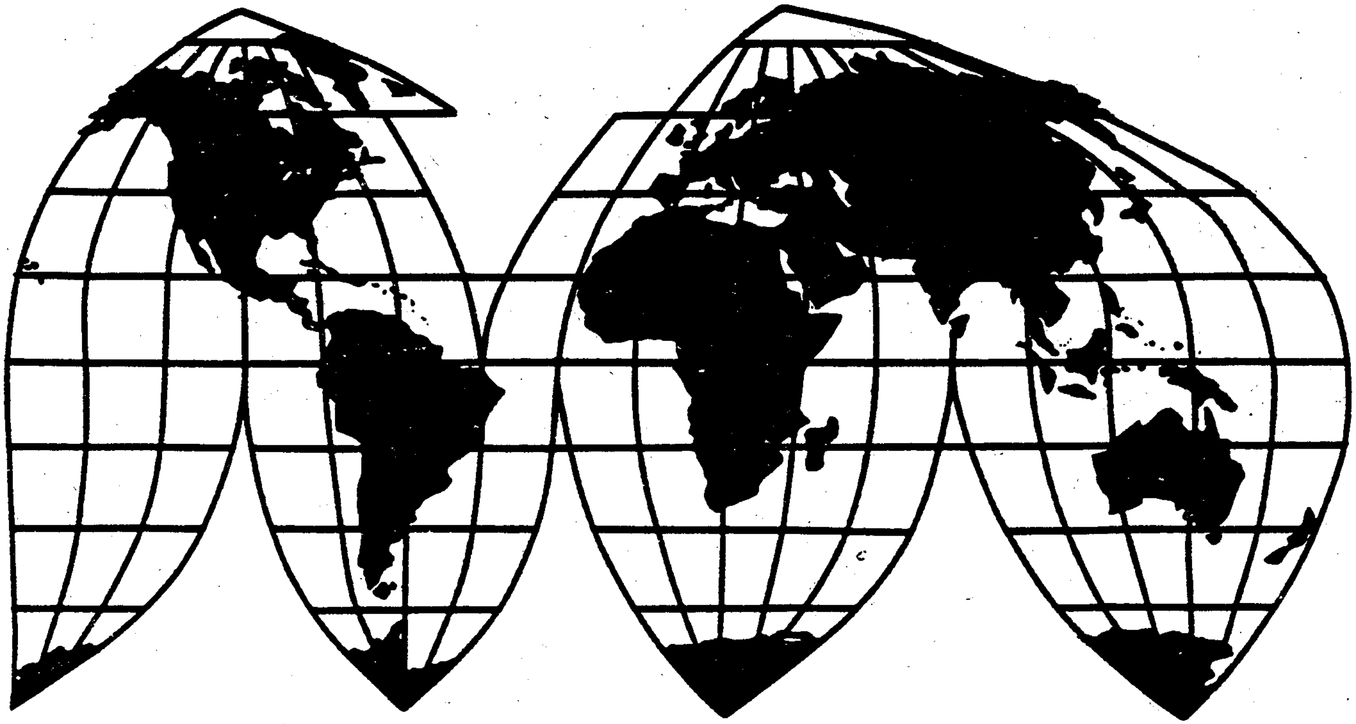
In the Matter of

Certain Microsphere Adhesives, Process for Making Same, and Products Containing Same, Including Self-Stick Repositionable Notes

Investigation No. 337-TA-366

Publication 2949 **January 1996**

U.S. International Trade Commission



Washington, DC 20436

U.S. International Trade Commission

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In the Matter of

Certain Microsphere Adhesives, Process for Making Same, and Products Containing Same, Including Self-Stick Repositionable Notes

Publication 2949

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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, DC 20436

PUBLIC INSPECTION

In the Matter of CERTAIN MICROSPHERE ADHESIVES, PROCESS FOR MAKING SAME, AND PRODUCTS CONTAINING SAME, INCLUDING SELF-STICK REPOSITIONABLE NOTES	**Investigation No. 337-TA-366**

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OFC OF THE SECRETARY
U.S. INT'L

NOTICE OF TERMINATION OF INVESTIGATION AND ISSUANCE OF LIMITED EXCLUSION ORDER

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has issued a limited exclusion order in the above-captioned investigation and terminated the investigation.

FOR FURTHER INFORMATION CONTACT: Jean Jackson, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone 202-205-3104.

SUPPLEMENTARY INFORMATION: This investigation was instituted by the Commission on June 8, 1994, based on a complaint filed by Minnesota Mining and Manufacturing Co. (3M). On March 23, 1995, the then presiding administrative law judge (ALJ)(Chief Judge Janet Saxon) issued her final ID in the investigation. The ALJ determined that a violation of section 337 of the Tariff Act of 1930, as amended, had occurred by reason of infringement of certain claims of U.S. Letters Patent 4,166,152 (the '152 patent) in the importation or sale of certain products containing microsphere adhesives by Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. (collectively, Kudos). The finding of violation as to Kudos was based on adverse inferences drawn from Kudos' failure to cooperate in discovery. The ID found no violation as to respondents Taiwan Hopax Chemicals Manufacturing, Co., Ltd.; Yuen Foong Paper Co., Ltd.; Beautone Specialties Co., Ltd.; and Beautone Specialties Co. (collectively, Beautone).

On April 17, 1995, 3M, Beautone, and the Commission investigative attorney (IA) filed petitions for review of the ID. On April 27, 1995, they filed responses to each other's petitions. On May 23, 1995, the Commission determined to review the issues of (1) claim interpretation, (2) patent infringement by Beautone and Kudos, (3) patent validity under 35 U.S.C. §§ 102(f), 102(g), and 112, second paragraph, and (4) domestic industry. The Commission determined not to review the remainder of the ID. The Commission also determined to remand the ID to the ALJ for additional findings and for clarification of certain findings made in the ID concerning the issues under review.

Subsequent to remand of the ID, the investigation was reassigned to Judge Paul Luckern, who, on August 8, 1995, issued his ID on remand. 3M and Beautone filed petitions for review on August 18, 1995. 3M, Beautone, and the IA filed responses to the petitions. On September 22, 1995, the Commission determined not to review the remand ID, thereby resolving the issues of claim interpretation and validity under 35 U.S.C. § 112, and the validity of claims 1, 2, 4, and 5. The

Commission determined not to review the ALJ's remand ID and requested written submissions on the issues of remedy, the public interest, and bonding. 60 Fed. Reg. 50215 (1995)(Sept. 28, 1995). On review the Commission determined that claims 7, 8, and 10 were not invalid under 35 U.S.C. §§ 102(f), 102(g); that Beautone did not infringe any of the '152 patent claims in issue; that Kudos infringed claims 1, 4, and 7, based on adverse inferences; and that there is a domestic industry.

Submissions on remedy, the public interest, and bonding were received from complainant 3M, respondent Beautone, and the IA. Complainant, respondents, and the IA also filed reply submissions on those issues.

Having reviewed the record in this investigation, including the written submissions of the parties, the Commission made its determinations on the issues of remedy, the public interest, and bonding. The Commission determined that the appropriate form of relief is a limited exclusion order prohibiting the unlicensed importation of infringing microsphere adhesives, and products containing same, including repositionable notes and products containing repositionable notes, manufactured and/or imported by or on behalf of Kudos. The order applies to any of the affiliated companies, parents, subsidiaries, licensees, contractors, or other related business entities, or their successors or assigns of Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co.

The Commission also determined that the public interest factors enumerated in 19 U.S.C. § 1337(d) do not preclude the issuance of the limited exclusion order, and that the bond during the Presidential review period shall be in the amount of 100 percent of the entered value of the articles in question.

This action is taken under the authority of section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), and section 210.58 of the Commission's Interim Rules of Practice and Procedure (19 C.F.R. § 210.58)(1994).

Copies of the Commission order, the Commission opinion in support thereof, and all other nonconfidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone 202-205-2000. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on 202-205-1810.

By order of the Commission.

Donna R. Koehnke

Donna R. Koehnke
Secretary

Issued: December 8, 1995

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, DC 20436

In the Matter of

CERTAIN MICROSPHERE ADHESIVES, PROCESS FOR MAKING SAME, AND PRODUCTS CONTAINING SAME, INCLUDING SELF-STICK REPOSITIONABLE NOTES

Investigation No. 337-TA-366

ORDER

Having determined that there is a violation of section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) in the unlawful importation and sale of certain microsphere adhesives and products containing the same, including self-stick repositionable notes, that infringe or are made by a process that infringes U.S. Letters Patent 4,166,152, and having considered the issues of remedy, the public interest, and bonding, the Commission hereby **ORDERS** that:

1. Microsphere adhesives and products containing the same, covered by claims 1, 4, or 7 of U.S. Letters Patent 4,166,152, including self-stick repositionable notes and products containing self-stick repositionable notes, that are manufactured and/or imported by or on behalf of Kudos Finder Tape Industrial Ltd., of Taiwan; or Kudos Finder Trading Co., Ltd., of Taiwan; or any of their affiliated companies, parents, subsidiaries, licensees, contractors, or other related business entities, or their successors or assigns, are excluded from entry for consumption into the United States for the remaining term of the patent, i.e., until August 17, 1997, except under license of the patent owner or as provided by law.

2. Microsphere adhesives and products containing the same, covered by claims 1, 4, or 7 of U.S. Letters Patent 4,166,152, including self-stick repositionable notes and products containing self-stick repositionable notes, that are manufactured and/or imported by or on behalf of the entities identified in paragraph 1 are entitled to entry into the United States under bond in the amount of 100 percent of the entered value of such items pursuant to subsection (j) of section 337 of the Tariff Act of 1930, as amended (19 U.S.C. 1337(j)), from the day after this Order is received by the President, until such time as the President notifies the Commission that he approves or disapproves this action, but no later than 60 days after the date of receipt of this Order by the President.

3. Pursuant to procedures to be specified by the U.S. Customs Service, as the Customs Service deems necessary, persons seeking to import microsphere adhesives and products containing the same, covered by claims 1, 4, or 7 of U.S. Letters Patent 4,166,152, including self-stick repositionable notes and products containing repositionable notes, that are manufactured and/or imported by or on behalf of the entities identified in paragraph 1 above, shall certify that they are familiar with the

terms of this Order, that they have made appropriate inquiry, and thereupon state that, to the best of their knowledge and belief, the microsphere adhesives or products containing the same, including self-stick repositionable notes, are not excluded from entry under paragraph 1 of this Order.

4. In accordance with 19 U.S.C. § 1337(l), the provisions of this Order shall not apply to microsphere adhesives or products containing the same, including self-stick repositionable notes, imported by and for the use of the United States, or imported for, and to be used for, the United States with the authorization or consent of the Government.

5. The Commission may modify this Order in accordance with the procedure described in section 211.57 of the Commission's Interim Rules of Practice and Procedure (19 C.F.R. § 211.57) (1994).

6. The Secretary shall serve copies of this Order upon each party of record in this investigation and upon the Department of Health and Human Services, the Department of Justice, the Federal Trade Commission, and the U.S. Customs Service.

7. Notice of this Order shall be published in the Federal Register.

By order of the Commission.

Donna R. Koehnke

Donna R. Koehnke
Secretary

Issued: December 8, 1995

PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, DC 20436

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In the Matter of

CERTAIN MICROSPHERE ADHESIVES, PROCESS FOR MAKING SAME, AND PRODUCTS CONTAINING SAME, INCLUDING SELF-STICK REPOSITIONABLE NOTES

Investigation No. 337-TA-366

COMMISSION OPINION

PROCEDURAL HISTORY

On May 9, 1994, Minnesota Mining and Manufacturing Co. (3M) filed a complaint under section 337 of the Tariff Act of 1930 (19 U.S.C. § 1337) alleging infringement of claims 1-8 and 10 of U.S. Letters Patent 4,166,152 (the '152 patent), owned by 3M, in the importation and sale of certain microsphere adhesives, and products containing same, including self-stick repositionable notes. 3M later dropped its allegations of infringement concerning claims 3 and 6. 3M's complaint listed the following eight firms as respondents: Taiwan Hopax Chemicals Manufacturing, Co., Ltd.; Yuen Foong Paper Co., Ltd.; Beautone Specialties Co., Ltd.; Beautone Specialties Co. (collectively, Beautone); Kudos Finder Tape Industrial Ltd.; Kudos Finder Trading Co. Ltd. (collectively, Kudos); Print-Inform GmbH & Co. (Print Inform); and Z-International, Inc. (Z-International). The Commission published notice of institution of an investigation of 3M's complaint in the <u>Federal</u> <u>Register</u> on June 8, 1994. 59 <u>Fed</u>. <u>Reg</u>. 29620. The investigation was designated "more complicated" by presiding administrative law judge (ALJ) Janet Saxon on March 1, 1995.

Respondent Print-Inform corresponded with the Commission and the parties, but did not participate fully in discovery and was not present at the evidentiary hearing. In her ID of March 23, 1995 (see below), Judge Saxon found that Print-Inform was not in violation of section 337 because no evidence was offered to support 3M's allegations against Print Inform. This finding became the Commission's determination when the Commission declined to review this part of Judge Saxon's ID. Respondent Z-International was terminated from the investigation based on a consent order and consent order agreement on April 3, 1995. The Kudos respondents filed an answer to the complaint, but did not participate in discovery or offer evidence at the evidentiary hearing. The Beautone respondents actively participated in the investigation.

Judge Saxon issued her final ID in the investigation on March 23, 1995, and all active parties petitioned for review. On May 23, 1995, the Commission determined to review the issues of (1) claim construction, (2) patent validity under 35 U.S.C. §§ 102(f), 102(g), and 112, (3) patent infringement by both Kudos and Beautone, and (4) domestic industry. The Commission remanded the ID to the presiding ALJ for additional findings and clarifications. On remand, the investigation was reassigned to Judge Paul Luckern, who issued his remand ID on August 8, 1995. The Commission determined that it would not review, and therefore adopted, Judge Luckern's ID on September 22, 1995. Adoption of the remand ID resolved the following review issues: (1) claim construction, (2) validity of all claims under 35 U.S.C. § 112, (3) validity of claims 1, 2, 4, and 5 under 35 U.S.C. §§ 102 (f) and (g), and (4) infringement of claim 4 by the Kudos respondents. Since the issues under review were broader than those remanded to the ALJ, the following issues remain for disposition by the Commission: (1) validity of claims 7, 8, and 10 under 35 U.S.C. §§ 102(f) and 102(g); (2) infringement and (3) domestic industry.

DISCUSSION 1/

I. Violation Issues

A. Validity of Claims 7, 8, and 10 under 35 U.S.C. §§ 102(f) and (g).

Judge Saxon determined that claims 7, 8, and 10 were not invalid under 35 U.S.C. §§ 102(f) and 102(g), as had been alleged by Beautone. Her determination was based on her finding that the prior art asserted against the patent by Beautone -- an experiment done by another 3M scientist, Dr. Silver, with poly-TMA (trimethylamine methacrylimide) -- did not teach all the process limitations of claim 7, and therefore did not anticipate the claims. In particular, Judge Saxon found that it was not proven that Dr. Silver's experiment included charging "an ionic suspension stabilizer that had an interfacial tension of at least about 15.0 dynes per centimeter," to a reaction vessel, as required by the '152 patent claims. Saxon ID (SID) at 57.

The remand ID did not consider the validity of claims 7, 8, and 10. However, Judge Luckern's analysis upholding the validity of claims 1, and 2 under 35 U.S.C. §§ 102 (f) and 102(g), has bearing on the validity of claims 7, 8, and 10 because the claims are similar and share many of the same limitations. Judge Luckern found that Dr. Silver's experiment was not shown by clear and convincing evidence to constitute a conception of the invention

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1/ For a discussion of the technology and the patent at issue, which covers 3M's popular Post-It® Note products, see Judge Saxon's ID, March 23, 1995, at pp. 10-33.

of the '152 patent, nor was the claimed subject matter communicated to the patentee as required by 35 U.S.C. §§ 102(f). See Price v. Symsek, 988 F.2d 1187, 1190 (Fed. Cir. 1993). Luckern ID (LID) at 52-54. Judge Luckern also found that the Silver experiment did not constitute a reduction to practice as further required by 35 U.S.C. §102(g). See In re Katz, 687 F.2d 450, 454 (C.C.P.A. 1982). Finally, Judge Luckern found that, under the guidelines set forth in Checkpoint Systems, Inc. v. U.S.I.T.C., 54 F.3d 756, 35 USPQ2d 1042 (Fed. Cir. 1995), the facts of this case demonstrated that Dr. Silver had abandoned his poly-TMA work, and thus his experiment did not invalidate the claims at issue of the '152 patent under U.S.C. § 102(g) for that additional reason. LID at 55-59.

Accordingly, we affirm Judge Saxon's original finding that claims 7, 8 and 10 are not invalid under 35 U.S.C. §§ 102(f) and 102(g), and we modify her findings to include the additional, and equally applicable, reasons cited by Judge Luckern for determining that Dr. Silver's experiment did not anticipate claims 1 and 2.

B. Infringement by Kudos

The Kudos respondents did not respond to 3M's interrogatories and requests for admissions, although they were ordered to do so by Judge Saxon. Because of Kudos refusal to participate in discovery, Judge Saxon drew adverse inferences and deemed certain facts to be admitted by Kudos. (Order No. 11, dated October 18, 1994). She found that the facts deemed admitted proved that Kudos infringed "at least" independent claims 1 and 7 of the '152 patent. Id. On remand, Judge Luckern found that adverse inferences drawn from Kudos refusal to answer 3M's Request for Admission No. 11 also supported a finding that independent claim 4 was infringed by Kudos. LID at 62. This finding was adopted by the Commission. The Commission now affirms Judge Saxon's finding that Kudos infringes independent claims 1 and 7 of the '152 patent. Affirmation of Judge Saxon's findings results in a Commission determination that, based on adverse inferences, Kudos infringes claims 1, 4, and 7 of the '152 patent. 2/

C. Infringement by Beautone

Judge Luckern's claim constructions, which were adopted by the Commission, provide the basis for determining whether Beautone infringes the '152 patent claims. Judge Luckern found that all of the '152 patent claim limitations were met by Beautone, with the exception of the limitation "ionic suspension stabilizer having an interfacial tension below about 15.0 dynes per centimeter." Judge Luckern construed the disputed claim language "ionic suspension stabilizer" to require that the suspension stabilizer be ionic when it is added to the reaction mixture. LID at 23. He specifically found that the claim language does not cover the in situ transformation of a nonionic stabilizer into an ionic one during a chemical reaction. Id. Judge Luckern construed the claim language "having an interfacial tension of at least about 15.0 dynes per centimeter" to encompass interfacial tensions of as low as 14.8 dynes per centimeter.

2/ Neither Judge Saxon nor Judge Luckern made a finding on whether claims 2, 5, 8, and 10 were infringed by Kudos because the requests for admission that were put to Kudos did not address those dependent claims.

Judge Saxon found that the Beautone respondents did not infringe the '152 patent claims on the following grounds: 3/

1. The accused adhesive is made using nonionic stabilizers instead of the ionic stabilizers called for in the '152 patent. SID at 112-115.

2. The nonionic stabilizers utilized by respondents work in a different way than the ionic stabilizers claimed in the '152 patent, and are thus not equivalent to the ionic stabilizers. SID at 115.

3. 3M forfeited any right to use the doctrine of equivalents to capture nonionic suspension stabilizers because of its knowledge that some nonionic suspension stabilizers would work and its failure to disclose this knowledge to the U.S. Patent and Trademark Office. SID at 115.

4. 3M lost its right to use the doctrine of equivalents to capture nonionic suspension stabilizers having an interfacial tension below about 15.0 dynes per centimeter because of claim amendments and attorney arguments made during the prosecution history of the '152 patent. SID at 114-115. The stabilizers utilized in making the accused adhesive have an interfacial tension of 11.0 dynes per centimeter, which is below the 13.0

3/ The listed findings concern infringement of claims 1, 2, 4, and 5. Judge Saxon made additional findings to support her conclusion that Beautone did not infringe claims 7, 8, and 10. However, 3M declined to petition for review of those findings stating: "[t]o simplify review by narrowing the petition to the claims most clearly infringed (claims 1, 2, 4, and 5), complainant has dropped reliance on method claims 7, 8, and 10." 3M Petition for Review at 13. Under the Commission's Interim Rules of Practice and Procedure, which govern this investigation, issues not raised in a petition for review are deemed abandoned and may be disregarded by the Commission in reviewing the ID. 19 C.F.R. § 210.54 (a)(2). See, Texas Instruments, Inc. v. U.S. Int'l Trade Comm., 988 F.2d 1165, 1176 (Fed. Cir. 1993); Allied Corp. v. U.S. Int'l Trade Comm., 850 F.2d 1573, 1580 (Fed. Cir. 1988), cert. denied, 488 U.S. 1008 (1989).

Judge Saxon also found that the accused adhesive was not shown to be infusible as the '152 patent claims require, SID at 108-110, and that 3M limited its claims during prosecution to reactions that were predominately suspension polymerization reactions to the exclusion of the dual system utilizing both suspension polymerization and emulsion polymerization. SID at 106-07. These findings were contradicted in Judge Luckern's ID, LID at 30, 17, and thus were rejected by the Commission when it adopted Judge Luckern's ID.

> lower limit of interfacial tension covered by the '152 patent claims. SID at 116-117. 4/

We have carefully considered the parties' arguments concerning Judge Saxon's finding of noninfringment by Beautone. In particular, we have considered her determination in light of the Federal Circuit's recent en banc explication of the doctrine of equivalents in Hilton Davis Chemical Co. v. Warner-Jenkinson Company, Inc., 35 USPQ2d 1641 (Fed. Cir. 1995). We conclude that Judge Saxon was correct in determining that Beautone does not infringe the '152 patent claims in issue either literally or under the doctrine of equivalents. Accordingly, we affirm her finding that Beautone does not infringe the '152 patent. We adopt her infringement analysis to the extent that it does not conflict with the remand findings made by Judge Luckern and adopted by the Commission on September 22, 1995. The determination of no infringement results in a finding of no violation of section 337 as to Beautone.

C. Domestic Industry

1. Background

The Omnibus Trade and Competitiveness Act of 1988 (OTCA) amended section 337 of the Tariff Act of 1930 to specify the types of unfair acts covered by that section. As amended, section 337 explicitly prohibits the importation and sale of imported articles that --

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4/ Judge Luckern's claim construction of the term "about 15.0 dynes per centimeter" to mean no lower than 14.8 dynes per centimeter did not affect Judge Saxon's ultimate determination that the claim term was not met in the Beautone adhesive and process because Beautone's suspension stabilizers were found to have surface tensions no greater than 11.0 dynes per centimeter.

> (i) infringe a valid and enforceable United States patent. . . ; or
>
> (ii) are made, produced, processed, or mined under, or by means of, a process covered by the claims of a valid and enforceable United States patent.

19 U.S.C. § 1337 (a)(1)(B). In order to prove a violation of section 337 in a patent-based case, a complainant must show that an industry exists in the United States practicing the patent. Specifically, there can be a violation of section 337 --

> only if an industry in the United States, relating to the articles protected by the patent, . . . exists or is in the process of being established.

19 U.S.C. § 1337(a)(2).

In investigations involving alleged infringement of a patent, and other statutory intellectual property rights, section 337(a)(3) defines the term domestic industry as follows:

> (a) (3) . . . an industry in the United States shall be considered to exist if there is in the United States, with respect to the articles protected by the patent, copyright, [registered] trademark, or mask work concerned --
>
> (A) significant investment in plant and equipment;
>
> (B) significant employment of labor or capital; or
>
> (C) substantial investment in its exploitation, including engineering, research and development, or licensing.

19 U.S.C. § 1337 (a)(3).

Thus, important questions in section 337 investigations are whether there is significant or substantial commercial exploitation, and whether the complainant is exploiting or practicing the patent in controversy. Certain Doxorubicin and Preparations Containing Same, USITC Inv. No. 337-TA-300, Commission Opinion (Public Version) at 21 (May 2, 1991). The issue raised in this investigation is whether section 337 requires that there be a correspondence between the claims practiced by the complainant and the claims infringed by the respondent in order to have a violation of the statute. The Commission determined to review the claim correspondence issue in this investigation as a matter of policy.

It was held in Certain Chemiluminescent Compositions, Inv. No. 337-TA-285, (Unreviewed Initial Determination (March 22, 1989)) ("Chemiluminescent Compositions"), that there must be a domestic industry practicing each asserted claim in order for a violation of section 337 to be found on the basis of each claim. Chemiluminescent Compositions at 90, n. 16. This requirement of "claim correspondence" resulted in a finding of no violation as to some patent claims in the Chemiluminescent Compositions investigation. However, a general exclusion order issued in that investigation based on infringement of a registered trademark, as well as infringement of other patent claims which were practiced by complainant. While several subsequent IDs or orders in other investigations followed Chemiluminescent Compositions in holding that there must be claim correspondence in order to establish a violation of section 337, the issue of claim correspondence was not dispositive of the issue of violation in any of those investigations. 5/ The

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5/ See Certain Heavy-Duty Mobile Scrap Shears, Inv. No. 337-TA-252 (ALJ ultimately found that all relevant claims were practiced by complainant and infringed by respondent); Certain Concealed Cabinet Hinges and Mounting Plates, Inv. No. 337-TA-289 (complaint dismissed with prejudice for violation of the duty of candor); Certain Scanning Multiple-Beam Equalization Systems for Chest Radiography and Components Thereof, Inv. No. 337-TA-326 (investigation terminated on the basis of a settlement agreement).

Commission, however, subsequently indicated in Certain Plastic Encapsulated Integrated Circuits, Inv. No. 337-TA-315, Commission Opinion on Remedy, the Public Interest, and Bonding, at 18-19 n. 37 (March 24, 1992) ("Encapsulated Circuits"), that the need for claim correspondence in order to find a violation of section 337 remained an open question.

Judge Saxon found that 3M practices process claims 7 and 8 of the '152 patent, but not product claims 1, 2, 4, or 5. SID at 132-6. Her finding was based on testimony that the microspheres used on 3M's products contained some ionic monomers while the language of claims 1, 2, 4, and 5 requires that the microspheres be formed exclusively from non-ionic monomers. SID at 133. Claims 7, 8, and 10, although defining a process for making the microspheres of the product claims, do not require that the process use exclusively nonionic monomers. 3M did not petition for review of Judge Saxon's finding that it did not practice claims 1, 2, 4, or 5. On remand, Judge Luckern found that 3M also practices claim 10.

Since she was bound by the decision in Chemiluminescent Compositions, Judge Saxon found a violation of section 337 as to Kudos with regard to only claim 7, the only claim at issue that Judge Saxon had found to be not invalid, practiced by 3M, and infringed by Kudos. SID at 136-38. In its petition for review, 3M contended that Judge Saxon's finding that it practices claims 7 and 8 is enough to support a finding of violation of section 337 in this investigation as to all the infringed claims, and urged that the Commission overrule the "claim correspondence" approach of Chemiluminescent Compositions.

2. Parties' Arguments

3M argued that the ordinary meaning of the language used in section 337(c) -- "articles protected by the patent" -- is that the articles need only be covered by any claim of the patent. 3M argued that if Congress had wanted to impose a requirement that the infringed claims be practiced, it would have done so in clear and unequivocal terms. Moreover, 3M asserted that requiring claim correspondence contravenes the purposes of section 337. 3M explained that section 337(c) resulted from the 1988 amendments to section 337, a major purpose of which was the removal of impediments to bringing section 337 cases, so that section 337 would be a more effective remedy for the protection of U.S. intellectual property rights. 6/ For example, 3M noted that the 1988 amendments exempted complainants asserting infringement of statutory intellectual property rights from the requirement of proving injury by reason of the infringing acts. 7/ 3M argued that requiring claim correspondence would add a new requirement to section 337 which would offset the benefits that removal of the injury requirement was intended to achieve. 3M contended that this requirement could also make it impossible for a patent owner to use section 337 against infringing goods even if the patent owner was actively using some claims of its patent in the United States.

Beautone contended that a claim correspondence requirement is appropriate. It argued that section 337 protects articles, not intellectual

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6/ 3M cited the Report of the House Committee on Ways and Means to accompany H.R. 3 (Omnibus Trade and Competitiveness Act of 1988), Report No. 100-40 pt. 1 at 154 (April 6, 1987).

7/ The requirement of proving injury was retained for investigations involving other types of unfair acts. 19 U.S.C. § 1337(a)(1)(A).

property rights, relying on Schaper Mfg. Co. v. U.S. Intern. Trade Comm'n, 717 F. 2d 1368, 1371 (Fed. Cir. 1983), where the court explained that in "cases under § 337 involving United States article patents, the relevant domestic 'industry' extends only to articles which come with the claims of the patent relied on." (Emphasis in original.) Beautone also relied on Jones v. Hardy, 727 F.2d 1524, 1528 (Fed. Cir. 1984), which held that each patent claim is considered a separate invention, as support for the proposition that each claim should also be considered to define a separate domestic industry.

As further support for its position, Beautone cited the House Report accompanying the 1988 amendments, which states: "in order to clarify the industry standard, a definition is included which specifies that an industry exists in the United States with respect to a particular article involving an intellectual property right," H.R. Rep. No. 100-40, 100th Cong., 1st Sess. 157 (Beautone's emphasis), and "retention of the requirement that the statute be used on behalf of an industry in the United States retains the essential nexus." Id. Beautone asserted that these quotes clearly define that the essential nexus to the domestic industry is the article or process, not the intellectual property right. Thus, Beautone asserted, only those claims that actually cover the infringing article or process can establish the domestic industry.

The Commission investigative attorney (IA) argued that the language of section 337 supports the view that where the domestic industry practices some of the claims of a patent, a respondent's infringement of any of the claims of that patent provides a basis for finding a violation of section 337. The IA noted that the statute emphasizes infringement and practice of the patent, rather than the individual claims of the patent. Specifically, the IA quoted the language of the statute referring to infringement of a U.S. patent (19 U.S.C. § 1337(a)(1)(B)(i)); the requirement that an industry exist in the United States "relating to the articles protected by the patent," (Id. at § 1337(a)(2)); and the domestic industry requirements "with respect to the articles protected by the patent" (Id. at § 1337(a)(3)). The IA argued that since there is no statutory definition of "articles protected by the patent," the phrase should be given its ordinary meaning.

3. Discussion

The analysis of the domestic industry issue in Chemiluminescent Compositions was not exhaustive, comprising only one explanatory paragraph found in a footnote in the summary section of the ID where the ALJ wrote:

> Thus the claims of the patents at issue which are infringed by [respondent's products] are not the subject of a violation of section 337, because they are not practiced by the domestic industry. While [the OTCA] liberalized the requirements for a domestic industry in "articles protected by the patent," still the Act retained the requirement that domestic industry must be shown. The claims of the patent constitute separate definitions of the scope of the patent's protection, and the practice, infringement and validity of separate claims is determined separately under the patent law, see, 35 U.S.C. sections 112, 271, 282. The domestic industry issue focuses on whether the intellectual property right covers the domestic activity. (Report of Senate Committee on Finance on S. 490, Rpt. No. 100-71, 100th Cong., 1st Sess., June 12, 1987 at 128-129, and here the coverage of [deleted from public version] on the domestic industry has not been shown.

Chemiluminescent Compositions, at 90, n. 16. Thus, although the ALJ cited section 337 and its legislative history, he actually grounded the claim correspondence requirement on various patent statutes. This analysis ignores the fact that the domestic industry requirement originated in a trade statute -- section 337. When Congress amended section 337 in 1988, it specifically distinguished the trade purpose of section 337 from the purpose of protecting intellectual property rights by stating:

> [the domestic industry requirement] was maintained in order to preclude holders of U.S. intellectual property rights who have no contact with the United States other than owning such intellectual property rights from utilizing section 337. The purpose of the Commission is to adjudicate trade disputes between U.S. industries and those who seek to import goods from abroad. Retention of the requirement that the statute be utilized on behalf of an industry in the United States retains that essential nexus. 8/

Section 337 clearly states that a domestic industry exists where there is significant investment in plant and equipment; significant employment of labor or capital; or substantial investment in exploitation, including engineering, research and development, or licensing, in the United States "with respect to the articles protected by the patent, copyright, [registered] trademark, or mask work concerned." 19 U.S.C. § 1337 (a)(3) (emphasis added). In Certain Sputtered Carbon-Coated Computer Disks, Inv. No. 337-TA-350, Commission Opinion at 5 (1993), we held that it was not appropriate to insert limitations into section 337 that were not placed there by Congress. 9/ We

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8/ H.R. Rep. No. 100-40, 100th cong., 1st Sess. 157 (1987); also see S. Rep. No. 100-71, 100th cong., 1st Sess. 129 (1987).

9/ The Commission relied on West Virginia University Hospitals, Inc. v. Casey, 111 S. Ct. 1138, 1143 (1991) (terminology used repeatedly in statutes must be given significance so it will not "become an inexplicable exercise in redundancy"); Russello v. United States, 464 U.S. 16, 23 (1983) (if Congress had intended to restrict statute's scope, it presumably would have done so in the same manner as it did in a related statute; "[t]he short answer is that Congress did not write the statute that way."). See generally 2A Singer, Sutherland Statutory Construction § 47.38 (1992) ("In construing a statute, it is always safer not to add or to subtract from the language of a statute unless imperatively required to make it a rational statute"); 62 Cases of Jam v. United States, 340 U.S. 593, 596 (1951) (in statutory construction, the court's role "is . . . to ascertain -- neither to add nor to subtract, neither to delete nor to distort").

see no basis in the statutory language for Beautone's position that the term "patent" means "patent claims that have been violated." Indeed, the statute does not mention patent claims at all. In contrast, patent statutes cited in the <u>Chemiluminescent Compositions</u> investigation expressly mention patent claims. The fact that Congress did not use similar language in section 337, or place an express provision requiring claim correspondence, militates against a statutory construction that would require claim correspondence.

The legislative history of the 1988 amendments does not specifically address whether the domestic industry must practice each claim infringed, or whether the statute is satisfied if the domestic industry practices at least one claim of the patent. There can be no doubt, however, that Congress intended the 1988 amendments to liberalize the domestic industry requirement. For instance, the 1988 amendments allowed holders of intellectual property to bring section 337 complainants even if the only exploitation of their property rights lies in licensing or research and development. Prior to the amendments, the domestic industry requirement was met only by production and/or servicing activities. <u>Schaper</u>, 717 F.2d 1368, 1373. In our view, the legislative history cited by Beautone to support the contrary position is ambiguous at best. The language from <u>Schaper</u>, "<u>claims</u> of the patent relied on" which was quoted by Beautone, is also ambiguous. The phrase "relied on" could modify either the word "patent" or, as Beautone urges, the word "claims." 10/

10/ In any event, the <u>Schaper</u> case was decided before the 1988 amendments supplied a definition of the term "domestic industry." Moreover, the issue in <u>Schaper</u> was whether complainant had sufficient business activities in the (continued...)

We stated in Sputtered Carbon Coated Computer Disks, Inv. No. 337-TA-350, Commission Opinion at 7 (1993), that "[i]n the absence of the most extraordinary showing of contrary intentions from the [legislative history] . . . we must find the language of the statute itself to be conclusive and decline to read limitations into it," citing Garcia v. United States, 469 U.S. 70, 75 (1984). 11/ Our review of the pertinent statutory language and legislative history leads us to conclude that Congress did not intend that the Commission impose a claim correspondence requirement on section 337 complainants. Our conclusion, however, cannot be squared with the decision in Chemiluminescent Compositions, and so we hereby overrule that decision.

We find in this investigation that 3M's practice of claims 7, 8, and 10 suffice to establish a domestic industry as to all the asserted claims. If, in a future case, the products of complainant and respondents are significantly different, even though made under different claims of the same patent, we could consider the matter in the context of remedy or public interest.

III. Remedy, Public Interest, and Bonding

Where a violation of section 337 has been found, the Commission must consider the issues of remedy, the public interest, and bonding.

10/(...continued)
United States to constitute a domestic industry, not whether complainant practiced the claims infringed by the respondents.

11/ The Commission also cited Park'N Fly, Inc. v. Dollar Park and Fly, Inc., 469 U.S. 189, 194 (1985)("statutory construction must begin with the language employed by Congress and the assumption that the ordinary meaning of that language accurately expresses the legislative purpose").

A. Remedy

The Commission may issue either a general exclusion order, which directs the U.S. Customs Service to exclude from entry into the United States all articles which infringe the involved patent, without regard to source, or a limited exclusion order which would be directed to respondents who were found to have violated section 337. 19 U.S.C. § 1337(d). The Commission may also issue cease and desist orders directing persons who were parties to the Commission investigation to cease unfair acts. 19 U.S.C. § 1337(f).

Because a general exclusion order has considerable impact on international trade, potentially extending beyond the parties and articles involved in the investigation, more than solely the interests of the parties are affected. Therefore, the Commission exercises caution in issuing general exclusion orders and requires that certain conditions be met before one is issued. These conditions were set forth by the Commission in Certain Airless Paint Spray Pumps, Inv. No. 337-TA-90, 216 U.S.P.Q. 465 (ITC 1981)(Spray Pumps), where the Commission stated that it would "require that a complainant seeking a general exclusion order prove both a widespread pattern of unauthorized use of its patented invention and certain business conditions from which one might reasonably infer that foreign manufacturers other than the respondents to the investigation may attempt to enter the U.S. market with infringing articles." 216 USPQ at 473.

3M argues that a pattern of unauthorized use is evidenced by the level of litigation over the '152 patent. However, the litigation 3M cites to support its argument has been largely concluded. For instance, 3M cites its litigation at the Commission against Beautone, Kudos, and Z-International and the on-going litigation in Germany against Print-Inform. The Commission has found that Beautone and Print-Inform do not infringe the '152 patent and that Z-International has entered into a consent order in which it agrees not to infringe the '152 patent. The domestic litigation against Ampad Inc. in the U.S. District Court for the District of Massachusetts concluded in 1985 with a finding that the '152 patent was held valid and infringed. Litigation against PCI Paper conversion Inc., Civ. Act. No. 3-93-CV-499, in the U.S. District Court for the District of Minnesota was settled with an admission of validity and the infringement by PCI. The outcome of all this litigation indicates that 3M has already pursued its remedies against most of its potential infringers and that 3M no longer need fear infringement by them.

Regarding the "business considerations" prong of <u>Spray Pumps</u>, 3M asserts that there are numerous distribution channels for the huge repositionable note market in the United States, and that it is easy for manufacturers to enter the mass market channel of distribution. 3M cites testimony, concerning Beautone, to the effect that a foreign manufacturer can establish channels of distribution and sell into the mass market and commercial markets with only one sales person and a single warehouse for inventory. Hofstetter Tr. 137, lines 8-13. 3M cites other testimony that in the repositionable note market, services are often not provided in the United States by foreign manufacturers, and customers deal directly with the foreign manufacturers, who send shipments directly to the customers. Hofstetter Tr. at 89 at 1-5. Thus, 3M argues, a foreign manufacturer could easily utilize existing channels of distribution to make sales.

3M alleges that other manufacturers are poised to enter the U.S. market, as the expiration date of the '152 patent nears and there is no longer a chance for 3M to obtain effective relief from the Commission. 3M submitted a declaration by a 3M employee which identified a number of foreign manufacturers that 3M believes have the capability to build or retool existing facilities at minimal cost to make infringing repositionable note pads. Declaration of Sharon R. Benjamin, para. 4, Oct. 13, 1995.

We agree with 3M that there is a large U.S. market for respositionable notes and ample channels of distribution. We find, however, that the record does not indicate that non-parties are on the verge of entering the U.S. market with infringing products. 3M has not identified a single potential infringer, but has instead only suggested that the "presence of many manufacturers with the capacity to convert to the infringing process at little cost demonstrates the need for a general exclusion order." However, with the exception of the affidavit from the 3M employee, the record contains no evidence to suggest that foreign manufacturers could easily convert to an infringing process. Indeed, the evidence in this investigation indicates that the process at issue is complicated and difficult to control. Moreover, 3M has made no showing that any competitor has an incentive or intends to switch to an infringing process. The evidence of record amply demonstrates that non-infringing alternatives to the process of the '152 patent exist and are being used in legitimate competition. 3M itself has made repositionable notes successfully for 20 years using the process of the now expired Silver patent and still uses that process for making repositionable note products. We have determined that the Beautone process is also not infringing.

In view of the foregoing, we find that the facts here do not meet the criteria for issuance of a general exclusion order set forth in Spray Pumps. Given the widespread presence of non-infringing alternatives to the '152 patent product and process in the U.S. marketplace, we find that issuance of a general exclusion order in this investigation would be inappropriate. Moreover, repositionable notes enter the U.S. in large volumes and in an enormous variety of forms. Under these circumstances, imposition of a general exclusion order, under which all imports of repositionable notes would be stopped by Customs, would place an unwarranted burden on legitimate commerce. We therefore find that a limited exclusion order directed against the Kudos respondents is the appropriate remedy here.

The record in this investigation demonstrates that an order having a downstream reach is necessary to give 3M complete relief. Repositionable note pads enter the United States in a wide variety of articles, such as travel wallets, desk top trays, 3-ring binder note packs, systems for organizers, and automobile clip-boards. These products are sold with self-stick respositionable notes included, and refills of the note pads are sold separately. Such downstream products should be covered by the order because the value of the infringing product, in most cases, is high compared to the value of the downstream product. Although some downstream products may have a high value that is not attributable to the patented note pad, our order will not pose a problem to commerce because it is limited to the Kudos respondents. Therefore, in order to insure complete relief to 3M, we determine that the limited exclusion order must cover downstream products containing infringing repositionable note pads. See, Certain Erasable Programmable Read-Only

Memories, Components Thereof, Products Containing Such Memories, and Process for Making Such Memories (EPROMs), Inv. No 337-TA-276, USITC Pub. No. 2196 at 125 (May 1989), aff'd, Hyundai Electronics Industries Co., Ltd. v. U.S. International Trade Comm., 899 F.2d 1204, 1209 (Fed. Cir. 1990).

We also determine that it is appropriate to include a certification provision in the limited order whereby an importer seeking to import goods manufactured by the Kudos respondents may do so by providing a written certification, pursuant to procedures to be specified by the U.S. Customs Service, that the goods are not covered by the exclusion order. This type of provision is desirable because an order directed to the products covered by the '152 patent would be difficult for Customs to enforce without a certification procedure. This is so because the '152 patent claims are either process claims or product by process claims, and the exact composition of the adhesive is not apparent upon a visual examination of the product. Thus, complex testing by Customs would be required to determine whether a repositionable note product falls within any exclusion order. The purpose of this certification provisions is to facilitate Customs' administration of the order by eliminating the need to test goods sought to be imported. As the provision is contained in a limited exclusion order covering only the Kudos respondents, it will not unduly burden legitimate commerce. Under Hyundai Electronics Industries Co., Ltd. v U.S. Int'l Trade Comm'n, 899 F.2d 1204 (Fed. Cir. 1990), inclusion of a certification requirement is "both reasonable and well within [the Commission's] authority." Id., 899 F.2d at 1210.

We do not find it appropriate to issue a cease and desist order against the Kudos respondents. The Commission normally issues cease and desist orders when the circumstances indicate that the respondents have a "commercially significant" amount of infringing imported product in the United States which they can sell, thus undercutting the effect of any exclusion order. See, e.g., Certain Crystalline Cefadroxil Monohydrate, Inv. No. 337-TA-293, USITC Pub. 2391 (March 15, 1990). 3M has not shown that Kudos has any inventory in the United States. In support of its argument that a cease and desist order should be entered against Kudos, 3M relied on testimony by a Beautone employee, Mr. Hofstetter, concerning the inventory practices of a domestic retailer, Staples. Mr. Hofstetter testified that a company which has a foreign supplier and maintains its own inventory typically keeps an inventory of 60-90 days. Hofstetter Tr. at 121, lines 7-15. From this testimony, 3M argued that it followed that Kudos maintains a 60-90 day inventory of respositionable note pads in the United States. However, 3M also cited the same witness's testimony that, in the repositionable note market, services are often not provided in the United States by foreign manufacturers, and customers deal directly with the foreign manufacturers who send shipments directly to the customers. Hofstetter Tr. at 89, lines 1-5, cited in 3M's Brief on Remedy, the Public Interest, and Bonding at 6. Thus, the evidence cited by 3M undercuts any assumption that Kudos must have a warehouse in the United States. Given the channels of distribution, and evidence that domestic retailers' maintain their own inventory, there is no reason to assume that Kudos necessarily maintains a significant inventory in the U.S.

Moreover, a cease and desist order is typically an in personam order directed to a party in the United States and enforced by the Commission in U.S. district courts. Thus, unless a party in the United States can be compelled to do some act or to refrain from doing some act by U.S. courts, a cease and desist order is inappropriate. Both Kudos respondents are foreign entities with addresses solely in Taiwan, and 3M has identified no legal entity in the United States as affiliated with or as operating on behalf of Kudos. It is Commission practice to decline to issue cease and desist orders against purely foreign respondents, Certain Reclosable Plastic Bags and Tubing, Inv. No. 337-TA-266, and so we decline to issue one here.

We reject Beautone's argument that a remedy should be denied 3M because the '152 patent is currently undergoing reexamination at the U.S. Patent and Trademark Office (PTO). A reexamination certificate will not be issued for the '152 patent until 3M has exhausted its administrative and judicial appeals of any adverse decision by the PTO. 35 U.S.C. § 307. Until that time, 3M is entitled to the benefits of owning the '152 patent as it is currently in force. The Commission's order could be modified if the PTO's reexamination certificate alters or cancels claims 1, 4, or 7.

We also reject Beautone's suggestion that any order terminate on the '152 patent's original expiration date. The term of the '152 patent was extended by the Uruguay Round Agreements Act (URAA), 35 U.S.C. § 154(a)(2) and (c)(1), until August 17, 1997. We are aware that the URAA legislation exempted certain infringers from various patent remedies upon the payment of "equitable remuneration," 35 U.S.C. 154 (c)(2). However, the statutory remedies that are not available to patent owners during the extended term of a patent are specifically listed in 35 U.S.C. § 154(c)(2), and that that section does not mention any remedies under section 337. Since nothing in the URAA legislation prevents section 337 remedial orders from remaining in effect until the underlying patents expire, there is no basis for the Commission's remedial order to expire before August 17, 1997. We also note that, while the URAA exempts certain patent remedies, it does so only on the payment of an "equitable remuneration" to the patentee. 35 U.S.C. 154(c)(3). Since the Commission cannot award damages or other remuneration for infringing acts, the statutory prerequisite for the section 154(c)(2) exemptions could not be met.

B. Public Interest

Prior to issuing relief, the Commission is required to consider the effect of such relief on the public health and welfare, competitive conditions in the U.S. economy, the production of like or directly competitive articles in the United States, and U.S. consumers. 19 U.S.C. 1337(d). We find that in this investigation the issuance of relief would have no adverse impact on the public interest. There is no evidence that repositionable note products made by the '152 patent process have any public interest implications in the United States, and there is no evidence that the demand for such products could not be met by 3M and noninfringing alternatives.

C. Bonding

Section 337(j)(3) provides for the entry of infringing articles upon the payment of a bond during the 60-day Presidential review period. 19 U.S.C. § 1337(j)(3). In setting the bond amount, the Commission typically has considered the differential in sales price between the patented product made by the domestic industry and the lower price of the infringing imported product, and has set a bond amount sufficient to eliminate that difference. Basing the bond on price differentials between 3M's and Kudos' products in this investigation would be very problematic because of the large variety of products involved, the wide variations in pricing, and the many distribution methods employed. Under these circumstances, setting an individual bond amount for each kind of respositionable note pad is not practical or justified. In cases where a price comparison is not possible, the Commission has set a 100 per cent bond during the Presidential review period. EPROMs, USITC Pub. 2196 at 132-34 (1989); Certain Amorphous Metal Alloys and Amorphous Metal Articles, Inv. No. 337-TA-143, USITC Pub. No. 1664 at 11-12 (1984); Certain Electrical Wire Discharge Machining Apparatus and Components Thereof, Inv. No. 337-TA-290, Commission Opinion at 20 (March 16, 1990. Accordingly, we set a bond of 100 percent of entered value during the Presidential review period in this investigation.

ADDENDUM

Claim 1. Infusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres formed from non-ionic monomers and comprising a major portion of at least one oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester, said polymeric microspheres having a glass transition temperature below about -20 degrees C., and having been prepared by aqueous suspension polymerization in the presence of at least one anionic emulsifier at a concentration level above said emulsifier's critical micelle concentration and an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter.

Claim 2. The microspheres of claim 1 wherein said ester is selected from the group consisting of n-butyl acrylate, sec-butyl acrylate, 2-methyl butyl acrylate, 4-methyl-2-pentyl acrylate, 2-ethyl hexyl acrylate, isooctyl acrylate, isodecyl methacrylate.

Claim 4. An article comprising a substrate having disposed on at least one surface thereon infusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres formed from non-ionic monomers and comprising a major portion of at least one oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester, said polymeric microspheres having a glass transition temperature below about -20 degrees C., and having been prepared by aqueous suspension polymerization in the presence of at least one anionic emulsifier at a concentration level above said emulsifier's critical micelle concentration and an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter.

Claim 5. The article of claim 4 wherein said ester is selected from the group consisting of n-butyl acrylate, sec-butyl acrylate, 2-methyl butyl acrylate, 4-methyl-2-pentyl acrylate, 2-ethyl hexyl acrylate, isooctyl acrylate, isodecyl methacrylate.

Claim 7. A suspension polymerization process for preparing infusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres comprising the steps of:

(a) charging to a reaction vessel

  (i) at least one alkyl acrylate or methacrylate ester monomer; and

  (ii) at least one anionic emulsifier at a concentration above its critical micelle concentration; and

  (iii) a substantially water-insoluble polymerization initiator; and

(iv) an ionic suspension stabilizer, having an interfacial tension of at least about 15.0 dynes per centimeter;

(b) agitating the reaction vessel charge to create an emulsion;

(c) heating said emulsion while maintaining said agitation;

whereby elastomeric, solvent-dispersible polymeric microspheres are formed from said emulsion.

Claim 8. The process of claim 7 wherein said ester monomer is selected from the group consisting of n-butyl acrylate, sec-butyl acrylate, 2-methyl butyl acrylate, 4-methyl-2-pentyl acrylate, 2-ethyl hexyl acrylate, isooctyl acrylate, isodecyl methacrylate.

Claim 10. The process of claim 7 wherein said stabilizer is present at up to about 10 percent of said monomer.

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U.S. INT'L TRADE COMM.
'95 SEP 22 P1:40

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, DC 20436

In the Matter of

CERTAIN MICROSPHERE ADHESIVES, PROCESS FOR MAKING SAME, AND PRODUCTS CONTAINING SAME, INCLUDING SELF-STICK REPOSITIONABLE NOTES

Investigation No. 337-TA-366

PUBLIC INSPECTION

RECEIVED
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U.S. INT'L TRADE COMM.
'95 SEP 22

NOTICE OF COMMISSION DECISION NOT TO REVIEW THE PRESIDING ADMINISTRATIVE LAW JUDGES'S INITIAL DETERMINATION ON REMAND; DENIAL OF MOTION FOR ORAL ARGUMENT; AND SCHEDULE FOR THE FILING OF WRITTEN SUBMISSIONS ON REMEDY, THE PUBLIC INTEREST, AND BONDING.

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the Commission has determined not to review the initial determination (ID) on remand issued by the presiding administrative law judge (ALJ) on August 8, 1995, in the above-captioned investigation. The Commission also determined to deny complainant's request for oral argument.

FOR FURTHER INFORMATION CONTACT: Jean Jackson, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone 202-205-3104.

SUPPLEMENTARY INFORMATION: This investigation was instituted by the Commission on June 8, 1994, based on a complaint filed by Minnesota Mining and Manufacturing Co. (3M). On March 23, 1995, then presiding ALJ (Chief Judge Janet Saxon) issued her final ID in this investigation. The ALJ determined that a violation of section 337 of the Tariff Act of 1930, as amended, has occurred by reason of infringement of certain claims of U.S. Letters Patent 4,166,152 (the '152 patent) in the importation or sale of certain products containing microsphere adhesives by Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. (collectively, Kudos). The finding of violation as to Kudos was based on adverse inferences drawn from Kudos' failure to cooperate in discovery. The ID found no violation as to respondents Taiwan Hopax Chemicals Manufacturing, Co., Ltd.; Yuen Foong Paper Co., Ltd.; Beautone Specialties Co., Ltd.; and Beautone Specialties Co. (collectively, Beautone).

On April 17, 1995, 3M, Beautone, and the Commission investigative attorney (IA) filed petitions for review of the ID. On April 27, 1995, they filed responses to each other's petitions. Under Commission interim rule 210.53(h), the ID would have become the determination of the

Commission on May 8, 1995, unless review were ordered or the review deadline were extended. However, on March 31, 1995, the Commission extended the review deadline until May 23, 1995.

On May 23, 1995, the Commission determined to review the issues of (1) claim interpretation, (2) patent infringement by Beautone and Kudos, (3) patent validity under 35 U.S.C. §§ 102(f), 102(g), and 112, second paragraph, and (4) domestic industry. The Commission determined not to review the remainder of the ID. The Commission also determined to remand the ID to the ALJ for additional findings and for clarification of certain findings made in the ID concerning the issues under review.

Subsequent to remand of the ID, the investigation was reassigned to Judge Paul Luckern, who, on August 8, 1995, issued his ID on remand. 3M and Beautone filed petitions for review on August 18, 1995. 3M, Beautone, and the IA filed responses to the petitions. The Commission determined not to review the remand ID, thereby resolving the issues of claim interpretation and validity under 35 U.S.C. § 112. Accordingly, the violation issues remaining on review are patent validity under 35 U.S.C. §§ 102(f), 102(g); patent infringement by Beautone and Kudos; and domestic industry.

In connection with final disposition of this investigation, the Commission may issue (1) an order that could result in the exclusion of the subject articles from entry into the United States, and/or (2) cease and desist orders that could result in respondents being required to cease and desist from engaging in unfair acts in the importation and sale of such articles. Accordingly, the Commission is interested in receiving written submissions that address the form of remedy, if any, that should be ordered. If a party seeks exclusion of an article from entry into the United States for purposes other than entry for consumption, the party should so indicate and provide information establishing that activities involving other types of entry either are adversely affecting it or are likely to do so. For background, see the Commission Opinion, Certain Devices for Connecting Computers via Telephone Lines, Inc., Inv. No. 337-TA-360.

If the Commission contemplates some form of remedy, it must consider the effects of that remedy upon the public interest. The factors the Commission will consider include the effect that an exclusion order and/or cease and desist orders would have on (1) the public health and welfare, (2) competitive conditions in the U.S. economy, (3) U.S. production of articles that are like or directly competitive with those that are subject to investigation, and (4) U.S. consumers. The Commission is therefore interested in receiving written submissions that address the aforementioned public interest factors in the context of this investigation.

If the Commission orders some form of remedy, the President has 60 days to approve or disapprove the Commission's action. During this period, the subject articles would be entitled to enter the United States under a bond, in an amount determined by the Commission and prescribed by the Secretary of the Treasury. The Commission is therefore interested in receiving submissions concerning the amount of the bond that should be imposed, if remedial orders are issued.

WRITTEN SUBMISSIONS: The Commission has received adequate briefing on the violation issues under review, and therefore will not accept submissions on those issues. The parties to the investigation, interested government agencies, and any other interested persons are encouraged to file written submissions on the issues of remedy, the public interest, and bonding. Complainant and the Commission investigative attorney are also requested to submit proposed remedial orders for the Commission's consideration. The written submissions and proposed remedial orders must be filed no later than the close of business on October 6, 1995. Reply submissions must be filed no later than the close of business on October 13, 1995. No further submissions will be permitted unless otherwise ordered by the Commission.

Persons filing written submissions must file the original document and 14 true copies thereof with the Office of the Secretary on or before the deadlines stated above. Any person desiring to submit a document (or portion thereof) to the Commission in confidence must request confidential treatment unless the information has already been granted such treatment during the proceedings. All such requests should be directed to the Secretary of the Commission and must include a full statement of the reasons why the Commission should grant such treatment. See 19 C.F.R. § 201.6. Documents for which confidential treatment is granted by the Commission will be treated accordingly. All nonconfidential written submissions will be available for public inspection at the Office of the Secretary.

This action is taken under the authority of section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), and sections 210.53, 210.56, and 210.58 of the Commission's Interim Rules of Practice and Procedure (19 C.F.R. §§ 210.53, 210.56, and 210.58).

Copies of the nonconfidential version of the ID and all other nonconfidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street S.W., Washington, D.C. 20436, telephone 202-205-2000. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on 202-205-1810.

By order of the Commission.

Donna R. Koehnke

Donna R. Koehnke
Secretary

Issued: **September 22, 1995**

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, DC 20436

RECEIVED
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U.S. INT'L TRADE [illegible]

'95 MAY 23 P3:56

In the Matter of

CERTAIN MICROSPHERE ADHESIVES, PROCESS FOR MAKING SAME, AND PRODUCTS CONTAINING SAME, INCLUDING SELF-STICK REPOSITIONABLE NOTES

Investigation No. 337-TA-366

NOTICE OF COMMISSION DETERMINATIONS TO REVIEW CERTAIN PORTIONS OF THE PRESIDING ADMINISTRATIVE LAW JUDGE'S FINAL INITIAL DETERMINATION AND TO REMAND THE INITIAL DETERMINATION TO THE ALJ FOR CLARIFICATION AND ADDITIONAL FINDINGS; DENIAL OF REQUEST FOR ORAL ARGUMENT

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the Commission has determined to review certain portions of the final initial determination (ID) issued by the presiding administrative law judge (ALJ) on March 23, 1995, in the above-captioned investigation. The Commission has also determined to remand the ID to the ALJ for additional findings and for clarification of certain findings made in the ID concerning the issues under review. The Commission also determined to deny complainant's request for oral argument.

FOR FURTHER INFORMATION CONTACT: Jean Jackson, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone 202-205-3104.

SUPPLEMENTARY INFORMATION: This investigation was instituted by the Commission on June 8, 1994, based on a complaint filed by Minnesota Mining and Manufacturing Co. (3M). On March 23, 1995, the ALJ issued her final ID in this investigation. The ALJ determined that a violation of section 337 of the Tariff Act of 1930, as amended, has occurred by reason of infringement of certain claims of U.S. Letters Patent 4,166,152 (the '152 patent) in the importation or sale of certain products containing microsphere adhesives by Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. (collectively, Kudos). The finding of violation as to Kudos was based on adverse inferences drawn from Kudos' failure to cooperate in discovery. The ID found no violation as to respondents Taiwan Hopax Chemicals Manufacturing, Co., Ltd.; Yuen Foong Paper Co., Ltd.; Beautone Specialties Co., Ltd.; and Beautone Specialties Co. (collectively, Beautone).

On April 17, 1995, 3M, Beautone, and the Commission investigative attorney filed petitions for review of the ID. On April 27, 1995, the parties filed responses to each other's petitions. Under Commission interim rule 210.53(h), the ID would have become the determination of the Commission on May 8, 1995, unless review were ordered or the review deadline were extended. However, the Commission had previously extended the review deadline until May 23, 1995. 60 Fed. Reg. 17806 (April 7, 1995). The statutory deadline for completing this investigation is December 8, 1995.

Having examined the record in this investigation, including the ID, the Commission determined to review the issues of (1) claim interpretation, (2) patent infringement by Beautone and Kudos, (3) patent validity under 35 U.S.C. §§ 102(f), 102(g), and 112, and (4) domestic industry. The Commission has determined not to review the remainder of the ID. The Commission also determined to remand the ID to the presiding ALJ to make additional findings and to clarify certain other findings made in the ID, and has directed the ALJ to issue her ID on remand on or before August 8, 1995. The ID on remand will be processed in accordance with Commission interim rules 210.53 and 210.54.

This action is taken under the authority of section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), and sections 210.53, 210.56, and 210.58 of the Commission's Interim Rules of Practice and Procedure (19 C.F.R. §§ 210.53, 210.56, and 210.58).

Copies of the nonconfidential version of the ID and all other nonconfidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street S.W., Washington, D.C. 20436, telephone 202-205-2000. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on 202-205-1810.

By order of the Commission.

Donna R. Koehnke

Donna R. Koehnke
Secretary

Issued: **May 23, 1995**

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, DC 20436

In the Matter of

CERTAIN MICROSPHERE ADHESIVES, PROCESS FOR MAKING SAME, AND PRODUCTS CONTAINING SAME, INCLUDING SELF-STICK REPOSITIONABLE NOTES

Investigation No. 337-TA-366

ORDER

On March 23, 1995, the presiding administrative law judge (ALJ) issued her final ID in this investigation, determining that a violation of section 337 of the Tariff Act of 1930, as amended (19 U.S.C. § 1337), has occurred by reason of infringement of certain claims of U.S. Letters Patent 4,166,152 (the '152 patent or the Baker patent) in the importation and sale of certain products containing microsphere adhesives by respondents Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. (collectively, Kudos). The finding of violation as to Kudos was based on adverse inferences drawn from Kudos' failure to cooperate in discovery. The ID found no violation as to respondents Taiwan Hopax Chemicals Manufacturing, Co., Ltd.; Yuen Foong Paper Co., Ltd.; Beautone Specialties Co., Ltd.; and Beautone Specialties Co. (collectively, Beautone). On April 17, 1995, complainant Minnesota Mining and Manufacturing Co. (3M), Beautone, and the Commission investigative attorney filed petitions for review of the ID. By virtue of investigation's more complicated designation, the statutory deadline for completion of the investigation was extended to December 8, 1995.

Having examined the record in this investigation, including the ID and the petitions for review, and the responses thereto, the Commission hereby determines to review the issues of (1) claim interpretation, (2) patent validity under 35 U.S.C. §§ 102(f), 102(g), and 112, (3) patent infringement by Beautone and Kudos, and (4) domestic industry. The Commission further determines that it would be in the best interests of the parties and the Commission to remand this ID to the ALJ. On remand the ALJ is directed to make certain findings that were omitted from the ID and to clarify certain other findings, some of which appear to be internally inconsistent in the ID.

Accordingly, it is hereby **ORDERED THAT** -

1. The presiding administrative law judge's ID of March 23, 1995, is reviewed in part and remanded to the administrative law judge for further proceedings consistent with this order.

2. On or before August 8, 1995, the administrative law judge shall issue an ID in which she:

    a. Reconsiders her claim interpretation findings in view of Markman v. Westview Instruments Inc., 34 USPQ2d 1321 (Fed. Cir. 1995), a decision handed down by the Federal Circuit on April 5, 1995, after the administrative law judge had issued her ID.

    b. Clarifies her interpretation of the term "infusible," since the administrative law judge's interpretation of the term found on p. 37 of the ID directly conflicts with her interpretation of the same term on p. 71 of the ID.

    c. Decides which evidence, 3M's or Beautone's, is stronger on the issue of whether the claim term "infusible" is met in Beautone's products. See United States v. General Motors Corp., 561 F.2d 923, 933 (D.C. Cir. 1977); Andrew Corp. v. Gabriel Electronics, Inc., 847 F.2d 819, 824 (Fed. Cir. 1988).

    d. Further explains the ID's finding on p. 56 that "one can conclude that microspheres made from IOA have the physical characteristics claimed in . . . Baker Claim 1," and supports that finding with citation to the evidence of record.

    e. Reconciles the ID's finding that "[i]t is not required that the microspheres of the Baker claim 1 be made by a predominately suspension polymerization process," ID at p. 35, with the ID's findings at, e.g., pp. 76 and 96, which appear to indicate that the administrative law judge required 3M to prove that the accused Glue G adhesive was made by predominately suspension polymerization.

    f. Makes a determination on the issue of the validity of claims 4 and 5 of the '152 patent. States why claim 2 of the patent was held invalid. Determines whether 3M is practicing claim 10 of the patent.

    g. Makes a determination on whether the admissions found to have been made by the Kudos respondents support a finding that independent claim 4 of the '152 patent has been infringed by the Kudos respondents.

    h. Reconsiders her finding of invalidity under 35 U.S.C. § 102(g) in view of Checkpoint Systems, Inc. v. USITC, Appeal No. 94-1295, a decision handed down by the Federal Circuit on May 17, 1995, after the administrative law judge had issued her ID.

    i. If, prior to issuance of the ID on remand, the Federal Circuit issues its en banc decision in Hilton Davis Chemical Co. v.

Warner-Jenkinson Company, Inc., Appeal No. 93-1088, involving application of the doctrine of equivalents, applies the Hilton Davis analysis to this investigation.

j. Makes any other clarifications or additions to the parts of the ID under review that the administrative law judge deems appropriate.

3. The remand ID will be processed in accordance with Commission interim rules 210.53 and 210.54. Any petitions for review should be limited to issues newly raised by the remand ID.

4. The Secretary shall serve copies of this order upon each party of record in this investigation and upon the Department of Health and Human Services, the Department of Justice, and the Federal Trade Commission, and shall publish notice thereof in the Federal Register.

By order of the Commission.

Donna R. Koehnke

Donna R. Koehnke
Secretary

Issued: **May 23, 1995**

PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

PUBLIC INSPECTION

In the Matter of)
)
CERTAIN MICROSPHERE ADHESIVES,)
PROCESSES FOR MAKING SAME, AND) Investigation No. 337-TA-366
PRODUCTS CONTAINING SAME, INCLUDING)
SELF-STICK RESPOSITIONABLE NOTES)
)

Initial Determination

Paul J. Luckern, Administrative Law Judge

This is the administrative law judge's initial determination, pursuant to a May 23, 1995 "Notice of Commission Determination To Review Certain Portions Of The Presiding Administrative Law Judge's Final Initial Determination [3/23/ID] And To Remand The Initial Determination To The ALJ For Clarification And Additional Findings ..." (NOTICE). The NOTICE included a three page ORDER (ORDER).

'95 SEP 14 A9:52

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TABLE OF CONTENTS

ABBREVIATIONS

3M	Complainant Minnesota Mining and Manufacturing Company
3M Ex.	Complainant's exhibit
3MIR	Complainant 3M's Submission Of Initial Comments Required By Order 34 of The Administrative Law Judge
3MRR	Complainant 3M's Reply Submission
Beautone	Respondents Taiwan Hopax Chemicals Manufacturing Co., Ltd.; Yuen Foong Paper Co., Ltd.; Beautone Specialties Co., Ltd., and Beautone Specialties Co.
BIR	Beautone Respondents' Submission
BRR	Beautone Respondents' Reply Submission
Resp. Ex. or BRX	Beautone Respondents' exhibit
SIR	Commission Investigation Staff's Response To Points Raised In Order No. 34
SRR	Commission Investigation Staff's Reply To Parties' Responses To Points Raised In Order No. 34
3/23/ID	Final Initial Determination dated March 23, 1995
Tr.	Transcript of hearing

I. PROCEDURAL HISTORY

The Commission, in its ORDER ordered:

On or before August 8, 1995, the administrative law judge shall issue an ID in which she:

a. Reconsiders her claim interpretation findings in view of Markman v. Westview Instruments, Inc., 34 USPQ2d 1321 (Fed. Cir. 1995), a decision handed down by the Federal Circuit on April 5, 1995, after the administrative law judge had issued her ID.

b. Clarifies her interpretation of the term 'infusible,' since the administrative law judge's interpretation of the term found on p. 37 of the ID directly conflicts with her interpretation of the same term on p.71 of the ID.

c. Decides which evidence, 3M's or Beautone's, is stronger on the issue of whether the claim term "infusible" is met in Beautone's products. See United States v. General Motors Corp., 561 F.2d 923, 933 (D.C. Cir. 1977); Andrew Corp. v. Gabriel Electronics, Inc., 847 F.2d 819, 824 (Fed. Cir. 1988).

d. Further explains the ID's finding on p. 56 that 'one can conclude that microspheres made from IOA have the physical characteristics claimed in ... Baker Claim 1,' and supports that finding with citation to the evidence of record.

e. Reconciles the ID's findings that '[i]t is not required that the microspheres of the Baker claim 1 be made by a predominately suspension polymerization process,'ID at p. 35, with the ID's findings at, e.g., pp. 76 and 96, which appear to indicate that the administrative law judge required 3M to prove that the accused Glue G adhesive was made by predominately suspension polymerization.

f. Makes a determination on the issue of the validity of claims 4 and 5 of the '152 patent. States why claim 2 of the patent was held invalid. Determines whether 3M is practicing claim 10 of the patent.

g. Makes a determination on whether the admissions found to have been made by the Kudos respondents support a finding that independent claim 4 of the '152 patent has been infringed by the Kudos respondents.

h. Reconsiders her finding of invalidity under 35 U.S.C.

§ 102(g) in view of Checkpoint Systems, Inc. v. USITC, ... [54 F.3d 756 (Fed. Cir. 1995)] ....

i. If, prior to issuance of the ID on remand, the Federal Circuit issues it en banc decision in Hilton Davis Chemical Co. v. Warner-Jenkinson Company, Inc., Appeal No. 93-1088, involving application of the doctrine of equivalents, applies the Hilton Davis analysis to this investigation.

j. Makes any other clarifications or additions to the parts of the ID under review that the administrative law judge deems appropriate. [[1]]

Order No. 34, dated June 5, 1995, and issued by the undersigned,[2] ordered each of the "active respondents (either individually or collectively), complainant [3M] and the staff"[3] to make initial comments, no later than June 13 related to points a thru h and j of the ORDER and to make reply comments to said initial comments no later than June 20. Initial and reply comments were received from complainant, Beautone and the staff.

In response to Order No. 34, the administrative law judge on June 20,

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[1] Since point j uses the language "under review", the administrative law judge concludes that the point is limited, by its own terms, to the issues that the Commission has determined to review. In its NOTICE at 2 it was stated:

> the Commission determined to review the issues of (1) claim interpretation, (2) patent infringement by Beautone and Kudos, (3) patent validity under 35 U.S.C. §§102(f), 102(g), and 112, and (4) domestic industry. The Commission has determined not to review the remainder of the ID.

The Commission did not specify the claims that would be the focus of its review.

[2] The undersigned was assigned to this investigation on June 2, 1995.

[3] The respondents named in the notice of investigation included, inter alia, Taiwan Hopax Chemicals Mfg. Co. Ltd., Yuen Foong Paper Co. Ltd., Beautone Specialties Co. Ltd., Beautone Specialties Co. (collectively Beautone) (See NOTICE at 2) (referred to in Order No. 34 as the "active respondents") and Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. Ltd., referred to in the ORDER (point g) as the Kudos respondents.

1995, also received a submission from the Kudos respondents. Order No. 36, which issued on June 20, gave the opportunity to the other parties in this investigation to comment on said submission. Complainant, in responding to Order No. 36, took the position that the Kudos submission did not affect the finding of the 3/23/ID that the Kudos respondents infringed the patent in issue and violated section 337. The staff argued that the record in the investigation was closed in February 1995, citing Order No. 31; that the finding of the 3/23/ID that the Kudos respondents are in violation of section 337 issued on March 23, 1995; that the Commission's NOTICE was limited to particular issues, including whether the evidence <u>already of record</u> supported a finding that the Kudos respondents infringed claim 4 (point g of ORDER); and that the submission of the Kudos respondents was based on "new evidence" and is therefore beyond the scope of the NOTICE, as were arguments of the Kudos respondents in said submission, to the extent they concern any claims other than claim 4. The staff further argued that Order No. 34 was limited to the ORDER and hence said submission of the Kudos respondents is beyond the scope of Order No. 34 and should be rejected on that basis. Moreover, it was argued by the staff that having virtually ignored the Commission's investigation up to now and having been found to have admitted facts sufficient to support a conclusion that products and process of the Kudos respondents infringe the patent in issue, the Kudos respondents should not be permitted to assert noninfringement now.

The administrative law judge finds merit in the arguments of complainant and the staff in their responses to Order No. 36. Accordingly, the June 20 submission of the Kudos respondents is rejected because it is outside the scope of the issues that are before the administrative law judge in the NOTICE it is untimely and it is insufficient to overcome the evidence already of record that the Kudos respondents have violated section 337.

Order No. 37, which issued on June 27, directed the parties to comment, in light of Lannom Mfg. Co., Inc. v. USITC 799 F.2d 1572, 231 USPQ 32 (Lannom) (Fed. Cir. 1986) and of Order No. 146 in Certain Recombinantly Produced Human Growth Hormones, Inv. No. 337-TA-358, upon Beautone's arguments that complainant "cannot withdraw claims 7-10" (BRR at 3).[4] [5] At the outset, the administrative law judge finds that complainant merely took the position, in its response to Order No. 34, that "3M is no longer asserting claim 7 in this investigation" (3MIR at 25, 26). This is supported by complainant's statement in its Petition for Review at 13, n. 4 where it declined to seek review of the finding of the 3/23/ID that Beautone does not infringe claims 7, 8 and 10[6] (BRR at 3). The administrative law judge finds nothing in the record to support Beautone's allegations that complainant filed a motion to amend its complaint in which complainant has dropped claims 7, 8 and 10 of the '152 patent, or withdrawn said claims from this investigation (BRR at 3).

The administrative law judge also finds nothing in the record to show that complainant is not now relying on its allegations in its complaint that the Kudos respondents infringe independent claim 7 or that a domestic industry

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[4] Claim 9 was never asserted in 3M's complaint and has not been at issue in this investigation. See Notice of Investigation, 59 Fed. Reg. 29620 (June 8, 1994).

[5] Beautone has also asserted that the complainant seeks to "drop claims seven through ten from this investigation" (BRR at 3).

[6] In footnote 4 of complainant's petition for review, complainant stated that "[t]o simplify review by narrowing the petition to the claims most clearly infringed (claims 1, 2, 4 and 5) complainant has dropped reliance on method claims 7, 8 and 10." In the same footnote, it stated that it was no longer relying on claims 1, 2, 4 and 5 for purposes of the domestic industry.

exists as to said claims 7 and 8 which allegations it prevailed on in the 3/23/ID.[7]

The record further shows that Beautone, in its April 17, 1995, petition for review of the 3/23/ID, did not seek review of the conclusions of the 3/23/ID that claims 7 and 8 were practiced by a domestic industry. To the contrary, it stated that no party was contesting the finding of the 3/23/ID that a domestic industry was present. See Beautone's response to petition for review at 56, complainant's petition for review at 49, and the staff's petition for review at 27-28. Under the Commission's interim rules, in effect for this investigation, any issue decided adversely to a party in a final initial determination that is not raised in a petition for review is deemed abandoned and may be disregarded by the Commission in reviewing the initial determination. See 19 C.F.R. § 210.54(a)(2)(1994); Checkpoint Systems, Inc. v. USITC, 54 F.3d 756, 35 USPQ2d 1042 (Fed. Cir. 1995), Texas Instruments, Inc. v. USITC, 988 F.2d 1165, 1176, 26 USPQ2d 1018 (Fed. Cir, 1993); Allied Corp. v. USITC, 850 F.2d 1573, 1580, 7 USPQ2d 1303 (Fed. Cir. 1988), cert. denied, 488 U.S. 1008 (1989). Hence, because neither complainant nor Beautone sought review of any findings in the 3/23/ID respecting claims 7, 8 and 10 and because it does not appear that the Commission has decided to review the findings of the 3/23/ID that Beautone does not infringe claims 7, 8 and 10;

---

[7] The "Conclusions of Fact and Law" of the 3/23/ID at 138 stated, inter alia:

> 2. There is a domestic industry practicing claims 7 and 8 of the Baker ['152] patent pursuant to 19 C.F.R. § 1337(a)(2).
>
> * * *
>
> 5. Claim 7 of the Baker ['152] patent was infringed by the Kudos respondents.

that a domestic industry exists as to claims 7 and 8; and that the Kudos respondents infringe claim 7, the administrative law judge concludes that those findings may be considered unchallenged and non-appealable.

Beautone has argued that the parties conducted full discovery concerning "infringement and validity" of claims 7, 8 and 10, completed a two week hearing on issues of infringement and validity of those claims and expended many pages of post-hearing briefing on those issues; that the public and Beautone deserve a <u>final</u> decision on those issues; that the public has a right to know, after all of the effort that has gone into this investigation, whether a public industry does exist as to those claims, and where the scope of that industry ends, at least with respect to the litigated issues (BRR at 3). As seen <u>supra</u> the administrative law judge has concluded that the 3/23/ID's findings of (1) noninfringement as to claim 7, 8 and 10, with respect to Beaütone, (2) the exitence of a domestic industry as to claims 7 and 8 and (3) infringement of claim 7 by the Kudos respondents may be considered as unchallenged and non-appealable. In addition, the administrative law judge interprets the ORDER as limited to points a thru j. With the exception of point f of the ORDER, which states in part "[d]etermines whether 3M is practicing claim 10 of the patent," the points of the ORDER did not explicitly refer to claims 7, 8 and 10. While point j of the ORDER allows the administrative law judge to make "any other clarifications or additions to the parts of the ID under review that the administrative law judge deems appropriate," because the NOTICE did not indicate what specific claims would be the focus of the Commission's review, the administrative law judge in this initial determination is limiting any treatment of the "infringement and validity" of claims 7, 8 and 10 as well as the infringement and validity of any other claim only insofar as said infringement and validity would pertain to the other points of the ORDER.

Complainant, in a letter dated June 28, 1995, to the administrative law judge offered "to make persons available for an oral presentation if such a presentation would assist you." It was represented that the staff neither supports nor opposes complainant's proposal, but that if the administrative law judge favors the proposal the staff will participate. In a supplemental letter dated July 31 to the administrative law judge, complainant stated that it "would like to make clear that it will support any effort by you [to] extend the deadline which the Commission has imposed on the remand." Beautone, in a letter dated June 28 to the administrative law judge, questioned the "need for a supplemental, oral presentation." It was argued, inter alia, that the scope of the NOTICE does not encompass reopening the record and in fact the record was closed on February 10, 1995 (Order No. 31) and that the NOTICE is limited to that record. The administrative law judge finds merit in Beautone's arguments. Accordingly, the administrative law judge has not accepted complainant's offer.

On July 20, 1995, the administrative law judge received a letter from Beautone's counsel that Beautone's citation to CX-457, p. 682, lines 7-10, in its submission in response to Order No. 34 was in error and instead should be Beautone's BRX 252, p. 682, lines 7-16. Beautone referred to a supplement served on November 7, 1994, the first day of the hearing, which included only eighteen pages of Silver's testimony. Beautone represented that it "inadvertently" failed to physically place certain pages in the exhibits of each party with the consequent "confusion regarding the location of page 682." Beautone argued that its reliance on page 682 is proper and requested that the administrative law judge "simply place the pages from the Beautone Respondents' November 7 supplement within BRX 252." Complainant's counsel, in a letter dated July 26, 1995, responding to Beautone's July 20 letter, argued that the November 7, 1994 submission is not a part of the official record in this investigation and that complainant is prejudiced if Beautone is permitted to use the pages thereof, because it never understood those pages to be part of the record and accordingly did not use them. In support it was argued:

> The issue involves 3 exhibits of the Beautone Respondents -- numbers 252, 255, and 260. Beautone claims that it thought it had updated these exhibits by virtue of its November 7, 1994 submission to the Court.
>
> Our research indicates that 3M's copies of Beautone Respondents' exhibits 252, 255, and 260 were never updated to include the materials contained in the Beautone Respondent's November 7 submission. There is no indication in the November 7, 1994 submission that the attached documents constituted a trial exhibit, or were submitted to replace a previously-submitted trial exhibit. Indeed, the word "exhibit" does not appear on the November 7 submission.

The administrative law judge has received the original exhibits in evidence from the Secretary and reviewed same. BRX 255 and BRX 260 were not received into evidence. Moreover, BRX 255 does not include the materials contained in Beautone's November 7 submission.[8] The administrative law judge finds nothing in the November 7, 1994 submission indicating that the attached documents constituted a hearing <u>exhibit</u> or were submitted to replace a previously-submitted hearing <u>exhibit</u>. Accordingly, Beautone's request to place the pages from Beautone's November 7 supplement "within BRX 252" is denied.

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[8] While the final exhibit list describes BRX 252 as consisting of 338 pages as does the label on the original exhibit, BRX 252 contains 301 pages and accordingly only 301 pages are in evidence.

II. OPINION

1. Point a of ORDER:

Point a states:

> "a. Reconsiders her claim interpretation findings in view of Markman v. Westview Instruments Inc., 34 USPQ2d 1321 (Fed. Cir 1995). [Markman]..."

Since Markman is the thrust of point a and because opposing parties have conflicting positions on claim interpretation, when considering Markman, the administrative law judge has reproduced the following pertinent portion of Markman:

> "'To ascertain the meaning of claims, we consider three sources: The claims, the specification, and the prosecution history.' Unique Concepts, Inc. v. Brown, 939 F.2d 1558, 1561 [19 USPQ2d 1500] (Fed. Cir. 1991); accord Autogiro Co. of Am. v. United States, 384 F.2d 391, 396-98, 155 USPQ 697, 701-03 (Ct. Cl. 1967). 'Expert testimony, including evidence of how those skilled in the art would interpret the claims, may also be used.' Fonar Corp. v. Johnson & Johnson, 821 F.2d 627, 631 [3 USPQ2d 1109] (Fed. Cir. 1987). ...
>
> Claims must be read in view of the specification, of which they are a part. Autogiro, 384 F.2d at 397, 155 USPQ at 702; see Winans v. Denmead, 56 U.S. (15 How.) at 338; Bates v. Coe, 98 U.S. at 38-39. The specification contains a written description of the invention that must enable one of ordinary skill in the art to make and use the invention. For claim construction purposes, the description may act as a sort of dictionary, which explains the invention and may define terms used in the claims. See In re Vogel, 422 F.2d 438, 441, 164 USPQ 619, 621 (CCPA 1970)('Occasionally the disclosure will serve as a dictionary for terms appearing in the claims, and in such instances the disclosure may be used in interpreting the coverage of the claim'). As we have often stated, a patentee is free to be his own lexicographer. Autogiro, 384 F.2d at 397, 155 USPQ at 702. The caveat is that any special definition given to a word must be clearly defined in the specification. Interlicall, Inc. v. Phonometrics, Inc., 952 F.2d 1384, 1388, 21 USPQ2d 1383, 1386 (Fed. Cir. 1992). The written description part of the specification itself does not delimit the right to exclude. That is the function and purpose of claims.
>
> To construe claim language, the court should also consider the patent's prosecution history, if it is in evidence. Graham v. John Deere Co., 383 U.S. 1, 33, 148 USPQ 459, 473 (1966). This

'undisputed public record' Office is of primary significance in understanding the claims. See Autogiro, 384 F.2d at 397, 155 USPQ at 702 (the 'file wrapper' is 'part [] of the patent'). The court has broad power to look as a matter of law to the prosecution history of the patent in order to ascertain the true meaning of language used in the patent claims:

> Th[e] construction of the patent is confirmed by the avowed understanding of the patentee, expressed by him, or on his half [sic], when his application for the original patent was pending.... [W]hen a patent bears on its face a particular construction, inasmuch as the specification and claim are in the words of the patentee,... such a construction may be confirmed by what the patentee said when he was making his application.

Goodyear Dental Vulcanite Co. v. Davis, 102 U.S. 222, 227 (1880); see Singer Mfg. Co., 192 U.S. [265] at 278-85 (construing the claims in light of the prosecution history as a matter of law). Although the prosecution history can and should be used to understand the language used in the claims, it too cannot 'enlarge, diminish, or vary' the limitations in the claims. Goodyear Dental Vulcanite Co., 102 U.S. at 227; Intervet Am., Inc. v. Kee Vet Labs., Inc., 887 F. 2d 1050, 1054, 12 USPQ2d 1474, 1477 (Fed. Cir. 1989).

Extrinsic evidence consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises. This evidence may be helpful to explain scientific principles, the meaning of technical terms, and terms of art that appear in the patent and prosecution history. Extrinsic evidence may demonstrate the state of the prior art at the time of the invention. It is useful 'to show what was then old, to distinguish what was new, and to aid the court in the construction of the patent.' Brown v. Piper, 91 U.S. 37, 41 (1875).

The court may, in its discretion, receive extrinsic evidence in order 'to aid the court in coming to a correct conclusion' as to the 'true meaning of the language employed' in the patent. Seymour v. Osborne, 78 U.S. (11 Wall.) 516, 546 (1871) (reviewing a decree in equity); see United Carbon Co. v. Binney & Smith Co., 317 U.S. 228, 233, 55 USPQ 381, 384 (1942) (the court construed the claim by relying in part on the testimony of one of the patentees as the 'clearest exposition of the significance which the terms employed in the claims had for those skilled in the art'); U.S. Indus. Chems., Inc. v. Carbide & Carbon Chems. Corp., 315 U.S. 668, 678, 53 USPQ 6, 10 (1942)('[I]t is permissible, and often necessary, to receive expert evidence to ascertain the meaning of a technical or scientific term or term of art so that the court may be aided in understanding... what [the instruments] actually say.'); Winans v. New York & Erie R.R. Co., 62 U.S. (21 How.) [88] at 101 ("[P]rofessors or mechanics cannot be received to prove to the court or jury what is the proper or legal construction of any instrument of writing. A judge may obtain information from them, it he desire [sic] it, on matters which he does not clearly comprehend, but cannot be compelled to receive their opinions as matter of evidence.'); Marsh v. Quick-Meal Stove Co., 51 F. 203 (C.C.D. Mo. 1892) ('It is the province of the court to construe the claims of the patent that has been offered in evidence. That construction, of course, is to be made in the light of such expert testimony as has been offered.'); 3 Robinson on Patents, supra §§ 1012-15, 1019-20; accord Seattle Box Co. v. Industrial Crating & Packing, Inc. 731 F.2d 818, 826, 221 USPQ 568, 573 (Fed. Cir. 1984) ('A trial judge has sole discretion to decide whether or not he needs, or even just desires, an expert's assistance to understand a patent. We will not disturb that discretionary decision except in the clearest case.'); Advanced Cardiovascular Sys., Inc. v. Scimed Life Sys., Inc., 887 F.2d 1070, 1076, 12 USPQ2d 1539, 1544 (Fed. Cir. 1989) (Newman, J., dissenting) ('The purpose of expert testimony is to provide assistance to the court in understanding, when the claims are technologically complex or linguistically obscure, how a technician in the field, reading the patent, would understand the claims.')

Extrinsic evidence is to be used for the court's understanding of the patent, not for the purpose of varying or contradicting the terms of the claims. U.S. Indus. Chems., Inc., 315 U.S. at 678, 53 USPQ at 10; Catalin Corp. of Am. v. Catalazuli Mfg. Co., 79 F.2d 593, 594, 27 USPQ 371, 373 (2d Cir. 1935) (Learned Hand, J.) ('If the doctrine of the 'integration' of a written instrument has any basis at all, surely it should apply to such a document...[as the patent.'); 3 Robinson on Patents, supra § 1019, at 247-48. When, after considering the extrinsic evidence, the court finally arrives at an understanding of the language as used in the patent and prosecution history, the court must then pronounce as a matter of law the meaning of that language. See Loom Co. v. Higgins, 105 U.S. [580] at 586....

Through this process of construing claims by, among other things, using certain extrinsic evidence that the court finds helpful and rejecting other evidence as unhelpful, and resolving disputes en route to pronouncing the meaning of claim language as a matter of law based on the patent documents themselves, the court is not crediting certain evidence over other evidence or making factual evidentiary findings. Rather, the court is looking to the extrinsic evidence to assist in its construction of the written document, a task it is required to perform. The district court's claim construction, enlightened by such extrinsic evidence as may be helpful, is still based upon the patent and prosecution history. It is therefore still construction, and is a matter of law subject to de novo review.

* * *

... _the testimony of Markman and his patent attorney on the proper construction of the claims is entitled to no deference. For example, they both testified as to how the patent should be construed based on the text of the patent. This testimony about construction, however, amounts to no more than legal opinion -- it is precisely the process of construction that the court must undertake_. Thus, as to these types of opinions, the court has complete discretion to adopt the expert legal opinion as its own, to find guidance from it, or to ignore it entirely, or even to exclude it. _See_ _Becton Dickinson & Co. v. C.R. Bard, Inc._, 922 F.2d 792, 797, 17 USPQ2d 1097, 1100 (Fed. Cir. 1990). When legal experts" offer their conflicting views of how the patent should be construed, or where the legal expert's view of how the patent should be construed conflicts with the patent document itself, such conflict does not create a question of fact nor can the expert opinion bind the court or relieve the court of its obligation to construe the claims according to the tenor of the patent. This opinion testimony also does not change or affect the _de novo_ appellate review standard for ascertaining the meaning of the claim language....

... the extrinsic evidence of record cannot be relied on to change the meaning of the claims.... we too find unhelpful and reject Markman's testimonay ....

* * *

No inquiry as to the subjective intent of the applicant or PTO is appropriate or even possible in the context of a patent infringement suit. The subjective intent of the inventor when he used a particular term is of little or no probative weight in determining the scope of a claim (except as documented in the prosecution history). _See_ _Senmed_, 888 F.2d at 817, n.8, 12 USPQ2d at 1512 n.8. In fact, commonly the claims are drafted by the inventor's patent solicitor and they may even be drafted by the patent examiner in an examiner's amendment (subject to the approval of the inventor's solicitor). _See_ Manual of Patent Examining Procedure (MPEP) § 1302.04 (Rev. 15, Aug. 1993) ('Examiner's Amendments and Changes'). While presumably the inventor has approved any changes to the claim scope that have occurred via amendment during the prosecution process, it is not unusual for there to be a significant difference between what an inventor thinks his patented invention is and what the ultimate scope of the claims is after allowance by the PTO. _See generally_ _Senmed_, 888 F.2d at 819 n.8, 12 USPQ2d at 1521 n.8. Of course the views of the other party to the "patent contract," the government, are generally not obtainable, except as reflected in the prosecution history. _See_ _Western Elec. Co. v. Piezo Tech., Inc._, 860 F.2d 428, 432-33, 8 USPQ2d 1853, 1856-57 (Fed. Cir. 1988); MPEPP § 1701.01 ("Office personnel not to testify").

> Thus the focus in construing disputed terms in claim language is not the subjective intent of the parties to the patent contract when they used a particular term. Rather the focus is on the objective test of what one of ordinary skill in the art at the time of the invention would have understood the term to mean.
>
> ... A judge is not usually a person conversant in the particular technical art involved and is not the hypothetical person skilled in the art to whom a patent is addressed. Extrinsic evidence, therefore, may be necessary to inform the court about the language in which the patent is written. But this evidence is not for the purpose of clarifying ambiguity in claim terminology. It is not ambiguity in the document that creates the need for extrinsic evidence but rather unfamiliarity of the court with the terminology of the art to which the patent is addressed.

52 F.3d at 979-986, 34 USPQ2d at 1329-1335. (footnotes omitted) (emphasis added) (double emphasis by Court)

(i) "formation of a single microsphere."

The 3/23/ID at 34 states that claim 1 "is construed as covering the formation of a single microsphere." Complainant argued that "more than an isolated, single microsphere is plainly required both by the language of claim 1 ('microspheres') and the common sense need to have more than one microsphere in a real world repositionable product" (3MIR at 21). Beautone argued (BIR at 9) that, as to the "formation of a single microsphere", the express language of claim 1 requires "microspheres[plural]", and that "throughout its specification, the Baker patent consistently refers to microspheres (plural) as opposed to a microsphere (singular)" and in column four, "the Baker patent provides exemplary uses for the microspheres, including application to substrates as an adhesive for repeatedly reusable adhesive surfaces as disclosed in U.S. Pat. No. 3,857,731 (BRX 73) and to provide a repositionable hot melt adhesive as disclosed in U.S. application Ser. No. 742,743 of Loder, et al. (now U.S. Pat. No.4,049,483 BRX 99)" and that:

> [e]ach of the patents disclosed by the Baker patent requires more than just a single microsphere. BRX 73, Figures 1, 2 and 3 . . .

> in the context of the assertions made during this investigation toward Respondents' product, and in comparison with 3M's Easel Pad, one observes that literally many thousands, if not millions, of microspheres must appear on a single repositionable sheet. See. e.g., BRX C-3.

Thus Beautone argued that the "formation of a single microsphere does not fall within the scope of Baker claim one." (BIR at 9).

According to Markman the claims, specification and the prosecution history are to be considered to ascertain the meaning of claims. Based on the language of claim 1 (FF 16) and the language of the '152 patent specification, the administrative law judge finds that the formation of a single microsphere does not fall within the scope of Baker claim 1. The administrative law judge further finds nothing in the prosecution of the '152 patent that affects this conclusion.

(ii) "predominantly suspension polymerization process"

The 3/23/ID at 35 states:

> [i]t is not required that the microspheres of Baker claim 1 be made by a predominantly suspension polymerization process. If emulsion polymerization occurs in the same process , or even is predominant in the process, the microspheres could be covered by claim 1.

Complainant argued that the 3/23/ID finding was correct (3MIR at 21-26). Beautone argued that claim 1 in issue covers only a suspension polymerization process (BIR 9-13). The staff argued that there is no requirement in the claims in issue that suspension polymerization "predominate" over emulsion polymerization (Appendix A at 22,23 of SIR).

At the outset, claim 1 does not recite "predominantly" or "predominate" (FF 16); nor are those words found in the specification of the '152 patent. Moreover, while claim 1 requires that "said polymeric microspheres [of certain properties] . . . [be] prepared by aqueous suspension polymerization [with some specifics as to the conditions of the suspension polymerization]" (Emphasis added), the administrative law judge finds no language in claim 1 that emulsion polymerization, which forms latex of small particle size (submicron particles of substantially less than a micron while a suspension polymerization gives particles between 10 microns and a thousand microns (FF 39, 43)), can not occur in conjunction with the suspension polymerization disclosed in claim 1 which produces the claimed polymeric microspheres. Moreover, the specification of the '152 patent specifically indicates that the resultant suspensions may contain latex polymer. Thus, the specification states that the "use of water-soluble catalyst may cause formation of <u>substantial</u> amounts of latex, the extremely small particles size and solvent solubility of which are undesirable" (FF 9) and that "[a]though some stabilizers may function at levels greater than 10 percent based on monomer, the resultant suspensions may become undesirable for several reasons, e.g., they may contain <u>too large an amount</u> of undesirable latex polymer." (Emphasis added) (FF 9).

Beautone argued that the '152 patent, in its sections BACKGROUND OF INVENTION, SUMMARY OF THE INVENTION and DETAILED DESCRIPTION OF THE INVENTION, supports the "exclusivity" of suspension polymerization in the claimed subject matter (BIR at 13). The administrative law judge, however, finds nothing in those sections that limit the claimed subject matter to <u>only</u> a suspension polymerization. Thus the BACKGROUND OF THE INVENTION states that the "<u>microspheres</u> are prepared by aqueous suspension polymerization," (Emphasis added) (FF 1). Also the SUMMARY OF THE INVENTION states that the "<u>microspheres</u> of the invention are prepared by an aqueous suspension polymerization technique" (Emphasis added) (FF 8). In addition the DETAILED

DESCRIPTION OF THE INVENTION states that the "microspheres of the invention are prepared by an aqueous suspension polymerization technique" (Emphasis added) (FF 9). While those sections refer to the claimed microspheres being prepared by an aqueous suspension polymerization process, the administrative law judge can find nothing in the specification of the '152 patent that excludes the formation of other particles (through emulsion polymerization) in addition to the claimed microspheres in the claimed process. To the contrary, the administrative law judge has found that the DETAILED DESCRIPTION OF THE INVENTION points out that the suspension resulting from the described aqueous suspension polymerization recited in claim one may contain certain amounts of latex polymer. See supra.

Beautone argued that the prosecution history of the '152 patent "lays to rest the exclusive nature of the suspension reaction." (BIR at 13). While an amendment received on June 19, 1978 in the prosecution of the '152 patent states that "the present claims are limited to formation of the polymeric microspheres by suspension polymerization," (FF 33) and that "[a]pplicants present claims are limited to suspension polymerization - produced microspheres, as opposed to the explicitly defined emulsion polymerization - produced microspheres of Morehouse et al,"[9] (Emphasis added) (FF 33) the

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[9] While the amendment referred to the formation of "emulsion polymerization produced microspheres," "microspheres" are not so formed as the term is used in the pertinent art. Thus the 3/23/ID at 9, 10 found:

> The spherical particles produced by the Baker patent process and the Silver patent process are referred to as microspheres. Much smaller particles are produced by a standard emulsion polymerization process, and they are referred to as latex.

This finding is supported by the Silver patent and the '152 patent (FF 6, 9 - latex is of extremely small particle size) as well as testimony, including expert testimony (FF 39, 43).

administrative law judge finds nothing in the prosecution history that excludes the simultaneous formation, via an emulsion polymerization, of latex of particle size smaller than the particle size of the microspheres produced by suspension polymerization disclosed in claim 1.

As Markman makes clear, to ascertain the meaning of claims, the language of the claims, the specification as well as the prosecution history are to be considered. In addition, as discussed in Markman, the administrative law judge, in his discretion, may consider extrinsic evidence including testimony. Based on the language of the '152 patent and its prosecution, the Silver patent referenced in the '152 patent and testimony on the meaning of "microspheres," the administrative law judge finds that the claimed subject matter is not exclusive to suspension polymerization nor is there any requirement that in the claimed subject matter there be predominantly a suspension polymerization.[10]

(iii) "in the presence of .... an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter"

(a) "in the presence of ... an ionic suspension stabilizer"

The 3/23/ID at 47 states:

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[10] The 3/23/ID at 35 found:

> [c]laim 7 is given a different construction; it is construed as requiring that the single process claimed be predominantly a suspension polymerization process. This is because the applicants for the Baker patent (in order to get their claims allowed after an initial rejection) surrendered any right to include emulsion polymerization under their claims.

This administrative law judge rejects this portion of the 3/23/ID for the reasons that he supports the 3/23/ID at 35, supra. Moreover, he finds nothing in the prosecution history to support the conclusion that the applicants for the '152 patent, to get any claim allowed, surrendered any right to include, in addition to suspension polymerization for producing microspheres, emulsion polymerization under their claims. See supra.

> The term 'ionic suspension stabilizer' as used in this patent means just that [i.e. the ionic suspension stabilizer charged to a reaction vessel as in claim 7]...

Complainant is in disagreement, arguing that the stabilizer may be "non-ionic before use ... [and] transformed... into an ionic stabilizer during use, "(3MIR at 43-44, 46-53). Beautone and the staff are in agreement with the language of the 3/23/ID at 47 (BIR at 33-36, BRR at 18-32) (SIR at 11-12).

Each of the three independent claims 1, 4 and 7 of the '152 patent (FF 16) contain the language "an ionic suspension stabilizer." Independent claims 1 and 4 are composition of matter claims while independent claim 7 is directed to a "suspension polymerization process" (FF 16). The '152 patent, under the heading BACKGROUND OF THE INVENTION, states that the invention relates to inherently tacky, elastomeric, solvent-dispersible, solvent-insoluble, polymeric microspheres and "<u>a</u> process for preparing same" (Emphasis added) and further states that "[t]he microspheres [of the invention] are prepared by aqueous suspension polymerization, but have as an <u>essential</u> ingredient in their preparation a <u>hereafter defined suspension stabilizer.</u>" (FF 1). As disclosed in the specification, that essential ingredient to the process involves an <u>ionic</u> suspension stabilizer.[11] Thus under the heading SUMMARY OF THE INVENTION, the '152 patent states that the "microspheres of the invention are prepared by an aqueous suspension polymerization technique utilizing emulsifiers in an amount greater than the critical micelle concentration, <u>in combination with an ionic suspension stabilizer</u>." (Emphasis added) (FF 8). Under the heading DETAILED DESCRIPTION OF THE INVENTION, the '152 patent refers to "[i]onic suspension stabilizers" that assist in the preparation of

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[11] The words "ionic" and "non-ionic" have definite, distinct meanings to a person having ordinary skill in the relevant art (FF 40, 42, 45).

the claimed microspheres and also recites a number of specific ionic suspension stabilizers (FF 9). It also has a teaching that relates the amounts of ionic stabilizer to monomer percentage used. Thus, the '152 patent discloses that although some ionic suspension stabilizers may function at levels greater than 10 percent based on monomer, the resultant suspensions may become undesirable (FF 9). The '152 patent also has ten specific examples, each of which uses an ionic suspension stabilizer disclosed in Tables I and II of the '152 patent and each of which has said stabilizer charged to a reaction vessel (FF 15). The administrative law judge finds no disclosure in the language of the '152 patent that suggests to a person having ordinary skill in the art the substitution, in the charging to a reaction vessel, of a non-ionic suspension stabilizer for the essential ionic suspension stabilizer.

The prosecution history of the '152 patent is found consistent with the finding that the claimed subject matter is limited to charging an ionic suspension stabilizer to a reaction vessel. Thus, there were eleven claims, three of which were independent claims, in the original application Serial No. 825,259 filed August 17, 1977 which resulted in the '152 patent (FF 18). Independent original claim 1 was directed to merely "[i]nfusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres formed from non-ionic monomers" (FF 19). Original independent claim 7 was directed to a suspension polymerization process for preparing the microspheres of claim 1 comprising charging to a reaction vessel, inter alia, "an ionic suspension stabilizer, having an interfacial tension of at least about 15.0 dynes per centimeter" (FF 20). The remaining original independent claim 11 was directed to an aqueous suspension of inherently tacky microspheres prepared in accordance with the process of claim 7 (FF 21).

Subsequent to the August 17, 1977 filing of the original application (FF 17), the Examiner, in an office action mailed on January 9, 1978, made a restriction requirement, pursuant to 35 U.S.C. § 121,[12] to one of the following inventions: viz. Invention I (claims 1-10) which he characterized as drawn to polymeric materials and methods for their preparation and Invention II (claim 11) which the Examiner characterized as drawn to an aqueous suspension (FF 23). Thereafter, on March 16, 1978, the Examiner, upon reconsideration, withdrew his restriction requirement (FF 25). In the office action mailed on March 16 the Examiner, however, rejected claims 1-11 as failing to comply with the requirements of 35 U.S.C. § 112 because, inter alia, the claims were indefinite in that they recite "the process of claim 7 being capable of producing both a polymer product per se (claim 1) and a aqueous suspension (claim 11)" (Emphasis added) (FF 29). Responding to that rejection, applicants, in an amendment received by the Patent Office on June 19, 1978, cancelled original claim 11 (FF 32) and amended original claim 1 to include the language, inter alia, that the polymeric microspheres were prepared "by aqueous suspension polymerization" (FF 30).[13] It was argued that

> the Examiner asserts: (a) the claims are indefinite because they

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[12] 35 U.S.C. §121 reads in part:

> If two or more independent and distinct inventions are claimed in one application, the Commissioner may require the application to be restricted to one of the inventions ....

[13] Claim 1, as amended in the amendment received on June 19, 1978, and claim 1 in issue are product-by-process claims. A "product-by-process" claim is one in which the product is defined at least in part in terms of the method or process by which it is made. The Patent Office traditionally allowed product-by-process claims only when the product could not be adequately defined in any other manner. See 2 Chisum Patents §8.05.

> recite the process of claim 7 as being capable of producing both the polymer per se as is defined in claims, and an aqueous suspension thereof, as is defined in claim 1, and an aqueous suspension thereof, as is defined in claim 11. In essence the suspension polymerization process produces an aqueous suspension of the polymeric microspheres as are defined in claim 1. In other words the process produces an aqueous suspension, as in former claim 11, of polymeric microspheres which have the definition of claim 1. In order to further prosecution, Applicants have amended claim 7 "to contain the definition of the polymeric microspheres of claim 1 as opposed to simply indicating that same is directed to a process for 'preparing the microspheres of claim 1' [Emphasis added] [FF 33].

Moreover, in a final office action mailed on July 20, 1978 claims 1-6 were rejected under 35 U.S.C. 112, para. 1" as being broader than the disclosed invention ... in that the process conditions of the claimed product-by-process are not adequately defined" (FF 34). Thereafter in an amendment received by the Patent Office on November 24, 1978, claim 1 was conformed to claim 7 by including in claim 1 the language "and an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter" (FF 36). The administrative law judge finds that the November 24, 1978 amendment and the arguments received on June 19, 1978 are further support for the finding that the recitation "prepared by aqueous suspension polymerization" of claim 1 is limited to the process recited in claim 7.

Complainant, relying on certain testimony concerning Beautone's stabilizer, argued that claim 1 has the language that "calls for microspheres having been prepared by aqueous suspension polymerization in the presence of . . . an ionic suspension stabilizer'" and "requires no more than that the stabilizer 'be ionic during use'" and not that it requires "an ionic stabilizer at the moment of introduction." (Emphasis in original) (3MIR at 43, 44). The term "during use," much less the definition of that term, are no where to be found in the specification of the '152 patent. The administrative law judge concludes that such arguments and testimony on the construction of claim 1 "is entitled to no deference." See Markman, supra. Moreover, construction of language in a claim should be independent of any infringement issue See 4 Donald S. Chisum, Patents § 180.3 (1995) (Chisum).

Complainant, citing Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 770, 218 USPQ 781, 790 (Fed. Cir. 1983) (Kalman) argued that the doctrine of claim differentiation underscores and reinforces "the broader formulation of the stabilizer of claim 1" in contrast to claim 7 (3MIR at 44).[14] In Autogiro Co. of America v. United States 384 F.2d 391, 404, 155 USPQ 697 (Ct. Cl. 1967) the court noted, however, that "[c]laim differentiation is a guide, not a rigid rule. If a claim will bear only one interpretation, similarity will have to be tolerated." (Emphasis added) In Moleculon Research Corp. v. CBS, Inc. 793 F.2d 1261, 229 USPQ 805 (Fed. Cir. 1986) (Moleculon) the trial court read independent method claim 3 of the patent in issue, that expressly recited only rotation of a puzzle around a first axis and a second axis, as implicitly limited to structures that can also rotate around a third axis and did so even though it recognized that such an interpretation rendered method claim 4 (specifying rotation around a third axis) and dependent on method claim 3 redundant. CBS argued that, because claim 1 expressly claimed rotation about three axis, claim 3 must therefore be more "broadly" claiming rotation about two axis only and that the language of dependent claims 4 and 5 support this argument. The Federal Circuit found that the district court reviewed the

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[14] The Federal Circuit in Kalman stated that the district court properly rejected the contention that the independent claim must be read as limited to a particular process and apparatus because dependent claims 2 and 33 contain that very limitation and it is settled and proper law "that '[w]here some claims are broad and others narrow, the narrow claim limitation cannot be read into the broad whether to avoid invalidity or to escape infringement.'" Id.

entire patent and concluded otherwise and further held that the district court's interpretation was the more reasonable one. Moleculon 793 F.2d at 1269 n4, 229 USPQ at 810 n4.

At issue in this investigation are an independent composition of matter claim 1 and an independent process claim 7, which claims are distinct in themselves. It is not the situation where a limitation of a dependent claim is read into an independent claim. Moreover, the administrative law judge has found, following a review of the '152 patent and its prosecution history, that the claimed subject matter requires more than that the essential suspension stabilizer be ionic only "during use," assuming there was some basis for the term "during use" in the '152 patent.

Markman requires that, to ascertain the meaning of language in a claim, the administrative law judge must consider the claims, the specification and the prosecution history. It also holds that the testimony of an inventor on the proper construction of a claim is entitled to no deference and no inquiry as to the subjective intent of the applicants is appropriate or even possible in the context of a patent infringement suit. Having so considered the claims, the specification and the prosecution history of the '152 patent, he finds that the ionic suspension stabilizer in claim 1 should be construed such that said stabilizer is charged to the reaction vessel as in claim 7.

(b) "having an interfacial tension of at least about 15.0 dynes per centimeter."

The 3/23/ID at 49 states:

> Because the Baker patent warns the reader that if the interfacial tension falls below about 15.0 dynes per centimeter, agglomeration may occur, 3M is precluded from capturing more than one or two degrees below 15.0 dynes per centimeter within the scope of this term. The warning in the patent would insure that the reader would not risk going much lower than one or two

> degrees below 15.0 dynes. The word 'about' would be construed narrowly by a cautious reader wanting to avoid agglomeration. One cannot include under the patent claim precisely what the patent warned would be unsafe, when one knew at the time of filing that it would not necessarily be unsafe.
>
> The word 'about' is construed as covering interfacial tension as low as 13 dynes per centimeter, but no less.

While Order No. 34 at 2,3 ordered complainant to comment on the interpretation of "having an interfacial tension of least about 15.0 dynes per centimeter" <u>inter alia</u>, complainant did not so comply but rather spent some fourteen pages arguing that "Beautone Uses the Equivalent of the claimed Ionic suspension stabilizer" (3MIR at 43 to 57). Complainant, in not challenging the statements of the 3/23/ID at 49 appears to agree with them. The staff represented that it is in agreement with the statements of the 3/23/ID at 49 and "notes that

[15]. Beautone disagrees with the 3/23/ID's construction in issue and argued that the proper construction is that the "interfacial tension" can be only as low as 14.8 dynes per centimeter (BIR at 35-36). Critical to this issue is the meaning of the word "about."

While the claims of the '152 patent do not define the word "about," the '152 specification, under the heading DETAILED DESCRIPTION OF THE INVENTION, states:

> Ionic suspension stabilizers that assist in the preparation of the microspheres can be characterized by an interfacial tension of at least <u>about 15.0 dynes per centimeter</u>. Interfacial tension herein means the

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[15] Proper construction of the meaning of language of the claimed subject matter in issue should be made independent of the interfacial tension of any of Beautone's stabilizers. <u>See</u> 4 Chisum, Patents § 18.03.

> value determined between the monomer phase and a 1.0 percent by weight aqueous solution of the stabilizer. To determine the interfacial tension. a standard test, ASTM #D-1331-56, entitled "Standard Methods of Tests for Surface and Interfacial Tension of Solutions of Surface Agents" can be utilized. If the interfacial tension between the monomer phase and the 1.0 percent by weight aqueous solution of stabilizer falls below about 15.0 dynes per centimeter, there is insufficient stabilization of the final polymerized droplets and agglomeration may occur. [Emphasis added] [FF 9]

The emphasized portion, supra, reads about fifteen point zero dynes per centimeter not just about fifteen. Moreover, the interfacial tensions expressed in Table I, Table II and Table III of the '152 patent are all expressed in terms of tenths of a dyne per centimeter. Thus, the administrative law judge finds that the '152 patent puts a man of ordinary skill in the pertinent art on notice that a tenth of a dyne per centimeter is a significant digit.

Referring to the prosecution of the '152 patent, the language of the specification, viz. "[i]f the interfacial tension . . . falls below about 15.0 dynes per centimeter" was in the original specification for the '152 patent as filed (FF 10) and also in original independent claim 7 (FF 20). Following a rejection of the Examiner that the process conditions of the claimed product-by-process were not adequately recited (FF 34) applicants included the language "of at least about 15.0 dynes per centimeter" in all of the issued independent claims (FF 36). In addition, there is evidence that the interfacial tension of the ionic suspension stabilizer can be measured within an experimental error range of 0.2 dynes per centimeter (FF 48).[16]

Complainant's attorneys argued that (3MIR at 43):

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[16] See Hybritech Inc. v. Abbott Laboratories, 849 F.2d 1446, 1445, 7 USPQ2d 1191 (Fed. Cir. 1988).

> the essence of the Baker/Ketola breakthrough was the recognition--contrary to what Silver had concluded--that suspension polymerization could be controlled to produce the desired microspheres by using a separate suspension process and making possible the production of completely non-ionic microspheres.

While complainant's attorneys so argued, in its submission dated June 16, 1995, the administrative law judge finds the disclosure of the '152 patent to the contrary. Thus the '152 patent, for example, discloses:

> The microspheres are prepared by aqueous suspension polymerization, but have as an essential ingredient in their preparation a hereinafter defined suspension stabilizer.
>
> * * *
>
> The microspheres of the invention are prepared ... with an ionic suspension stabilizer.
>
> * * *
>
> Ionic suspension stabilizers that assist in the preparation of the microspheres can be characterized by an interfacial tension of at least about 15.0 dynes per centimeter.

(Emphasis added) (FF 1, 8, 9). The inventors in the '152 patent were specific in using the language "having an interfacial tension of at least about 15.0 dynes per centimeter." (Emphasis added). The term "about" means "3a with some approach to exactness in quantity, number, or time."[17] When the interfacial tension is repeatedly reported in the '152 patent and its prosecution in tenths of a dyne per centimeter, the administrative law judge finds that expansion of the word "about" to encompass twenty tenths, as did the 3/23/ID at 49, supra, distorts the ordinary meaning of "about."

Complainant, in its "Post-Trial Memorandum" filed on December 14, 1994, argued at 53 that inventor Ketola

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[17] Webster's Third New International Dictionary (1976) at 5. See also Conopoco Inc. v. May Department Stores Co., 46 F.3d 1556, 1561, 32 USPQ 1225, 1227 (Fed. Cir. 1994).

> ran numerous tests to determine which stabilizers successfully functioned to prevent agglomeration and facilitate the formation of inherently tacky microspheres. Tr. 444-46. In doing so, he found a wide variety of stabilizers which worked, both ionic and non-ionic.

There is, however, absolutely nothing in the '152 patent that discloses that non-ionic stabilizers would "work" and the administrative law judge finds that the '152 specification, in emphasizing that an ionic suspension stabilizer is an essential ingredient, teaches away from charging a reaction vessel with a non-ionic suspension stabilizer. In his testimony Ketola attempts to construe in 1994, some fifteen years after the issuance of the '152 patent, the claimed subject matter. That testimony is given no deference. See Markman, supra.

Taking into consideration expert testimony relating to experimental error of the interfacial tension test defined in the '152 specification and having considered the claims, specification and prosecution history of the '152 patent, the administrative law judge construes the claimed phrase "at least about 15.0 dynes per centimeter" as referring to an ionic suspension stabilizer with an interfacial tension that can be only as low as 14.8 dynes per centimeter.

(iv) "infusible"

The 3/23/ID at 36, 37 states:

> 3M takes the position that the term 'infusible' should be given the practical meaning of the word in the context of the temperatures used in the manufacture, storage, and use of the adhesive. 3M would define a microsphere as infusible if it does not melt or flow when kept at 150°C for 5 minutes. Tr. 730 ....
>
> ... 3M's definition of infusible is adopted

However, at 71, the entire third paragraph of the 3/23/ID states:

> If the term 'infusible' is construed as 3M construes it, the term 'infusible' would be indefinite under Section 112. But in this case, the term has been construed as it was defined by the inventor in the Baker patent, and it is not indefinite.

Complainant and the staff argued that the 3/23/ID at 36, 37 is correct and that the first sentence of the third paragraph at 71 of the 3/23/ID is erroneous (3MIR 33, 35) (SIR at 10, 16). Beautone argued that the 3/23/ID at 36, 37 is in error and that while it agrees that a contradiction exists in the 3/23/ID regarding the term "infusible", the claims should be construed as the term "infusible" is defined in the '152 patent at col. 4, lines 32-35 and that under that definition the claims are definite (BIR at 17, 38, 39).

The word "infusible" is not defined in the claims (FF 16). The term was found, however, in original claim 1 (FF 19). There is nothing in the prosecution history of the '152 patent that aids in the definition of "infusible." In the field of chemistry "infusible" is a conventional term. Thus Hachk's Chemical Dictionary, 4th Ed. (1969) at 346 defines "infusible" as "[n]ot being capable of being fused" and at 287 defines "fused" as "[c]ooled to a compact mass after having been molten or sintered."

Beautone's expert Kuo testified that, based on his reading of the '152 patent, "infusible" means that when you heat up to the carbonization temperature the adhesive will not flow and change shape. In support he testified that in the '152 patent the "properties [of the microspheres] are the same as Silver's patent" and that there are statements in the '152 patent and the Silver patent that support Kuo's definition (FF 61). Kuo, however, is in error in his testimony that the '152 patent disclosed that the claimed microsphere properties are the "same" as those properties for the microspheres disclosed in the Silver patent. The '152 patent states that the claimed microspheres have physical properties "similar to those of the Silver patent" (FF 1). Moreover, while the language of the Silver patent is that "[u]pon being heated, the spheres do not melt or flow, but retain their integrity until carbonization temperature is reached" (FF 6), the '152 patent states that "[u]pon being heated, the spheres <u>typically</u> do not melt or flow, but retain their integrity until their carbonization temperature is reached" (Emphasis added) (FF 9). What is "typical," or even preferred, is by definition not required. <u>Specialty Composites v. Cabot Corp.</u>; 845 F.2d 981, 987, 6 USPQ2d 1601 (Fed. Cir. 1988).

Beautone argued that "exemplary uses of the microspheres highlighted the extreme temperature contemplated by the term infusible" referring to the reference in the '152 patent to "copending U.S. application Ser. No. 742,743 of Loder et al" (BIR at 18). However, the reference to the Loder et al application in the '152 patent (FF 11) is, as Beautone argued, an <u>exemplary</u> use. While the '152 patent makes reference to the fact that the claimed microspheres can be utilized in aerosol adhesives; can be applied to substrates as an adhesive; can be mixed with binder materials and placed on substrates to provide repeatedly reusable adhesive surfaces, such as disclosed in U.S. Pat. No. 3,857,731; and can be combined with a hot melt adhesive on a substrate as is disclosed in the Loder et al application (FF 11), the '152 specification does not <u>limit</u> the microspheres to uses involving U.S. Pat. No. 3,857,731 and the Loder et al application. To the contrary, claim 1 in issue is not limited to any use for the microspheres (FF 16). However, accepting Beautone's definition of "infusible," use of the microspheres for Post-It notes would have to remain infusible at temperatures far above normal use of the notes as Beautone's expert Kuo so testified (FF 62). Accordingly, in view of the fact that the claimed subject matter is not limited as to use and in light of the language of the '152 specification, the administrative law judge rejects Beautone's argument that "infusible" should be restricted to the language at col. 4, lines 32-35 of the '152 specification.

It is correct, as complainant's expert Govek and complainant's fact witness Kesti testified (FF 55, 58), that complainant's definition of "infusible" is <u>not</u> found in the '152 patent. Hence, the administrative law judge rejects the finding of the 3/23/ID at 36, 37 that the claimed term "infusible" should be limited to a microsphere which does not melt or flow when kept at 150°C for five minutes. Consistent with the language of the claimed subject matter in issue (which is unlimited as to use of the microspheres), the language of the '152 patent specification, and expert testimony that the term "infusible" as applied to microspheres means "not melting or flowing" (FF 57), the administrative law judge construes the claimed term "infusible" as "not melting or flowing," under conditions including, but not limited to, a temperature of at 150°C for five minutes.

(v) "solvent-dispersible"

The 3/23/ID at 38 states:

> Dr. Baker and Mr. Ketola did not define the term 'solvent-dispersible' in the Baker ['152] patent, and the term will be given its ordinary meaning.
>
> * * *
>
> [A] plain reading of the term 'solvent-dispersible' conveys the idea that solids disperse when placed in a solvent. To be solvent-dispersible, the microspheres cannot completely dissolve in the solvent, and they must spread out in the solvent.

Complainant and the staff agree with the 3/23/ID at 38 (3MIR at 42), (SIR at 10). Beautone argued that the '152 patent provides a definition of "solvent-dispersible" and this definition governs (BIR at 30).

While the claims of the '152 patent do not define the term "solvent-dispersible," which term was in original claim 1 (FF 19), the specification discloses that, following polymerization, the aqueous suspension of polymer microspheres upon prolonged standing may separate into two phases, one phase being aqueous and substantially free of polymer and the other phase being an aqueous suspension of the polymer spheres and that while separation of the polymer phase provide a low viscosity aqueous suspension, if the aqueous suspension is shaken with water it "will readily redisperse" (FF 9). The '152 specification further discloses that <u>if desired</u> the aqueous suspension of microspheres may be utilized immediately following polymerization <u>or</u> may also be coagulated followed by washing and drying and that those dried polymer spheres, with sufficient agitation, will readily disperse in a wide variety of common organic solvents, although once the polymer is dried it is not redispersible in water (FF 9). It <u>also</u> teaches that the microspheres form dispersions in most common solvents, except such highly polar solvents as water, methanol, and alcohol (FF 9). Accordingly, the administrative law judge construes "solvent-dispersible" as meaning that the microspheres following polymerization will readily disperse in water and that the microspheres will form dispersions in most common solvents except highly polar solvents.

(vi) "solvent-insoluble"

The 3/23/ID at 37, 38 states:

> [e]ven if the microsphere is washed repeatedly in solvents, as long as there is an insoluble core remaining, a microsphere will meet the definition of solvent-insoluble, as this term is construed herein, if the insoluble core is large enough to disperse in a solvent.

Complainant and the staff agrees that the 3/23/ID at 37, 38 is correct (3MIR at 41) (SIR at 10) in its definition of "solvent-insoluble." Beautone disagrees with the construction of "solvent-insoluble" in the 3/23/ID (BIR at 28).

As with the term "solvent-dispersible," the term "solvent-insoluble," which also was in original claim 1 (FF 19), is not defined in the claims of the '152 patent. However, the specification of the '152 patent discloses that the microspheres are insoluble in organic solvents (FF 9). Accordingly, the administrative law judge construes "solvent-insoluble" as referring to microspheres that are insoluble in organic solvents.

(vii) "formed from non-ionic monomers and comprising a major portion of at least one oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester"

The parties, as to this phrase, contested only the construction of the phrase "formed from non-ionic monomer." The 3/23/ID at 44 states:

> the phrase 'formed from non-ionic monomers' in Baker claim 1 is construed as a closed term that excludes any microsphere formed from both nonionic and ionic monomers. It is found that the Baker patent microspheres must be formed completely and 100 % from nonionic monomers.

Complainant and the staff agree, while Beautone disagrees with the construction of "formed from non-ionic monomers" at 44 of the 3/23/ID (3MIR at 60, 61) (SIR at 11) (BIR at 32).

The specification of the '152 patent discloses that the invention relates to inherently tacky, elastomeric, solvent-dispersible, solvent-insoluble, polymeric microspheres. It refers to the prior art Silver '140 patent as disclosing inherently tacky acrylate copolymer microspheres comprising a major portion of at least one alkyl acrylate and a minor portion of an <u>ionic monomer</u> (FF 1). It teaches that the Silver microspheres require an "ionic comonomer" as an essential component and that, according to the invention disclosed in the '152 patent, inherently tacky microspheres having physical properties similar to those of the Silver patent can be prepared which are not limited to copolymers but may also be homopolymers <u>and do not</u>

<u>contain an ionic comonomer</u> (FF 1). Under the heading DETAILED DESCRIPTION OF THE INVENTION, the inventors disclose useful alkyl acrylate or methacrylate ester monomers in the invention in issue and further disclose that a minor portion of a non-acrylate or methacrylate ester comonomer <u>which is non-ionic</u> and water insoluble can be included (FF 9). All of the microspheres of the ten specific examples in the '152 patent are formed from non-ionic monomers (FF 15).

During the prosecution, the Examiner rejected the claimed subject matter under 35 U.S.C. § 112 on the ground that certain of the claims were broader than the disclosed invention since the methacrylate contents were not recited and the specification did not suggest polymers which contain mere trace amounts of polymerized units of acrylics contained therein (FF 35). Thereafter the claims were amended to indicate that a major portion of the polymeric microspheres must be based on the acrylate or methacrylate ester (FF 36).

Based on the specification and prosecution history of the '152 patent, the administrative law judge construes the claimed phrase "formed from non-ionic monomers and comprising a major portion of at least one oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester" as excluding any microspheres formed from both nonionic <u>and</u> ionic monomers and also excluding mere trace amounts of polymerized units of acrylics.

(viii) "charging to a reaction vessel . . . a substantially water-insoluble polymerization initiator"

The 3/23/ID under the heading "CONSTRUCTION OF THE BAKER PATENT CLAIMS at 33 has a subsection at 49 titled "7. The step of charging to a reaction vessel 'a substantially water-insoluble polymerization initiator.'" That subsection makes reference to independent claim 7 as the source for the phrase and states at 50 that the first step of claim 7 is charging to a reaction vessel four specific substances with the third substance being "a substantially water-insoluble polymerization initiator." The 3/23/ID at 50 concludes that neither the Baker patent nor the file history defines the phrase "substantially water-insoluble polymerization initiator" and that

> [t]o one working with polymerization processes, 'substantially water-insoluble initiator' means a suspension polymerization initiator, such a [sic] benzoyl peroxide, having low water-solubility and high-monomer-solubility.

Complainant does not dispute that "claim 7 should be interpreted so as to require charging the recited items to the vessel, including a substantially water-insoluble polymerization initiator" (3IR at 57). The staff noted that the water-insoluble polymerization initiator is only relevant to "process claims 7 through 10," which have been "withdrawn"[18] as to Beautone and that the Kudos respondents were deemed to have admitted that their process includes the step of charging to the reaction vessel a substantially water-insoluble polymerization initiator. The staff agrees with the claim construction of the 3/23/ID at 49-50. Beautone also agrees with the construction of the 3/23/ID at 50.

Independent claim 7 is the only independent claim that has the language "a substantially water-insoluble polymerization initiator" (FF 16). The specification of the '152 patent discloses that catalysts or polymerization initiators for the polymerization recited in the claims are those which are normally suitable for free-radical polymerization of acrylate monomers and which are oil-soluble and of very low solubility in water such as, for example, benzoyl peroxide (FF 9). Based on the language of the claim and the

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[18] The administrative law judge has found that claims 7, 8 and 10 were not withdrawn. See supra. Claim 9 was never in issue. See n4.

disclosure of the specification of the '152 patent the administrative law judge interprets the phrase in issue as charging to a reaction vessel items (i), (ii), (iii) and (iv) recited in claim 7 (FF 16), the initiator (item (iii)) being from the class of those which are normally suitable for free-radical polymerization of acrylate monomers and which are oil-soluble and of very low solubility in water, such as, for example, benzoyl peroxide.

2. Point b of Order

Point b states:

> "b. Clarifies her interpretation of the term 'infusible,' since the administrative law judge's interpretation of the term found on p. 37 of the ID directly conflicts with her interpretation of the same term on p. 71 of the ID"-

Reference is made to Section 1(iv) <u>supra</u>, wherein this administrative law judge set forth the 3/23/ID's interpretation of "infusible" at 37 and 71 and construed the claimed term "infusible" as "not melting or flowing" under conditions which include, but which are not limited to, a temperature of 150°C for five minutes. Such construction, which is found to meet the requirement of the second paragraph of 35 U.S.C. § 112, encompasses but is not limited to the interpretation of the 3/23/ID at 37.

3. Point c of Order:

Point c states:

> c. Decides which evidence, 3M's or Beautone's, is stronger on the issue of whether the claim term 'infusible' is met in Beautone's products. <u>See</u> <u>United States v. General Motors Corp.</u>, 561 F. 2d 923, 933 (D.C. Cir. 1977); <u>Andrew Corp. v. Gabriel Electronics, Inc.</u>, 847 F2d 819, 814 (Fed. Cir. 1988).

The 3/23/ID at 110 states:

> Once the Baker applicants decided to require that the Baker microspheres be infusible, they could have explained in the patent what infusible meant, if it did not mean melt and flow at the carbonization temperature. Or they could have suggested an appropriate test to determine fusibility. The Baker patent does not do either one. That leaves competitors free to make any reasonable test that they wanted to make. Mr. Seiple's test [Seiple was an expert witness for Beautone] was reasonable under the circumstances for someone who was trying to prove that the microspheres were fusible.
>
> 3M proved that under normal manufacturing conditions, the larger Hopex particles did not melt and flow to the extent that they disappeared. As a practical matter, the particles that gave the adhesive their repositionable characteristic survived the drying process without excessive melting and flowing. Using 3M's definition of infusible, however, 3M has failed to prove by a preponderance of the evidence that Glue G-1 is infusible.

Each of complainant and the staff argued that, on the issue of infusibility, complainant's evidence is far stronger than that of Beautone (3MIR at 35) (SIR at 16). Complainant further argued that "3M's evidence demonstrates that the Beautone microspheres are infusible" (3MIR at 41) and hence disagreed with the 3/23/ID's statement at 110 that complainant failed to prove that Beautone's adhesive is infusible.

The staff argued (SIR at 18) that the section of the 3/23/ID at 108 to 110[19] is not entirely clear as it appears to give credence to complainant's

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[19] The 3/23/ID at 108 to 110 stated:

> Dr. Govek's infusibility test on Glue G-1 adhesive taken from respondents' commercial product showed that it was infusible at 150 °C (Paper will spontaneously combust at 233 °C) Dr. Govek took a large glob of Glue G and heated it on a needle. When heated at 150 °C the surface showed that individual particles were present. When heated at 210 °C for 5 minutes, Dr. Govek testified that the surface topography was still intact and still showed individual discrete particles, but on cross-examination he agreed that the surface

tests as well as Beautone's test and then faults complainant's evidence not because its tests were unreliable, but because the disclosure of the '152 patent neglected to specify tests of infusibility; that this purported oversight seems to be the only reason that the 3/23/ID gives any credence to the tests of the Beautone expert witness and that no comparative analysis of the merits of the tests of complainant and Beautone was undertaken; that the 3/23/ID erred in, on the one hand, adopting the position of complainant and the staff on the proper construction of "infusible" (infusibility up to the temperatures encountered in normal manufacturing, storage, and use), but, on the other hand, faulting the inventors for not explaining what they meant by "infusible" or identifying possible tests for infusibility as a way to open the door to Beautone's less reliable tests. This administrative law judge

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> looked smooth an glassy. By then the adhesive may have started to melt and flow, but the glob had not become clear nor had it started to slide down the needle. Using these tests, the Glue G adhesive met the definition of infusible as that term is defined herein (not melting and flowing until it reached a temperature of 150 °C)....
>
> * * *
>
> The normal drying temperature for this glue is 120° C. If Glue G-1 were fusible at 120 °C, Glue G-1 would have reached this temperature during the ordinary commercial drying process, and the bulges of individual particles would not be visible in the final Glue G-1 adhesive above the film that the adhesive forms when heated. These bulges are clearly visible in pictures of Glue G-1. The tests made by Mr. Seiple on the Glue G-1 adhesive were harsher than the normal commercial drying process used by Hopax. Nevertheless, the Glue G-1 did fuse before 150 °C was reached, and Mr. Seiple's tests showed that Glue G-1 is not infusible as that word was construed herein, adopting 3M's proposed definition, (i.e., not melting or flowing below the temperature of 150 °C). [citations omitted]

agrees with the staff that the section of the 3/23/ID at 108 to 110 is not entirely clear. The staff concluded that the 3/23/ID "decided the issue wrongly" (SIR at 18).

Beautone agreed with the 3/23/ID at 110 that Beautone's glue G is not "infusible" and argued further that, under Beautone's proposed construction of the claims, Beautone's glue G is also not "infusible" (BIR at 39, 40).

In Andrew Corp. v. Gabriel Electronics, Inc., 847 F.2d 819, 824, 6 USPQ2d 1010, 1014 (Fed. Cir. 1988), cited in point c of ORDER, the district court concluded that the evidence was "in equipoise," i.e. in a state of equilibrium, and therefore the plaintiff had not met its burden of proving infringement by a preponderance of the evidence. The Federal Circuit however stated:

> A true equipoise of evidence may indeed defeat the party with the burden of proof, . . . , but there is no authority for holding evidence to be in equipoise for the sole reason that the court could not decide between conflicting experts. We agree with the statement in United States v. General Motors Corp., 561 F.2d 923. 933 (D.D.Cir. 1977), cert. denied, 434 U.S. 1033 (1978) [also cited in point c. of ORDER]:
>
>> The mere fact that experts disagree does not mean that the party with the burden of proof loses. The finder of fact has to make the effort to decide which side has the stronger case. This can be based on the demeanor of the witnesses (if so, the trial judge should say so) or the intellectual strength of the evidence and arguments based thereon.

Complainant's evidence was presented by Dr. Govek. Govek is a research specialist in complainant's Post-It Products Business Unit of the Commercial Office Supply Division. He has experience in testing both conventional and microsphere adhesives (FF 56). Govek's tests and the pictures therefrom showed that even when heated to 150 degrees Centigrade (302 degrees Faranheit), Beautone's microspheres retained their integrity, with the photographs of several commercial samples showing visible microspheres after testing to 150 degrees Centigrade (FF 57).

The administrative law judge finds that complainant's evidence is stronger than Beautone's evidence on the issue of whether the claimed term "infusible" is met in Beautone's products. Beautone manufactures and sells repositionable notes (FF 63). Also Beautone's Kuo has testified that the commercial Beautone microspheres are heated to 120°C-150°C during manufacturing (FF 63). In addition, Govek, who is responsible for analytical testing and competitive analysis for a wide range of products which includes Post-It notes and Scotch Magic and mini tape (FF 56) demonstrated with pictures that Beautone's microspheres are infusible (FF 57). While Beautone's Seiple did some tests there are <u>no</u> pictures in evidence showing that the Beautone products are not within the claimed term "infusible" as the administrative law judge has construed the term.

4. Point d of Order:

Point d states:

> d. Further explains the ID's finding on p. 56 that' one can conclude that microspheres made from IOA have the physical characteristics claimed in . . . [both Silver claim 1 and] Baker Claim 1,' and supports that finding with citation to the evidence of record.

The 3/23/ID at 56 states:

> Because IOA is listed in the Silver patent as an eligible nonionic monomer, and because the Silver patent microspheres are indistinguishable from the Baker patent microspheres, <u>one can conclude that microspheres made from IOA have the physical characteristics claimed in both Silver claim 1 and Baker claim 1</u>. [Emphasis added]

Complainant takes the position that the emphasized portion of the

3/23/ID is irrelevant and therefore takes no position on whether the finding is accurate (3MIR at 21). The staff believes that there is insufficient reliable evidentiary support for the finding (SIR at 19). Beautone agrees with the emphasized portion of the 3/23/ID (BIR at 51 to 53).

Beautone argued that Ketola admitted that Silver's microsphere are "physically identical" to the microspheres described in the '152 patent (BIR at 52). Ketola's testimony, however, is ambiguous. Thus, while he used the phrase "[p]hysical properties are identical" in the same interrogation he testified that the physical properties are "essentially identical" and that the "amount of that copolymers does not contribute much at all to the physical properties" (FF 64). Moreover, Silver testified that the adhesive microspheres of his patent and the '152 patent were in essence "similar" (FF 84) which is consistent with the disclosure of the '152 patent that the claimed microspheres have physical properties "similar to those of the Silver patent" (FF 1).

Based on the foregoing the administrative law judge finds that there is insufficient reliable evidence for the finding that all "microspheres made from IOA have the physical characteristics claimed in both Silver claim 1 and Baker Claim 1."

5. Point e of ORDER

Point e states:

> Reconciles the ID's finding that '[i]t is not required that the microspheres of the Baker claim 1 be made by a predominantly suspension polymerization process,' ID at p. 35, with the ID's findings at, <u>e.g.</u>, pp. 76 and 96, which appear to indicate that the administrative law judge required 3M to prove that the accused Glue G adhesive was made by predominately suspension polymerization.

The 3/23/ID at 35 states:

> It is not required that the microspheres of Baker ['152] claim 1 be made by a <u>predominantly</u> suspension polymerization process. If emulsion polymerization occurs in the same process, or even is predominant in the process, the microspheres could be covered by claim 1.

The 3/23/ID at 76 states:

> 13. Complainant failed to prove that the Glue G process is predominantly a suspension polymerization process.

The 3/23/ID at 96 states:

> It is found that the calculation of complainant as to how much suspension polymerization is taking place in the Glue G process do not prove by a preponderance of the evidence that the Glue G process is predominantly one of suspension polymerization.

Complainant agreed with the 3/23/ID at 35, <u>supra</u>. It also agreed with findings 13 of the 3/23/ID but noted that the claims do not require predominance. It disagreed with the indication of the 3/23/ID at 96 that complainant has to prove that the accused Glue G adhesive is made by a "predominately suspension polymerization" to sustain any infringement allegation (3MIR at 27, 28).

The staff agreed with the statement of the 3/23/ID at 35. The staff neither agreed or disagreed with finding 13 of the 3/23/ID because "the finding is irrelevant." The staff disagreed with the indication of the 3/23/ID at 96 that the '152 patent requires a reaction that is predominantly suspension polymerization (SIR at 24).

Beautone disagreed with the 3/23/ID at 35, <u>supra</u> (BIR at 54), and agreed with finding 13 of the 3/23/ID (BIR at 79, 80). Beautone also agreed with the 3/23/ID at 96 (BIR at 83).

This administrative law judge has found that the claimed subject matter does not require a "predominantly" suspension polymerization process. <u>See</u> section 1(ii), <u>supra</u>. Hence, he cannot reconcile the 3/23/ID's finding at 35 with its findings at 76 and 96.

6. Points f and h of ORDER

Points f and h state:

> f. Makes a determination on the issue of the validity of claims 4 and 5 of the '152 patent. States why claim 2 of the patent was held invalid. Determines whether 3M is practicing claim 10 of the patent.
>
> h. Reconsiders ... [the] finding of invalidity under 35 U.S.C. § 102(g) in view of <u>Checkpoint Systems, Inc. v. USITC</u>," 54 F.3d 756, 35 USPQ2d 1042 (Fed. Cir. 1995)] (Checkpoint).

(i) Claims 2, 4 and 5

The 3/23/ID at 50 found:

> 1. Baker ['152] patent claims 1 and 2 Section are invalid, as anticipated under Section 102(f) and Section 102(g) of the Patent Act.
>
> 2. The <u>other</u> Baker ['152] patent claims in issue are not invalid as anticipated by the prior art. [Emphasis added]

As the basis for this finding, the 3/23/ID at 57 found that in "the

that anticipated the microspheres claimed in claim 1 of the Baker patent." The 3/23/ID made no explicit reference to claims 4 and 5.[20] The 3/23/ID at 56, 57, while it does not explain the rationale for finding claim 2 invalid, stated as to claim 1:

> Because IOA is listed in the Silver patent as an eligible nonionic monomer, and because the Silver patent microspheres are indistinguishable from the Baker patent microspheres, one can conclude that microspheres made from IOA have the physical

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[20] Claim 4 is an independent claim while claim 5 is dependent on claim 4. Claim 2 is dependent on independent claim 1 (FF 16).

> characteristics claimed in both Silver claim 1 and Baker claim 1. other limitations of Baker claim 1 except that it was not established that the microspheres were prepared in the presence of an ionic suspension stabilizer "having an interfacial tension of at least about 15.0 dynes per centimeter. This limitation relates only to the process by which the product was made, it has nothing to do with the inherent physical characteristics of a microsphere, and it is not considered in determining whether the product is old in the art.

Complainant argued that the 3/23/ID "erred in holding claims 1 and 2 of the Baker/Ketola patent invalid . . . [because]

(3MRR at 2). It was further argued that not only was there an abandonment that precluded invalidity under 35 U.S.C. § 102(g) but that the communication of failure to Baker/Ketola was a patentability strengthening teaching away, rather than a derivation under § 102, and for at least the same reasons, claims 4 and 5 were also not rendered invalid by

(3MIR at 8, 19). Complainant also argued that even if

are prior art, that fact merely renderd Silver a co-inventor of the '152 patent and did not invalidate the patent (3MRR at 2).

The staff argued that "claims 4 and 5 have not been proven to be invalid" (SIR at 25).[21] This position is based on the argument that "claims 4 and 5 add a limitation beyond the requirements of claims 1 and 2. . . . [and] claims 1 and 2, which are otherwise identical to claims 4 and 5, have <u>not</u> been proven to be invalid." <u>Id.</u> (emphasis in original).

Beautone has attacked the validity of the '152 patent on the basis of both 35 U.S.C. §§ 102(f) and (g). Beautone supports their invalidity

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[21] The staff also asserted that "[p]resumably Beautone's failure to assert invalidity .... of [claims 4 and 5] in its posthearing briefs resulted in the 'not invalid' finding" of the 3/23/ID, citing <u>Lannom</u>. (SRR at 14). The Commission, in its ORDER (point f) has specifically asked for a ruling on the validity of claims 4 and 5.

contentions by reference to Mr. Ketola's concession that he knew of Dr. Silver's work, Mr. Ketola's knowledge that 3M sought to place microspheres upon a substrate, Dr. Silver's testimony that he believed his patent covered polymeric stabilizers, and 3M's assertion of the Silver patent against Ampad Corporation." (BIR at 84). Beautone also argued that claims 1 and 2 are invalid under §102(f) because "Dr. Silver had the original and complete conception of microspheres made from 100% polymeric stabilizer . . . [and] Dr. Baker and Mr. Ketola knew of the (BIR at 84, 85). Beautone further argued that invalidity can not be cured simply by adding Dr. Silver as a co-inventor, "[i]n view of 3M's long awareness of Dr. Silver's work and its conflicting positions regarding Dr. Silver's work." (BRR at 46); as well as the fact that neither the administrative law judge, nor "the Commission possesses the authority to correct inventorship under section 256, only the Patent Commissioner or an Article III court may do so." Id. citing Stark v. Advanced Magnetics, Inc., 29 F.3d 1570, 1573 (Fed. Cir. 1994).

A patent is presumed valid. 35 U.S.C. § 282 (1988). This places "the burdens of going forward and of persuasion upon the party asserting invalidity." Checkpoint, 54 F.3d at 765, 35 USPQ2d at 1050, citing SSIH Equip. S.A. v. United States Int'l Trade Comm'n, 718 F.2d 365, 375, 218 USPQ 678, 687 (Fed. Cir. 1983). This burden requires that Beautone establish invalidity by "clear and convincing evidence." Checkpoint, 54 F.3d at 765, 35 USPQ2d at 1050.

Independent claims 1 and 4 of the '152 patent are product by process claims. In determining the novelty of a product-by-process claim, both the product and the process limitations are given weight. Thus in Atlantic

Thermoplastics Co. Inc. v. Faytex Corp., 970 F.2d 834, 23 USPQ2d 1481 (Fed. Cir. 1992) (Atlantic Thermoplastics), claim 1 in issue read "[i]n a method of manufacturing a shock-absorbing, molded innersole for insertion in footwear, which method comprises: ... [step(a) and a detailed step b]" while claim 24 in issue read: "[t]he molded innersole produced by the method of claim 1" (Id. 970 F.2d at 837, 23 USPQ2d at 1482, 1483). The district court had held that one Faytex did not infringe the '204 patent in issue by selling innersoles manufactured by Sorbothane. Atlantic argued that the Sorbothane process resulted in innersoles which are indistinguishable from innersoles made by a Surge process and claimed in the '204 patent and hence that the Sorbothane innersoles, though made by a different non-infringing process, also infringed Atlantic, 970 F.2d at 839, 23 USPQ2d at 1485. Judge Rader, writing for a panel of Chief Judge Archer and Judges Michael and Rader, rejected Atlantic's invitation to ignore the process limitation in the product-by-process claim. Id. 970 F.2d at 845, 23 USPQ2d at 1491. He also rejected Atlantic's argument that Scripps Clinic & Research Foundation v. Genentech, Inc., 927 F.2d 1565, 18 USPQ2d 1001 (Fed. Cir. 1991) (Scripps) demanded reversal of the non-infringement finding. Id. 970 F.2d at 839, 23 USPQ2d (at 1484, 1485). Scripps had stated that:

> [T]he correct reading of product-by-process claims is that they are not limited to product prepared by the process set forth in the claims.[22]

Each of Judges Newman with whom Judges Rich and Lourie joined, Judge Lourie,

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[22] Judge Radar noted that in Scripps, the Court ruled without reference to the Supreme Court's previous cases involving product claims with process limitations and in the absence of responsive briefing of the issues by the Scripps parties, the Scripps Court noting that it was reviewing an "undeveloped record," and devoted one paragraph to resolving the jurisdictional issue and one paragraph to the merits. 970 F.2d at 839, 23 USPQ2d at 1485.

Judge Nies and Judge Rich filed opinions dissenting from the denial of a rehearing in banc 974 F.2d 1229, 23 USPQ2d 1801 (Fed. Cir. 1992).[23]

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[23] Judge Rich in his dissent criticized Atlantic Thermoplastic, stating:

> The most egregious act of the Atlantic panel, however, is its defiant disregard, for the first time in this court's nearly ten-year history, of its rule that no precedent can be disregarded or overruled save by an in banc court, on the stated, but feeble ground that the authors of the precedential opinion "ruled without reference to the Supreme Court's previous cases involving product claims with process limitations." The Atlantic panel continued:
>
> > A decision that fails to consider Supreme Court precedent does not control if the court [i.e. the Atlantic panel] determines that the prior panel [in the Scripp case] would have reached a different conclusion if it had considered controlling precedent.
>
> This is not only insulting to the Scripps panel (Chief Judge Markey, Judge Newman and a visiting judge); it is mutiny. It is heresy. It is illegal.

Judge Rich concluded:

> Fortunately, this court has another rule -- as yet to be ignored by a panel, I believe that where there are conflicting precedents, the earlier precedent controls. But the conflict should have been eliminated in banc to avoid confusion in the law. [Emphasis in original]

970 F.2d at 1231, 23 USPQ2d at 1802.

In Atlantic Thermoplastic Co. Inc. v. Faytex Corp. 974 F.2d 1299, 24 USPQ2d 1138, 1139, 1142 (Fed. Cir. 1992), Judge Rader concurring in the denial of the rehearing en banc, stated that in Atlantic Thermoplastic the Court reaffirmed, in the case of a product-by-process claim, that claim language defines the bounds of patent protection and further correctly read binding Supreme Court precedents on adherence to claim language in product-by-process claim interpretation.

In Tropix Inc. v. Lumigen Inc. 825 F.2d 705, 27 USPQ2d 1475, 1478 (D. Mass 1993) the district judge concluded that Atlantic Thermoplastic stated the controlling law.

In addition, a party challenging validity in an infringement proceeding has the "burden of proving by clear and convincing evidence that the [prior art] copolymers . . . possessed those [claimed] properties." DuPont v. Phillips Petroleum Co., 849 F.2d 1430, 7 USPQ2d 1129, 1133 (Fed. Cir.), cert. denied, 109 S.Ct. 542 (1988).[24] Therefore, Beautone must present clear and convincing evidence that the product of the '152 patent is anticipated under either 35 U.S.C. § 102(f) or § 102 (g).

Both the 3/23/ID and the Beautone respondents have relied on

as prior art that anticipates claims 1 and 2 of the '152

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[24] In DuPont, Phillips, the alleged infringer, cross-appealed from the district court's judgment that Phillips failed to prove invalidity under 35 U.S.C. § 102(g). Claims 1 and 12 in issue read:

> 1. An interpolymer composed of interpolymerized comonomers consisting essentially of ethylene and at least one normal aliphatic mono-alpha-olefinic hydrocarbon containing from 5 to 10 carbon atoms per molecule, the proportion of said monoolefinic hydrocarbon being from 3 to 7% of the weight of the interpolymer, said interpolymer having a melt index within the range of 0.3 to 20, and when in the form of a film, an Elmendorf tear strength in the range of 150 to 400 grams per mil, and a density of 0.93 to 0.94.
>
> 12. Composition of claim 5 in the form of pipe which is further characterized by withstanding 3000 hours at hoop stress of 750 psi and a temperature of 60°C. [849 F.2d at 1439, 7 USPQ2d at 1132, 1137, 1138].

DuPont conceded that certain prior art polymers had an identical structure to those covered by certain of the claims. DuPont, however, did not concede that those prior art polymers contained other specified physical limitations. The Court noted that, "particularly with polymers, structure alone may be inadequate to define the invention," pointing to the district court's finding that "the interpolymer actually produced depends in part on the process used to prepare it," Id. 849 F.2d at 1438, USPQ2d at 1133. The Court did not find invalidity because "Phillips has not shown that their interpolymers ...possess the property limitations set forth in the claims." Id. 849 F.2d at 1438, USPQ2d at 1134.

patent under both § 102(f)and § 102(g)[25] (3/23/ID at 62 and BIR at 84).

[26]

(a) 35 U.S.C. § 102(f)

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[25] Beautone, in arguing the invalidity of claims 4 and 5, has also relied on that prior art in its petition at 5, 21 and 24 and in its response to Order No. 34 but did not rely on that art in its posthearing briefs.

[26] The Silver '140 patent discloses that TMA is an ionic monomer (FF 5).

Under 35 U.S.C. § 102(f), a patent is invalid if the named inventor "did not himself invent the subject matter sought to be patented." 35 U.S.C. § 102(f). This requirement simply means that "a person cannot obtain a patent on an invention if he obtained a complete idea for the invention from another source." 2 Chisum, Patents § 5.03[3][d] (emphasis in original). As the inventor must receive the complete idea, a finding of "lack of novelty requires, as the first step in the inquiry, that all the elements of the claimed invention be described in a single reference." In re Spada, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990), citing Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir.), cert. denied, 110 S.Ct. 154 (1989).

To establish that Baker and Ketola obtained the complete idea of claims 1 and 2 of the '152 patent[27] from and thereby prove derivation under 35 U.S.C. § 102(f), Beautone must establish by clear and convincing evidence "prior conception of the claimed subject matter and communication of the conception to the [patentee]." Price v. Symsek, 988 F.2d 1187, 1190, 26 USPQ2d 1031, 1034 (Fed. Cir. 1993) (Price). As the party asserting invalidity under § 102(f), Beautone must establish both that proves that he was first to conceive of producing microspheres using a suspension stabilizer in place of a

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[27] The only distinction of claim 2 over independent claim 1 is that claim 2 is specific to the "oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester" of claim 1, i.e. claim 2 recites the ester as "selected from the group consisting of n-butyl acrylate, sec-butyl acrylate, 2-methyl butyl acrylate, 4-methyl-2-pentyl acrylate, 2-ethyl hexyl acrylate, isooctyl acrylate, isodecyl methacrylate." (FF 16). Thus, while the ORDER in point f relating to "validity" refers only to the validity of claims 4 and 5 and the invalidity of claim 2, in view of the dependency of claim 2 on claim 1, the fact that point h of the ORDER is not restricted to any claims and the directive of point j of the ORDER, the administrative law judge is including claim 1 in his consideration of point f and point h of the ORDER.

comonomer,[28] and that this conception was communicated to Baker and Ketola in a manner "sufficient to enable one of ordinary skill in the art to construct and successfully operate the invention." <u>Hedgewick v. Akers</u>, 497 F.2d 905, 908, 182 USPQ 167 (CCPA 1974). The "conception" of an invention is defined as "the formation in the mind of the inventor, of a definite and permanent idea of the complete and operative invention," <u>Burroughs Wellcome Co. v. Barr Laboratories, Inc.</u>, 40 F.3d 1223, 1228, 32 USPQ2d 1915, 1920 (Fed. Cir. 1994), (<u>Burroughs</u>) quoting <u>Hybritech Inc. v. Monoclonal Antibodies, Inc.</u>, 802 F.2d 1367, 1376, 231 USPQ 1915, 1925 (Fed. Cir. 1986), and is complete when "the idea is so clearly defined in the inventor's mind that only ordinary skill would be necessary to reduce the invention to practice."m <u>Burroughs</u> 40 F.3d at 1228, 32 USPQ2d at 1920.

The administrative law judge finds

insufficient proof that Silver first conceived of producing microspheres as described in claims 1 and 2 of the '152 patent. This finding is based on the fact that "in establishing conception a party must show possession of every feature recited in the [claim], and every limitation of the [claim] must have been known to the inventor at the time of the alleged conception." <u>Coleman v. Dines</u>, 754 F.2d 353, 359. 224 USPQ 857, 843 (Fed. Cir. 1985). The administrative law judge finds nothing in Silver's notebook, (Resp. Ex. 155) or the record that proves that the

identical to the product claimed in the '152 patent, having the physical properties ("[i]nfusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres formed from non-ionic

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[28] Beautone argued that

surely establishes that fact" (BIR at 93).

monomers and . . . having a glass transition temperature below about -20° C") required by claims 1 and 2[29] (FF 16, 71). To the contrary the evidence merely suggests that

that Silver did not test (FF 73).

Also, although where a process claim teaches the same method as the prior art "the natural presumption is that, if in the prior art the same method was used . . . the same results were obtained" In re Wait, 83 F.2d 696, 698, 23 CCPA 1172, 1175 (CCPA, 1936), the administrative law judge finds no evidence that the microspheres were prepared in the presence of an ionic suspension stabilizer "having an interfacial tension of at least about 15.0 dynes per centimeter," as required in claim 1. See 3/23/ID at 56.[30] That difference between the process

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[29] In proceedings before the Patent and Trademark Office (PTO), once the PTO has established a prima facie case that the product of the applicant's process is the same as the product of the prior art "the burden ha[s] shifted to [the applicant], 'to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product.'" In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 967 (Fed. Cir. 1985), In re Brown, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972), In re Best, 562 F.2d 125, 195 USPQ 430 (CCPA 1977) ("the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product"). However, this rule is based on the policy observation that "the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith." In re Brown, 459 F.2d at 535, 1730 USPQ at 688. Therefore, this burden shifting is not applicable to an infringement action, where the burden of proof remains with the party asserting invalidity. Atlantic Thermoplastics, 970 F.2d at 848, fn. 10 23 USPQ2d at 1490, n 10.

[30] Beautone, in its submission in response to Order No. 34, did not point to any evidence that Sipex A identified as "an ionic emulsifier" in Silver's notebook (FF 68, 71) was in fact an anionic emulsifier "[present] at a concentration level above said emulsifier's critical micelle concentration."

Said Example 2 teaches that Sipex A is ammonium lauryl sulfate (FF 6). Claim 1 of the Silver patent teaches the use of an anionic emulsifier at a concentration level above said emulsifier's critical micelle concentration (FF 7).

detailed in independent claim 1 of the '152 patent and is found sufficient to make this natural presumption inapplicable. See Atlantic Thermoplastics, and DuPont. In determining whether a product-by-process claim is anticipated, it is permissible to use the process limitations of the claims to determine if the product of the claim is different from the prior art. See Atlantic Thermoplastics, 970 F.2d at 848, 23 USPQ2d at 1490. Thus the administrative law judge finds that Beautone has not proven that the contains all the elements of claim 1 and dependent claim 2 of the '152 patent as required to find invalidity of those claims under 35 U.S.C. § 102(f).

Moreover, assuming that met all of the elements of claims 1 and 2, the evidence surrounding that experiment reveals significant uncertainty regarding its success and workability (FF 73, 74, 75). Although "[a]n inventor's belief that his invention will work or his reasons for choosing a particular approach are irrelevant to conception," Burroughs 40 F.3d at 1228, 32 USPQ2d at 1919 MacMillan v. Moffett, 432 F.2d 1237, 1239, 167 USPQ 550, 552 (CCPA 1970), a conception is not considered complete if "the subsequent course of experimentation, especially experimental failures, reveals uncertainty that so undermines the specificity of the inventor's idea that it is not yet a definite and permanent reflection of the complete invention as it will be used in practice." Burroughs 40 F.2d at 1229, 31 USPQ2d at 1920. In fact, the only evidence in the record on this point indicates that and reinforced his belief that a comonomer was required to successfully produce microspheres and avoid agglomeration (FF 74, 75). but instead proceeded to perform other experiments employing a comonomer, leading up to his application for the '140 patent (FF 73, 75, 80).[31]

Even assuming that Silver's

establish conception, the administrative law judge finds insufficient evidence that this conception was communicated to Baker and Ketola. To prove communication, "corroboration is required to support . . .testimony regarding communication." <u>Price</u> 988 F.2d at 1196, 26 USPQ2d at 1038. The only evidence the administrative law judge finds that this idea was in fact communicated comes from statements made by Ketola in his declaration and at the hearing that "[i]n the mid 1970s William Baker and I . . . knew that

(Tr. at 661, 3M Ex. 374 at ¶ 8, FF 81). In determining the sufficiency of communication, "[a]ll the circumstances in the record must be considered . . . . mere proof of motive and opportunity (e.g. access) is not sufficient to carry the burden of proving derivation." <u>Hedgewick</u> 497 F.2d at 908, 182 USPQ at 169 citing <u>Bartsch v. Baker</u>, 134 F.2d 487 (CCPA 1942), and <u>Rider v. Griffith</u>, 154 F.2d 193, 69 USPQ 112 (CCPA 1946). The fact that Baker and Ketola knew of in this area, and that Ketola did not remember seeing Silver's notebook (FF 82) is insufficient to prove that Baker and Ketola knew sufficient details to enable one of ordinary skill in the art to make the invention claimed in the '152 patent.[32] See <u>Hedgewick</u>,

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[31] The Silver '140 patent is acknowledged in the '152 patent and the '152 patent distinguishes its claimed polymeric microspheres over the microspheres disclosed in the Silver patent in that the former do not contain an ionic comonomer (FF 1).

[32] Silver, who is at least a "man of ordinary skill in the art" (FF 83) actually he learned of the work of Baker and Ketola (FF 77, 78).

497 at 908, 182 USPQ at 169. Therefore, the administrative law judge finds that Beautone has not carried its burden of proving sufficient communication of to Baker and Ketola, as required to find invalidity of claims 1 and 2 under 35 U.S.C. § 102(f).

Independent claim 4 and claim 5, dependent on claim 4, add an additional limitation to claims 1 and 2. (FF 16).[33] Therefore, if claims 1 and 2 are valid under § 102(f), claims 4 and 5 are valid under § 102(f) for the same reasons as outlined above. In addition, while Beautone has argued that "neither Baker nor Ketola had the idea of a homopolymer on a substrate -- they obtained the complete idea from another source" (BIR at 94) the administrative law judge finds that Beautone has not provided clear and convincing evidence to indicate that the microspheres

Beautone has argued that "Silver, not Baker and Ketola, first invented . . . microspheres on substrates" (BRR at 47). However, Beautone relies on a combination of Silver's '140 patent and the to meet the limitations of claims 4 and 5 of the '152 patent, and has not pointed to a single prior art reference that contains a <u>complete</u> conception of the subject matter of claims 4 and 5, as required by <u>Burroughs</u>, <u>supra</u>. To anticipate under 35 U.S.C. §102, a single piece of prior art must contain each had every limitation set forth in the claims. <u>Electro Med. Sys. S.A. v. Cooper Life Sciences, Inc.</u>, 34 F.3d 1048, 1052, 32 USPQ2d

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[33] Independent claim 4 reads "An article comprising a substrate having deposed on at least one surface therein ... [polymeric microspheres of claim 1]. Dependent claim 5 has an <u>additional</u> limitation over claim 4 regarding the group of ester from which monomers can be selected, but this distinction has not been an issue in the investigation (FF 16).

1017 (Fed. Cir. 1994). If even one limitations is not present in the prior art, there is no anticipation. Id. Accordingly, the administrative law judge finds that Beautone has not carried its burden of proving claims 4 and 5 are not valid under 35 U.S.C. § 102(f).

(b) 35 U.S.C. § 102(g)

A patent is invalid under section 102(g) if "before the applicant's invention thereof the invention was made in this country by another who had not abandoned, suppressed, or concealed it." 35 U.S.C. § 102(g). This section does not require that the invention be communicated, but rather gives priority to a first inventor over a second inventor. The 3/23/ID at 63 found that:

> Dr. Silver made the invention claimed in Baker claim 1 (the microsphere of the Baker patent) in this country when he made the He did not conceal, suppress or abandon either of his TMA experiments.

Beautone has argued that "Dr. Silver conceived and actually reduced to practice microspheres made exclusively with ionic polymeric stabilizers. . . . Furthermore, the conduct of 3M and Dr. Silver during the Ampad litigation demonstrate that Dr. Silver did not abandon, suppress, or conceal his prior invention." Beautone has further argued that "[t]he Federal Circuit's recent decision in Checkpoint Systems, Inc. v. [US]ITC, [54 F.3d 756, 35 USPQ2d 1042] (Fed. Cir. 1995) strengthens [the 3/23/ID] finding of invalidity of claims one and two under section 102(g) and further supports a finding of invalidity for claims four, five, seven, eight, and ten" (BIR at 98)[34].

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[34] The ORDER in point f limits determinations regarding validity to claims 2, 4 and 5. However, point h of the ORDER is not limited to any claims. Because Checkpoint deals with validity under section 102(g), and because the 3/23/ID found claims 1 and 2 invalid under section 102(g), the administrative law judge will consider the validity of claims 1, 2, 4 and 5 under 35 USC § 102(g), in light of the Checkpoint decision. Invalidity of

The staff argued that "none of the asserted claims of the '152 patent are invalid under 35 U.S.C. § 102(g). . . . Checkpoint . . . does not alter this position" (SIR at 27).

Complainant argued that the 3/23/ID "was wrong, as a matter of law, in finding claims 1 and 2 invalid under § 102(g); that said § 102(g) finding was based on

Invalidity under 35 U.S.C. § 102(g) requires a showing that a prior inventor conceived of the claimed invention, reduced the claimed invention to practice, and did not abandon, suppress, or conceal the invention. In Checkpoint, "respondents at the ITC bore the burden of establishing, by clear and convincing evidence, facts which support . . . invalidity under § 102(g)." Id. 54 F.2d at 765, 35 USPQ2d at 1046. The administrative law judge in this section titled "35 U.S.C. §102(f)", supra, has already found that Silver did not conceive the claimed invention,
Moreover, assuming that Silver conceived the claimed invention, neither Beautone, nor the 3/23/ID has pointed to clear and convincing evidence that this conception was reduced to practice. To establish reduction to practice of a chemical composition, it is necessary to prove that the inventor actually prepared the composition and knew it would work. Hahn v. Wong, 892 F.2d 1028, 1032, 13 USPQ2d 1313, 1317 (Fed. Cir. 1989), quoting Mikus v. Wachtel [II],

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claims 7, 8 and 10 will not be addressed for the reasons given in the PROCEDURAL HISTORY, supra.

542 F.2d 1157, 1159, 191 USPQ 571, 573 (CCPA 1976); UMC Electronics Co. v. United States, 816 F.2d 647, 650, 2 USPQ2d 1465, 1468 (Fed. Cir. 1987), cert. denied, 108 S.Ct. 748 (1988) ("there cannot be a reduction to practice of the invention . . . without a physical embodiment which includes all limitations of the claim"). Proof of actual reduction to practice must be supported by testing that demonstrates that the invention is suitable for its intended purpose. Scott v. Finney, 34 F.3d 1058, 1061 32 USPQ2d 1115 (Fed. Cir. 1993); Newkirk v. Lulejian, 825 F.2d 1581, 1582 3 USPQ2d 1793 (Fed. Cir. 1987); Kimberly-Clark Corp. v. Johnson & Johnson, 745 F.2d 1437, 1445 223 USPQ 603, 609 (Fed. Cir. 1984). In this investigation, there is no evidence that the microspheres were tested, and thereby reduced to practice (FF 73). In fact, Silver testified that this experiment did not work as he intended, and he did not believe it was useful (FF 74, 75).

In determining if an invention has been abandoned, suppressed or concealed, "a period of delay between completion of the invention and subsequent public disclosure may or may not be of legal consequence" Checkpoint, 54 F.2d at 759, 35 USPQ at 1047. The determination of abandonment has "consistently been based on equitable principles and public policy as applied to the facts of each case." Checkpoint 54 F.2d at 760, 35 USPQ at 1047.

The administrative law judge finds the facts and equities in this investigation significantly different than in Checkpoint. In Checkpoint, the first inventor, after completing his invention, disclosed it to his employer, further tested the invention, communicated with vendors, designed further related equipment, and helped develop a process for mass producing the invention. Id. 54 F.2d at 760, 35 USPQ at 1047. The Federal Circuit held that, because the inventor "was diligent in working toward commercializing the [invention] . . . the delay in introducing the product into the marketplace was not unreasonable." Checkpoint 54 F.2d at 760, 35 USPQ2d at 1047. The record in this investigation shows that that Beautone argues anticipated claims 1 and 2 of the '152 patent on June 23, 1969 (FF 71). On August 17, 1977, Baker and Ketola filed an application for the '152 patent, thereby constructively reducing to practice their claimed invention (FF 17). Between June 23, 1969 and August 17, 1977, the administrative law judge finds no evidence that Silver attempted to publicly disclose or commercialize microspheres made without an ionic comonomer. The administrative law judge further finds that, while Silver filed a patent application on March 9 1970 which resulted in the '140 patent which required the use of an ionic comonomer (FF 2), Silver was not diligent in pursuing the (FF 73, 74, 75, 77). There are no facts in this case that illustrate, as was the case in Checkpoint, that complainant intentionally passed over Silver for opportunistic reasons. In contrast to Checkpoint, the administrative law judge finds no evidence that Silver sought patent protection for the subject of the '152 patent and was put off by complainant.[35]

(FF 75, 77, 78, 79). Accordingly, the

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[35] Beautone points to certain of Silver's testimony that he believed his invention was broader than that claimed by the '140 patent. However, Silver testified that the essence of the '152 patent is that the patent does not have an ionic comonomer component (FF 84), an essential component of the microspheres disclosed in the Silver patent (FF 5, 7).

administrative law judge finds that Silver intentionally abandoned his work in that area (FF 73, 74, 75) and that Beautone has not established that claims 1 and 2 are not valid under 35 U.S.C. § 102(g).

Complainant has argued that, even if Silver did first conceive and reduce to practice the invention described in the '152 patent, this would simply make him a co-inventor. Omission of an inventor from a patent can be corrected. See 35 U.S.C. § 256, which provides that where a person is omitted an inventor in error and there is no deceptive intent on the part of any named inventor, the Commissioner of the Patent and Trademark Office may, upon application of all the parties and assignees issue a certificate correcting such error. Section 256 does state that such omission does not invalidate a patent "if it can be corrected as provided in this section" and that a "court" may order correction of the patent upon notice and hearing of all concerned parties, whereupon the Commissioner shall issue a certificate accordingly. 35 U.S.C. §256, ¶ 2. Thus a district court may order such correction upon motion of a party in an infringement action, Iowa State Univ. Research Found. v. Sperry Rand Corp., 444 F.2d 406, 170 USPQ 374 (4th Cir. 1971), or upon filing of a complaint solely to determine inventorship. MCV, Inc. v. King-Seeley Thermos Co., 870 F.2d 1568, 10 USPQ2d 1287 (Fed. Cir. 1989). No party has cited precedent which clearly demonstrates that the Commission has jurisdiction under section 256 or under section 337 of the Tariff Act of 1930, as amended, to make such a correction. See e.g. Tandon Corp. v. USITC 831 F.2d at 1017, 1019, 4 USPQ2d 1283, 1285 (Commission's primary responsibility is to administer the trade laws and not the patent laws). See also Lannom 799 F.2d at 1577, 231 USPQ at 36. In this investigation, because the evidentiary record supports the finding that the issue as to whether the Commission has jurisdiction to determine whether Silver is a co-inventor is considered to be moot.

Regarding claims 4 and 5 Beautone argued that "the Silver <u>patent's</u> disclosure to use the microsphere adhesive as a 'coating' demonstrates the prior constructive reduction to practice for an article having microspheres disposed on at least one side" (Emphasis added) (BIR at 97). However, the microspheres claimed in the '140 patent, made using an ionic comonomer are not the same as the microspheres claimed in the '152 patent (FF 1, 7, 16, 64, 68). The only microspheres that were arguably the same (although Beautone has not proven they are the same) as those claimed in the '152 patent are the microspheres produced . The administrative law judge has found no evidence that these microspheres were ever disposed of on a substrate, as claimed in claims 4 and 5 of the '152 patent. Because Beautone has not pointed to a single prior art reference that anticipates claims 4 and 5, they are not found invalid under § 102(g).

ii. Practice Of Claim 10

Complainant argued that it practices claim 10 of the '152 patent in making the microspheres used in its Easel Pad Product, citing Tr at 812, lines 11-15 and 3M Ex 145; that complainant uses polyammonium acrylate, which is a polymeric ionic stabilizer, citing Tr. at 810, lines 1-9; and that the stabilizer is present at less than ten percent of the monomers, citing 3M Ex 145 wherein fifty-three pounds of the stabilizer (Goodrite K702 neutralized with ammonia) and 2660 pounds of the monomer (IOA) are added, citing 3M Ex 145 (3MIR at 62, 63).

Beautone argued that the 3/23/ID at 130, 131 found that complainant practiced claims seven and eight of the '152 patent; that assuming for the purposes of Beautone's submission in response to Order No. 34 that complainant does, in fact, practice claims seven and eight, then Beautone will concede that complainant practices claim ten; that claim ten requires the stabilizer to be present at up to about ten percent of said monomer; that a review of complainant's manufacturing recipe for the Easel Pad microspheres reveals that the stabilizer concentration does not exceed a concentration of about ten percent of the monomer concentration, citing Resp. Ex. 261 (BIR at 98).

It is the staff's position that complainant, in manufacturing its "Easel Pad" microsphere adhesive product, practices claim 10; that while the 3/23/ID made no findings or conclusions on whether a domestic industry exists that practices claim 10 of the '152 patent, claim 10 depends from claim 7, and adds the limitation that the stabilizer in the process be "present at up to about 10 percent of said monomer," citing 3M Ex 2 ('152 patent, col. 8, lines 15-16); and that Kesti's testimony (Tr. at 812) that the claim 10 limitation is met in connection with the manufacture of complainant's "Easel Pad" was not contradicted by Beautone (SIR at 26).

The administrative law judge finds that the evidence cited by complainant and the staff establishes that complainant has met its burden in showing that a domestic industry exists that practices claim 10 of the '152 patent.

7. Point g of ORDER

Point g states:

> Makes a determination on whether the admissions found to have been made by the Kudos respondents support a finding that independent claim 4 of the '152 patent has been infringed by the Kudos respondents

Complainant argued that the admissions contained in Requests for

Admissions Nos. 1-13, and most notably No. 11, (3M Ex. 215 and 216) support a finding of infringement of claim 4 of the '152 patent by the Kudos respondents (3MIR at 63). The staff argued that Order No. 11 (October 18, 1994) deemed admitted complainant's requests for admissions propounded to the Kudos respondents, and in particular Request No. 11 supports a finding that claim 4 of the '152 patent has been infringed by the Kudos respondents (SIR at 27). Beautone did not take a position (BIR at 98).

The administrative law judge determines that Request No. 11,[36] deemed admitted by Order No. 11, supports a finding that independent claim 4 of the '152 patent has been infringed by the Kudos respondents.

8. Point i of ORDER

Point i states:

> If, prior to issuance of the ID on remand, the Federal Circuit issues it en banc decision in Hilton Davis Chemical Co. v. Warner-Jenkinson Company, Inc., Appeal No. 93-1088, [Hilton Davis] involving application of the doctrine of equivalents, applies the Hilton Davis analysis to this investigation.

---

[36] Request No. 11 (3M Ex 215) reads:

Kudos Finder Tape Industrial Ltd. has exported to the United States repositionable paper products that include a microsphere adhesive that includes infusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres formed from non-ionic monomers and comprising a major portion of at least one oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester, said polymeric microspheres having a glass transition temperature below about -20°C and having been prepared by aqueous suspension polymerization in the presence of at least one anionic emulsifier at a concentration level above said emulsifier's critical micelle concentration and an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter. [Emphasis added]

As of the issuance of this initial determination on August 8, 1995, the Federal Circuit has not issued Hilton Davis.

9. Point j of Order

Point j states:

> "j. Makes any other clarifications or additions to the parts of the ID under review that the administrative law judge deems appropriate."

Complainant argued that the 3/23/ID should be corrected such that it is held that by a preponderance of the evidence that claims 1, 2, 4 and 5 are infringed by Beautone's "Stick On Notes" and any other repositionable paper products made by Beautone's Glue G/G1 process (3MIR at 64). Beautone argued that, using the construction of "solvent-insoluble" asserted by Beautone, the administrative law judge should find that Beautone's adhesive does not meet the limitation of "solvent-insoluble;" that Beautone's adhesive does not meet the limitation of "solvent-dispersible" using the construction Beautone advocated; and that Beautone's analysis regarding the application of 35 U.S.C. §§ 102(f) and 102(g) apply to claim seven, eight and ten (BIR at 102-104). The staff did not believe that any of the other positions the staff has taken are affected by any position the staff has taken with respect to the points of the ORDER.

The 3/23/ID at 138 held that "[c]omplainant has not proved that the respondents who actively participated in this case [Beautone] infringed claims 1, 2, 4, 5, 7, 8 or 10 of the Baker ['152] patent." While complainant has argued that this administrative law judge should hold that claims 1, 2, 4 and 5 are infringed by Beautone, infringement of claims 1, 2, 4 and 5 was not the subject of either point i of the ORDER, because Hilton Davis has not issued, nor of points a through h of the ORDER nor was the ultimate holding of the 3/23/ID of non-infringement by Beautone of claims 1, 2, 4 and 5 affected by this administrative law judge's treatment of points a through h of the ORDER. Hence, he will not correct any alleged error in the finding of the 3/23/ID that Beautone does not infringe claims 1, 2, 4 and 5.

The 3/23/ID at 50, 51 held that claims 1 and 2 of the '152 patent are invalid as anticipated under 35 U.S.C. § 102(f) and § 102(g) while the other '152 claims in issue are not invalid as anticipated by the prior art. This administrative law judge has found that claims 1, 2, 4 and 5 as well as claim 2, and necessarily claim 1 on which claim 2 is dependent, are not anticipated under 35 U.S.C. § 102(f) and § 102(g). This finding does not affect the finding of the 3/23/ID that claims 7, 8 and 10 are not invalid.

The 3/23/ID at 110, 111, on whether the accused product is solvent-insoluble, stated:

> 3M made tests to determine the solvent-insolubility of respondents' Glue G-1 adhesives (that were scraped off the finished product) in the organic solvent heptane. Tr. 739-743, 777-779; 3M Ex 421A... The tests showed that 80 percent of Glue G-1 was insoluble Tr. 743; 3M Ex. 421A ... and this is enough to support a finding that the microspheres made by the Glue G process are solvent-insoluble as that term is defined herein.

Beautone argued that "solvent insoluble" should refer to material that "does not dissolve to any significant extent, i.e. less than one or two precent" (BIR at 29) and hence the administrative law judge should find that Beautone's adhesive does not meet the limitation of "solvent-insoluble." The administrative has construed "solvent-insoluble" as referring to microspheres that are insoluble in organic solvents. He finds that the evidentiary record referred to in the 3/23/ID, <u>supra</u>, supports the finding that Beautone's adhesive does meet the limitation of "solvent insoluble."

The 3/23/ID at 111, on whether the accused product is solvent-dispersible, stated:

> The term 'solvent-dispersible' means that solids disperse when placed in a solvent. To be solvent-dispersible, the particles cannot completely dissolve in the solvent, and the parts that do not dissolve will spread out in the solvent. The Glue G adhesive is solvent-dispersible in this sense.
>
> * * *
>
> The Glue G microparticles are solvent-dispersible as that term is defined herein.

While Beautone argued that its adhesive does not meet the limitation of "solvent-dispersible" using its construction, the administrative finds that the evidence (FF 59) demonstrates the Beautone's adhesive is "solvent-dispersible" as he has construed the term in Section 1(v), <u>supra</u>.

III. FINDINGS OF FACT

1. The '152 Patent

1. The '152 patent, titled "Tacky Polymeric Microspheres," under the heading BACKGROUND OF THE INVENTION" it states at col. 1, lines 5-32:

> This invention relates to inherently tacky, elastomeric, solvent-dispersible, solvent-insoluble, polymeric microspheres and a process for preparing same.
>
> In U.S. Pat. No. 3,691,140 to Silver [the Silver '140 patent], there are disclosed inherently tacky acrylate copolymer microspheres comprising a major portion of at least one alkyl acrylate ester and a minor portion of an ionic monomer.
>
> As discussed in the Silver patent, the microspheres can be unexpectedly prepared by suspension polymerization techniques, which historically have been considered unsuitable for preparation of tacky polymers. In the technique described by Silver, the microspheres are prepared utilizing an emulsifier in an amount greater than the critical micelle concentration in the absence of externally added protective colloids or the like. The Silver microspheres are copolymeric in nature and require an ionic comonomer as an essential component thereof.
>
> It has now been found that inherently tacky microspheres having physical properties similar to those of the Silver patent, i.e., inherent tack, infusibility, solvent dispersibility, and solvent insolubility, can be prepared which are not limited to copolymers, but may also be homopolymers, and do not contain an ionic comonomer. The microspheres are prepared by aqueous suspension polymerization, but have as an essential ingredient in their preparation a hereinafter defined suspension stabilizer. [Emphasis added]

(3M Ex. 2)

2. The Silver '140 patent, which is titled "Acrylate Copolymer Microspheres," issued on September 12, 1972 on an application filed March 9, 1970 to inventor Spencer Fergerson Silver, 3M Center, St. Paul, Minn. Under the heading BACKGROUND OF THE INVENTION it states that this invention relates to "inherently tacky, elastomeric, solvent-dispersible, solvent-insoluble, acrylate copolymer and a process of preparing the copolymer" (col. 1, lines 4-11) (Resp. Ex. 4).

3. The Silver '140 patent under the heading **BACKGROUND OF THE INVENTION** states (Resp. Ex. 4 col. 1, lines 7-30):

> Aerosol spray adhesives have recently found commercial importance in the graphic arts for adhering paper to various substrates, as well as numerous other uses. Such adhesives have many desirable properties. For instance, they permit paper to be removed from a substrate to which it is adhered, without tearing; however, they do not permit rebonding. These adhesives generally comprise solvent dispersions of cross-linked rubbers or acrylates. Such polymers, while commercially utilizable, are not completely satisfactory because the cross-linking reaction is difficult to control and often provides soluble or partially soluble polymers. Soluble polymers are undesirable for spray adhesives having a non-volatile content above 10 percent because they do not atomize well and therefore fail to spray or form a "cobweb" spray pattern. Also, such polymers form agglomerates of random size, the large particles often plugging the spray nozzle orifice. Further, the polymer particles, when dry, agglomerate and are dispersible only with difficulty.
>
> Despite the desirability of inherently tacky, elastomeric polymers which are solvent-dispersible, solvent-insoluble, and of uniformly small size, such a product has never heretofore existed.

4. The first paragraph of the **SUMMARY** of the Silver '140 patent reads (Resp. Ex. 4 col. 1, lines 34 to 44):

> The invention provides inherently tacky, elastomeric, polymers which are uniformly solvent-insoluble, solvent-dispersible, of small size, and ideally suited for use in aerosol spray adhesives. The polymers easily disperse in various solvents to provide non-plugging suspensions which spray without cobwebbing. The polymers permit bonding of paper and other materials to various substrates, permit easy removal of bonded paper from the substrate without tearing, and also permit subsequent rebonding of the paper without application of additional adhesive.

5. The Silver '140 patent (Resp. Ex. 4) at col. 1, lines 45-54 under SUMMARY states:

> The invention comprises infusible solvent-dispersible, solvent-insoluble, inherently tacky, elastomeric, acrylate copolymer microspheres consisting essentially of about 90 to about 99.5 percent by weight of at least one alkyl acrylate ester and about 10 to about 0.5 percent by weight of at least one monomer selected from the group consisting of substantially oil-insoluble water-soluble, -ionic monomers and maleic anhydride.

The Silver '140 patent discloses as an example of a useful ionic monomer trimethylamine methacrylimide (col. 3, line 7).

6. The Silver '140 patent states in part under SUMMARY (Resp. Ex. 4 col. 3 lines 67 to col. 4, lines 36):

> The copolymer microspheres are small in size, having diameters in the range of about 1 to about 250 microns, the diameter of the majority of the spheres falling in the range of about 5 to about 150 microns. The spheres are normally tacky and elastomeric, are insoluble in organic solvents, and form suspensions in all common solvents except highly polar solvents such as water, methanol, and ethanol. Typical useful solvents are ethyl acetate, tetrahydrofuran, heptane, 2-butanones and other ketones, benzene, cyclohexane, esters, isopropanol, and higher alcohols. When dispersed, the microspheres absorb the solvent and swell to about twice their original diameter, or about eight times their original volume. After dispersion, the microspheres, which contain about 80 percent solvent, remain homogeneously dispersed for extended periods of time. When the dispersed microspheres are sprayed or coated on a surface, the solvent quickly evaporates, the microspheres shrinking to approximately their original size. A force applied directly to one of the polymer spheres will deform it; however, the spherical shape is reassumed upon release of the stress. Upon being heated, the spheres do not melt or flow, but retain their integrity until carbonization temperature is reached. Tack properties of the microspheres may be altered by inclusion of various resins in the solvent or aqueous suspensions of microspheres.
>
> The microspheres of the invention are prepared by an aqueous suspension polymerization technique utilizing anionic emulsifiers in an amount greater than the critical micelle concentration in the absence of protective colloids, finely divided inorganic solids, or the like. Heretofore, suspension polymerizations conducted in the absence of such materials and at high emulsifier levels, i.e., above the critical micelle concentration, have yielded latices of extremely small particle size, which are solvent-soluble, fusible particles. The critical micelle concentration is here defined as that minimum concentration of emulsifier necessary for the formation of micelles. Critical micelle concentration is slightly different for each emulsifier, usable concentrations ranging from about 1.0 x 10-4 to about 3.0 moles/liter. Non-ionic emulsifiers may also be included so long as an anionic emulsifier is present and predominates. Catalysts for polymerizing the monomers to provide the spheres of the invention are those which are normally suitable for free-radical polymerization of acrylate monomers and which are oil-soluble and of very low solubility in water such as, for example, benzoyl peroxide. Use of a water-soluble catalyst causes formation of

> substantial amounts of latex, the extremely small particle size and solubility of latex particles being undesirable. Concentration of catalyst will affect sphere quality and, therefore, should be on the order of about 0.15 to about 0.6 percent by weight, of the total suspension, preferably about 0.25 to about 0.45 percent. Catalyst concentrations below about 0.15 percent may cause agglomerations of spheres, whereas a concentration greater than 0.6 percent results in low molecular weight polymer which does not exhibit all of the desired properties. [Emphasis added]

Example 2 of the Silver patent reads:

> A 500 ml indented 3-neck flask fitted with a stirrer was charged with 150 ml of deoxyganated distilled water, 47.5 gms of iso-octyl acrylate, 2.5 gms of trimethylamine methacylimide, 1.0 gms of ammonium lauryl sulfate (commercially available from the Alcolac Chemicals Co. under the trade designation "Sipex A"), and 0.15 g. of benzoyl perioxide. The mixture was heated to 65°C, maintained for 20 hours with rapid stirring (about 550 rpm), cooled to 20°C., and filtered through cheesecloth to provide a suspension of tacky copolymer microspheres on the order of 10 to 180 microns in diameter. After coagulation and washing with methanol, the tacky, elastomeric microspheres were found to be insoluble in, but dispersible in tetrahydrofuran, 2-butanone, and heptain [sic].

(Resp. Ex. 4).

7. Claim 1 of the Silver '140 patent reads (Resp. Ex. 4 col. 7, lines 23-44):

> 1. Infusible, non-polar organic liquid dispersible, non-polar organic liquid insoluble, inherently tacky, elastomeric copolymer microspheres consisting essentially of about 90 to about 99.5 percent by weight of one or more oleophilic, water-emulsifiable alkyl acrylate esters, at least one of said esters being selected from the group consisting of iso-octyl acrylate, 4-methyl-2-pentyl acrylate, 2-methylbutyl acrylate, and sec-butyl acrylate and about 10 to about 0.5 percent by weight of one or more monomers selected from the group consisting of trimethylamine methacrylimide, trimethylamine p-vinyl benzimide, ammonium acrylate, sodium acrylate, N,N-dimethyl-N-(B-methacryloxyethyl) ammonium propionate betaine, 1,1-dimethyl-1-(2-hydroxypropyl) amine methacylimide, 4,4,9-trimethyl-4-azonia-7-oxo-8-oxo-9-decene-1-sulphonate, 1,1-dimethyl-1-(2,3-dihydroxypropyl) amine methacrylimide, and maleic anhydride, said copolymer having been prepared by aqueous suspension polymerization in the presence of an anion emulsifier at a level above said emulsifier's critical micelle concentration.

8. Under the heading SUMMARY OF THE INVENTION the '152 patent states (3M Ex. 2 col. 1, lines 35 to 45):

> In accordance with the invention there are provided inherently tacky, infusible, solvent-insoluble, solvent-dispersible, elastomeric polymeric microspheres which are formed from non-ionic monomers and are comprised of at least one oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester.
>
> The microspheres of the invention are prepared by an aqueous suspension polymerization technique utilizing emulsifiers in an amount greater than the critical micelle concentration, <u>in combination with an ionic suspension stabilizer</u>. [Emphasis added]

(3M Ex. 2).

9. Under the heading DETAILED DESCRIPTION OF THE INVENTION the '152 patent (3M Ex. 2) states in part (3M Ex. 2 col. 1, line 49 to col. 4, line 35):

> Useful alkyl acrylate or methacrylate ester monomers are those which are oleophilic water-emulsifiable, of restricted water-solubility, and which, as homopolymers, generally have glass transition temperatures below about -20° C. Exemplary alkyl acrylate and methacrylate ester monomers which are suitable for preparation of the microspheres of the invention include n-butyl acrylate, secbutyl acrylate, 2 methyl butyl acrylate, 4-methyl-2-pentyl acrylate, 2-ethyl hexyl acrylate, isooctyl acrylate, isodecyl methacrylate, and the like. Alkyl acrylate and methacrylate ester monomers with glass transition temperatures higher than -20° C. (i.e., butylmethacrylate, isobornyl acrylate, or the like) may be utilized in conjunction with one of the above described monomers as long as the glass transition temperature of the resultant polymer is below about -20° C.
>
> Additionally, the tacky nature of the microspheres can be varied by inclusion of a minor portion of a non-acrylate or methacrylate ester comonomer which is non-ionic and water insoluble such as divinyl benzene, N-t-octylacrylamide, etc.
>
> The microspheres of the invention are prepared by an aqueous suspension polymerization technique utilizing at least one emulsifier in a concentration greater than the critical micelle concentration. The critical micelle concentration is that minimum emulsifier concentration necessary for the formation of micelles, and is slightly different for each emulsifier, usable concentrations typically ranging from about 1.0×10^{-4} to about 3.0 moles per liter.

The emulsifiers used for the successful preparation of the inherently tacky microspheres of this invention are preferably anionic in nature, typical examples being sodium dodecylbenzene sulfonate, sodium salts of alkylaryl ether sulfonates, and the like. Non-ionic emulsifiers, e.g., ethoxylate oleyl alcohol, can also be utilized alone or in conjunction with anionic types. In this latter instance it is preferred that the anionic emulsifier predominates.

Catalysts or polymerization initiators for polymerizing the monomers to provide the microspheres of the invention are those which are normally suitable for free-radical polymerization of acrylate monomers, and which are oil-soluble and of very low solubility in water such as, for example, benzoyl peroxide. <u>The use of water-soluble catalyst may cause formation of substantial amounts of latex, the extremely small particle size and solvent solubility of which are undesirable</u>.

Concentration of catalysts may affect sphere quality and therefore, should be on the order of about 0.15 to about 0.66 percent by weight of the total monomers, and more preferable about 0.25 to about 0.45 percent by weight. Catalyst concentrations below about 0.15 percent by weight may tend to cause agglomeration of the microspheres, whereas concentrations greater than about 0.66 percent may result in low molecular weight polymers which do not exhibit all of the desired properties.

<u>Ionic suspension stabilizers that assist in the preparation of the microspheres can be characterized by an interfacial tension of at least about 15.0 dynes per centimeter</u>. Interfacial tension herein means the value determined between the monomer phase and a 1.0 percent by weight aqueous solution of the stabilizer. To determine the interfacial tension, a standard test, ASTM #D-1331-56, entitled "Standard Methods of Tests for Surface and Interfacial Tension of Solutions of Surface Active Agents" can be utilized. <u>If the interfacial tension between the monomer phase and the 1.0 percent by weight aqueous solution of stabilizer falls below about 15.0 dynes per centimeter, there is insufficient stabilization of the final polymerized droplets and agglomeration may occur</u>.

The approximate concentration of any single stabilizer required for successful preparation of the tacky microspheres of this invention can also be determined by the value of the interfacial tension. Typically, increasing interfacial tension values between the monomer phase and the aqueous stabilizer phase corresponds to a reduction in required concentration of the particular stabilizer for the successful preparation of the microspheres. Stabilizer concentrations greater than about 10 percent by weight based on the monomer may tend to provide less than optimum properties to the resultant suspension.

Exemplary stabilizers include salts of polyacrylic acid of greater than about 5000 molecular weight (e.g., the ammonium, sodium, lithium, and potassium salts), carboxyl modified polyacrylamides (e.g., "Cyanamer A-370" from American Cyanamid), copolymers of acrylic acid and dimethylaminoethylmethacrylate and the like, quaternary amines (e.g., General Analine and Film's "Gafquat 755", a quaternized polyvinyl-pyrollidone copolymer, or Union Carbides's "JR-400", a quaternized amine substituted cellulosic), and carboxyl modified cellulosics (e.g., Hercules' "Natrosol CMC Type 7L", sodium carboxyl methylcellulose). The following is a table indicating representative stabilizers, their interfacial tension with the monomer phase, and the concentration level found to be required for successful microsphere preparation.

Table I

Stabilizer Trade Name	Class	Interfacial Tension Between Isooctyl-acrylate and 1.0% Solution of Stabilizer in H_2O dynes per cm.	Approximate Level for Successful Preparation of Isooctyl acrylate Homopolymer (Weight Percent Based on Monomer
None	50/50 copolymer of acrylic acid and dimethylamino ethyl-methacrylate	21.2	1.0%
Good Rite K714	Polyacrylic acid (neutralized with ammonia)	21.0	1.0%
GAF Gafquat 755	Quaternized poly-vinyl pyrollidone copolymer	18.2	1.0%
Union Carbide JR-400	Quaternized cellulosic	18.5	1.0%
Cyanamer A-370	Carboxyl modified polyacrylamide	21.0	3.0%
Natrosol CMC	Sodium carboxyl-methylellulose		

Type 7L		19.8	5.0%
Gantrez HYM	Copolymer of polyvinylmethylether and maleic anhydride (neutralized with ammonia)	15.4	10.0%

Although some stabilizers may function at levels greater than 10 percent based on monomer, the resultant suspensions may become undesirable for several reasons, e.g., they may contain too large an amount of undesirable latex polymer. Furthermore, control of final particle size can become difficult because of the high viscosities involved and excess concentration levels may also lead to detackification of the resultant polymer spheres.

Following polymerization, the aqueous suspension of polymer microspheres is stable to agglomeration or coagulation under room temperature conditions. The polymer suspension may have non-volatile solids contents from about 10 to about 50 percent by weight. Upon prolonged standing, the suspensions may separate into two phases, one phase being aqueous and substantially free of polymer, the other phase being an aqueous suspension of the polymer spheres. The degree and type of separation is dependent on the density of the resultant polymers. Separation of the polymer phase provides a low viscosity aqueous suspension having a non-volatile solids content on the order of about 75 percent which, if shaken with water, will readily redisperse.

If desired, the aqueous suspension of microspheres may be utilized immediately following polymerization to provide inherently tacky coatings or adhesives. The aqueous suspension may also be coagulated with methanol, saturated salt solutions, or the like, followed by washing and drying. These dried polymer spheres, with sufficient agitation, will readily disperse in a wide variety of common organic solvents. Once the polymer is dried, however, it is not redispersible in water.

The polymer microspheres are typically small in size, having diameters in the range of about 1 to about 250 microns, the diameter of the majority of the spheres being in the range of from about 5 to about 150 microns. The spheres are normally tacky and elastomeric, are insoluble in organic solvents and form dispersions in most common solvents except such highly polar solvents as water, methanol, and ethanol. Typical useful solvents are ethyl acetate, tetrahydrofuran, heptane, 2-butanone and other ketones, benzene, cyclohexane, and isopropanol and higher alcohols. When dispersed in such solvents, the microspheres absorb the solvent and swell to about twice their original diameter, or about 8 times their original volume. After dispersion, the microspheres, which contain about 80

> percent solvent, remain homogeneously dispersed for extended periods of time. A force applied directly to one of the polymer spheres will deform it; however, the spherical shape is reassumed upon release of the stress. Upon being heated, the spheres typically do not melt or flow, but retain their integrity until their carbonization temperature is reached. [Emphasis added]

10. The language of the '152 patent at col. 2, lines 51 to 53, *viz*. "[i]f the interfacial tension ... falls below about 15.0 dynes per centimeter" was in the original application as filed (3M Ex. 3).

11. As for use of the claimed microspheres, the '152 patent discloses (3M Ex. 3, col. 4, lines 35 to 45):

> The microspheres can be utilized in aerosol adhesives, they can be applied to substrates as an adhesive, they can be mixed with binder materials, and placed on substrates to provide repeatedly reusable adhesive surfaces, such as disclosed in U.S. Pat. No. 3,857,731, and they can be combined with a hot melt adhesive on a substrate to provide a positionable hot melt adhesive system, as is disclosed in commonly assigned and copending U.S. application Ser. No. 742,743 of Loder et al.

12. Application Ser. No. 742,743 of Loder et al issued as U.S. Pat. No. 4,049,483 on Sept. 20, 1977 (Resp. Ex. 99). It discloses (col. 1, lines 5-10) that the invention relates to a hot melt adhesive system which, while retaining conventional hot melt heat activatable bonding characteristics also displays pressure-sensitive adhesive characteristics at ordinary room temperature.

13. It also discloses at col. 4, lines 20 to 28:

> The discrete microspheres must be evidenced throughout the hot melt matrix, and particularly at the adhesive film surfaces, to provide the positionable tack for the article to be bonded prior to heat activation. Because of this necessity of retention of the integrity of the microspheres, the hot melt adhesive should be substantially incompatible with or inert toward the microspheres, i.e. mechanical interaction therewith or solvation therein should be avoided.

14. The first paragraph of Example 11 of the '152 patent (col. 10, lines

19 to 32) reads:

> A hot melt composition was prepared by adding 200 grams of the segmented polyester described in Example 1 and 90 grams of Foral-85 to a 1200 milliliter stainless steel beaker. The beaker was placed in a peanut oil bath at a temperature of between 180° and 200°C to allow the polymers to melt. After completion of the melting, stirring was initiated with a high speed turbine-type mixer for approximately 5 minutes. While stirring was in progress, 200 grams of a 50 percent by weight solids aqueous microsphere dispersion was slowly added to the hot melt. Stirring was continued for approximately 30 minutes after addition of the microsphere dispersion to insure thorough mixing of the microspheres into the hot melt system.

15. Referring to the '152 patent (3M Ex. 2) in each of its Examples 1 through 10 (all of the examples of the patent) an ionic suspension stabilizer, having an interfacial tension of at least about 15.0 dynes per centimeter is charged to a reaction vessel. Also microspheres of each of the ten specific examples are formed from non-ionic monomers.

16. The claims of the '152 patent (3M Ex.2) in issue in the 3/23/ID read:

> 1. Infusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres formed from non-ionic monomers and comprising a major portion of at least one oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester, said polymeric microspheres having a glass transition temperature below about -20° C., and having been prepared by aqueous suspension polymerization in the presence of at least one anionic emulsifier at a concentration level above said emulsifier's critical micelle concentration and an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter.
>
> 2. The microspheres of claim 1 wherein said ester is selected from the group consisting of n-butyl acrylate, sec-butyl acrylate, 2-methyl butyl acrylate, 4-methyl-2-pentyl acrylate, 2-ethyl hexyl acrylate, isooctyl acrylate, isodecyl methacrylate.
>
> 3. The microspheres of claim 1 wherein said microspheres are homopolymers and said ester in isooctylacrylate.
>
> 4. An article comprising a substrate having disposed on at least one surface thereon infusible, solvent-insoluble, solvent-

dispersible, inherently tacky, elastomeric polymeric microspheres formed from non-ionic monomers and comprising a major portion of at least one oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester, said polymeric microspheres having a glass transition temperature below about-20°C, and having been prepared by aqueous suspension polymerization in the presence of at least one anionic emulsifier at a concentration level above said emulsifier's critical micelle concentration and an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter.

5. The article of claim 4 wherein said ester is selected from the group consisting of n-butyl acrylate, secbutyl acrylate, 2-methyl butyl acrylate, 4-methyl-2-pentylacrylate, 2-ethyl hexyl acrylate, isooctyl acrylate, isodecyl methacrylate.

7. A suspension polymerization process for preparing infusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres comprising the steps of:

(a) charging to a reaction vessel

(i) at least one alkyl acrylate or methacrylate ester monomer; and
(ii) at least one anionic emulsifier at a concentration above its critical micelle concentration; and
(iii) a substantially water-insoluble polymerization initiator; and
(iv) an ionic suspension stabilizer, having an interfacial tension of at least about 15.0 dynes per centimeter;

(b) agitating the reaction vessel charge to create an emulsion;

(c) heating said emulsion while maintaining said agitation;

whereby elastomeric, solvent-dispersible polymeric microspheres are formed from said emulsion.

8. The process of claim 7 wherein said ester monomer is selected from the group consisting of n-butyl acrylate, sec-butyl acrylate, 2-methyl butyl acrylate, 4-methyl-2-pentyl acrylate, 2-ethyl hexyl acrylate, isooctyl acrylate, isodecyl methacrylate.

10. The process of claim 7 wherein said stabilizer is present at up to about 10 percent of said monomer.

2. The '152 File Wrapper

17. The '152 patent which issued on August 28, 1979, is based on Ser. No. 825,259 filed on August 17, 1977 by inventors William A. Baker and Warren D. Ketola and is assigned on its face to 3M. (3M Ex. 2).

18. Serial No. 825,259 as filed contained eleven claims which included independent claims 1, 4, 7 and 11 and dependent claims 2, 3, 5, 6, 8, 9 and 10.

19. Original independent claim 1 of Serial No. 825,259 read:

> Infusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres formed from non-ionic monomers and comprising at least one oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester.

Original independent claims 4 (3M Ex. 3) read:

> 4. An article comprising a substrate having disposed on at least one surface thereof infusible, solvent-insoluble, solvent-dispersible; inherently tacky, elastomeric polymeric microspheres formed from non-ionic monomers and comprising at least one oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester.

20. Original independent claim 7 read:

> 7. A suspension polymerization process for preparing the microspheres of claim 1 comprising the steps of:
>
> a) charging to a reaction vessel
>
> i) at least one alkyl acrylate or methacrylate ester monomer; and
>
> ii) at least one emulsifier at a concentration above its critical micelle concentration; and
>
> iii) a substantially water-insoluble polymerization initiator; and
>
> iv) an ionic suspension stabilizer, having an interfacial tension of at least about 15.0 dynes per centimeter;
>
> b) agitating the reaction vessel charge to create an emulsion;

> c) heating said emulsion while maintaining said agitation;
>
> whereby elastomeric, solvent-dispersible polymeric microspheres are formed from said emulsion.

(3M Ex. 3).

21. Original independent claim 11 read:

> 11. An aqueous suspension of inherently tacky microspheres prepared in accordance with the process of claim 7.

22. The abstract of the original application as filed read:

> Infusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres which are formed from non-ionic monomers and comprise at least one oleophilic water-emulsifiable alkyl acrylate or methacrylate ester, and a suspension polymerization technique for producing the microspheres.

23. The Examiner in an office action mailed on January 9, 1978 (3M Ex. 3) stated the following:

> 12. Restriction to one of the following inventions is required, under 37 CFR 1.142 (35 U.S.C. 121):
>
> I. Claims 1-10 are drawn to polymeric materials and methods for their preparation, classified in Class 526, subclass 328.
>
> II. Claim 11 is drawn to an aqueous suspension, classified in Class 260, subclass 29.6.
>
> 13. The two inventions as grouped above are distinct each from the other; distinctiveness being shown by the different classifications. See MPEP 808.02.
>
> 14. These distinct inventions have acquired a separate status in the art and have different fields of search.
>
> 15. Restriction for examination purposes as indicated is proper since the inventions as grouped are distinct and have both separate status in the art and divergent fields of search.
>
> 16. Applicants are advised that their response to be complete must include a provisional election of one of the above inventions identified as I and II (see 37 CFR 1.143), even though they traverse the requirement.

24. In a response, received on February 15, 1978, the applicants provisionally elected with traverse, the invention claimed in claims 1-10, (3M

Ex. 3).

25. The Examiner in an office action mailed on March 16, 1978, stated that upon reconsideration, the restriction requirement made in the office action mailed on January 9, 1978 was withdrawn. (3m Ex. 3).

26. In a paragraph 13 of the office action mailed on March 16, 1978 (Paper No. 4), original claim 1-11 were rejected over either one of Pohlemann et. al. U.S. Pat. No. 3,513,120 (Pohlemann) or Morehouse et. al. U.S. Pat. No. 4,049,604 (Morehouse) under 35 U.S.C. 102 and 35 U.S.C. 103 on the ground that "[e]ach teaches aqueous polymerization of acrylic esters in the presence of an emulsifier and an ionic suspension stabilizer). (3M Ex. 3).

27. Pohlemann Example 1 states that the obtained dispersion "consists of primary particles having a size of 0.1 to 0.3 micron, substantially agglomerated to particles a few microns in size." It also states that the obtained dispersion is free from coagulate and stable to stirring, which flows well and dries to a "clear, glossy non-tacky film". (3M Ex. 4, col. 4, lines 68-73).

28. Morehouse has microspheres having liquid centers and seamless rigid, walls of an organic polymer "rigid walls of an organic polymer." (3M Ex. 5, col. 1, lines 18-20).

29. In the Office action mailed on March 16, 1978 in Ser. No. 825,259 (3M Ex. 3) it was stated, in paragraph 14:

> 14. Claims 1-11 are rejected as failing to comply with the requirements of 35 U.S.C. 112.
>
> (a) The claims are indefinite in that they recite the process of claim 7 being capable of producing both a polymer product per se (claim 1) and an aqueous suspension (claim 11) (35 U.S.C. 112, paragraph 2).
>
> (b) In claim 1, for example, "...alkyl acrylate or methacrylate ester" is broader than their support found at page 2 of

the specification (35 U.S.C. 112, paragraph 1).

(c) The claims (except for claims 3 and 6) are broader than the disclosed invention since the (meth)acrylate contents are not recited; see page 2, line 30 of the specification (35 U.S.C. 112, paragraph 1).

(d) In claim 7, the emulsifier and stabilizer, as defined, are broader than their supported description in the specification at pages 3 and 5, respectively (35 U.S.C. 112, paragraph 1).

30. In an amendment received by the Patent Office on June 19, 1978 (3M Ex. 3) original claim 1 was amended as follows:

1. (Amended) Infusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres formed from non-ionic monomers and comprising at least one oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester, said polymeric microspheres having a glass transition temperature below about -20°C, and having been prepared by aqueous suspension polymerization in the presence of at least one anionic emulsifier at a concentration level above said emulsifier's critical micelle concentration.

31. Original claim 7 was amended on June 19, 1978 as follows:

7. (Amended) A suspension polymerization process for preparing infusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres [the microspheres of claim 1] comprising the steps of:

a) charging to a reaction vessel

i) at least one alkyl acrylate or methacrylate ester monomer; and

ii) at least one anionic [ionic] emulsifier at a concentration above its critical micelle concentration; and

iii) a substantially water-insoluble polymerization initiator; and

iv) an ionic suspension stabilizer, having an interfacial tension of at least about 15.0 dyness per centimeter;

b) agitating the reaction vessel charge to create an emulsion;

> c) heating said emulsion while maintaining said agitation;
>
> whereby elastomeric, solvent-dispersible polymeric microspheres are formed from said emulsion.

32. Original claim 11 was cancelled in the amendment received on June 19, 1978 (3M Ex. 3).

33. In the REMARKS section of the amendment received on June 19, 1978 it was argued at 3:

> The Examiner has rejected claims 1 through 11 as failing to comply with the requirements of 35 U.S.C. 112. More particularly, the Examiner asserts: (a) the claims are indefinite because they recite the process of claim 7 as being capable of producing both the polymer product per se, as is defined in claim 1, and an aqueous suspension thereof, as is defined in claim 11. In essence, the suspension polymerization process produces an aqueous suspension of the polymeric microspheres as are defined in claim 1. In other words, the process produces an aqueous suspension, as in former claim 11, of polymeric microspheres which have the definition of claim 1. In order to further prosecution, Applicants have amended claim 7 to contain the definition of the polymeric microspheres of claim 1 as opposed to simply indicating that same is directed to a process for "preparing the microspheres of claim 1", and cancelled claim 11. It is deemed that such amendments overcome the Examiner's rejection.

It was further argued at 5, 6, 7:

> Pohlemann et al discloses a process for copolymerizing styrene and acrylic esters in aqueous emulsion polymerization. A protective colloid material is added during the polymerization process so as to obtain highly viscous dispersions of these copolymers which are designed to be used primarily in paints. It is indicated that the products resulting therefrom are useful in films, coatings and adhesives.
>
> One critical major distinction between the disclosure of Pohlemann et al and Applicants' invention is the use of emulsion polymerization techniques as opposed to Applicants' suspension polymerization techniques. <u>Since the present claims are limited to formation of the polymeric microspheres by suspension polymerization, it is deemed that the Section 102 rejection has been overcome</u>.
>
> Pohlemann et al nowhere disclose a resultant polymeric microsphere having characteristics as contained in Applicants' claims. The particle size of the materials resulting from the Pohlemann et al

> emulsion polymerization is indicated to be from about 0.1 to about 0.5 microns, in contrast with Applicants' 1 to 250 microns as disclosed at line 23 on page 7 of the application. Furthermore, comparative example C indicates that when styrene is omitted from the Pohlemann et al reaction mixture, a fine-particle dispersion is obtained which contains fine coagulate and is 'mechanically unstable'. Yet, as is disclosed and claimed in Applicants' specification, all that is necessary to effectively produce the polymeric microspheres is a single acrylate monomer, which will, of course, result in a homopolymer microsphere.
>
> For the foregoing reasons, Pohlemann et al nowhere discloses polymeric microspheres having the claim limitations of Applicants, and therefore the rejection based on Section 103 is deemed overcome.
>
> As to Morehouse et al, same is directed to emulsion polymerization, which is indicated to form microspheres having liquid centers and seamless rigid walls of a normally solid, organic polymer. Applicants present claims are limited to suspension polymerization - produced microspheres, as opposed to the explicitly defined emulsion polymerization - produced microspheres of Morehouse et al, and therefore the rejection based on Section 102 is deemed overcome.
>
> Morehouse et al deals with preparation of microspheres having rigid walls and liquid centers. Therefore, it is not seen how the microspheres produced by Morehouse et al, by a process totally inopposite to that Applicants, can be deemed to provide 'infusible, solvent-insoluble, solvent-dispersible, inherently tacky elastomeric polymeric microspheres'. The microspheres of Morehouse et al contain liquid centers and seamless rigid walls, clearly not 'elastomeric'. Furthermore, the microspheres of Applicants' invention are composed of the polymeric material itself, as opposed to a hard rigid wall containing a separate liquid component therein. Morehouse et al, in column 4, lines 18 through 26 indicate that the liquid which is encapsulated by the process of their invention is non-reactive with the monomer charge, therefore their microsphere could never comprise, in totality, the polymer itself. This is clearly in contradistinction to Applicants' microspheres as presently claimed.
>
> Since the Morehouse et al disclosure is clearly based on a process different from that of Applicants, and the resultant product thereof has characteristics which are outside the scope of Applicants' microspheres, as presently claimed, and similarly since Applicants' microspheres have characteristics, presently contained in the claims, which cannot be met by Morehouse et al, it is deemed that the rejection thereon is overcome. [Emphasis added] [double Emphasis in original]

(3M Ex. 3).

34. In a final office action mailed on July 20, 1978 (3M Ex. 3) claims

1-6 were rejected as being broader than the disclosed invention, under 35 U.S.C. 112, para. 1, in that the process conditions of the claimed product-by-process are not adequately recited.

35. In the final office action mailed July 20, 1978 in Ser. No. 825,259 (3M Ex. 3) amended claim 1-10, were rejected for the reasons set forth at para. 13 of the Office action mailed on March 16, 1978, which had rejected claims 1 and 7 over either of Pohlemann et al. or Morehouse, because "[a]pplicants' arguments ... pertain to products and processes which are narrower in scope than those set forth in the claims." It was also stated, in paragraph 12 that:

> 12. Para. 14(c) of Paper No. 4 is herein repeated. Applicants' arguments have been considered but are not convincing. Page 2 of the specification do not suggest polymers which contain mere trace amounts of polymerized units of acrylics contained therein.

36. In an amendment received by the U.S. Patent Office on November 24, 1978, in Ser. No. 825,259 (3M EX. 3) amended claim 1, inter alia, was further amended to conform to claim 1 in issue, i.e. the amended claim 1 was amended to recite "a major portion of" the alkyl acrylate or methacrylate and to include the language "and an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dyness per centimeter." It was also argued at 3:

> Relative to the Examiner's position, the claims have now been amended to indicate that a major portion of the polymeric microspheres must be based on the acrylate or methacrylate ester. It is deemed that such amendatory language precludes the Examiner's rejection.
>
> Furthermore, the claims have been amended to indicate that the microspheres are prepared by the aqueous suspension polymerization wherein an ionic suspension stabilizer having a defined interfacial tension is contained. The Examiner has also indicated that the emulsifier should be limited to concentration values illustrated in the specification. However, in this regard, it is to be noted that the claims as presently drafted indicate that the emulsifier must be

> present at a concentration level above its critical micelle concentration. Such is deemed to be a proper limitation relative to the emulsifier concentration, since this terminology is known to one skilled in the art and since different emulsifiers have differing critical micelle concentrations.
>
> Since the Examiner based his continued rejection of the claims on the prior art because they did not contain the requisite limitations, which the Examiner suggested be contained, it is deemed that the present amendatory language precludes the prior art rejections. [Emphasis added]

37. In a communication mailed December 15, 1979, in Ser. No. 825,259 (3M Ex. 3) the Examiner indicated that all the claims were allowed. He also stated:

> In the abstract before the ".",----, which includes the use of an ionic suspension stabilizer - - - has been inserted.

3. Terminology

38. Warren D. Ketola, a named inventor on the '152 patent and a fact witness for complainant, has a B.S, in chemistry from Michigan Technological University. He began work at complainant in 1970 and is now a senior research specialist (Ketola Tr. at 397, 400).

39. Ketola testified regarding the claimed subject matter in issue (Tr. at 498-500):

> Q. Would you now describe your process, the Baker/Ketola suspension process, Mr. Ketola?
>
> A. (Witness preparing document).
>
> I'll again draw the monomer droplet and polymer particle and I'll label this the Baker/Ketola suspension. I'll put in a micelle. I'll label the diameters, as I did before. It will be --
>
> Q. Maybe you could use a different color.
>
> A. (Witness complies.)
>
> Drawing the -- I'll draw in the surfactant molecules in blue, again with the water-hating ends at the droplet, and the particle surface, the water-loving ends, going into the water.

I'll put the polymer stabilizer as a squiggly red line on the surfaces of the droplet and also a squiggly red line on the surface of the polymer particle. I'll label that polymer stabilizer.

I'll also draw the latex polymer particle, which is also formed in the Baker/Ketola suspension.

Q. What is the comparison of the droplet-to-particle size in this process?

A. The droplet size equals the polymer particle size.

Q. Is that true in the emulsion polymerizations that you've done?

A. No.

Q. Why not?

A. As I explained before, the emulsion polymerization occurs -- begins in the micelle and goes to a growing polymer particle, and the ultimate particle size is substantially less than a micron.

Q. All right. Now, how about initiation? Where does that have to occur in this process?

A. That also occurs as in the Silver process in the monomer droplet.

Q. And where does the actual initiator have to be?

A. Typically, or it's usually in the monomers droplet, but whatever initiator you use, if you get the polymerization to occur within the droplet, you will get a suspension polymer, the key being if the droplet size equals the finished polymer particle size.

Q. Can the initiator be outside the droplet?

A. It can, but -- but if you get the initiation to begin in the droplet -- what we call the locus or location of the polymerization to be in the monomer droplet, then it's a suspension polymer.

Q. Okay. And you say you do get latex in making your process?

A. Yes, we do.

Q. How much latex do you get?

A. I think I testified in my deposition, and our data shows that some of the materials that we've run, we got as high as about 30 percent of the total polymer in the latex.

Q. What's doing the job? What's giving the repositionable function? What in the product is giving that function?

A. The large polymer particles is giving the functional properties. The formation of latex is not really something to worry about. In some cases it -- you may want to minimize it, in some cases you can tolerate quite a high level, depending on a particular application.

40. Ketola testified further as to the claimed subject matter in issue (Tr. at 524-526):

Q. In Claim 7 there are similar terms -- by the way, the reference to an emulsifier, you said that Silver has an emulsifier above the critical micelle concentration. Do you have that same requirement in your process?

A. Yes.

Q. Is that requirement typical for all suspension polymerizations?

A. Yes, all the suspension polymerizations that I know of.

* * *

A. I'm sorry. Let me start from the beginning.

Emulsion polymerization uses an emulsifier in a concentration greater that the critical micelle concentration.

In suspension polymerization, especially classic suspension polymerization, you don't use emulsifiers at all. The reason is that they're considered contaminant because they promote the formation of very small particles and they contaminate the surface of the polymer and detract from the properties that are desired in the ultimate product.

Q. But did Silver follow the classic teaching in his suspension?

A. No.

Q. Why?

A. Because he used an emulsifier in quite a high concentration in his suspension polymerization.

Q. And did -- what did you do in your process with respect to this classical teaching of suspension polymerization?

A. We also used a very high concentration of emulsifier.

Q. And what is the critical micelle concentration?

A. That's the concentration of the surfactant or emulsifier or soap, or whatever term you prefer to use.

Above that concentration you will get the surfactant and emulsifier molecules aggregating into these micelles as I've illustrated. Below that concentration they tend to remain as just discrete molecules dissolved in the water.

Q. So it's enough emulsifier to create micelles?

A. That's what's termed critical micelle concentration.

Q. Okay. Now, does the emulsifier in your process help to stabilize the monomer droplets?

A. I believe -- I don't know to what extent it stabilizes the monomer droplets. I believe it does. It also assists in stabilizing the polymer particles as well.

Q. And in the vast majority of your patent examples, what kind of emulsifier do you use?

A. An anionic emulsifier.

Q. Explain what anionic means.

A. Anionic emulsifiers have a water-hating end that is very nonpolar, very inorganic like, and it has a water-loving end that is actually a salt. And the anionic emulsifiers, the emulsifier, the water-loving end is an anion or negatively charged species.

41. Francis Schork was qualified generally as an expert for complainant (Tr. at 971). He is an associate professor and associate director of the school of chemical engineering, Georgia Institute of Technology. He has a BS, MS and Ph.D in chemical engineering. He did emulsion polymerization in graduate school and has some twenty articles on emulsion polymerization (Tr. at 875-876).

42. Complainant's Schork testified as to ionic emulsifiers (Tr. at 978):

Judge Saxon: On the record.

I have -- I would like to get your definition -- as I understand it, you said anionic has a negative charge on one side.

The Witness: Yes, Your Honor.

> Judge Saxon: Non-ionic has no charge?
>
> The Witness: Yes, Your Honor.
>
> Judge Saxon: Ionic is separated into two charges -- what's the difference between that an anionic?
>
> The Witness: There are two kinds of ionic emulsifiers. There are cationic, which have a positive charge on the end, and anionic, which have a negative charge on the end. Those are two subcategories of ionic.

43. Complainant's Schork also testified (Tr. at 924).

> Q. How else can one tell the difference between a suspension mechanism and an emulsion mechanism?
>
> A. Well, you can look at the final particle size. An emulsion mechanism will normally give you submicronic particles. A suspension polymerization will give you particles between 10 microns and a thousand microns. They could even be big enough to see.

44. Gary Poehlein was qualified as an expert witness for complainant (Tr. at 1087). He is a professor of chemical engineering and vice-president for interdisciplinary programs, Georgia Institute of Technology. He has twenty five years experience in the field of polymerization (Tr. at 1087).

45. Complainant's Poehlein testified as to the word "ionic" (Tr. 1179-1180):

> Q. Okay. Well, I think that response is good for now. I guess what I'm trying to ask you is now my understanding of the word ionic is that something that's ionic has a charge, be it positive or negative. I think that's what you said earlier; isn't that right?
>
> A. Yes.

46. Robert Seiple was qualified was qualified as an expert witness for Beautone in the field of analytical polymer chemistry (Tr. at 1452). Seiple is an analytical chemist, manager of the Epic Applied Research Polymer Laboratory Institute of Polymer Science, University of Akron. The laboratory is responsible for doing contract work. He received a BS in chemistry and an

MS in polymer science. His specialty is in analytical testing, physical testing

47. Beautone's Seiple testified,

stipulation in the Baker patent.

Q. And the results you obtained
is that correct?

48. Beautone's Seiple also testified

49.

50.

51. Inventor Ketola on November 8, 1984 on the word "infusible" testified at the hearing (Tr. at 507, 508):

> Q. Okay. Could you explain what the meaning of each of these terms is? And start with infusible.
>
> A. Infusible means that, as I think I just described, if I take these polymer particles and I coat them or put them in a formulation, coat them, dry that vehicle off from the formulation, the polymer particles remain discrete, they don't flow together.
>
> They also don't flow together after the coating is made and dried in conditions of use or when the product is stored under normal conditions.
>
> Q. Could you explain what kind of heat is applied in each of those stages, the coating, the storage, and the use that the microspheres would have to undergo?
>
> A. The coating sometimes depends on the type of vehicle you use, but typically the temperatures would be somewhere between 150 and 200 degrees Fahrenheit for a relatively short period of time. During use, the conditions may be as high as that. And certainly during storage, if you have an unair-conditioned warehouse, that could get to 150 degrees, 120 degrees Fahrenheit.
>
> If you would permit me a personal story of how these things are used, in my current work in evaluating durability of materials, I send up many specimens to outdoor exposure tests.
>
> When I send a stack of specimens, I will often put a Post-It Note on the top specimen to indicate how long and what other indications the materials are going to be exposed.

52. Inventor Ketola on November 9, 1994 at the hearing on the word "infusible" testified (Tr. at 686, 687):

> Q. Mr. Ketola, do your microspheres have to withstand temperatures up to carbonization to be infusible within the meaning of your claims?
>
> A. No.
>
> Q. Does the patent say they do?
>
> A. No.
>
> Q. Well, let me refer you to what Mr. Turner referred you to yesterday in Column 4. Upon being heated -- that's Column 4, line 33. Upon being heated, spheres typically do not melt or flow, but retain their integrity until their carbonization temperature is reached. Does that conflict with what you just said?
>
> A. No, it does not. The term typically indicates that's not a requirement and it's indicative that the polymers that we make are going to be quite resistant to -- or very resistant to being fused together, even at conditions where aggressive use, as I described my personal example of the little pad that was on my specimen that was exposed in Florida for at least a year.

53. With respect to the term "carbonization" inventor Ketola testified (Tr. at 690-691):

> Q. Mr. Ketola, how would you characterize a microsphere infusibility test that requires infusibility up to the point of carbonization?
>
> A. Well, that's an unrealistic test. At the point of, quote-unquote, carbonization, the product that the microsphere adhesive would be used on is also going to be carbonized or destroyed.
>
> Q. Are there any applications that you know of that require that temperature?
>
> A. I don't know of any application that require that temperature.
>
> Q. What is the approximate temperature of carbonization of your microspheres?
>
> A. I don't know. It depends on how you define the term carbonization. I think we discussed that in my deposition

as well. If you define the term carbonization as turning to charcoal, as I said, the microspheres would turn to charcoal and everything else would turn to charcoal as well.

If you define carbonization as a temperature where you get substantial degradation of the polymer when the polymer degrades, you don't have the same polymer that you had initially that was infusible, and I don't think that degraded polymer is a fair characterization of the properties of the undegraded polymer.

Q. Well, in all you years of working with your invention, have you ever tested for infusibility by determining carbonization temperature?

A. No.

54. Michael R. Kesti was a fact witness for complainant. He is a senior research chemist in complainant's Post-It laboratory and has a Ph.D. in chemistry (Tr. at 803 et. seq.).

55. Complainant's Kesti on November 9, 1994, at the hearing as to the word "infusible," testified (Tr. at 826, 828, 829):

Q. What is your understanding of the definition of infusible?

A. My understanding of infusible is that the microspheres does not melt or flow at normal manufacturing and use temperatures.

Q. Dr. Kesti, is there a definition in the Baker/Ketola patent for infusible?

A. There's a description which describes the typical behavior of a microsphere with regard to infusibility.

* * *

Q. Dr. Kesti, do you now state that [at col. 4. lines 32-35] is not a definition in the Baker/Ketola patent?

A. I state it's a general definition. It's a typical property of Baker microspheres.

Q. But it is a definition, is it not?

A. It is a general definition.

A more practical definition is they do not melt or flow at normal manufacturing and use temperatures over the life of the microspheres product.

Q. Just a yes or no answer to my question, sir. Is it a definition?

A. I have stated in my deposition that --

Q. Yes or no.

A. -- it's a general definition.

* * *

THE WITNESS: The answers are consistent.

BY MR. REITER:

Q. So, you're saying it is a general definition?

A. I'm saying the answers are consistent with my deposition.

* * *

BY MR. REITER:

Q. Is the other definition you gave earlier concerning normal use and manufacturing conditions, is that in the patent as well?

A. No.

56. Michael Govek was a fact witness for complainant. He is a research specialist in its Post-It Products Business Unit of the Commercial Office Supply Division and

He started working with Post-It Adhesive in about 1984. He has a Ph.D. in organic chemistry and has experience in testing both conventional and microsphere adhesives (Tr. at 704, 705).

57. Complainant's Govek at the hearing on November 9, 1994, on the word "infusible," testified (Tr. at 728, 730 to 739):

Q. Dr. Govek, could you describe Exhibit 403.

A. Exhibit 403 are SEM micrographs of three Beautone products.

Q. Which products were those?

A. Those products were the green sheet, which is the same as the Gaoshung sample taken from the Gaoshung plant in Taiwan; the 294 J sample and the 294 E sample.

Q. Were there also run by Jeff Payne under your direction and control?

A. Yes, they were.

* * *

Q. Dr. Govek, what does infusible mean in Claim 1 of the Baker patent?

A. Infusible means not melting or flowing.

Q. Under what conditions do these not melt or flow?

A. We test the microspheres at 150 degrees C for 5 minutes.

Q. Why do you test at 150 degrees C?

A. Because we're testing for melting or flowing at manufacturing and use conditions.

Q. What is the Fahrenheit calculation of 150 degrees C?

A. It's approximately 300 degrees Fahrenheit.

Q. Have you tested microspheres for infusibility?

A. Yes, I have.

Q. What specific tests do you use to test infusibility?

A. I use an oven test where we place the sample in an oven at an elevated temperature.

Q. Is the oven calibrated?

A. Yes, it is.

Q. Do you test a single microsphere to see if it melts and flows?

A. No, I do not.

Q. Why don't you?

A. A single microsphere before and after melting will appear to be the same. So it is not a good indication on whether the material actually melted or flowed.

Q. What type of test do you do for infusibility?

A. The test that I do, we take a clump of adhesive and look at that in the oven condition.

Q. Did you develop this test?

A. No, I did not.

Q. Who developed this test at 3M?

A. Mr. Ray Farm developed this test.

Q. Do you believe this is an accurate test for determining whether the microspheres in that clump melt or flow?

A. Yes, I do.

Q. And can you explain why you believe it's an accurate test?

A. Yes. If you take a clump of adhesive and look at the clump, you will find that there is a topography to the clump. In other words, there is surface structure. There are hills and valleys in the clump of adhesive.

If before and after heating, we still have the hills and the valleys, the topography of the clump of adhesive, we have to determine or we have to conclude that the internal structure has held up and the microspheres inside the clump making the structure have not melted or flowed.

Q. I would like to show you what has been marked as 3M Trial Exhibits 387, 388, 389 and 390. Can you tell me what these four exhibits show.

A. These exhibits show the infusibility testing for four different products.

Q. Which four products was that?

A. The four products were the 3M Easel Pad adhesive, the Beautone product 294 E, the Beautone product 294 J. And the B autone product which is the green sheet, which is also the same as the Gaoshung plant sample.

Q. Can you tell me what the top and bottom picture on each of these four exhibits, 387 through 293, represent.

A. The top picture is a micrograph of the adhesive clump which has been heated in the oven for 5 minutes at 150 degrees Centigrade.

Q. So these are before and after pictures of the infusibility tests?

A. Yes, they are.

Q. Where were samples 294 E and 294 J obtained from?

A. They were obtained by a 3M sales rep and transmitted to 3M in St. Paul in January of '94, and we logged them into our system in February of '94.

Q. I'm showing you what has been marked as Exhibit 401. Could you identify this document.

* * *

THE WITNESS: Exhibit 401 is the copy of the log-in sheet that we used for the Beautone products coming from Patty Maxwell.

BY MR. TELLEKSON:

Q. 294 J and 294 E were two of the pads of paper that were logged in in February of '94, is that where that notation 294 comes from?

A. Yes, it is.

Q. Dr. Govek, were the infusibility tests shown in 3M Trial Exhibits 387, 388, 389 and 390, are the microspheres that make up the clumps on the end of the needle melting and flowing after being exposed to 150 degrees C for 5 minutes?

A. No, they are not.

Q. How can you tell this?

A. I can tell this, as I have said, because the topography of the clump of adhesive has remained before and after heating. Therefore, we conclude that the microspheres that make up the clump have not melted or flowed.

Q. Would you illustrate on the easel what you mean by surface topography.

A. Yes. When we take the clump of adhesive, we'll put in on the end of a syringe needle, this being the syringe needle. This clump of adhesive will have a topography. In other words, it will have a surface characteristic, a structure. It will have hills and valleys that can be readily seen on the photographs.

These clumps of adhesives in these cases are made up of microspheres. These microspheres -- I will draw in just a couple in about the size range that you will see in the photograph.

These, of course, are all the way through and make a completely, except for it there is any binder material, the mass of adhesive that we have.

Q. Have you -- so the surface topography is the roughness of the outer surface of the clump; is that what you're referring to?

A. Yes. The roughness and the hills and the valleys that you see.

Q. If that topography remains after heating, you would consider these to be infusible?

A. Yes.

Q. Do you believe that the microspheres in Exhibits 387, 388, 389 and 390 are infusible?

A. Yes, I do.

Q. Have you ever observed a clump of adhesive that has melted and flowed?

A. Yes, I have.

Q. Could you illustrate what it would look like if that same clump of adhesive had melted and flowed.

A. When the adhesive clump actually melts and flows, you will lose all the surface topography. You will actually form a droplet on the end of the syringe needle. In many cases, this droplet will actually move down the syringe needle.

* * *

BY MR. TELLEKSON:

Q. Dr. Govek, are you familiar with the assertions that have been made that infusibility should be tested at 210 degrees centigrade?

A. Yes, I have.

Q. Would you give me a reference point to indicate how hot 210 degrees centigrade is?

A. 210 degrees centigrade is a very extreme temperature. Just to give you an idea, only about 20 degrees more than 210 degrees and paper will spontaneously combust.

Q. You also run tests where you exposed microspheres to 210 degrees centigrade for 5 minutes?

A. Yes, I have.

Q. I would like to show you Exhibits 391, 392, 393 and 394, all three of them 3M trial exhibits. Would you identity them, please.

A. These exhibits show micrographs of an oven tests of various products at 210 degrees centigrade for 5 minutes.

Q. Were these tests taken in the same fashion as the previous exhibits, 387 through 390, except for the fact that the temperature is 210 degrees centigrade?

A. Yes.

Q. Were these tests also taken under your direction and control?

A. Yes, they were.

Q. Is the top picture of each exhibit the before-heating picture and the bottom the after-heating picture?

A. Yes.

Q. In 3M Trial Exhibits 391 through 394, do the clusters or clumps of microspheres melt and float at 210 degrees C for 5 minutes?

A. No, they did not.

Q. Did the clusters of microspheres show evidence of softening?

A. Yes, they did.

* * *

BY MR. TELLEKSON:

Q. Dr. Govek, could you describe for me the clumps of adhesives after heating it to 210 degrees C for 5 minutes?

A. In each case that you see from the before and the after oven heating at 210 degrees, you will be able to see that the hills and the valleys, that is, the surface topography, still remains in each case.

From this we conclude that the internal microspheres that make up these clumps have not melted or flowed.

Q. Do you believe that the Beautone samples 294 E, 294 J and the Gaoshung green sheet and the Easel Pad sample shown in Exhibits 387 through 390 are infusible?

A. Yes, I do.

58. Govek later testified on "infusible" (Tr. at 771 to 775):

Q. In the pictures that show your tests relating to the 210 degree C testing, did you see the microspheres before the heating in those pictures?

A. Yes, I can see microspheres before the test.

Q. And can you see the microspheres after the heating at 210 degrees C?

A. No. Not usually.

Q. Why can you not see the microspheres after the heating?

A. Well, there are a couple of reasons why you can't see the microspheres. They may have softened and smoothed the surface. While we try to take out extractable materials that may mask the test, there may still be some extractable material that will mask the test.

The adhesive at those extreme temperatures will start to degrade, so there may be some decomposition. That will change the test.

Q. Isn't it true, Dr. Govek, at your deposition you also stated that it is a possibility maybe that the microspheres actually did fuse together?

A. I stated in may deposition that they may have melted or flowed.

Q. That may be one reason why you could not see the microspheres any longer?

A. The microspheres on the surface, yes.

Q. Isn't it also true, Dr. Govek, at 210 degrees C, these pictures show that the surface of the clump of adhesive become very glassy?

A. The surface smoothed and became glassy, yes.

Q. It lost the characteristic bumps of the clump of adhesive before the heating?

A. It smoothed but you can still see the major topology of the adhesive before the heating?

Q. But that heating only occurred for 5 minutes; is that correct?

A. That is true.

* * *

Q. Dr. Govek, is there anything within the Baker patent that tells you should only do the test at 150 degrees C, the fusibility test?

A. No, there is not.

* * *

BY MR. REITER:

Q. Is there anything in the Baker patent that tells one they shouldn't do a fusibility test at a higher temperature than 150 degrees C?

A. There is a reference to fusibility in the Baker patent.

Q. That reference refers to temperature of carbonization, does it not?

A. There is that phrase in the statement, yes.

Q. There is no other statement in the patent relating to fusibility other than that one sentence relating to melting and flowing up to the temperature of up to carbonization, is that true?

A. That's true.

* * *

Q. At 210 degrees in the adhesive sample you tested after the heating, could you see microspheres any longer?

A. For these samples, no.

Q. If the microspheres disappeared because they melted and flowed, would that flow under the Baker/Ketola patent?

* * *

Q. Would that fall within the definition of infusibility of the Baker/Ketola patent?

A. There is no definition of infusibility in the Baker/Ketola patent.

Q. So there is nothing in the Baker/Ketola patent that would teach one how to determine whether or not their adhesive was fusible or infusible?

A. Yes, that's true.

59. Govek testified as to solvent solubility, solvent disperisbility and the infusibility testing (Tr. at 741).

Q. What test is reflected in Exhibit 404?

A. In Exhibit 404 there are three tests that are shown. The tests are solvent solubility, solvent dispersibility, and the infusibility testing.

Q. Were these tests done under your direction and control?

A. Yes, they were.

Q. How did you conduct the solvent dispersibility test?

A. The solvent dispersibility test was the visual observation of the adhesive that has been placed in the solvent. And if the adhesive does not clump and maintains its individual particulate nature and we consider it solvent dispersible.

Q. What was your conclusion with respect to samples 294 E, 294 J, Gaoshung sample and the Easel Pad product as

> reflected in 3M trial Exhibit 404?
>
> A. We considered these both or all of these products solvent insoluble and solvent dispersible.
>
> Q. Would you describe the solvent and solubility test that you did or that is reflected in Exhibit 404, solvent insolubility test?
>
> A. Yes. What we did was we put the adhesive in solvent and visually observed whether or not it dissolved.
>
> Q. What was -- I believe you already stated your conclusion?
>
> A. Yes.
>
> Q. What was that?
>
> A. We concluded for the insolubility test that each of these four products were solvent insoluble.

60. Alex Kuo is a expert witness and fact witness for Beautone. He is a president of respondent Taiwan Hopax and has a Ph.D. in Chemical Engineering (Tr. at 1260).

61.

62.

63.

Thus Beautone's Kuo testified (Tr. at 1268):

Q. Dr. Kuo, you mentioned the fact

A.

Q.

A.

64. Ketola testified as to properties of Silver's microspheres and the microspheres of the '152 patent: (Tr. at 581, 582):

> Q. But I'm asking about the product Mr. Ketola, that is actually made. Once it's made, the microsphere that is formed and that is coated out and used, for example, on a Post-it note, in that situation, there is no distinction, is there, between the product that is made and as it is used by the Silver patent as opposed to the Baker patent?
>
> A. I have said the physical properties are essentially identical, but Silver is a copolymer and Baker/Ketola polymer would be a homopolymer.
>
> Q. In that copolymer in the Silver patent in that use, for example, on a Post-it-note, that copolymer forms no function at that point, does it?
>
> A. Well, you could not get to the point where it's used

> without the copolymer. You could not make a stable suspension.
>
> Q. I'm not asking about that. I'm asking at the point that it's being used, you now have a microsphere that is formed, is already made, it's a true statement, isn't it, that copolymer serves no function for that product at that time?
>
> A. Physical properties are identical. Chemically, one is a copolymer, one is a homopolymer.
>
> Q. Can I have an answer to my question? Yes or no?
>
> A. The amount of -- yes, the amount of that copolymer does not contributes much at all to the physical properties but allows you to make a stable suspension.

4. 35 U.S.C. §102(f) and §102(g)

65. In 1969, during the course of his work at 3M leading up to the preparation and filing of the application for the '140 patent,

66.

Thus he testified:

(3M Ex. 457, at 698, 699).

67.

(Resp. Ex. 155 at 30).

68.

69.

(3M 457 at 703).

70.

71.

(Resp. Ex. 155, at 53.)

72.

73.

Q. Did you do anything further with the material in 53?

A. No.

Q. Did you try to test it or anything?

A. No.

(3M Ex. 457 at 710).

74.

(3M ex. 457 at 710).

75.

(3M 457 at 713).

76.

(3M Ex. 457 at 709 - 713). (Resp. Ex. 155 at 1).

77.

Thus he testified:

Q. So what was your thinking prior to the Baker/Ketola invention as to whether one could make microspheres that had the properties of your patent and do that with an external stabilizer instead of the comonomer?

A. I didn't feel it could be done with an external stabilizer. [3M Ex. 455 at 476, 477].

He also testified:

Q. At some later time, did you become aware that a comonomer was not essential?

A. Yes. . . . Through the reduction to practice by Baker and Ketola. [3M Ex. 457 at 714].

78. Silver has testified that he did not know how to successfully make homopolymeric microspheres prior to Baker and Ketola's discovery:

Q. So in other words, prior to the Baker/Ketola invention you yourself were unable to make a homopolymeric microsphere that you could test?

A. That's right. . . .

A. By that I mean I had, in the cases where I tried, I had agglomeration, I had a huge lump of material.

(3M Ex. 455 at 475).

79. Silver testified, regarding the '152 patent:

Q. [w]as it obvious to you prior to the Baker/Ketola reduction to practice that one could eliminate the comonomer and substitute an external protective colloid or external suspension stabilizer?

A.

(3M 457 at 714).

80.

81.

(3M Ex. 374 ¶ 8).

82.

Q.

A.

A.

(Tr. at 659-661).

83. Silver as at least a man of ordinary skill in the art. Thus as Ketola testified:

> Q. [In] the period 1974 to '77. Could you just describe the educational level of the people, including yourself, that were working on microsphere adhesives at 3M?
>
> A. Well, the three people that I know were working on microspheres during that time were Dr. Silver and Dr. Baker, [and] myself. The education ranged from a bachelor's degree to a Ph.D. degree in chemistry. . . . And we were all making or had hands-on experience in making the microsphere adhesive that's described in the Silver patent.
>
> Q. And do you have any knowledge or did you have any knowledge in that period, 1974 to '77, of anyone else other than those three people who were working on making microsphere adhesives?
>
> A. No, I don't recall anybody else or I don't know of anybody else.

(Tr. at 465-466).

84. Silver testified as to the '152 patent:

> Q. Column one. That they have found, and I'm paraphrasing above that area starting at line 23, I guess it would be to line 31 or 32. Makes the comment there that which are not limited to copolymers. Do you agree with that statement?
>
> A. Well, that is the essence of the Baker patent. That they don't have an ionic comonomer component.
>
> Q. So they are not limited to copolymers?
>
> A. I don't think in this situation copolymer was particularly limiting because the particles in each case are essentially the same.
>
> Q. He says can be prepared which are not limited, he's talking about microspheres I believe, inherent tack, infusibility, solvent dispersibility, and solvent insolubility, can be prepared which are not limited to copolymers. Does that imply that he's -- he doesn't have to only make copolymer microspheres under his system?
>
> A. It implies that he's found a way to do that. That as a derivation of my patent he can make homopolymers, yes.
>
> * * *
>
> A. My patent. My invention was -- at least one way I see it, is a novel material that had never been described before. So that since the comonomer does not function in terms of modifying the properties of the final sphere we are still talking about adhesive microspheres, that they were in essence similar.

(Resp. Ex 250 at 3M 105165, 105166).

IV. INITIAL DETERMINATION AND ORDER

Pursuant to the NOTICE, the Commission remanded the 3/23/ID to the administrative law judge "to make additional findings and to clarify certain other findings made." The foregoing is the additional findings and clarification.

The administrative law judge hereby CERTIFIES to the Commission this initial determination. The submissions of the parties filed with the Secretary in response to Order No. 34 are not certified, since they are already in the Commission's possession in accordance with Commission Rules and Practice and Procedure.

Further it is ordered that:

1. In accordance with Commission interim rule 210.44(b), all material heretofore marked <u>in camera</u> because of business, financial, and marketing data found by the administrative law judge to be cognizable as confidential business information under Rule 201.6(a) is to be given <u>in camera</u> treatment continuing after the date this investigation is terminated.

2. Counsel for the parties shall have in the hands of the administrative law judge a copy of this initial determination with those portions containing confidential business information designated in brackets, no later than Friday August 18, 1995. Any such bracketed version shall not be served by telecopy on the administrative law judge. If no such version is received from a party, it will mean that the party has no objection to removing the confidential status, in its entirety, from this final initial determination.

3. With respect to Commission action on this initial determination, reference is made to the NOTICE which stated that the initial

determination will be processed in accordance with Commission interim rules 210.53 and 210.54.

Paul J. Luckern

Paul J. Luckern
Administrative Law Judge

Issued: August 8, 1995

PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C.

PUBLIC INSPECTION

In the Matter of)
)
CERTAIN MICROSPHERE ADHESIVES,)
PROCESS FOR MAKING SAME, AND)
PRODUCTS CONTAINING SAME)
INCLUDING SELF-STICK)
REPOSITIONABLE NOTES)
)

Investigation No. 337-TA-366

INITIAL DETERMINATION

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PROCEDURAL HISTORY

On May 9, 1994, complainant, Minnesota Mining and Manufacturing Company, filed a complaint under Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337. An amended complaint, filed on May 27, 1994, alleged violations of subsection (a)(1)(B) of Section 337 in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain microsphere adhesives and products containing same, including self-stick repositionable notes, by reason of alleged infringement of claims 1-8 and 10 of U.S. Letters Patent 4,166,152 (referred to herein as the Baker patent).

On June 3, 1994, the Commission issued a notice of investigation of the facts alleged in the complaint. The notice was published in the Federal Register on June 8, 1994.

Complainant is Minnesota Mining and Manufacturing Company, a Delaware corporation having its principal place of business at 3M Center, St. Paul, Minnesota. It will be referred to herein as 3M. 3M manufactures repositionable adhesive products that are marketed under the POST-IT brand name, including the 3M Easel Pad product.

The Commission investigative attorney, an independent party in this case, supports complainant 3M on all issues except infringement.

The acts initially alleged to be unfair under Section 337 in this case are the importation into the United States, the sale for importation, or the sale within the United States after importation of certain microsphere adhesives, and products containing same, including self-stick repositionable notes, by reason of infringement of claims 1-8 or 10 of U.S. Letters Patent

4,166,152 (the Baker patent). Complainant later dropped its allegation of infringement of claims 3 and 6 of the Baker patent.

On November 2, 1994, an initial determination was issued that dismissed Print-Inform as a respondent. This initial determination was reversed and remanded by the Commission on December 5, 1994. At the request of 3M, a supplemental hearing was scheduled for January 23, 1995, to receive evidence relating to Print-Inform. The case was found to be "more complicated" (due to the complexity of the subject matter and the remand of the Print-Inform matter), extending by five months the time by which an initial determination had to be filed. 3M thereupon withdrew its request for a supplemental hearing, and requested reconsideration of the initial determination making the case more complicated. The designation of the case as more complicated was withdrawn, with notice that the case might be designated "more complicated" again, based on the complexity of the subject matter, if the initial determination could not be completed by March 8, 1995.

The case was designated more complicated again on March 1, 1995, extending to August 8, 1995 the date on which this initial determination is due. Complainant has requested that the initial determination be issued as soon as possible, because the patent in issue will soon expire. I have issued the initial determination early, although under other circumstances, I would have wanted more time to assimilate the facts.

A hearing under the Administrative Procedure Act was held from November 7, 1994 through November 19, 1994. After consideration of the evidentiary record made at the hearing and the post-hearing briefs filed by the parties, the following findings are made:

FINDINGS

JURISDICTION

Findings

1. The Commission has jurisdiction over the subject matter of this case.

2. The Commission has personal jurisdiction over respondents Beautone Boston, Yuen Foong Paper Co., Ltd., Taiwan Hopax Chemicals Mfg. Co. Ltd., and Print-Inform GmbH & Co.

Discussion

The respondents named in the notice of investigation are:

1. Taiwan Hopax Chemicals Mfg. Co. Ltd. (referred to herein as Taiwan Hopax or Hopax), which has a principal place of business at 13 F-2, Li Wen Rd., Tso Ying District, Kaohsiung, Taiwan (R.O.C.). 3M Ex. 168, at 4-5. At another location, 287 Fung-Lin 2nd Road, Taliao, Kaoshiung, Taiwan, Hopax manufactures the adhesives for the repositionable paper product sold under the brand names Beautone Stick-On Notes and Beautone Recycled Notes. 3M Ex. 168 at 5. At a third location, 94-2 Feng Ren Road, Feng Shan, Kaoshiung, Taiwan, Hopax coats the adhesive onto paper and converts the coated paper into the final note product. Id.

2. Yuen Foong Paper Co. Ltd., has a principal place of business at 4F, 51 Chung Ching S. Rd., Sec. 2, Chung Cheng District, Taipei, Taiwan (R.O.C.). 3M Ex. 168, at 6.

3. Beautone Specialties Co. Ltd. [Inc.] (Boston), has its principal place of business at 200 High Street, Boston, Massachusetts 02110. (It is referred to herein as Beautone Boston.) Yuen Foong Paper Co., Ltd. and Beautone Boston are referred to by 3M collectively as the Beautone respondents. 3M Ex. 168 at 6. Beautone Boston sells in the United States repositionable adhesive products that are at issue in this case. Beautone

Boston receives, or has received, Beautone Stick-On Notes from Taiwan Hopax Chemicals Mfg. Co. Ltd. and Yuen Foong Paper Co., Ltd. 3M Ex. 168 at 15.

Beautone Specialties Co. Ltd., a company in Taiwan, was named as a respondent in the Commission's notice of investigation. This corporation was dissolved on September 20, 1993, and Yuen Foong assumed its business responsibilities. Staff Ex. 4C at 6. The Commission never had personal jurisdiction over this respondent.

4. Kudos Finder Tape Industrial Ltd. has its principal place of business at 8 Chung Hsiao East Road, Section 5, Nan Kang District, Taipei, Taiwan TW-115.

5. Kudos Finder Trading Co., Ltd., has its principal place of business at 811 Chung Hsiao East Road, Section 5, Nan Kang District, Taipei, Taiwan TW-115.

6. Print-Inform GmbH & Co. has its principal place of business at Birsigstr 8, 24568 Kaltenkirchen, Germany. This company has corresponded with the Commission and the parties, but has not participated fully in discovery and was not present at the hearing. 3M offered no evidence that Print-Inform had infringed the Baker patent.

7. Z-International, Inc., has its principal place of business at 110 East 16th Avenue, North Kansas City, Missouri 64116. An initial determination terminating Z-International based on a settlement agreement and a proposed consent order is pending before the Commission.

The Commission has subject matter jurisdiction in this investigation under Section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. Section 1337, because the unfair methods of competition and unfair acts alleged by 3M involve the importation into, and sale in, the United States of certain products using a repositionable adhesive.

The Commission has personal jurisdiction over all of the active respondents in this case, Beautone Boston, Yuen Foong, and Taiwan Hopax. It also has personal jurisdiction over Print-Inform because Print-Inform actively participated in this case by correspondence, although it did not participate at the hearing. It also has personal jurisdiction over the Kudos respondents for the reasons stated at p. 132.

THE ISSUES IN THIS CASE

The general issues in this case are the validity, enforceability and infringement of the Baker patent and the issue of whether 3M is practicing any or all of the Baker patent claims in issue, as required by Section 337(a)(2).

More specific questions relate to what is actually going on in the process claimed in the Baker patent, the Hopax Glue G process, and the process used by 3M in making its Easel Pads. Many of the witnesses indicated that one cannot be sure about what really is happening in these processes. Although the initial recipes, equipment and process steps are known, the ingredients may interact and chemical changes may occur during the reaction. The processes and the products made by these processes can be seen only with a microscope, or scanning electron microscopy, or similar technology. The evidence does not show precisely how much of the final product consists of microspheres compared to how much consists of latex microparticles in a process that uses both suspension polymerization and emulsion polymerization.

The spherical particles produced by the Baker patent process and the Silver patent process are referred to as microspheres. Much smaller particles are produced by a standard emulsion polymerization process, and they are referred to as latex. When the issue is whether the larger particles formed by respondents' Glue G process are the microspheres claimed in the Baker patent or are particles produced by a emulsion polymerization process as asserted by respondents, these larger particles are referred to as "microparticles", a word that does not indicate either microspheres or particles made by emulsion polymerization.

THE TECHNOLOGY IN ISSUE

This proceeding involves microspheres, the processes for making microspheres, and adhesives containing microspheres. The best-known use for microsphere adhesives is self-stick repositionable notes like 3M's trademarked Post-It notes.

Conventional adhesives (adhesives that do not contain microspheres), are also referred to as flat film adhesives or permanent pressure sensitive adhesives. A typical flat film adhesive is "Scotch" tape. Tr. 708-709; 3M Exs. 298, 299. There are a number of differences between microsphere adhesives and flat film adhesives.

Microsphere adhesives have high tack (they are very sticky), and low peel (they are easy to pull apart). Tr. 706. Flat film adhesives have either high tack and high peel (they are hard to pull apart), or low tack and low peel. Tr. 706.

When microsphere adhesives are used, one can stick a repositionable note on a piece of paper where it will stay, and then much later, one can easily pull the note off the piece of paper without tearing the piece of paper or the note. The phrase "inherently tacky," which is used to describe microspheres in the Baker patent, means that the polymer is permanently, constantly sticky.

Tr. 515. This tackiness results from having a glass transition temperature below about -20°C. Tr. 686.

The microsphere adhesive is elastomeric. "Elastomeric" means that the polymeric particles or microspheres are deformable, but when a microsphere is stretched and then released, it will snap back to its original shape. Tr. 518. A microsphere adhesive easily can be pulled off another surface because only the points of the microspheres stick to the other surface, and the microspheres are separated from one another. When the points of the microspheres are pulled off the other surface, the microspheres snap back to their original shape on the repositionable note. In other words, microspheres have elasticity. Tr. 707-715; 3M Phys. Ex. J, 3M Ex. 299.

Microspheres have a constant adhesion level over time; unlike flat film adhesives, they will not adhere to a surface more strongly after a long time. In contrast, conventional flat film adhesives adhere to a surface more strongly after a long time. Tr. 707.

"Cold flow" refers to an adhesive changing or flowing over time at room temperature. Tr. 707-708. Over time, flat film adhesives will cold flow; in other words, the adhesives will flow into the paper fibers and stick fast. Tr. 708. When there is cold flow, the adhesion in a film adhesive can increase over time to the point where two pieces of paper joined by the adhesive can tear when separated. Tr. 1265-66. This increased adhesion is referred to as "adhesion build up". Tr. 708-09.

Microspheres do not cold flow or get adhesion build up because they are cross-linked, or tied together in a three-dimensional polymeric network that keeps the microspheres together and restricts cold flow. Tr. 708. Cross-linking contributes to the low-peel characteristic of microsphere adhesives over time as well as to making the microspheres less soluble in solvents.

Applying a conventional flat film adhesive in a discontinuous pattern of dots or patches on a piece of paper does not solve the problem of cold flow or adhesion build up. Tr. 709. A conventional flat film adhesive will cold flow even if it is applied in patches. If the adhesive is applied in patches to one piece of paper and attached to another piece of paper, the two papers will be easier to separate than if a flat film adhesive had been applied in a continuous film, but two papers glued together in patches with conventional flat film adhesive may still tear when separated.

In the "standard" 3M products, microspheres are not mixed with a binder material. Tr. 262, 767. [CONFIDENTIAL]
[CONFIDENTIAL]
[CONFIDENTIAL]
[CONFIDENTIAL] Tr. 261-262, 722-30, 769-770. If the microspheres are not covered, they have all the characteristics of microspheres described above. If they are covered, the product will have the adhesive characteristics of the binder rather than of the underlying microspheres. Even then, the microsphere adhesive will have the characteristic of being elastomeric, because the microspheres underlying the binder are elastomeric. This is the principal characteristic that allows the product to be repositioned. Each microsphere underlying the binder is a discrete round particle, the top of the microsphere will deform when attached to another surface, and because only the top (covered by the binder) is attached to the other surface, it can be pulled away easily from the other

surface and the underlying microsphere will revert to its original spherical shape.

The three processes in issue in this case are suspension polymerization, emulsion polymerization, and a dual process in which both suspension and emulsion polymerization take place at the same time.

Suspension polymerization

A monomer is an individual chemical building block that reacts with other chemical building blocks to form a polymer. Polymerization is a chemical process in which monomers are combined to create long chains of monomers, or polymers. Tr. 400. The adhesives in issue in this proceeding are all polymer adhesives. 3M Ex. 331.

The process used for making the relatively large microspheres claimed in the Baker patent (the patent in issue) is suspension polymerization. (In contrast, emulsion polymerization makes much smaller latex microparticles.) The Baker patent claims only a suspension polymerization process.

In the initial step of the Baker patent process for making microspheres, monomer droplets are suspended in water (or an aqueous solution). An anionic emulsifier is used to emulsify the oily monomer in the water phase to make very small droplets. The emulsifier does this by adsorption at the interface between the oil phase and the water phase and by reducing surface tension. Then the mixture is agitated and the oil phase is broken down into small droplets. Resp. Ex. 252 at 229. Without the emulsifier, the dispersion would not be stable and would revert to two separate phases of oil and water. Resp. Ex. 252 at 230.

The suspension polymerization process claimed in the Baker patent departs from a classic suspension polymerization process because it requires the use

of additional emulsifier above the critical micelle concentration (C.M.C.), so that micelles will be formed. 3M Ex. 332, Tr. 887, 980-82, 1842-43. (In a classic suspension polymerization process, some emulsifier would be required to keep the monomer droplets suspended in an emulsion, and some emulsifier is dissolved in the water phase, but not enough additional emulsifier is required to create micelles. [CONFIDENTIAL]
[CONFIDENTIAL]

Micelles are small particles made from an aggregation of emulsifier in solution, or as defined by Dr. Silver, "an aggregate of surfactant particles". Resp. Ex. 252 at 303. Micelles have to be present before microspheres will be formed in the monomer droplets. The prior art Silver patent taught this. Dr. Silver was not sure why micelles were required to make microspheres, but he thought that they protected the "ester surfaces of this particle in combination with these polar monomers that I am using." When Dr. Silver did not have micelles, the experiment agglomerated. Resp. Ex. 252 at 381.

A micelle is a collection of many emulsifier molecules clustered together with their water-hating (hydrophobic) ends in the center, and their water-loving (hydrophilic) ends on the outside of the micelle (where the water is). The micelles help stabilize the reaction by steric stabilization. The hydrophilic ends of the emulsifier molecules form a soft protective shell around the micelle. Tr. 402-404. They also can form a soft protective cell around a monomer droplet. This helps prevent agglomeration by steric stabilization.

The Silver patent required that the principal monomers be nonionic monomers. The Silver patent also required that a small amount of ionic comonomer be used. The purpose of the ionic comonomer in the Silver patent was solely to stabilize the process by ionic stabilization, although the ionic comonomer would become part of the final microsphere. Resp. Ex. 252 at 510, 511.

One of the distinctions between the Baker patent and the prior art Silver patent is that the Baker patent required an ionic suspension stabilizer instead of Silver's ionic comonomer. The ionic suspension stabilizer, like Silver's ionic comonomer, helps keep the particles in the solution from coagulating or agglomerating into a large mass.

Both the Silver patent and the Baker patent require that the emulsifier be anionic (carry a negative charge). This may have various effects on stabilization of the solution.

Suspension polymerization requires an oil-soluble initiator. Although claim 1 of the Baker patent does not expressly require an oil-soluble initiator, it requires that the microspheres be formed by suspension polymerization.

Claim 7 of the Baker patent expressly requires a substantially water-insoluble polymerization initiator. This is the same as a monomer-soluble or oil-soluble initiator or catalyst. The monomer in the droplets is oily, and the initiator can be absorbed into the monomer droplet to create free radicals that change the monomer into chains of polymer. The oil-soluble initiator, which is soluble in the monomer droplets, will migrate to and be absorbed by the oily monomer droplets. When the mixture is heated, the oil-soluble initiator decomposes and forms free radicals in the monomer droplets. Tr. 1840-1842; Resp. Ex. 252 at 231. The free radicals cause the monomer in the droplet to form long chains of monomer molecules or polymer. The polymerized monomer droplets or polymers are microspheres. The Baker patent microspheres are absolutely spherical. See Resp. Ex. C-400, T-409. Because there is so much monomer in the droplet, the free radicals in the droplet are less likely to meet one another and terminate the reaction before the whole droplet is polymerized. Tr. 1840-1842.

When a microsphere is formed by polymerization of a spherical monomer droplet, cross-linking occurs between the long chains of monomer molecules as these chains grow inside the monomer droplet. The net result can be thought of as "one big molecule"; the final shape of the microsphere is a result of this extensive cross-linking, and this is why the microsphere remains a sphere. Silver, Resp. Ex. 252 at 482.

Because of the presence of additional emulsifier and micelles, some latex particles may be polymerized in the micelles in the Baker process, but the Baker patent describes them as undesirable. Resp. Ex. 2, col. 2, l. 26-29. [

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In a suspension polymerization process, the rate of the reaction is dependent upon the concentration of initiator. The rate of reaction is faster when there is more initiator present. Tr. 1459-1460, 1465-1466.

The polymerization of a monomer droplet produces a spherical solid or microsphere of about the same size as the droplet. Tr. 1131-34, 1419, 1668-69, 1904. Microspheres produced by suspension polymerization usually are much larger than the submicron microparticles produced by emulsion polymerization. They are a micron or larger in size; the typical size range is from 10 to 1,000 microns. Resp. Exs. 119, 132; Tr. 887, 924-25.

In suspension polymerization, the monomer usually is added all at once at the beginning of the reaction. Tr. 1840-1848, 1133. (In emulsion polymerization, monomer is sometimes added all at once at the beginning, and sometimes monomer is added during the reaction.)

Usually the monomer that is used in emulsion and suspension polymerization is not very soluble in water, but it is partially soluble in water. Part of the monomer will dissolve in the water phase.

As the monomer droplets are polymerized in a suspension polymerization process, the equilibrium between monomer in the droplets and monomer dissolved in the water phase may change. As monomer in the droplets is combining into copolymers, monomer in the water phase is "pumped" into the monomer droplet across the interface between the water phase and the droplet and becomes part of the microsphere. Resp. Ex. 252 at 319-322.

When emulsion polymerization is taking place, the monomer may be pumped in the other direction into the water phase across the interface between the monomer droplet and the water phase, depending on how the equilibrium is disturbed. Resp. Ex. 252 at 320.

Emulsion polymerization

Dr. Silver described emulsion polymerization as follows:

> An emulsion polymerization involves very small particles, as I said, approximately a thousand-fold smaller in diameter than a suspension. It also normally uses a surfactant at high concentrations, this is because the particles are very small and consequently there is a very large surface area created and one needs a lot of surfactant to stabilize this in emulsion polymerization. Also the locus of polymerization is believed to begin in the water phase and migrate to the micelle at which point polymerization occurs in the micelle.... The catalysts used in emulsions are water-soluble catalysts also in order to generate the radicals in the water phase.... the radicals are formed in the water phase and they migrate to the micelles and the micelles are fed then by the existing oil, emulsified oil droplets. That makes a reservoir to feed the growth of the particle in the micelle. Resp. Ex. 252, at 303-304.

In emulsion polymerization a water-soluble initiator or catalyst is used, in order to generate the free radicals in the water phase rather than in the monomer droplets. Tr. 896, 1842-1848, Resp. Ex. 252 at 303. Monomer droplets are suspended in an aqueous solution (typically water), that includes an emulsifier. Tr. 1842-44; 3M Ex. 333. The amount of emulsifier must exceed the critical micelle concentration (C.M.C.), or in other words, there must be enough emulsifier to form micelles. Tr. 981-82, 1842-43, 3M Ex. 332.

If there is more emulsifier, more micelles will be formed, and the reaction rate will be faster. The reaction rate in emulsion polymerization generally increases with the concentration of emulsifier; the rate of reaction does not depend to any great extent upon the concentration of the initiator. Tr. 1461-1462, 1903. As the amount of emulsifier increases, the number of micelles increases, there are more places for the polymerization reaction to occur, and polymerization occurs more quickly. Tr. 1844.

There are millions of micelles in the water solution. There are far fewer monomer droplets. Although the monomer droplets are much larger than the micelles, the surface area of the micelles is larger than the surface area of the monomer droplets because there are so many micelles. Tr. 1843.

As in suspension polymerization, the oily monomers used in emulsion polymerization are partially soluble in water. Some monomer will be dissolved in the water phase and some will be found inside the micelles. Tr. 1844.

In emulsion polymerization, unlike suspension polymerization, it is not necessary that the mixture be heated to cause the initiator to form free radicals. The water-soluble initiator decomposes in the water phase, producing free radicals. These free radicals combine with monomer dissolved in the water phase. When the combination of a radical and monomer gets large enough, it can enter a micelle and polymerize the monomer that is inside the micelle. Tr. 1844.

When one free radical is in a micelle growing chains of monomer, the reaction will continue until another free radical enters the micelle. When a second radical enters the micelle, it stops the chain of polymers from growing (propagation of the chain is terminated). Tr. 1844-1845. A micelle is so small that a second radical entering the micelle will find the first radical and extinguish the reaction. As a result, the particle that is polymerized in a micelle will be much smaller than the microsphere formed in a monomer droplet. It will have less opportunity to form cross-linking bonds, and it will be more soluble in a solvent than a microsphere.

Because there are so many more micelles in the solution than monomer droplets, it is very unlikely, although possible, that a free radical formed in the water phase will reach a monomer droplet and polymerize it. Tr. 1844.

In emulsion polymerization, the monomer droplets store most of the monomer that feeds the reaction in the micelles. As the monomer in the micelles is polymerized, the monomer in the monomer droplet diffuses through the interface between the droplet and the water, and then moves through the water into the micelles, where the reaction occurs and polymer is formed. Tr. 892, 1844. Because of the large number of micelles, the monomer leaving the droplet will find micelles very near the droplet.

As monomer in the droplets is consumed, the monomer droplets shrink in size, and less monomer is available for the reaction in the micelles. In emulsion polymerization, monomer sometimes is added throughout the reaction to make more monomer available in the micelles. Tr. 891-92, 1131-34; 3M Ex. 333.

Polymerization continues to take place until all of the monomer is used up. Tr. 1840-1848. Eventually, the monomer droplets will disappear towards the end of the reaction. This should be observable with a microscope. Tr. 1847.

More emulsifier may be required in emulsion polymerization than in suspension polymerization because emulsion polymerization takes place in the micelles, and the micelles have a larger total surface area than the monomer droplets.

In emulsion polymerization, there is no correlation between the size of the monomer droplet and the size of the particle produced, because the polymerization does not occur in the monomer droplet but in the micelle. Tr. 1133, 1904, 2192. When polymerization takes place in the micelles, tiny latex particles are formed. These particles are rarely as large as one micron. Tr. 413, 924-25, 1119; 3M Ex. 333. These submicronic particles are referred to as latex. Tr. 412. Latex particles have less cross-linking than microspheres, and they sometimes fuse together to form a film. Tr. 916, 2419.

The prior art Silver patent

The Silver patent, U.S. Letters Patent No. 3,691,140, was issued on September 12, 1972, to Dr. Spencer F. Silver who worked for 3M. Like the later Baker patent, the Silver patent was assigned to 3M. The Silver patent (Resp. Ex. 4) expired on September 12, 1989, and now is in the public domain.

The Silver patent claims microspheres made by a modified suspension polymerization process. The respondents take the position that the Baker patent, the patent that complainant alleges to be infringed, was anticipated and made obvious by the earlier Silver patent, which now has expired. Respondents also assert that they are not using either the Baker patent or the

Silver patent, but are using an emulsion polymerization process that was abandoned by the applicants for the Baker patent at the PTO.

Both the Baker patent and the Silver patent claims require that the microspheres be made by a suspension polymerization process.

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The Silver patent requires that the microspheres be made by suspension polymerization. During the prosecution of the Silver patent, the applicant submitted to the PTO an excerpt from Preparative Methods of Polymer Chemistry, Interscience Publisher's Inc., 2d Ed., N.Y., N.Y. (1968). This document taught that the initiator used in suspension polymerization "must be soluble in the monomer drops." 3M Ex. 57, at 3M001050. The Silver patent thus teaches that an oil-soluble initiator must be used.

The subject matter of the Silver patent is the forming of infusible, solvent-insoluble, solvent-dispersible, elastomeric polymeric microspheres by suspension polymerization.

The Silver patent requires an anionic emulsifier (carrying a negative charge) in an amount above the critical micelle concentration level. Resp. Ex. 4, col. 1.

The Silver patent requires the use of one or more of a certain group of nonionic monomers, and one of a second group of comonomers, all but one of which is ionic. (A comonomer refers to a second type of monomer.) An ionic comonomer carries either a positive or a negative charge. (Cationic means carrying a positive charge, and nonionic means carrying no charge. Tr. 2085-2806.)

The Silver patent taught that if a small amount of a comonomer selected from a group of specific comonomers is used, it is not necessary to use a suspension stabilizer (a protective colloid) to stabilize the process. Tr. 565.

In the prosecution history of the Silver patent, the applicant described his invention as "an inherently tacky copolymer of an acrylic ester and a properly selected ionic monomer which is in the form of particulate microspheres of uniform small size, and a process by which said microspheres can be manufactured." 3M Ex. 157 at 3M001023. The acrylic ester was a nonionic monomer. A selected ionic comonomer was also used with the nonionic monomer to form the microsphere.

The applicant stated that his microsphere was produced by a modification of standard suspension polymerization techniques. The principal modifications were that he required that an ionic comonomer be used, and he required that enough emulsifier be used to form micelles. His process did not require the use of protective colloids to keep the monomers from agglomerating during the polymerization process. He stated that one advantage of his invention was that washing and other procedures for removal of protective colloids from the polymer product were not necessary. (Another advantage was that the selective cross-linking reaction to make the polymer insoluble was not necessary. There was enough cross-linking in the monomer droplet when it was polymerized.) 3M Ex. 157 at 3M001023-24.

Claim 1 of the Silver patent required one of the monomers to be an "oleophilic water-emulsifiable alkyl acrylate ester." This is a nonionic monomer.

It also required that the recipe include one of a second group of comonomers. All but one of this group were ionic monomers. One of the monomers named in this group was maleic anhydride, which is not an ionic monomer. Maleic anhydride is a polar material. Resp. Ex. 250 at 3M 105160, Resp. Ex. 251 at 110665. But maleic anhydride partially hydrolizes with water in the solution and becomes an ionic monomer. Resp. Ex. 252 at 828. The Silver patent thus claimed microspheres made from a combination of nonionic monomers and a small amount of ionic comonomer polymerized by suspension polymerization in monomer droplets in a solution that contained micelles.

The Baker patent (in issue here) later claimed microspheres made entirely from nonionic monomers by a process that used an ionic suspension stabilizer instead of an ionic comonomer.

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Ionic suspension stabilizers and steric stabilizers

Some type of stabilizer is necessary in emulsion polymerization and in suspension polymerization, initially to stabilize the monomer droplets, and later to keep the discrete polymerized particles from agglomerating or coagulating into a large mass during the process of polymerization. Tr. 2105. A protective colloid or suspension stabilizer commonly was used in polymerization processes to help provide stability. Once a large mass has formed, it is difficult or sometimes impossible to redisperse it into discrete particles. Agglomeration is even more of a problem when tacky polymers are formed from tacky monomers.

When an ionic suspension stabilizer is used, stability can be obtained by both electrostatic and steric repulsion. Resp. Ex. 252 at 886-903.

The Silver patent taught the use of an ionic comonomer instead of an ionic suspension stabilizer. Dr. Silver testified that the ionic comonomer contributed to electrostatic stabilization in the Silver process. Resp. Ex. 252 at 900. Respondents argued that the ionic comonomer of the Silver patent was just one type of ionic suspension stabilizer, and that the Silver patent inherently disclosed ionic suspension stabilizers, thus anticipating the Baker patent. But the Silver patent taught away from the use of an ionic suspension stabilizer.

The Baker patent requires the use of an ionic suspension stabilizer and excludes the use of the ionic comonomer that was required in the Silver patent. The Baker patent can be distinguished from the narrow Silver patent claims, if not from the Silver invention.

The respondents use a nonionic suspension stabilizer in their recipe. 3M contends (1) that a nonionic suspension stabilizer can be the equivalent of the ionic suspension stabilizer required in the Baker patent claims, and (2) that the nonionic suspension stabilizer in respondents' process is converted into an ionic suspension stabilizer during the reaction, and thus meets this requirement in Baker claim 1 and is the equivalent of the requirement in Baker claim 7.

The Baker patent discloses a wide range of ionic stabilizers, some very strong and others very weak. When a stabilizer is only weakly ionic, it may provide about the same amount of stabilization as a steric stabilizer, but an ionic and a steric stabilizer do not stabilize in the same way. Tr. 2095.

In ionic stabilization (or electrostatic stabilization), ions with a negative charge and ions with a positive charge (counterions) distribute themselves near the surface of the particle. This double layer of ions is called the diffuse double layer or the electrical double layer. It repulses other particles in the solution, making it more difficult for the particles to agglomerate. Tr. 698, Resp. Ex. 252 at 887.

In steric stabilization, a different kind of protective shell is formed, and it works in a different way.

Dr. Atwood defined three separate categories of molecules as ionic, polar and steric. Tr. 2092. ("Steric" in this sense referred only to weak attractions between nonpolar molecules.) Both polar and nonpolar molecules are neutral, i.e., they are not ionic and carry no negative or positive charge. Tr. 2096-2099. In this initial determination, the term steric stabilization is used to refer only to stabilization achieved by <u>polar</u> molecules. As Mr. Ketola testified, a material has to be polar to be soluble in water, Tr. 701, and both suspension and emulsion polymerization take place in an aqueous solution. The polar molecules are neutral, in contrast to the molecules that carry an extra ion and have a negative or a positive charge.

"Hydrophobic" means water-hating. "Hydrophilic" means water-loving. These terms can refer to a positive or negative ion, or to a polar group or molecule. Water, for example, is polar, and the oxygen atom in that molecule drains electrons slightly away from the hydrogen. Tr. 2086-2087. Resp. Ex. 252 at 900; Tr. 2084-2099.

Steric repulsion, as used herein, occurs in polar molecules where one end of a polar molecule is attracted to water and the other end of the same molecule is repelled by water. Polar molecules are long chain nonionic molecules that have no electrical charge, i.e., no ions. Only a few segments of the long chain polar molecule are adsorbed or loosely attached to or slightly under the particle surface. The rest of the molecule is in the aqueous phase. Resp. Ex. 252, at 888, 889. The electrons within the single polar molecule that are attracted to water will move in one direction towards the water, thus creating an electron imbalance in the molecule, or a slight polarization of the molecule. Tr. 2087-2088. This electron imbalance causes a soft stabilizing cushion or shell to form around any monomer or polymer to which the water-hating ends of the polar molecules are attached. The hydrophobic ends of the molecules are loosely attached to another surface, where they try to be covered up and away from the water. The long hydrophilic tails of the long chain polar molecules are attracted to the water, and they form a cushion of protection from other particles around the outside perimeter. They repulse the approach of other particles in the solution, but not because of a positive or negative charge. When one end of each molecule is adsorbed on the surface of a monomer droplet or a microsphere polymer, and the other end has a long tail in the water phase, the tails form a soft barrier protecting the surrounded surface by steric stabilization. Tr. 2084-2096, Resp. Ex. 252 at 889.

Ionic stabilization (stabilization by an electric charge) provides long range stabilization of suspension and emulsion polymerization processes. Steric stabilization (with no electric charge) offers short range stabilization when neutral polar molecules provide "steric" repulsion by protecting a particle from other particles by forming a soft surrounding shell. If there is a good positioning of ionic material on the surface of the particle, ionic stabilization is a much more powerful force at a longer range than steric stabilization. Tr. 2270, 2090-2092.

Although operating in different ways, both ionic stabilization and steric stabilization provide a potential energy barrier protecting the particles from coagulation. If there is not enough stabilization or protection of the particles from one another, the protective shells will be overcome and the particles will coagulate. Dr. Silver testified that both electrostatic (ionic) stabilization and steric stabilization could be taking place at the same time, but that they work in a different way. Resp. Ex. 252 at 886-903. Dr. Atwood testified that in the Baker and Hopax polymerization processes, both steric and ionic stabilization are going on at the same time (Tr. 2270), but that they did not work in the same way. Tr. 2095.

The Baker patent in issue

The application for the Baker patent, U.S. Letters Patent No. 4,166,152, was filed on August 17, 1977, by Dr. William A. Baker and Mr. Warren D. Ketola, and issued on August 28, 1979.

3M alleges in this proceeding that the respondents have infringed claims 1, 2, 4, 5, 7, 8 and 10 of the Baker patent. (All of the claims in issue are set forth in full in Appendix A hereto.) Claims 1, 2, 4 and 5 are product or article claims, and claims 7-10 are process claims. Claims 1, 4, and 7 are the only independent claims in the patent.

The Baker patent, like the Silver patent, is directed to the manufacture of an adhesive made up of individual, discrete polymeric microspheres made by a suspension polymerization process. This is generally described as a microsphere adhesive, whether made under the Silver or the Baker patent, as opposed to a flat film adhesive.

Microspheres as disclosed in the Baker patent are small spherical polymer particles from about 5 to 150 microns in size that are made by suspension polymerization. Resp. Ex. 2, col. 4, l. 13-16. Most of the microspheres should be about the same size and this should be close to the size of the monomer droplets, because the polymerization takes place in the droplets.

The first five claims of the Baker patent claim a product or an article made by a process. The product (claims 1-3) is the Baker patent microsphere. The article (claims 4 and 5) is a substrate (for example, a piece of paper) covered by these microspheres.

Although claims 1 and 4 do not require a specific polymerization initiator, they require that the microspheres be prepared by suspension polymerization. This process requires an oil-soluble initiator that will be dissolved in the monomer droplets where it will form free radicals.

Claim 7 specifically requires a substantially water-insoluble polymerization initiator, and that is a substantially oil-soluble initiator. The Baker patent does not define the term suspension polymerization, but it warns against the use of a water-soluble catalyst, indicating that it "may cause formation of substantial amount of latex, the extremely small particle size and solvent solubility of which are undesirable." Resp. Ex. 2, col. 2. One with ordinary skill in the art would know that a water-soluble catalyst ordinarily would be used in an emulsion polymerization, and that an oil-soluble catalyst would be used in suspension polymerization.

The parties agree that the microspheres of the Silver and the Baker patents have exactly the same physical properties. Resp. Ex. 2, col. 1, 23-26; Resp. Ex. 12, at 14-15, 30-31; Tr. 580. Both are made by a modified suspension polymerization process. The microspheres made under both patents have the same structure (although not the same composition) and all of the physical characteristics required for use as a repositionable adhesive.

Respondents contend that the microsphere of the Baker patent was anticipated by the Silver patent, and that claims 1-5 of the Baker patent are invalid because the same product cannot be patented twice even though it is made by a different process.

The only difference between independent claim 4 and claim 1 is that claim 4 requires that the microspheres be deposited on at least one side of a substrate. A piece of paper could be the substrate. Claim 4 covers the piece of paper with the microsphere adhesive deposited on it.

About two years after the Silver patent had been issued, Dr. Baker and Mr. Ketola filed an application for the Baker patent. As issued, the Baker patent discloses and claims certain ionic suspension stabilizers having an interfacial tension of at least about 15.0 dynes per centimeter, and excludes the use of the ionic comonomer required by the Silver patent. Resp. Exs. 2

and 4. This was new subject matter not taught or suggested by the Silver patent.

Dr. Baker and Mr. Ketola were not trying to solve a problem or to find a way to meet a long-felt need. [CONFIDENTIAL]
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Tr. 557-558. Resp. Exs. 197-200 and 202. After the Silver patent issued, [C]
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[CONFIDENTIAL] Moreover, no foreign patent applications had been filed on the Silver patent. Tr. 557-558.

In 1975, Baker and Ketola did research to [CONFIDENTIAL]
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[CONFIDENTIAL] All three realized that
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[CONFIDENTIAL] Resp. Ex. 197, at 4. To get a new patentable claim for microspheres, Baker and Ketola wanted to [CONFIDENTIAL]
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[CONFIDENTIAL] Resp. Ex. 202, at 3.

Mr. Ketola tried using [CONFIDENTIAL]

[CONFIDENTIAL] Resp. Ex. 175, at 51; Tr. 656-657. He tried [C]
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] By defining a group of suspension stabilizers that would be likely to work well enough to stabilize the solution, they had a patentable claim. They did not disclose to the Patent Office that some suspension stabilizers outside of the claimed group also would work.

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] Having told the examiner (and the public in the patent) that this limitation was essential, when the applicants knew that it was not, they cannot now claim under the doctrine of equivalents the processes that they knew at the time the application was filed would work, [CONFIDENTIAL]

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Patent claims must give adequate notice to competitors as to what they may or may not do. Adequate notice requires definite claims and a clear line between what infringes and what does not infringe. United Carbon Co. v. Binney & Smith Co., 317 U.S. 228, 55 U.S.P.Q. 381, 383-384 (1942); General Electric Co. v. Wabash Appliance Corp., 304 U.S. 364, 37 U.S.P.Q. 466, 468-469 (1938).

Moreover, the Baker patent applicants cannot claim a process that does not include "ionic suspension stabilizers having an interfacial tension of at least about 15.0 dynes per centimeter" after they had amended their claims to include this limitation in order to overcome a PTO rejection of earlier claims that did not contain this limitation. File history of Baker patent, Resp. Ex. 3, Mr. Chernivec's amendment after final rejection.

CONSTRUCTION OF THE BAKER PATENT CLAIMS

Before a determination can be made as to whether a patent claim is valid or infringed, the patent claim must be construed. Lemelson v. United States, 752 F.2d 1538, 1549, 224 U.S.P.Q. 526, 532 (Fed Cir. 1985). A patent claim must be interpreted in the same way for determining validity as for determining infringement. White v. Dunbar, 119 U.S. 47 (1886).

An inventor can define the terms of his claim in the patent specification, but when an inventor chooses to give a term an uncommon meaning, he must set out his definition within the patent disclosure to give one of ordinary skill in the art notice of the meaning of the term. In re Paulsen, 30 F.3d 1475, 1480, 31 U.S.P.Q.2d 1671, 1674 (Fed. Cir. 1994). Words in a claim will be given their ordinary and accustomed meaning unless it appears that the inventor used them differently. Jonsson v. The Stanley Works, 903 F.2d 812, 819-820, 14 U.S.P.Q.2d 1863, 1871 (Fed. Cir. 1990).

The patent specification can define terms in the claim but it cannot alter the meaning of the claim. White v. Dunbar, 119 U.S. 47, 51-52 (1886). Other claims, the patent specification and the prosecution history can be used to interpret claims.

The parties are not in disagreement about the general differences between suspension polymerization and emulsion polymerization. The issues are more complex: The Baker patent requires that microspheres be produced by suspension polymerization, but the Baker patent refers to the process as a modified suspension polymerization process. What is a modified suspension polymerization process? Does it include only a process that makes microspheres with only a few latex particles as a byproduct? Does it include a process that makes only a few microspheres and mostly nonspherical particles? When does the process become an emulsion polymerization process? Are all mixed-product processes dual processes including both types of polymerization? Can a claim limitation be met by an in situ change in the characteristics of the ingredients during the reaction? Would one with ordinary skill in the art understand that these in situ changes were likely to occur, resulting in a process being covered by a Baker patent claim when the initial recipe would not appear to be covered by that claim?

The Baker patent claims are construed as follows:

1. General construction of claims 1 and 7

Claim 1 is a product-by-process claim. It is construed as covering the formation of a single microsphere.

It is not required that the microspheres of Baker claim 1 be made by a predominantly suspension polymerization process. If emulsion polymerization occurs in the same process, or even is predominant in the process, the microspheres could be covered by claim 1.

Claim 7 is given a different construction; it is construed as requiring that the single process claimed be predominantly a suspension polymerization process. This is because the applicants for the Baker patent (in order to get their claims allowed after an initial rejection) surrendered any right to include emulsion polymerization under their claims.

Claim 7 refers to charging certain materials to a single reaction vessel, and it relates to a single process. This is required to be a suspension polymerization process that produces microspheres. If the process is predominantly an emulsion polymerization process, complainant is estopped from claiming this process under the doctrine of prosecution history estoppel. To meet the requirements of claim 7, the overall process used to make the microspheres must be predominantly a suspension polymerization process.

Neither the Baker patent nor its file history defines "aqueous suspension polymerization". The Baker patent teaches that the initiator should be soluble in the oily monomer rather than in water, and it warns the reader away from using a water-soluble initiator. 3M Ex. 2, col. 2. The Baker patent also teaches that in suspension polymerization, the monomer droplets are polymerized into microspheres, not latex, although some latex may be formed.

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[C] Resp. Ex. 252, at 380. The sign that some suspension polymerization is taking place is whether microspheres are being produced.

The suspension polymerization process required by claim 7 must meet all of the steps in 7(a) before the reaction begins. Forming the microspheres from nonionic monomers is not required.

2. Infusible

Claim 1 requires that the microspheres be infusible, solvent-insoluble, solvent-dispersible, inherently tacky, and elastomeric. The parties agree about the meaning of inherently tacky and elastomeric.

The term "infusible" is described in the specification of the Baker patent: "Upon being heated, the spheres typically do not melt or flow, but retain their integrity until their carbonization temperature is reached." The only difference in the description of "infusible" in the Silver patent is that the word "typically" is not used in the Silver description. The word "typically" in the Baker description of infusible suggests that some microspheres may be covered by the Baker patent even if they melt or flow at a temperature below the temperature at which they would burn up.

3M takes the position that the term "infusible" should be given the practical meaning of the word in the context of the temperatures used in the manufacture, storage, and use of the adhesives. 3M would define a microsphere as infusible if it does not melt or flow when kept at 150°C. for 5 minutes. Tr. 730. The adhesive is not likely to get hotter than this during manufacture, storage or use. Even though the public was given a different description of "infusible" in the patent, the description in the patent was tempered by the word "typically".

One important characteristic of a repositionable adhesive is that the adhesive not melt or flow over time. Tr. 707. As a practical matter, if the adhesive does not melt or flow when maintained at 150° C. for 5 minutes, it is unlikely to get into the fibers of the paper to which it is attached after a long period of time. Tr. 730. 3M's definition and its tests for infusibility were reasonable. 3M's definition of infusible is adopted.

3. <u>Solvent-Insoluble</u>

Dr. Baker and Mr. Ketola did not define the term "solvent-insoluble" in the specification or the file history of the Baker '152 patent, and this term will be given its ordinary meaning.

The prior art Silver patent teaches that the microspheres claimed in that patent are neither soluble nor partially soluble in solvent. Yet the microspheres made by that process were partially soluble in solvent. The term solvent-insoluble must be read in the context of solvent-dispersible. To be dispersible in a solvent, at least part of the microsphere cannot dissolve in the solvent. If part of the microsphere is soluble in a solvent, and the microsphere is washed in solvents until it is no longer soluble, what is left for all practical purposes is an insoluble microsphere.

When a solvent is added to microspheres and latex particles made by the Baker patent, part of the microspheres will dissolve, but a substantial part of the microspheres will not dissolve and will remain separate particles. Tr. 511-12. (Part of the Baker microspheres may dissolve because not all of the polymer chains will be cross-linked during formation of the cross-linking networks during polymerization of the monomer droplet. Tr. 512-14.) Microspheres that are partially soluble in solvent still possess the characteristics that make the adhesive repositionable. Even if the

microsphere is washed repeatedly in solvents, as long as there is an insoluble core remaining, a microsphere will meet the definition of solvent-insoluble, as this term is construed herein, if the insoluble core is large enough to disperse in a solvent.

4. <u>Solvent-Dispersible</u>

Dr. Baker and Mr. Ketola did not define the term "solvent-dispersible" in the Baker patent, and the term will be given its ordinary meaning.

Complainant's definition of solvent-dispersible is that microspheres are solvent-dispersible if a clump of microspheres is put into a solvent and the clump redisperses into discrete microspheres. Tr. 514. When the clump of microspheres is placed in the solvent, the part of the microsphere that does not dissolve will absorb solvent and swell up until the microsphere is about 80% solvent. (Absorbing solvent is not inherent in the definition of solvent-dispersible.) The microspheres then disperse in the remaining solvent. When the solvent is removed, the microspheres shrink back to their original size and remain discrete particles. Tr. 515.

Respondents define "solvent-dispersible" as substantially the same as the term "non-polar organic liquid dispersible" in the Silver patent. A solvent is a "non-polar organic liquid." Using this definition, the term would mean that the microspheres are formed, dried, and then placed in an organic solvent. The microspheres then will disperse or separate from one another.

A plain reading of the term "solvent-dispersible" conveys the idea that solids disperse when placed in a solvent. To be solvent-dispersible, the microspheres cannot completely dissolve in the solvent, and they must spread out in the solvent. The definitions of the parties are consistent with this definition.

5. "formed from non-ionic monomers and comprising a major portion of at least one oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester"

Claim 1 of the Baker patent is a product-by-process claim that requires that the microspheres be "formed from non-ionic monomers".

A product may be claimed in terms of the process of making it, but the product must be new in structural terms in order to meet the novelty requirement of the patent law. 2 Chisum, Patents, § 8.05(4); Cochrane v. Badische Anilin & Soda Fabrik, 111 U.S. 293 (1884).

Claim 1 claims a product (polymeric microspheres) that is required to be infusible, solvent-insoluble, solvent-dispersible, inherently tacky and elastomeric. These microspheres must be made of at least one oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester. This is an oily monomer.

The microspheres must have a glass transition temperature below about -20°C. The glass transition temperature is the temperature at which an amorphous material changes from a brittle to a plastic state. The monomers used in the processes in issue in this case for making adhesives are naturally sticky. None of the parties has raised a question as to any monomer, polymer or microsphere discussed herein as to whether this element has been met. It will be assumed that it has been met for all microsphere products discussed herein because they are all inherently tacky. 3M proved that the accused product, respondents' Glue G, had a glass transition temperature below -20°C. Tr. 686.

Baker claim 1 requires that the microspheres be "formed from" nonionic monomers. Silver patent claim 1, from which much of Baker claim 1 was copied, uses the phrase "consisting essentially of" before listing the groups of monomers that could be used. This phrase would allow some nonionic monomers to be used. If the Baker applicants had wanted to claim only microspheres made entirely from nonionic monomers, they could have used the more commonly used phrase "consisting only of", a closed term that clearly would have limited the monomers to nonionic monomers. If the Baker applicants did not want to limit the claim to nonionic monomers, they could have used the phrase "comprising", a commonly used open term that clearly would have allowed the use of ionic monomers as well as nonionic monomers.

Respondents contend that one with skill in the art would read the term "formed from nonionic monomers" as an open term, not excluding other components (such as ionic monomers), as long as the other components did not materially affect the invention. Whether the microsphere is formed from ionic or nonionic monomers or a combination of both would not affect the physical characteristics of the microsphere.

The phrase "formed from" is not a commonly used term in patent claims, and it is not clear why the Baker applicants chose an ambiguous term if they intended to exclude all monomers except nonionic monomers. The phrase "formed from" will be given its ordinary meaning to one with skill in the art of adhesives, not patent law, if its ordinary meaning can be ascertained.

The plain meaning of the phrase "formed from" would include some of the process steps by which the microspheres are made, as well as indicating what the composition of the microspheres made of these monomers would be.

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The whole phrase in Baker claim 1 is "formed from nonionic monomers", and this suggests that it was the charge on the monomers that was important to the claim rather than other characteristics of the monomer. But common sense indicates that the types of monomers from which the nonionic monomers can be selected also are important to the physical characteristics of the final microsphere. For example, when isooctylacrylate is the principal monomer used, it contributes to the tackiness of the final microsphere. Resp. Ex. 252.

The Baker claim 1 microspheres must have been prepared by "aqueous suspension polymerization" in the presence of micelles. This is part of the process, but it is this process that assures that the microspheres will be relatively large, generally of the same size, and that they will be spherical. These are important inherent physical characteristics of a microsphere. So the required suspension polymerization process helps define the physical characteristics and structure of the microsphere.

The requirement that the microspheres be prepared in the presence of an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter is related only to the process and not to the product, once formed.

The charges on a monomer are sometimes important in stabilizing the process while the microspheres are being polymerized. This is why Silver claim 1 required an ionic comonomer. But the Baker requirement that the microspheres be formed from nonionic monomers is not based on any particular characteristic of a nonionic monomer. This requirement is in the claim only to distinguish the claim from the Silver patent, which required an ionic comonomer.

In Baker claim 1, the second phrase modifying the word "microspheres" states "and comprising a major portion of at least one oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester." Both of these are nonionic monomers, so the second phrase would not be inconsistent with the construction given the first phrase. The second phrase just requires that one of two types of nonionic monomers be included. These two limitations are not redundant.

The product of both the Baker and the Silver patents is a microsphere. Once the microsphere has been formed by suspension polymerization, there is no discernible difference in physical characteristics between the Baker patent microsphere and the Silver patent microsphere. There will be a difference in the chemical composition of the products because the products contain different monomers. There may be a charge on the microsphere when it has been formed, and the charge will vary depending on the particular process used to make the microspheres. Resp. Ex. 252 at 928. The charge on the microsphere has no effect on the structural characteristics or function of the microsphere once formed.

The microspheres of the Baker and Silver patents are defined in terms of identical physical characteristics some of which are identified in Baker claim 1. Certain additional physical characteristics of the microsphere are inherent in their being made by a suspension polymerization process. These characteristics are that the microspheres will be spherical, relatively large compared to latex particles made by emulsion polymerization, and most of the microspheres made in the same process will be about the same size.

The applicant for the Silver patent (or his attorney) wrote a claim that required the presence of an ionic comonomer in the microsphere. Claim 1 of the Silver patent requires a copolymer microsphere "consisting essentially" of certain nonionic and ionic monomers. At the time that the Silver patent application was filed, Dr. Silver thought that he could not create microspheres using an ionic suspension stabilizer instead of an ionic comonomer. Resp. Ex. 252 at 477. After the Silver patent had been issued, Baker and Ketola did additional research showing that certain ionic suspension stabilizers could be substituted for an ionic comonomer. They learned that they did not need an ionic comonomer to make microspheres. Their patent requires an ionic suspension stabilizer in the preparation process instead of an ionic comonomer.

Baker claim 1 is construed to show the intent of the inventors, who were trying to distinguish their microspheres (completely formed from nonionic monomers) from the Silver microspheres that consisted of nonionic monomers and at least one ionic comonomer. This distinction is conveyed to the reader of the Baker patent. The phrase "formed from" has no established meaning as a traditional open term or closed term used in patents. The phrase is construed as a closed term to reflect the intent of the inventors. The words "formed from" are construed as requiring the microspheres to be made entirely from nonionic monomers. Although the phrase "formed from non-ionic monomers" is not defined in the patent specification or file history, the intent of the inventors to use only nonionic monomers to distinguish their claims from the Silver patent claims is clear.

One with skill in the art of adhesives would understand that the Silver patent required the use of a combination of nonionic monomers and an ionic comonomer, and that the Baker patent required the use of only nonionic monomers. The Baker patent specification describes the microspheres of the

Baker patent as "similar" to the microspheres of the Silver patent, not identical to them. The inventors of the Baker patent obviously were aware of the Silver patent, and they were trying to distinguish the Silver microspheres from the Baker patent microspheres. The inventors intended to require the Baker patent microspheres to be made entirely from nonionic monomers. The reader is made aware of this in the patent specification.

To reflect this intent of the inventors, the phrase "formed from nonionic monomers" in Baker claim 1 is construed as a closed term that excludes any microsphere formed from both nonionic and ionic monomers. It is found that the Baker patent microspheres must be formed completely and 100% from nonionic monomers.

6. Ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter

Claim 1 requires that the microspheres be prepared in the presence of an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter.

a. Ionic suspension stabilizer

All of the claims of the Baker patent that are in issue require either that the microspheres be prepared in the presence of an ionic suspension stabilizer or that an ionic suspension stabilizer be charged to the reaction vessel.

Mr. Ketola needed to distinguish his process from the prior art, but he also wanted [

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] Tr. 443. A broad patent for microsphere adhesives would avoid the need to file dozens of patent applications covering all the individual processes that would work. Mr. Ketola made a number of experiments to this end. [

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] Tr. 444-446, 3M Ex. 40, at 51.

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] Tr. 447. A polar molecule has no electric charge. Mr. Ketola testified that the polar molecule had a polarity, and that one end would be more positive and one end would be more negative, but this was all within the same molecule. Tr. 447. In an ionic particle, there is a definite positive or negative charge on the molecule. Tr. 448. In a polar molecule, the electrons are attracted to one end of the molecule, creating an imbalance in electrons within the same molecule. The 7tails of the molecules that are attracted to water form a soft protective shell around the molecule that offers short-range protection to the particle from other particles. In contrast, when the particle is ionic or carries a charge, it repulses particles carrying the same charge at a great distance. [

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] Tr. 450-51. [CONFIDENITAL

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The applicants for the Baker patent did not define the term "ionic suspension stabilizer" in the patent specification or file history. The word "ionic" means that a particle carries a definite positive or negative charge. An ionic suspension stabilizer uses ionic or electrostatic stabilization to prevent or limit agglomeration. If it has polar molecules, it may also have a steric stabilizing function as well. The slight charge found on a polar molecule does not make it an ionic suspension stabilizer. The Baker patent claims and covers only ionic suspension stabilizers, and they do not work in the same way as a steric stabilizer.

The reader of a patent must be able to ascertain what a claim means. To read a claim that requires the use of an ionic suspension stabilizer as covering the exact opposite, i.e., a nonionic suspension stabilizer, under the doctrine of equivalents would make the patent claim meaningless. Hoganas AB v. Dresser Industries, 9 F.3d 948, 28 U.S.P.Q.2d 1936 (Fed. Cir. 1993); Conopco, Inc. v. May Dept. Stores, 32 USPQ2d 1225 (Fed Cir. 1994).

Dr. Baker and Mr. Ketola added the limitation requiring an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter in order to overcome a rejection of their earlier claims. [

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] The applicants relied on this limitation and one other to distinguish their invention over the prior art, after the examiner had rejected their claims over Pohlemann and Morehouse. Resp. Ex. 3, Chernivec amendment after final rejection, received by the Patent Office on November 24, 1978. The claims were then allowed. Resp. Ex. 4. This precludes 3M from construing the ionic suspension stabilizer requirement in the Baker claims as not requiring an ionic suspension stabilizer with about this interfacial tension. The Baker patent claims cannot be construed as covering nonionic stabilizers under the doctrine of equivalents, first because of prosecution history estoppel, and second because [CONFIDENTIAL]

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The term "ionic suspension stabilizer" as used in this patent means just that. Neither steric stabilizers nor nonionic stabilizers can be substituted for ionic suspension stabilizers under the doctrine of equivalents.

The Baker patent discloses a list of ionic stabilizers with a wide range of ionic strength. Tr. 671-72, 3M Exs. 2, 40 at 51. Two examples where the suspension stabilizer is only weakly ionic are Example 3 (GAF Gafquat 755) and Example 10 (DMAEMA). 3M Ex. 2 and Ex. 40 at 51. One skilled in the art would recognize that when only weakly ionic stabilizers are used, steric repulsion may be helping to stabilize the process. Tr. 669-672.

3M takes the position that a polar nonionic suspension stabilizer that uses steric repulsion to stabilize the process is the equivalent of the weakly ionic suspension stabilizers identified in the Baker patent that need steric repulsion to help stabilize the suspension. 3M argues that they perform the same function as a weakly ionic suspension stabilizer, that they work in the same way, and that the same result is achieved by both. Tr. 1150-1152.

The doctrine of prosecution history estoppel prevents this argument from being accepted. In any event, an ionic suspension stabilizer and a steric stabilizer work in an entirely different ways. One uses strong electrostatic repulsion that works over a wide distance, while steric stabilization is more local, and provides a soft cushion around the particle.

b. <u>"...having an interfacial tension of at least about 15.0 dynes per centimeter"</u>

This phrase follows the phrase "ionic suspension stabilizer." The Baker patent teaches the use of an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter instead of the ionic comonomer required by the Silver patent. This is one of the two distinctions between the claims in the two patents. (The other was the use of only nonionic monomers.)

The ionic suspension stabilizer with about this interfacial tension is described as an "essential ingredient" in the Baker patent specification. Resp. Ex. 2, col. 1. Column 2, lines 51-55, of the Baker patent warns the reader that if the interfacial tension falls below about 15.0 dynes per centimeter, "there is insufficient stabilization of the final polymerized droplets and agglomeration may occur."

The inventors defined interfacial tension at col. 2, line 44, as meaning the value determined between the monomer phase and a 1.0 percent by weight aqueous solution of the stabilizer. The patent gives a standard test to determine interfacial tension.

The interfacial tension measurement in the patent has an experimental error of 0.2 dynes per centimeter. Respondents therefore construe the phrase "at least about 15.0" as including stabilizers with interfacial tension measurements as low as 14.8 dynes per centimeter, but no lower. This interpretation is not adopted because it gives too narrow a construction to the word "about" in the claim.

Complainant argues that the word "about" should include stabilizers with much lower interfacial tension measurements.

The construction of this phrase raises a problem similar to the problem of construing ionic suspension stabilizers. Dr. Baker and Mr. Ketola did not disclose to the PTO [

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the inventors gave up their right to a broad construction of the word "about" in this claim.

The Baker patent inventors wanted a broad claim to prevent circumvention of the patent by competitors. [

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] because the patent that they obtained taught the public that these products would not work.

Because the Baker patent warns the reader that if the interfacial tension falls below about 15.0 dynes per centimeter, agglomeration may occur, 3M is precluded from capturing more than one or two degrees below 15.0 dynes per centimeter within the scope of this term. The warning in the patent would insure that the reader would not risk going much lower than one or two degrees below 15.0 dynes. The word "about" would be construed narrowly by a cautious reader wanting to avoid agglomeration. One cannot include under the patent claim precisely what the patent warned would be unsafe, [CONFIDENTIAL CONFIDENTIAL]

The word "about" is construed as covering interfacial tension as low as 13 dynes per centimeter, but no less.

7. The step of charging to a reaction vessel "a substantially water-insoluble polymerization initiator"

Independent claim 7 of the Baker patent claims "a suspension polymerization process for preparing infusible, solvent-insoluble, solvent dispersible, inherently tacky, elastomeric polymeric microspheres" comprising three steps, "whereby elastomeric, solvent-dispersible polymeric microspheres are formed from said emulsion." The first step is charging to a reaction vessel four specific substances. The third substance is "a substantially water-insoluble polymerization initiator."

Neither the Baker patent nor the file history defines the phrase "substantially water-insoluble polymerization initiator". To one working with polymerization processes, "substantially water-insoluble initiator" means a suspension polymerization initiator, such a benzoyl peroxide, having low water-solubility and high monomer-solubility. An oil-soluble initiator is the exact opposite of a water-soluble initiator. One is not the equivalent of the other. One working with polymer adhesives would have no trouble recognizing that water-soluble initiators commonly are used in suspension polymerization.

Meeting any claim limitation by relying on an in situ change that takes place during the reaction raises the question of whether the reader of the patent would understand that this change was likely to occur. A chemist would be aware that in situ changes would be likely to occur, but not aware that others would be likely to occur. One with ordinary skill in the art is not expected to be able to predict unusual or unexpected changes in situ. He is expected to be aware of obvious changes that one skilled in the art should know would occur just from reading the initial recipe and understanding how these ingredients usually react when combined. This issue is discussed in the infringement in connection with each in situ interaction that 3M relies upon to show that the respondents are infringing a claim.

VALIDITY OF THE BAKER PATENT

Findings:

1. Baker patent claims 1 and 2 are invalid as anticipated under Section 102(f) and Section 102(g) of the Patent Act.

2. The other Baker patent claims in issue are not invalid as anticipated by the prior art.

3. The Baker patent claims in issue are not obvious under Section 103 of the Patent Act.

4. The Baker patent claims in issue are not indefinite under Section 112 of the Patent Act.

Discussion:

The presumption of validity

A patent is presumed to be valid. 35 U.S.C. § 282. Under this presumption, the respondents must prove facts supporting a conclusion of invalidity by clear and convincing evidence. Innovative Scuba Concepts, Inc. v. Feder Industries Inc., 26 F.3d 1112, 1115, 31 U.S.P.Q.2d 1132, 1134 (Fed. Cir. 1994).

In 1977, the Patent and Trademark Office required an applicant to submit a full text copy of the pertinent portions of the prior art to the examiner. MPEP § 707.05(b). The file history of the Baker patent indicates that 3M did not provide a copy of the Silver '140 patent to the PTO with the Baker patent application, although the Silver patent is the most material prior art to the Baker patent. The examiner on the Baker patent already knew about the Silver patent. Not only is the Silver patent discussed in the background of the invention set forth in the Baker patent specification, the same examiner (Mr. Wong) was the examiner in the Silver patent prosecution. The examiner at one time had a copy of the Silver patent in his possession. Based solely on a technical oversight made by the attorney prosecuting the Baker patent, the failure to give the examiner a copy of the Silver patent, the Baker patent could be denied the usual presumption of validity with respect to the Silver patent. See Ceco Corp. v. Bliss & Laughlin Industries, Inc., 557 F.2d 687, 691 and n. 10, 195 U.S.P.Q. 337, 340 (9th Cir. 1977). But because the examiner had been the examiner in the Silver patent prosecution and that patent is discussed in the Baker patent specification, the Baker patent should not lose its presumption of validity.

ANTICIPATION

Two valid patents for the same invention cannot be granted either to the same or to a different party. Miller v. Eagle Mfg. Co., 151 U.S. 186, 197 (1894). An applicant cannot obtain more than one valid patent for either the same invention or for an obvious modification of the same invention. In re Longi, 759 F.2d 887, 892, 225 U.S.P.Q. 645, 648 (Fed. Cir. 1985).

Product-by-process claims define a product, not a process. Atlantic Thermoplastics Co. v. Faytex Corp., 970 F.2d 834, 845, 23 U.S.P.Q.2d 1481, reh. in banc denied, 974 F.2d 1279, 23 U.S.P.Q.2d 1801, 974 F.2d 1299, 24 U.S.P.Q.2d 1138 (Fed. Cir. 1992). "If the product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a difference process." In re Thorpe, 777 F.2d at 697; 227 U.S.P.Q. 964, 966 (Fed. Cir. 1985).

The first question raised under this section is whether claim 1 of the Baker patent is anticipated by the microspheres disclosed and claimed in the Silver '140 patent.

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1. **The Silver patent microspheres do not anticipate the microspheres claimed in Baker claim 1**

The physical characteristics of the microsphere product disclosed and claimed in the Silver '140 patent and the microsphere product claimed in claim 1 of the Baker '152 patent are indistinguishable. There will be a chemical difference between the two microspheres after they are formed, because the microspheres are made from different monomers, and there may be a difference in the charge on the microspheres. The processes by which the products are made are similar but not identical. There are differences between the microspheres of the Baker and Silver patents after they are formed, but these differences are not claimed in either patent.

Both claim 1 of the Baker patent and the Silver patent claim polymeric microspheres made by a suspension polymerization process. Inherent in this process is the production of microspheres that would be relatively large, spherical in shape, and similar in size to one another. Both claim 1 of the Baker patent and the Silver patent have express limitations requiring that the microspheres be infusible, solvent-insoluble, solvent-dispersible, inherently tacky, and elastomeric.

The Silver patent claims a microsphere that is made from nonionic monomers and one ionic comonomer (or a nonionic monomer that becomes ionic during the reaction). [

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] In contrast, Baker patent claim 1 claimed microspheres formed from nonionic monomers, and used an ionic suspension stabilizer rather than an ionic comonomer.

The term "formed from nonionic monomers" has been construed to mean formed entirely from nonionic monomers to reflect the intent of the Baker patent applicants to distinguish their microsphere from the Silver microsphere. Nevertheless, the structure and claimed physical characteristics of the microspheres of the Baker patent and the Silver patent are the same.

Dr. Silver did not think that microspheres could be made entirely from nonionic monomers, while this is what the Baker patent claims. Whether only nonionic monomers are used or an ionic comonomer is also used affects both the final microsphere and the process for making the microsphere. After the microsphere has been formed, however, the claimed and inherent physical characteristics of the microsphere are the same.

The other process limitation in the Baker and Silver patents that gives the microsphere some of its inherent physical characteristics is the requirement that the microspheres be made by suspension polymerization. This process produces microspheres that are relatively large and spherical, and all of the microspheres are about the same size.

The microspheres disclosed and claimed in the Silver patent do not anticipate the microspheres claimed in Baker patent claim 1 only because the Baker patent does not require an ionic comonomer. This does not change the claimed or inherent physical characteristics of the microsphere once formed. To prove anticipation, every element in the claim must be found in the anticipating prior art reference. The element of "formed from nonionic monomers" in Baker claim 1 is not found in the Silver patent.

2. The second Silver [C] anticipates Baker claim 1

In his work at 3M, Dr. Silver made two groups of experiments using a [CONFIDENTIAL] These experiments are recorded in Dr. Silver's laboratory notebooks, Resp. Ex. 155, at 46 and 53.

In his first [

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For the second [

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Dr. Silver thought that this second experiment [

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] Tr. 2230, 3M Ex. 458. [

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] Resp. Ex. 133 at 53, Atwood Tr. 2229-2233.

Respondents point out that 3M has taken the position in this case that a process that produces as little as 25% microspheres would infringe the Baker patent. Poehlein Tr. 1111-1112, 3M Ex. 341. [CONFIDENTIAL

CONFIDENTIAL] Atwood Tr. 2225-2228. Resp. Ex. 155.

Because IOA is listed in the Silver patent as an eligible nonionic monomer, and because the Silver patent microspheres are indistinguishable from the Baker patent microspheres, one can conclude that microspheres made from IOA have the physical characteristics claimed in both Silver claim 1 and Baker claim 1. The Silver [CONFIDENTIAL] met all of the other limitations of Baker claim 1 except that it was not established that the [

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limitation relates only to the process by which the product was made, it has nothing to do with the inherent physical characteristics of a microsphere, and it is not considered in determining whether the product is old in the art.

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3. <u>Neither the first nor the second TMA experiment anticipates claim 7</u>

Neither the [CONFIDENTIAL] met all the process limitations of claim 7, so neither experiment anticipated claim 7.

3M failed to show that the [CONFIDENTIAL] used an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter. [CONFIDENTIAL] Tr. 590-592.

Respondents failed to prove that either the [CONFIDENTIAL] experiment included the step of charging to a reaction vessel an ionic suspension stabilizer that had an interfacial tension of at least about 15.0 dynes per centimeter.

<u>SECTION 102(a)</u>

35 U.S.C. § 102(a) states:

> A person is entitled to a patent unless -
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent.

The microsphere product (the invention claimed by Baker patent claim 1) was not patented in this country in the Silver '140 patent before the invention thereof by Baker and Ketola. The Baker patent required that the microspheres be formed entirely from nonionic monomers. The Silver patent required an ionic comonomer.

The Baker patent process requires a suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter. The Silver patent does not disclose or claim such a stabilizer.

Neither claim 1 nor claim 7 of the Baker patent is invalid as anticipated under Section 102(a) of the Patent Act.

SECTION 102(b)

35 U.S.C. § 102(b) states:

> A person is entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States.

Claim 1

Claim 1 of the Baker patent is not invalid as anticipated under 35 U.S.C. § 102(b). The same invention (the microsphere of claim 1) was not patented in the Silver '140 patent in this country more than one year prior to the date of the application for patent in the United States. The Silver patent microsphere was made from nonionic monomers and an ionic comonomer. The Baker patent was made from only nonionic monomers.

Claim 7

The Silver patent does not disclose or teach a process to form microspheres that is identical to the process claimed in claim 7. The Silver patent discloses all the process limitations of claim 7 of the Baker patent other than charging to the reaction vessel an ionic suspension stabilizer

having an interfacial tension of at least about 15.0 dynes per centimeter. See Resp. Ex. 9, p. 24 and Tr. 590-591.

Respondents contend that the Silver patent discloses an ionic suspension stabilizer for the following reasons:

1. Respondents argue that Dr. Silver testified that the Silver patent taught that a water-soluble polymeric stabilizer could be used instead of the ionic comonomer required by the Silver patent claim.

In fact, the Silver patent teaches away from the use of an ionic suspension stabilizer. It lists the advantages of using an ionic comonomer instead of a suspension stabilizer. It teaches nothing about interfacial tension. The reference to a water-soluble polymeric stabilizer in the Silver patent does not anticipate the Baker patent.

2. Respondents argue that the Baker process claims 7, 8 and 10 are inherently anticipated by the prior art. A patent may be held invalid if it is anticipated either expressly or inherently by the prior art. See In re King, 801 F.2d 1324, 1326, 231 U.S.P.Q. 136, 138 (Fed. Cir. 1986). The "evidence must make clear that the missing descriptive matter is necessarily present in the [product or process] described in the reference, and that it would be so recognized by persons of ordinary skill." Continental Can Co. USA v. Monsanto Co., 948 F.2d 1264, 1268, 20 U.S.P.Q. 1746, 1749 (Fed. Cir. 1991). Respondents argue that the ionic comonomer in Silver polymerizes in situ and acts as a protective colloid or suspension stabilizer. Although this might occur, respondents offered no clear and convincing evidence that this necessarily occurs or that this would be recognized by one with ordinary skill in the art. Other patents disclose processes in which a suspension stabilizer

may be formed in situ from an ionic monomer, but these patents do not establish that this occurs in the Silver process.

The Baker patent does not substitute a generic claim requiring an ionic suspension stabilizer for the specific claim requiring an ionic comonomer in the prior art Silver patent. If an ionic comonomer were in fact a type of ionic suspension stabilizer, a second application for a patent containing a broader claim, "more generical in its character than the specific claim in the prior patent," would not support a valid patent. In re Goodman, 11 F.3d 1046, 1053, 29 U.S.P.Q.2d 2010, 2016 (Fed. Cir. 1993). This would make Baker patent claim 7 invalid.

But it is not found that an ionic suspension stabilizer is a generic term including the specific term ionic comonomer. [CONFIDENTIAL] and his patent taught the specific advantages of using an ionic comonomer, teaching away from a suspension stabilizer.

The Baker patent taught that a certain defined group of suspension stabilizers could be used to stabilize suspension polymerization processes making microspheres. This was a new teaching not found in the Silver patent. The specific ionic suspension stabilizer with an interfacial tension of at least about 15.0 dynes per centimeter disclosed in the Baker patent was not taught or disclosed in the Silver patent, nor was it inherently disclosed in the prior art.

3. In prosecuting a later patent application (which resulted in U.S. Patent 4,786,696 to Bohnel), 3M distinguished the Silver patent from a process for producing microspheres without the use of a stabilizer, characterizing

Silver as requiring "the use of a type of suspension stabilizer, an ionic comonomer . . . ."

Both 3M and respondents have changed their positions in this litigation from positions that they have taken in the past on the same issues. These are evidentiary admissions, not binding judicial admissions. The positions taken by the parties in this litigation and the evidence in support of these positions are given more weight than inconsistent positions taken by the parties in the past. Positions taken in the past that are inconsistent with positions taken in this case are admissible and may go to credibility.

As construed herein, the term "suspension stabilizer" excludes an ionic comonomer like that of Silver when, as in claim 7, the claim requires that the suspension stabilizer be charged to the reaction vessel. The requirement for an ionic suspension stabilizer was described as essential when that limitation was added by the applicant to overcome a rejection of an earlier claim. 3M cannot use the doctrine of equivalents to allow an ionic comonomer to be substituted for the suspension stabilizer required by claim 7 that must be added at the beginning of the reaction, even if an ionic suspension stabilizer were formed <u>in situ</u> during the reaction.

Claim 7 is not invalid as anticipated under 35 U.S.C. § 102(b).

<u>SECTION 102(f)</u>

35 U.S.C. § 102(f) states:

> A person is entitled to a patent unless -
>
> (f) he did not himself invent the subject matter sought to be patented.

"To invalidate a patent for derivation of invention [under § 102 (f)], a party must demonstrate the named inventor in the patent acquired knowledge of the invention from another...." <u>New England Braiding Co. v. A.W. Chesterton</u>

Co., 970 F.2d 878, 883, 23 U.S.P.Q.2d 1622, 1626 (Fed. Cir. 1992). "To prove derivation ... the person attacking the patent must establish prior conception of the claimed subject matter and communication of the conception to [the patentee]." Price v. Symsek, 988 F.2d 1187, 1190, 26 U.S.P.Q.2d 1031, 1033 (Fed. Cir. 1993).

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Claim 1 of the Baker patent was anticipated under § 102(f). Respondents proved by clear and convincing evidence that Baker and Ketola acquired knowledge of the invention from Dr. Silver, and they proved that the conception of the claimed subject matter was communicated to Baker and Ketola before they filed their patent application.

SECTION 102(g)

35 U.S.C. § 102(g) states:

A person is entitled to a patent unless -

> (g) before the applicant's invention thereof the invention was made in this country by another who had not abandoned, suppressed, or concealed it.

Section 102(g) does not require that the person who later made the same invention be aware of the earlier invention. To prove a patent invalid under this section, it is only necessary to prove that the same invention was made

in this country by another who had not abandoned, suppressed or concealed it.

Claim 1

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] Resp. Ex. 252 at 534-538.

Anticipation under § 102(g) requires both a prior conception and an actual reduction to practice. In re Katz, 687 F.2d 450, 454, 215 U.S.P.Q. 14, 17 (C.C.P.A. 1982). [

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The party asserting a prior reduction to practice need only show that the invention is suitable for its intended use. Scott v. Finney, 34 F.3d 1058, 1061-1062, 32 U.S.P.Q.2d 1115, 1117 (Fed. Cir. 1994). Dr. Silver was [

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] were suitable for use as an adhesive.

The microspheres produced by [CONFIDENTIAL] anticipated claim 1 of the Baker patent.

Claim 7

No clear and convincing evidence was offered by respondents to prove that the [CONFIDENTIAL] anticipated each process limitation in claim 7 of the Baker patent. [

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See Ketola Tr. 590-591. There was no evidence that the interfacial tension of the ionic suspension stabilizer was at least about 15.0 dynes per centimeter.

Because respondents did not prove that all of the process limitations of claim 7 of the Baker patent [CONFIDENTIAL] claim 7 is not anticipated under § 102(g).

OBVIOUSNESS

35 U.S.C. § 103 states:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

To be obvious, the claimed invention as a whole would have been obvious to a hypothetical person of ordinary skill in the art to which the subject matter of the invention pertains. Kimberly-Clark Corp. v. Johnson & Johnson, 745 F.2d 1437, 1448, 1452, 223 U.S.P.Q. 603, 614 (Fed. Cir. 1984). Under § 103, the standard of obviousness is "whether the invention, considered as a whole, would have been obvious to one skilled in the art, not whether it would have been obvious to one skilled in the art to try various combinations" that would eventually result in the invention. N.V. Akzo v. E.I. DuPont de Nemours, 810 F.2d 1148, 1151, 1 U.S.P.Q.2d 1704, 1707 (Fed. Cir. 1987).

A patent claim will be found invalid if the invention claimed, as a whole, would have been obvious to one of ordinary skill in the art at the time it was made. 35 U.S.C. § 103. The Supreme Court in Graham v. John Deere Co., 383 U.S. 1, 148 U.S.P.Q. 459 (1966) defined the factual inquiry that must be made:

> [T]he scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined....Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origins of the subject matter sought to be patented.

383 U.S. at 17-18.

In determining whether a patent claim would have been obvious, hindsight appraisals based on combinations of the prior art cannot be used where there is no teaching or suggestion of the combination, or any incentive to use the combinations. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 U.S.P.Q.2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988).

In this case, not much hindsight is required because Dr. Silver already had made microspheres by a process very similar to that claimed in the Baker patent and he had made some microspheres completely from nonionic monomers.

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] The requirement that hindsight not be used is applicable to combinations of the Silver patent and other prior art because others outside of 3M were not aware of Dr. Silver's unpublished experiments.

Level of skill in the art

The level of "ordinary skill in the art" is determined as of the time the invention was made. W.L. Gore & Associates v. Garlock, Inc., 721 F.2d 1540, 1553, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). In the early to mid 1970's, a person having ordinary skill in the art to which the subject matter of the Baker '152 patent pertains possessed a bachelor degree or sometimes higher degree in chemistry or engineering. They

would have had experience in emulsion polymerization and suspension polymerization, polymer science and polymer chemistry, and practical experience in making pressure-sensitive adhesives. Tr. 465-466; Resp. Ex. 252 at 451. This is a high level of skill.

The differences between the claimed invention and the prior art

Respondents rely on the following prior art patents in addition to (and in combination with) the Silver '140 patent: U.S. Patents to Ingram (Resp. Ex. 68), Cohen (Resp. Ex. 71), Merrill (Resp. Ex. 73), Waldman (Resp. Ex. 77), Fink (Resp. Ex. 74); U.K. Patent to Renfrew (Resp. Ex. 83); and the Trommsdorff publication, "Polymerizations in Suspension" (Resp. Ex. 88). (The prior art patents are collected in Resp. Ex. 147, which is a request for reexamination of the Baker patent in the Patent and Trademark Office.)

The Silver patent discloses all elements of the Baker patent claims except for the requirement that the microspheres be formed completely from nonionic monomers, and the use of an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter.

The Baker patent has not been shown to be obvious in view of U.S. Patent No. 3,620,988 to Cohen (Resp. Ex. 71) in combination with the Silver patent because no evidence was offered to show that a person of ordinary skill in the art would have been motivated to combine the two references. Cohen teaches a method of producing fusible, soluble particles that coalesce to form an adhesive having high peel strength. Tr. 607-08. This teaches away from the Baker patent, which produces infusible, insoluble, low-peel strength microspheres.

The Baker patent has not been shown to be obvious in view of the Silver patent in combination with U.S. Patent No. 3,243,419 to Ingram. The Ingram

patent describes the use of a suspension stabilization system that is similar to the suspension stabilization system used in the Baker patent, but it creates polystyrene, which is not a tacky polymer. Atwood Tr. 2167, 2205. Polystyrene is a longer-chained polymer that is used to make hard materials such as "Plexiglas". Tr. 516-17. No evidence was offered to show that one of ordinary skill in the art at the relevant time would have been motivated to combine a reference dealing with hard polymers with the Silver reference dealing with tacky polymers. There is no showing that the combination was suggested by the prior art.

The Baker patent has not been shown to be obvious in view of the Silver patent in combination with U.K. Patent No. 444,257 to Renfrew. There was no testimony at the hearing about the Renfrew patent. There was no evidence that would suggest that the person of ordinary skill in the art would be motivated to combine the teachings of Renfrew and Silver. Renfrew apparently discloses a conventional suspension polymerization process for preparing a typical suspension polymerization product. Renfrew does not teach adding high concentrations of emulsifier. While the products of Silver and Baker consist of tacky adhesive microspheres, Renfrew's product consists of hard, non-adhesive beads. 3M Exs. 2, 13; Resp. Ex. 83. At the time of the Baker invention, the general state of the art taught away from using classical suspension polymerization using suspension stabilizers to prepare adhesive products. Resp. Ex. 5.

The Baker patent has not been shown to be obvious in view of the Silver patent in combination with U.S. Patent No. 3,912,581 to Fink. As with Renfrew, there was no testimony at the hearing about the Fink patent. There was no evidence that would suggest that a person of ordinary skill in the art would be motivated to combine the teachings of Fink and Silver. The main objective of the Fink reference is to form a suspension of 2-EHA beads that fused upon heating to form a web for interconnecting fibers. Resp. Ex. 74, col. 4, line 8-21, col. 5, lines 20-27. Fink does not teach how to use suspension polymerization to prepare infusible, inherently tacky microspheres, nor does Fink teach the use of high emulsifier concentrations. Resp. Ex. 74. Fink teaches the preparation of a film-forming material, in contrast to the teaching of the Silver and the Baker patents. Resp. Ex. 74.

The Baker patent has not been shown to be obvious in view of the Silver patent in combination with the Trommsdorff publication. There was no evidence that would suggest that the person of ordinary skill in the art would be motivated to combine the teachings of Trommsdorff with those of Silver. The Trommsdorff publication discusses the use of water-soluble initiators in suspension polymerizations, but does not discuss polymerization processes to make tacky products. Resp. Ex. 88.

The Baker patent has not been shown to be obvious in view of the Silver patent in combination with the Waldman patent. There was no evidence that would suggest that the person of ordinary skill in the art would be motivated to combine the teachings of Waldman with those of Silver, or how such a combination would make the Baker invention obvious. The Waldman patent discloses an acrylate pressure sensitive adhesive of improved internal strength that provides for a cross-linking system. Resp. Ex. 77, col. 1, l. 53-67.

<u>Secondary considerations</u>

Secondary considerations may be considered in determining patent validity under 35 U.S.C. § 103. <u>Graham v. John Deere Co.</u>, 383 U.S. at 17-18. "[A] nexus between the merits of the claimed invention and the evidence of secondary considerations is required" for such evidence to be given substantial weight. <u>Cable Elec. Products, Inc. v. Genmark, Inc.</u>, 770 F.2d 1015, 1026, 226 U.S.P.Q. 881, 887 (Fed. Cir. 1985).

The commercial success of the Silver patent and the repositionable notes that 3M made and sold using that patent cannot be used to prove that the Baker patent had commercial success. 3M contends that the Baker patent is an important improvement over the Silver patent because the [CONFIDENTIAL] 3M notes that [CONFIDENTIAL]

The Baker patent application was filed in August 1977, and the Baker process was available for 3M to use at least by that date. [CONFIDENTIAL] Tr. 419, Tr. 427. 3M was [CONFIDENTIAL] 3M takes the position that [CONFIDENTIAL] By that time, the [CONFIDENTIAL] But the scaling up of the [C]

[CONFIDENTIAL] two years after the Baker patent application was filed.

Dr. Silver testified in 1989 in the Ampad litigation. At that time, Dr. Silver was working for 3M. He testified that the [

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] Resp. Ex. 252, at 537. See 3M Ex. 157, 3M 001023-24. In the hearing in the present case, Mr. Harstad of 3M testified that [CONFIDENTIAL] Tr. 391. There is no persuasive evidence that the Baker patent process was commercially successful because [CONFIDENTIAL

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The Baker patent did not fill a long felt need nor did it solve a long-standing problem. 3M did not prove that others had tried and failed to produce the product of the Baker patent. The Silver patent disclosed a previously unknown product, tacky microspheres. 3M later found a use for these tacky microspheres in adhesives that could be used for repositionable notes, and these notes had great commercial success. It was only after 3M learned that these notes were a commercial success that [

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Although secondary considerations do not support a finding of non-obviousness for the Baker patent, respondents have failed to show by clear and convincing evidence that the Baker patent claims are invalid for obviousness under 35 U.S.C. § 103.

35 U.S.C. Section 112

35 U.S.C, § 112 states:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains . . . to make and use the same. . . .

If the claims at issue are not sufficiently precise to permit a potential competitor to determine whether it is infringing, the claims are invalid for failing to satisfy the definiteness requirement of § 112. To determine whether a claim is indefinite, one must decide whether one skilled in the art would understand the bounds of the claim when read in light of the specification. Credle v. Bond, 25 F.3d 1566, 1576, 30 U.S.P.Q.2d 1911, 1919 (Fed. Cir. 1994).

If the term "infusible" is construed as 3M construes it, the term "infusible" would be indefinite under Section 112. But in this case, the term has been construed as it was defined by the inventor in the Baker patent, and it is not indefinite.

The terms "solvent-insoluble," "solvent-dispersible," "suspension polymerization" and "solvent insoluble" have been construed herein to reflect what a person with ordinary skill in the art would think that the terms meant. These terms are not indefinite.

Patent claims must be sufficiently precise and definite to persons skilled in the art so that the public can ascertain, without undue experimentation, the metes and bounds of the scope of coverage of the claims. W.L. Gore, supra, 721 F.2d at 1557, 220 U.S.P.Q. at 316; 35 U.S.C. § 112.

Respondents argue that in this case 3M has introduced an element of indefiniteness into its patent claims by arguing that its claims cover a dual

system. This argument is rejected. Although the Baker patent discloses an emulsifier and the formation of latex particles, the Baker patent claims only suspension polymerization. The patent discloses the formation of latex as an undesirable by-product. This is a disclosure of a second process going on at the same time as the suspension polymerization process, and the Baker patent does not exclude this. It is just not part of the Baker patent claims. The Baker patent claims are not too indefinite.

UNENFORCEABILITY

Findings:

1. The applicants for the Baker patent failed to disclose material facts to the PTO in connection with the prosecution of the Baker patent.

2. There was no evidence that the Baker patent applicants intended to mislead the PTO.

3. The Baker patent is enforceable.

Discussion:

The applicant for a patent and his attorney have a duty of candor to the Patent and Trademark Office. 37 C.F.R. § 1.56(a). Violation of this duty of candor during the prosecution of a patent application constitutes inequitable conduct that renders the claims of the patent unenforceable. Paragon Podiatry Laboratory, Inc. v. KLM Laboratories, Inc., 984 F.2d 1182, 1189, 25 U.S.P.Q.2d 1561 (Fed. Cir. 1993). Inequitable conduct arises when a person owing a duty of candor to the PTO deliberately withholds information or prior art from the PTO that he knows to be relevant to issues material to the examination of the application or submits false information to the PTO, as long as there was an intent to mislead. Argus Chemical Corp. v. Fibre Glass-Evercoat Co., 759 F.2d 10, 13, 225 U.S.P.Q. 1100 (Fed. Cir. 1985), cert. denied, 474 U.S. 903 (1985). When inequitable conduct occurs in connection with one claim, the entire patent is unenforceable. Kingsdown Medical Consultants, Ltd. v. Hollister Inc., 863 F.2d 867, 9 U.S.P.Q.2d 1384, 1392 (Fed. Cir. 1988), cert. denied, 490 U.S. 1067 (1989).

Materiality

37 C.F.R. § 1.56 states:

> [I]nformation is material to patentability when it is not cumulative to information already of record or being made of record in the application, and
>
> (1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or
>
> (2) It refutes, or is inconsistent with, a position the applicant takes in:
>
> (i) Opposing an argument of unpatentability relied on by the Office, or
>
> (ii) Asserting an argument of patentability.
>
> A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

37 C.F.R. §1.56(b).

"[I]nformation [that must be disclosed] is material where there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent." Golden Valley Microwave Foods, Inc. v. Weaver Popcorn Co., 837 F. Supp. 1444, 1473, 24 U.S.P.Q.2d 1801, 1824 (N.D. Ind. 1992). If a reference teaches a key

element or step of the claimed invention that is not taught in the prior art of record, the reference is material. Citation of a prior art reference in a corresponding foreign application is strong evidence of the materiality of the reference. The rejection of a corresponding foreign application over non-disclosed prior art should cause a reasonable applicant to recognize the materiality of the non-disclosed prior art in the Patent Office.

J.P. Stevens & Co. v. Lex Tex Ltd., 747 F.2d 1553, 1564-1566, 223 U.S.P.Q. 1089, 1097 (Fed. Cir. 1984), cert. denied, 474 U.S. 822 (1985).

Whether the claims are patentable over the withheld prior art is not relevant. The question is whether a reasonable examiner would consider such prior art material under 37 C.F.R. § 1.56(a) in deciding whether to grant the application. A.B. Dick Co. v. Burroughs Corp., 798 F.2d 1392, 1398, 230 U.S.P.Q. 849, 853-854 (Fed. Cir. 1986).

The Silver patent was clearly material to the Baker patent application. This is the closest prior art to the Baker patent. It was 3M's desire to [

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The copending U.K. Baker patent application and the Ketola application also were material to the Baker patent application. See MPEP §2001.06(b). Claim 1 of the Ketola application would fall within the scope of claim 7 of the Baker patent application. [

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The Baker patent application and the corresponding U.K. Baker patent application would fall within the meaning of the term "related foreign application" contained in MPEP §2001.06(a). The subject matter was identical

and the specifications of the two applications were identical. These references were material and they were not disclosed to the PTO in connection with the application for the Baker patent.

Intent

Inequitable conduct requires proof of intent to mislead the Patent Office into granting the application. Paragon, supra, 984 F.2d at 1189, 25 U.S.P.Q.2d at 1567. Intent "may be proven by showing acts the natural consequences of which are presumably intended by the actor." Id. A finding of "gross negligence" in itself does not justify an inference of intent to deceive. Kingsdown, supra, 863 F.2d at 876, 9 U.S.P.Q.2d at 1392. Both intent and materiality must be proven by clear and convincing evidence. Braun Inc. v. Dynamics Corp. of America, 975 F.2d 815, 822, 24 U.S.P.Q.2d 1121, 1127 (Fed. Cir. 1992).

There was no showing of intent to mislead the PTO or the public in connection with the failure to disclose relevant prior art to the examiner.

The evidence does not support a finding of inequitable conduct before the Patent and Trademark Office during the prosection of the Baker patent.

INFRINGEMENT

Findings relating to Glue G and the Glue G process:

1. The Glue G process produces a product formed from nonionic monomers that is inherently tacky, elastomeric, solvent-insoluble and solvent-dispersible. The product meets the requirement of "comprising a major portion of at least one oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester", and it has a glass transition temperature below about -20°C.

2. Glue G-1 is not infusible.

3. The Glue G process produces both latex microparticles by emulsion polymerization and at least some microspheres by suspension polymerization.

4. The Glue G recipe includes water-soluble initiators that promote emulsion polymerization in the micelles.

5. Both the latex microparticles and the microspheres are prepared in the presence of at least one anionic emulsifier at a concentration level well above said emulsifier's critical micelle concentration. This results in the creation of a very large number of micelles. The amount of emulsifier in the Glue G recipe is much larger than the amount of emulsifier taught in the Baker patent. Micelles are thickly distributed all around the monomer droplets.

6.

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[CONFIDENTIAL] As they decompose in the water, they form free radicals. Most of the radicals will reach micelles, and some will polymerize the monomer in the micelles.

8. The free radicals created by the water-soluble initiators in the water phase cause emulsion polymerization to take place in the micelles, forming latex. It is possible that a radical created in the water phase would migrate to a monomer droplet where it could polymerize the monomer droplet, before it reached a micelle, but this would be rare.

9. Unless the monomer in a droplet has been polymerized, the monomer can move from the droplet through the water phase to nearby micelles where it can supply monomer for polymerization in the micelles. The monomers in the Glue G process have low water-solubility, and they will move more slowly through the water than monomers with high water-solubility, but they will move through the water phase from the monomer droplets to the micelles or from the water phase to the monomer droplets, depending on the equilibrium of the solution.

[CONFIDENTIAL] relatively large monomer droplets and millions of tiny micelles are present, in close proximity to one another.

11. Complainant failed to prove that in the Glue G process, more monomer is polymerized in the monomer droplets than in the micelles. Complainant failed to prove that the predominant product of the Glue G process is microspheres prepared by aqueous suspension polymerization of the monomer droplets.

13. Complainant failed to prove that the Glue G process is predominantly a suspension polymerization process.

14. Both suspension polymerization and emulsion polymerization are taking place in the Glue G process and some microspheres are formed by suspension polymerization.

15. Neither the latex microparticles produced by the emulsion polymerization nor the microspheres produced by suspension polymerization are prepared in the presence of an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter.

16. Complainant failed to prove that the Glue G or the Glue G-1 product or the Glue G or the Glue G-1 process infringes Baker patent claims 1, 2, 4, 5, 7, 8, or 10.

Discussion:

Literal infringement

The party alleging patent infringement has the burden of proving it by a preponderance of the evidence. Morton International, Inc. v. Cardinal Chemical Co., 5 F.3d 1464, 1468, 28 U.S.P.Q.2d 1190, 1193 (Fed. Cir. 1993).

In product-by-process claims, the process limitations must be considered in determining infringement. Atlantic Thermoplastics, supra, 970 F.2d at 846-47, 23 U.S.P.Q.2d 1491 (Fed. Cir. 1992).[1]

The doctrine of equivalents

If the accused product does not literally infringe the claim, it may infringe under the doctrine of equivalents if it performs substantially the same function in substantially the same way to obtain the same result. Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 608, 85 U.S.P.Q. 328 (1950). This doctrine cannot extend or enlarge the scope of the claims. Dolly, Inc. v. Spalding & Evenflo Cos., 16 F.3d 394, 398, 29 U.S.P.Q.2d 1767, 1769 (Fed. Cir. 1994).

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[1] There is a split of authority on this issue. Scripps Clinic & Research Foundation v. Genentech Inc., 927 F.2d 1565, 18 U.S.P.Q.2d 1001, 18 U.S.P.Q.2d 1896 (Fed. Cir. 1991), would permit a finding of infringement even if all of the process limitations were not found in the accused product.

When the invention represents only a small advance over the prior art, the invention is not entitled to pioneer status or the broad range of equivalents that normally accompanies that status. Hoganas AB v. Dresser Industries, Inc., 9 F.3d 948, 954, 28 U.S.P.Q.2d 1936, 1942 (Fed. Cir. 1993). Because the Silver patent claimed an almost identical product and a process similar in many respects to the process claimed in the Baker patent, the Baker patent is not a pioneer patent and is not entitled to a broad range of equivalents.

The Federal Circuit has taken the position that the doctrine of equivalents is the exception, not the rule, in construing patent claims:

> Application of the doctrine of equivalents is the exception, however, not the rule, for if the public comes to believe (or fear) that the language of patent claims can never be relied on, and that the doctrine of equivalents is simply the second prong of every infringement charge, regularly available to extend protection beyond the scope of the claims, then claims will cease to serve their intended purpose.

London v. Carson Pirie Scott & Co., 946 F.2d 1534, 1538, 20 U.S.P.Q.2d 1456, 1458-59 (Fed. Cir. 1991).

Because the public is entitled to "design around" a U.S. patent, there must be a way for a competitor to ascertain the scope of a valid patent claim. See Slimfold Mfg. Co. v. Kinkead Industries, Inc., 932 F.2d 1453, 1457, 18 U.S.P.Q.2d 1842, 1845 (Fed. Cir. 1991).

Prosecution history estoppel

The doctrine of equivalents is limited by the doctrine of prosecution history estoppel. Townsend Engineering Co. v. HiTec Co., 829 F.2d 1086, 1090, 4 U.S.P.Q.2d 1136, 1139 (Fed. Cir. 1987). A patentee may not recapture in a patent infringement suit through the doctrine of equivalents what has been surrendered during the prosecution of the application in the Patent Office through the narrowing or cancelling of claims to meet the requirements of the

Patent Office examiner. Graham v. John Deere Co., supra, 383 U.S. at 33 (1966).

Prosecution history estoppel applies to claim amendments to overcome rejections based on prior art and to arguments submitted to obtain the patent. Townsend Engineering, supra, 829 F.2d at 1090, 4 U.S.P.Q.2d at 1139.

If a reasonable competitor could have concluded from reading the prosecution history that the examiner relied on a specific distinction when allowing the claims, the applicant has given up coverage of the subject matter incorporating this distinction. Hoganas, supra, 9 F.3d at 953, 28 U.S.P.Q.2d at 1940.

The accused products

Complainant alleges that Taiwan Hopax Chemicals Mfg. Co. Ltd. (Taiwan Hopax or Hopax), Yuen Foong Paper Co. Ltd., and Beautone Specialties Co. Ltd (Beautone Boston) have infringed claims 1, 2, 4, 5, 7, 8 and 10 of the Baker patent in connection with the importation into the United States and sale in the United States of certain products containing microsphere adhesives designated Glue G and Glue G-1 made by Taiwan Hopax.

The repositionable notes now manufactured and exported to the United States by Taiwan Hopax contain Glue G or Glue G-1 adhesives. Tr. 1289-92; Resp. Ex. 32.

Development of the Hopax Glue G process

Mr. Hsieh, of Taiwan Hopax, was primarily responsible for the development of the commercial Hopax adhesives, referred to as Glue A, Glue E, Glue F, Glue G, and Glue G-1. Tr. 960-61, 1783-84. Mr. Hsieh's notebooks (3M Exs. 129 - 139) include Mr. Hsieh's adhesive research from 1986 to 1994. Tr. 961; 3M Ex. 129-139.

When Hopax first began to produce repositionable notes in 1986, it used Glue A. Tr. 961, 1292; 3M Ex. 340. [

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] Tr. 1265-1266. To make the latex film adhesive work as a repositionable note, Glue A was applied to the paper substrate in a discontinuous dot pattern by using a Gravure coater. The use of a dot pattern was intended to reduce the strong adhesion, but coating Glue A in a dot pattern did not solve the problem of adhesion build-up. Tr. 709. [

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Hopax then began work on the development of other glues, Glues B, C, D, E, F, and G. Only glues A, E, F, and G were sold commercially. Tr. 1688. [

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] These experiments were an attempt to design around the Baker patent by not using the emulsifier required by the Baker patent claims. They were classic suspension polymerizations because no emulsifier was used. They were unsuccessful. Tr. 956-966. For some reason, micelles must be present in the Baker and Silver patent processes before microspheres can be formed in the monomer droplets. This requires the use of enough emulsifier to create micelles. This fact had been recognized earlier by Dr. Silver. Resp. Ex. 252 at 381.

Later, Taiwan Hopax developed Glue E. In Glue E a cross-linking agent is added to the recipe. This makes the microspheres less soluble in a solvent. [

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] 3M admitted that Glue A did not produce microspheres. Dr. Schork testified that [C] was used instead of [C], and they operate similarly. Tr. 968. Yet in Glue A, the [C] does not cause suspension polymerization. 3M contends that in Glue G, the [C] interacts with free radicals, and performs the function of an oil-soluble initiator. But [C] does not do this in Glue A. Respondents contend that [C] acts as a stabilizer, not as an oil-soluble initiator.

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Glue G and Glue G-1 are made by the processes set forth in 3M Ex. 86; Tr. 1087-88. The chemicals used in Glue G and Glue G-1 and the steps showing when each chemical is added and how the chemicals are processed are set forth in 3M Ex. 86. The chemicals used in Glue G and Glue G-1 and the equipment and the raw material preparation are the same. After Glue G is produced, there is another process step. Glue G-1 is what actually ends up on the repositionable note. Tr. 1161. To simplify the discussion of the chemicals and the process, only Glue G will be discussed here, but the same conclusions apply to Glue G-1.

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] This creates an emulsion. (An emulsion is a fluid consisting of a microscopically heterogeneous mixture of two normally immiscible liquid phases in which one liquid forms minute droplets suspended in the other liquid.) The three nonionic monomers form oily monomer droplets suspended in the water.

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] Both of these stabilizers are nonionic (carry no charge), and have an interfacial

tension of less than about 15.0 dynes per centimeter. Ketola Tr. 444-445; Seiple Tr. 1457-1486. The emulsifier in the Glue G recipe also has a stabilizing effect. [

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] Tr. 1140-41; 3M Exs. 86, 279A, 336. This amount meets the requirement of the Baker patent claims, and it assures the creation of micelles, which are required for both emulsion polymerization and suspension polymerization. (Emulsifier below the CMC is dissolved in the water.)

It is clear why micelles are required for emulsion polymerization; the polymerization takes place in the micelles. But micelles are also necessary before suspension polymerization of the monomer droplets can occur. Dr. Silver discovered that monomer droplets would not polymerize and form microspheres unless micelles were present. [CONFIDENTIAL] He tried to make microspheres by using a classical suspension polymerization process without any emulsifier or micelles. The experiment was a failure. [CONFIDENTIAL

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Although Dr. Silver knew that micelles made an emulsion more stable, and that one could not form microspheres without micelles being present, once there is enough emulsifier for micelles to be formed, more emulsifier does not seem to make much difference. A large amount of emulsifier is not required to get a successful product that does not agglomerate.

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substantially water-insoluble initiator, and suggested the use of benzoyl peroxide, a traditional oil-soluble initiator used for suspension polymerization processes.) Tr. 969-970; 3M Ex. 136, at ITC 003853-003855.

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The radicals formed from the two water-soluble redox initiators also produce latex by an emulsion polymerization of monomer in the micelles.

3M's witnesses testified that after the [C] combines with the radicals and with other monomer in the water phase, it grows chains of oil-soluble oligomers that get increasingly oil-soluble as they grow. As these chains reach the monomer droplets they will polymerize them, and produce microspheres.

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] It is not clear whether he thought that the product contained microspheres or something else.

For whatever reasons, the Hopax Glue G process produces a large number of submicronic latex particles by emulsion polymerization, and the pictures of Glue G appear to disclose at least a few microspheres, although they are difficult to find. See 3M Ex. W.

Claims 1, 2, 4 and 5

Claims 1 and 4 of the Baker patent are independent claims. Claims 2 and 5 are dependent claims.

Claim 1 is as follows:

> 1. Infusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres formed from

> **non-ionic monomers and comprising a major portion of at least one oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester, said polymeric microspheres having a glass transition temperature below about -20°C, and having been prepared by aqueous suspension polymerization in the presence of at least one anionic emulsifier at a concentration level above said emulsifier's critical micelle concentration and an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter.**

Claim 2 requires the microspheres of claim 1. It also requires that the water-emulsifiable alkyl acrylate or methacrylate ester be selected from a group that includes 2-ethyl hexyl acrylate and isooctyl acrylate. [

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Claim 4 requires that the microspheres of claim 1 be disposed on at least one surface of a substrate. Paper is a substrate, and the Hopax adhesives are disposed on one side of the imported repositionable notes. Tr. 1165-66; 3M Ex. 2.

Claim 5 relates to an article of claim 4 wherein the water-emulsifiable alkyl acrylate or methacrylate ester is selected from a group that includes 2-ethyl hexyl acrylate and isooctyl acrylate. [CONFIDENTIAL

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The product produced by the Glue G process has many of the structural characteristics required by claims 1, 2, 4 and 5. It is inherently tacky and it is elastomeric. Tr. 518, Tr. 713-14; 3M Ex. J. It is solvent-insoluble and solvent-dispersible, as those terms have been defined herein. [

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] It has a glass transition temperature below about -20° C. Tr. 915, 937.

Nevertheless, complainant has not proved by a preponderance of the evidence that the Glue G product literally infringes claim 1, 2, 4 or 5.

1. The Glue G process produces some microspheres

The first question relating to whether the Glue G process infringes the product claims of the Baker patent is whether Glue G contains any microspheres at all.

3M offered testimony that [C] in the Glue G process acts like an oil-soluble initiator during the reaction, and that this initiator polymerizes monomer droplets by suspension polymerization, creating microspheres. [

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] As these oligomers grow, they become increasingly oil-soluble. Tr. 944-45, 1105-10. These oligomers, if they reach a monomer droplet, can enter the droplet and cause suspension polymerization.

Respondents contend that [C] does not act like an oil-soluble initiator, and that it has only a stabilizing function, noting that [C], a similar ingredient in Glue A, did not act like an oil-soluble initiator. Respondents do not dispute that [C] could react with radicals and other monomer in the water phase to form oligomers.

It must take some amount of time for the water-soluble redox initiators to degrade in the solution, creating radicals, and for those radicals to find [C] It must take some amount of time for these oligomers to grow. It must take some time for the oligomers to find a monomer droplet and polymerize it. During this time, other radicals already formed from the water-soluble initiators in the Glue G recipe will be finding and entering micelles, causing the monomer in the micelles to polymerize, making latex microparticles. Polymerization of the micelles has a head start over polymerization of the monomer droplets, but the record does not show how much of a head start polymerization of the micelles has, or what effect this will have on the number of monomer droplets, if any, that are polymerized into microspheres.

Respondents contend that no microspheres are formed in the Glue G process, and that it is entirely an emulsion polymerization system.

The Hopax Glue G process starts out with a recipe that looks like an emulsion polymerization recipe. [

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] It would not be difficult for monomer to migrate from a droplet to a micelle right next to it (or from a micelle to a droplet), even though most of the monomer is not very water-soluble. It will not have far to go.

Dr. Kesti testified for 3M that he made experiments that showed that [C] would achieve suspension polymerization of the monomer droplets even though a water-soluble initiator was used. Tr. 815-20, 1106, 3M Ex. 412. When he started with Baker Example 1, leaving out [C] but adding the Hopax water-soluble redox initiator in place of the oil-soluble benzoyl peroxide of the Baker patent, he obtained latex particles less than a micron in size. Tr. 953-954; 3M Phys. Ex. T; 3M Ex. 412, at 41. When he added [C] to the Hopax water-soluble redox initiator, he obtained much larger particles in the range of three microns and above. 3M Phys. Ex. T; 3M Ex. 412, at 41.

In another reaction, Dr. Kesti used a similar water-soluble initiator with and without [C] Without [C] he obtained latex particles under a micron in size. With [C] he obtained much larger particles of about three to seventeen microns in size. Tr. 815-20, Tr. 1106, 3M Ex. 412, at 41.

Dr. Kesti's tests show that by adding [C] to a water-soluble initiator, suspension polymerization can be achieved, when using a <u>modification</u> of Example 1 of the Baker patent. Tr. 815-20, Tr. 1106, 3M Ex. 412 at 41.

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Dr. Schork, testifying for 3M, concluded that these experiments showed Mr. Hsieh that the Hopax water-soluble redox initiators, [CONFIDENTIAL] would produce the same result as the benzoyl peroxide (the oil-soluble initiator) suggested as the initiator in the Baker patent. See Tr. 970. This conclusion is supported by the fact that Mr. Hsieh then began using [C] in this process. Mr. Hsieh was aware that the Baker patent required the use of an oil-soluble initiator, and he would have had an incentive to find a substitute for an oil-soluble initiator.

Respondents point out that Dr. Kesti did not use the Glue G process in making his tests. He used a modified version of Baker Example 1. Dr. Kesti's tests show that [C] could perform the function of an oil-soluble initiator in polymerizing monomer droplets, but not that [C] would perform this function in the Glue G process, or that it perform this function in the same way that the Baker patent oil-soluble initiator would perform this function.

Respondents rely on Dr. Quirk's tests using the commercial Glue G process. His tests showed that with or without [C], the Glue G process worked in the same way and produced the same product: particles larger than a micron. Tr. 1895-1898, Resp. Ex. S-1, photographs T083-T086; Resp. Ex. C-1, at T063-T086. Dr. Quirk testified that these tests showed that [C] may have performed a stabilizing function, but it did not act as an oil-soluble initiator. When benzoyl peroxide was used as the initiator (an oil-soluble initiator), the Hopax Glue G process produced microspheres. When [CONFIDENTIAL] was used without any [C], the Hopax process produced only latex. Tr. 1894. Dr. Quirk's tests support a finding that the Hopax reaction is predominantly or entirely an emulsion polymerization process.

Mr. Seiple's experiments confirmed the conclusion of Dr. Quirk. Tr. 1469-1470. Both Dr. Quirk and Mr. Seiple testified that the Glue G process produces larger particles when [C] added. Resp. Exs. L, C-1, T085 and T086, C-4, T422 and T433; Tr. 1897-98, Tr. 1469-70. Mr. Seiple testified that without [C], the Glue G process produced larger (or coarser) particles earlier in the reaction than when [C] was added. He thought that [C] might play a role in stabilizing the small latex particles. Tr. 1469-1470.

Respondents also rely on Dr. Atwood's testimony that [C] oligomers in the water phase would have their hydrophilic ends in the water, and this would make it difficult for the oligomers to enter the monomer droplets. Tr. 2130--2134. This would explain why a few microspheres could be formed in the Glue G process, but not very many.

The tests made by Dr. Quirk and Mr. Seiple used the commercial Glue G process, rather than a modified version of Baker Example 1 using different ingredients than the Glue G process. 3M argued that its analog of the Glue G process was more than favorable to respondents, but it is not entirely clear how the Glue G process works, and a substitute for the Glue G process should not be more reliable than a test made on the Glue G process itself.

3M failed to prove that [C] was the equivalent of a monomer-soluble initiator or that the addition of [C] to the Hopax mixture created a predominantly suspension polymerization process that produced primarily microspheres with a by-product of tiny latex particles.

The evidence offered by 3M shows that it was possible for [C] to change in situ when it interacted with other ingredients in the Glue G process. At least some [C] in the Glue G process would have a chance to react with radicals created by the water-soluble initiators to form oligomers that became more and more oily, and some of these oligomers would have a chance to reach a monomer droplet, where they might enter and polymerize the droplet.

It is found that the large particles produced in the Glue G process may include a few microspheres. It is also found that the Glue G process does not have a "substantially water-insoluble polymerization initiator" or the equivalent of one that works in substantially the same way as the water-insoluble initiator required by claim 7 of the Baker patent.

2. The Glue G Process is predominantly a suspension polymerization process.

3M contends that the Glue G process is a dual process using both suspension polymerization and emulsion polymerization, but that suspension polymerization in the Glue G process produces enough microspheres to give the Glue G adhesive its repositionable characteristic.

Respondents contend that the Glue G process is entirely (or almost entirely) an emulsion polymerization process. They offer SEMs and other pictures of early and late stages of the Glue G process showing large particles with irregular shapes that do not look like microspheres. 3M's witnesses see microspheres in some of these pictures.

As a practical matter it is difficult to determine with any precision how much polymerization is occurring in the monomer droplets and how much is occurring in the micelles outside of the droplets. A suspension polymerization reaction in the droplets should produce large spherical particles, while emulsion polymerization in the micelles should produce submicronic latex particles. Respondents contend that these submicronic latex particles join together to make larger particles, but that in the Glue G process the agglomeration stops before these particles agglomerate into a total mass. Tr. 496-97, 927-930, 945-47, 1975.

Complainant and respondents offered testimony in support of their positions:

(a) 3M's calculations of number of microspheres

To prove that large numbers of microspheres were formed by the Hopax Glue G process, complainant's witness Dr. Schork offered a computation to show that about one in ten free radicals formed in the Glue G process would enter a monomer droplet, while nine in ten would enter a micelle. Tr. 2386-82; 3M Ex. 474. Dr. Schork took a scaled down version of the Glue G recipe, determined the amount of emulsifier that would dissolve in the water, subtracted that amount from the emulsifier, determined the amount of monomer that would be used, assumed a size for the monomer droplets, determined the amount of emulsifier that would be needed to cover the monomer droplets, then subtracted that amount from the emulsifier, then determined from the remaining amount of emulsifier what the surface area of the micelles created by this emulsifier would be. Finally he compared the total surface area of the monomer droplets to the total surface area of the micelles. Tr. 2386-2388. Although there was far more surface area on the micelles than on the droplets, the difference was not millions to one in favor of the micelles. Instead, the computation showed that about 10 free radicals would enter a micelle for every free radical that entered a monomer droplet. This computation involved a number of estimates and assumptions, but the general idea appeared to be sound. Another of complainant's expert witnesses (Dr. Poehlein) endorsed the results of these computations. He had made his own computation separately, and there was no great difference between the two. His computation showed a ratio of 16 to 1 in favor of radicals reaching micelles. Tr. 2388. He had assumed a different area for a single surfactant molecule on the surface. After discussing the

two computations with Dr. Schork, Dr. Poehlein supported Dr. Schork's computation. Tr. 2388.

Dr. Poehlein testified that some free radicals entering a micelle would be extinguished immediately. The first free radical entering a micelle would combine with monomer and begin to grow chains of polymer. It would continue to polymerize monomer until a second free radical entered the micelle. This would stop the reaction, and both free radicals would be extinguished. (Tr. 1115.) In contrast, a free radical entering a monomer droplet would be unlikely to see another free radical because there is a relatively large amount of monomer in the droplet. A number of radicals could enter the droplet and continue to grow chains of polymers. Although fewer radicals reached the droplet, the ones that did would continue to polymerize the droplet. There may be hundreds of growing free radicals in a droplet, while a micelle would have at most one. Tr. 1115. Up to half of the free radicals that enter micelles are extinguished without polymerizing any monomer. Tr. 919-920, 1114-1116, 1145-46. At least half of the radicals that enter micelles are not extinguished when they enter the micelle, and they will polymerize monomer in the micelle (if monomer is present) until they are extinguished by another radical.

The computations made by 3M's witnesses support a finding that some monomer droplets probably were reached by radicals and polymerized into microspheres during the Glue G reaction.

If one relies upon the calculations of complainant's expert witnesses (which were challenged by respondents), it is still not clear how much emulsion polymerization and how much suspension polymerization may be taking place in the Glue G process.

Dr. Poehlein calculated that in the Hopax system, if there is plenty of monomer available in the micelles, anywhere from 25% to 60% of the final product would be formed in the monomer droplets. Tr. 1111-17; 3M Ex. 341. Dr. Poehlein also testified that there would be more cross-linking in the monomer droplets than in the polymers made in the micelles because in the monomer droplets, two very large radicals would be likely to have cross-linking, while in the micelles, one radical might grow large and have cross-linking, but the second radical that stopped the reaction would be small, and less likely to form branches and cross-linking. Tr. 1116.

If the 60% figure were correct, the testimony would support a finding that the process was predominantly a suspension polymerization process. Tr. 1612-1613. If the 25% figure were correct, the testimony would support a finding that the process was predominantly an emulsion polymerization process. These calculations offer such a wide range of possibilities that they are not strong support for the proposition that the Hopax system is predominantly a suspension polymerization process. The testimony does support a finding that there is less cross-linking in emulsion polymerization than in suspension polymerization.

If the final Glue G product contained only 25% recoverable microspheres made by suspension polymerization and if it were found that this was enough to be covered by the product claims of the Baker patent, then the second experiment of Dr. Silver would have to be found to anticipate the Baker product claims.

It is suspension polymerization, not a dual system, that is claimed by the Baker patent. When one with skill in the art read the Baker patent and learned that there was an emulsifier in the recipe and that latex was being

formed, he would have realized that the Baker patent taught suspension polymerization, but that there was some emulsion polymerization going on at the same time. The Baker patent warns against the production of too much latex, and the latex is described as being undesirable. One trying to design around the Baker patent probably would have believed that he had succeeded if only 25% of the final product was microspheres and 75% was latex particles. Dr. Silver, Mr. Ketola and Dr. Baker all thought that Dr. Silver's experiment in which he made a product by suspension polymerization that was 30% microspheres by weight was a failure.

It is found that the calculations of complainant as to how much suspension polymerization is taking place in the Glue G process do not prove by a preponderance of the evidence that the Glue G process is predominantly one of suspension polymerization.

(b) <u>Correlation of droplet size and particle size</u>

Dr. Schork and Dr. Poehlein testified for 3M that there was a correlation between droplet size and particle size in the Hopax Glue G process. Tr. 948-49; 3M Exs. 339, 349. They testified that this correlation is found only in suspension polymerization. Tr. 1419, 1668-69, 1904. The particles in the Glue G adhesive are much larger than normal latex particles produced by classical emulsion polymerization. Latex particles usually are less than one micron in size. Tr. 1118-19, 1131.

Dr. Schork testified that his tests showed that when a process like the Glue G process is run with monomer droplets having a size of 15-20 microns, polymer particles of 15-20 microns are produced. Tr. 948-49; 3M Exs. 339, 349. When the size of the monomer droplets is reduced to 2.5 microns in size, and no other changes are made, polymer particles of 2.5 microns are produced.

Tr. 948-9; 3M Exs. 339, 349. The correlation between droplet size and final particle size suggests that the process creates microspheres by suspension polymerization in the droplets. Tr. 923, 948. This would be inconsistent with respondents' theory of agglomeration.

There are two problems with these tests:

1. These tests were not made using the Hopax procedures for making Glue G; for example, a different amount of [C] was used in Dr. Schork's model. 3M used only one of the three monomers in the Glue G recipe. It changed the solids content of the reactants, and the [C]-to-monomer ratio, and it did not use industrial grade chemicals. Tr. 1004-1006. When Hopax used commercial grade chemicals instead of industrial grade chemicals, it did not get satisfactory results.

Mr. Hsieh made the same tests using the Hopax commercial process, and the monomer droplet size was different from the final microparticle size. Resp. Ex. C-5. Tr. 1793-1797.

2. When Dr. Schork measured the particles, he used a Microtrac particle size analyzer, which measures particle sizes but not particle <u>shapes</u>, and then reports the <u>average</u> size of the particles, without showing variations in the sizes. This test does not show whether the particles measured were microspheres or microparticles of different shapes. Tr. 949, 1196-98; 3M Ex. 349.

There could have been agglomeration of smaller latex particles until they reached a particular size range, but respondents offered no compelling explanation as to why the particles would stop agglomerating as soon as the approximate size of the droplets was reached, but no sooner or later.

Respondents did submit pictures of the Glue G process appearing to show that smaller particles were combining together to make larger particles with irregular shapes.

3M offered no compelling explanation of the irregular shapes of the large particles in Glue G that can be seen in respondents' pictures of early and late stages of the Glue G process.

Mr. Hsieh did not use a Microtrac to measure the microparticles in Glue G, although Hopax had one. Tr. 1827-28, 199-2000. Mr. Hsieh, however, testified that he could see irregular shapes in his microscope and respondents offered SEMs of these irregular shapes. 3M did not prove that Hopax took thousands of SEMs and selected a few non-representative samples that would support its theory. See Tr. 2245.

It is found that the sizes of the microparticles made by the Glue G process relative to the sizes of the monomer droplets do not prove that the Glue G process is predominantly a suspension polymerization process.

(c) **Admissions made in the Hsieh '083 patents and correspondence**

Respondents advised their customers that they were practicing the Hsieh '083 patent in their Glue G process. The Hsieh '083 patent describes a suspension polymerization process. It is found that Hopax represented to others that it was making its Glue G and Glue G-1 adhesives under the Hsieh '083 patent. It is also found that the Hsieh '083 patent does not accurately describe the Glue G process.

(d) **The Glue G process has a high solids content**

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Adding all the monomer at the beginning of the reaction, rather than adding monomers as needed throughout the reaction, is a common practice in suspension polymerization, where the polymerization occurs in the monomer droplet. In emulsion polymerization, monomer is drawn from the monomer droplet as it is needed, as polymerization occurs in the micelles, using up monomer. Tr. 1131, 1133-34, 931-32, 1104-05; 3M Ex. 335. 3M argues that adding all the monomer at the beginning indicates that a suspension polymerization process is occurring.

But respondents point out that in many commercial processes, all the monomer is added at the beginning in emulsion polymerization processes. Resp. Ex. 124, at 10-11, Resp. Ex. 137 at 35, Tr. 1575-1576. Adding all the monomer at the beginning is not evidence that the process was predominantly a suspension polymerization process.

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] At that consistency, it would not take much to make the whole system agglomerate; it is on the edge of agglomerating. Tr. 2422-2426. A very small amount of agglomeration would result in total agglomeration. This is inconsistent with respondents' theory of controlled agglomeration. Total agglomeration tends to occur suddenly, and it usually is not reversible once it starts. Tr. 2427-2430. Although 3M witnesses were aware of literature indicating that controlled agglomeration was possible, they testified that they did not know how to stop total agglomeration in their own processes for making microspheres once it had started. Tr. 2323-2324, 2427-2430.

3M witnesses testified that the high shear effect resulting from having a high solids content could explain the irregularity in the shapes of the particles made by the Glue G process that 3M contends are microspheres. Tr. 1605. [

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particles produced with a smaller concentration of monomers had the same irregular shapes and sizes as the microparticles produced under the Glue G process with the normal solids content. Tr. 1794-1805.

It is found that the [CONFIDENTIAL] of the Glue G process does not necessarily cause total agglomeration nor does it explain the irregular shapes of the particles made by the Glue G process if they are microspheres.

(e) Insolubility and Cross-linking

3M argues that the relative insolubility of the Glue G adhesive suggests that the product consists primarily of microspheres rather than latex. 3M made quantitative extraction studies on a commercially available Glue G adhesive. These studies indicate that approximately 80% of the adhesive is completely insoluble. This corresponds to a high degree of cross-linking. Tr. 742-43; 3M Ex. 421A.

3M's witnesses made calculations indicating that there is about 60% to 80% cross-linking of the microparticles produced by the Glue G process. Tr. 1120. Dr. Poehlein testified that the possibility of obtaining this much cross-linking in the Glue G system through the use of an emulsion polymerization is near zero. Tr. 1120. He testified that it is difficult to obtain this much cross-linking in an emulsion process unless one deliberately adds a cross-linking agent, and Hopax does not add one in the Glue G process. Tr. 1120.

Dr. Schork testified, however, that there can be some cross-linking in emulsion polymerization. Tr. 1017-1018. He testified that the cross-linking in a latex product cannot be distinguished from the cross-linking in a microsphere when extraction tests for solubility are made. Tr. 1018. The cross-linking found in the Glue G product would be a combination of the cross-linking in particles made by emulsion polymerization <u>and</u> microspheres made by suspension polymerization. There would be less cross-linking in the latex particles. Tr. 1018. The extensive cross-linking found in Glue G suggests that some of the particles are made by suspension polymerization, but this does not prove that the process is predominantly a suspension polymerization process.

(f) <u>**Glue G uses highly water-insoluble monomers**</u>

3M argues that the Glue G system uses highly water-insoluble monomers, and that this is indicative of a suspension polymerization system. Tr. 1131.

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In an emulsion polymerization system, the monomer droplets store monomer to feed the reaction occurring in the micelles. Tr. 1413. As the emulsion reaction depletes the monomer in the micelles, new monomer has to diffuse out of the monomer droplets across the water into the micelles. Tr. 1110; 3M Exs. 333, 337. If one were trying to use an emulsion polymerization process, one might want to use monomers that are more soluble in water, so that the monomer could move through the water from the droplet to the micelles. The three principal monomers used by Hopax have low solubility in water, making them resistant to diffusing through the water phase to the micelles. This is

referred to as "mass transfer resistance". Tr. 1110. 3M argues that this means that more polymerization is likely to occur in the droplet before the monomer is able to travel through the water to the micelles.

But even if the monomer has low solubility in water, monomer will move through the water phase to the micelles when the amount of monomer in the water phase becomes depleted, even if the monomer moves slowly. The monomer does not have far to go because the Glue G recipe includes a large amount of emulsifier, and each droplet is surrounded by very large numbers of micelles. As the monomer in the micelles is depleted, the equilibrium will change, and monomer will be pulled from the droplets to the water phase.

It is found that the low water-solubility of the monomers in the Glue G process will not prevent emulsion polymerization from occurring.

(g) **The fast reaction rate of Glue G**

Complainant argues that the use of monomers with low solubility in water coupled with the fast reaction rate of the Glue G process suggests that a suspension polymerization mechanism is taking place. Tr. 959, 1110-11; 3M Exs. 341, 345.

The fast reaction rate of the Hopax system tends to support the conclusion that the reaction occurs in the monomer droplets if one considers only the fact that there is less time available for the monomer to leave the droplets and cross through the water to the micelle. Tr. 1110-1111.

But in the Glue G process a large amount of emulsifier is used, many micelles are formed, and each monomer droplet will be right next to a number of micelles. The monomer from a droplet should be able to reach a micelle quickly and be polymerized. The large concentration of emulsifier in the Glue G process tends to speed up the rate of emulsion polymerization, and this supports the opposite finding: that emulsion polymerization is taking place. Tr. 1461-1462, 1903.

The speed of the Glue G reaction does not support a finding that either suspension polymerization or emulsion polymerization is the dominant process.

(h) The Cryo-microtome evidence

3M introduced into evidence pictures of a sample of Glue G and G-1 that had been cryo-microtomed (cooled to beneath the glass transition temperature, cut with a diamond knife, and photographed under a transmission electron microscope). Tr. 853. 3M contends that these pictures are evidence of suspension polymerization because they show large particles that are fairly spherical and dense. Tr. 864-866; 3M Phys. Ex. R. The microtome evidence also indicates that these large particles did not flow during processing, suggesting that they were microspheres. Tr. 1131-32; 3M Phys. Ex. W.

But latex microparticles could have enough cross-linking to prevent flowing during processing. 3M's witnesses had no persuasive explanation for the irregular shapes of the large particles, if they were microspheres. The microtome evidence did not prove that the large particles with slightly irregular shapes were microspheres, but one particle in 3M Phys. Ex. W (on the left side, lower half) does look spherical and could be a microsphere.

(i) Scanning electron microscopy

Respondents' SEMs (pictures taken by scanning electron microscopy) show particles at two stages of the Glue G process at two different magnifications.

Larger particles can be seen in second stage of the Hopax process, but they have irregular shapes and do not appear to be spheres at all, especially when compared to the clearly spherical microspheres of the 3M products. Complainant's witnesses testified that they saw spheres in pictures of the

Glue G product. When these spheres were circled by respondents' witnesses, the part circled sometimes was the round center of a particle, but the shape of the rest of the particle could not be seen. These particles may or may not have been microspheres. The shapes of most large particles that were completely visible were irregular. The center of a particle with an irregular shape may bulge, making the top of the particle look round, but this does not prove that the whole particle is spherical.

Under a microscope, bumps or mounds can be seen in the adhesive on commercial Hopax repositionable notes. 3M contends that these bumps are clearly microspheres. One in 3M Phys. Ex. W looks like a microsphere. The rest could be microspheres or they could be irregular shapes covered by a film. 3M Phys. Ex. W; 3M Exs. 396, 397, 398, 403, 405. See Tr. 1121-24.

Dr. Atwood looked at 3M Phys. Ex. W and testified for respondents that he saw what might be basketballs or rocks under a Missouri snow. Tr. 2254. This is relied upon by 3M as evidence that he saw microspheres, but on the next page of his testimony, Dr. Atwood said he did not know what he was looking at. Tr. 2255. Respondents' SEMs do not clearly show very many microspheres in the Glue G process. The SEMs of the late stages of the process show mostly large particles with very irregular shapes. See, for example, Resp. Phys. Ex. C-2 at pp. 79, 71, and 77. (The same SEMs are also found on Resp. Phys. Ex. K-3.)

Spherical monomer droplets can be seen in the early stages of the process, but not in the later stages, although Dr. Quirk testified that he saw droplets but did not take pictures of them. Tr. 1874-1887. The pictures do not show whether droplets became smaller later in the process as monomer would have been drawn out of the monomer droplets if emulsion polymerization were the dominant process. They also do not show large numbers of microspheres late in the Glue G process. Smaller particles are seen early in the process and larger particles are seen later in the process, but since at least some latex is formed in the process, the presence of smaller particles early in the process is not surprising. The presence of large particles with irregular shapes late in the process is surprising if the process is predominantly a suspension polymerization process.

The SEMs show a large variety of particle sizes <u>at each stage</u> in the process. These SEMs are inconsistent with a process that is predominantly a suspension polymerization process unless 3M can show that the irregularly-shaped particles were in fact microspheres that were somehow deformed by the process. Respondents' argument that [C] caused this deformation was not persuasive. Tr. 1605.

There is no way to tell from the SEMs whether the larger particles with irregular shapes are an agglomeration of smaller latex particles. SEMs taken in the first and second stages of the Glue G process show different groups of particles. The larger particles could be deformed microspheres, partially hidden microspheres, or smaller particles that have coalesced into a larger particle.

It is found that the SEMs are strong support for a finding that the Glue G process is not predominantly a suspension polymerization process.

It is concluded that the Hopax process for making Glue G is predominantly an emulsion polymerization process. There was evidence that relatively large particles with irregular shapes that could not have been microspheres were produced by the Glue G process. These particles, whatever they were, performed the same function as microspheres in a repositionable adhesive

product. These particles or microparticles have the same repositionable characteristic as microspheres, but they cannot be microspheres because they are not spherical. If they had polymerized in a droplet, they would have to be spherical. Extensive cross-linking occurs in a droplet that is polymerized, and this would have kept the microsphere spherical.

It is also concluded that the Glue G process produces some microspheres formed completely and 100% from nonionic monomers. These microspheres are difficult to find, and probably are few and far between.

3M contends that the amount of emulsion used and the amount of latex produced is irrelevant to the question of infringement of the claims of the Baker patent. Tr. 498-500, 927-930, 939-40, 945-47, 1959, 1975, 2003; 3M Exs. 2, 334, 336, 337, 338. But 3M itself points out that emulsion polymerization takes place at the same time that suspension polymerization takes place in the Baker patent process and in the Glue G process. The Baker patent claims only a suspension polymerization process. Since the applicants for the Baker patent surrendered any claim to an emulsion polymerization process under the doctrine of prosecution history estoppel, the question here is simply which type of polymerization is dominant in the Glue G process.

3M proved by a preponderance of the evidence that there was some suspension polymerization in the Glue G process, as well as an emulsion polymerization process, but the record as a whole supports a finding that the Glue G process was predominantly an emulsion polymerization process.

The doctrine of equivalents is not available to complainant to claim the Glue G process as the equivalent of the Baker patent process. During the prosecution of the Baker patent, to overcome a rejection by the examiner based on anticipation, the applicants amended claims 1 and 6 to include a process step limitation requiring suspension polymerization. The applicants' attorney argued that the prior art cited by the examiner (Pohlemann, Resp. Ex. 70 and Morehouse, Resp. Ex. 76) used emulsion polymerization while the applicants claimed only suspension polymerization. 3M distinguished its process from this prior art. 3M is estopped from claiming that a predominantly emulsion polymerization process infringes the Baker patent.

The Morehouse patent disclosed a dual system, including both suspension and emulsion polymerization. This fact was not discussed in the file history of the Baker patent. This raises a question as to whether the Baker patent applicants gave up the right to claim a dual system. They did distinguish the Morehouse patent from their invention, but this was because it used emulsion polymerization. The Baker patent process required enough emulsifier to create micelles, and a latex particle by-product is disclosed in the patent. The Baker patent in effect disclosed a dual system, although it did not claim one. It is found that the Baker applicants did not give up the right to use a dual system including suspension polymerization, although their patent claims are limited to a suspension polymerization process. The Glue G process is a dual process, although predominantly an emulsion polymerization process.

The Baker patent applicants also distinguished the Pohlemann patent from their own invention. The Pohlemann patent process disclosed the use of controlled coagulation to form small particles from even smaller particles, all produced by emulsion polymerization. The Baker patent cannot be construed to cover a process that uses controlled coagulation.

Respondents contend that the Baker patent claims must be construed to require that the claimed process be "essentially exclusively suspension polymerization" with only a minimal amount, if any, of emulsion

polymerization. But nothing in the Baker patent or prosecution history says or suggests this. While the Baker patent claims only suspension polymerization, it requires the use of emulsifiers, and it teaches that some unwanted latex particles are formed during the Baker process.

3M takes the position that if there are enough microspheres formed to give the Glue G adhesive its repositionable characteristic, this would make the Glue G process infringe the Baker patent claims under the doctrine of equivalents. 3M, however, did not prove that there were enough microspheres formed to give the Glue G adhesive its repositionable characteristic, or that the irregular microparticles formed by the Glue G process did not give the adhesive its repositionable characteristic. The SEMs of the late stages of respondents' process show large particles with irregular shapes that cannot be explained as distorted microspheres. A perfectly round microsphere in respondents' product is rare.

3. Infusible

3M offered evidence to show that three Glue G-1 adhesives did not melt and flow at 150°C or at 210°C Tr. 730-737. Dr. Govek's infusibility test on Glue G-1 adhesive taken from respondents' commercial product showed that it was infusible at 150°C (Paper will spontaneously combust at 233°C.) Dr. Govek took a large glob of Glue G and heated it on a needle. When heated at 150°C the surface showed that individual particles were present. When heated at 210° for 5 minutes, Dr. Govek testified that the surface topography was still intact and still showed individual discrete particles, but on cross-examination he agreed that the surface looked smooth and glassy. By then the adhesive may have started to melt and flow, but the glob had not become clear nor had it started to slide down the needle. Tr. 730-36, 771-772; 3M Ex. 387-

390. 3M Exs. 392-94. Using these tests, the Glue G adhesive met the definition of infusible as that term is defined herein (not melting and flowing until it reached a temperature of 150°C).

Mr. Seiple testified that he took Glue G-1, diluted it with water, and heated it on a glass plate on top of a hot plate. He observed under a microscope the microparticles of Glue G-1 fusing together into larger particles somewhere between 80°C and 120°C. The fused particles formed a film. Tr. 1515-1520.

In a second test, Mr. Seiple put Glue G-1 in an oven overnight at 80°C. Tr. 1519-1520. It produced a film of stretchable material. No further tests were made on this film to determine whether some discrete particles could be found in this material, but Mr. Seiple concluded that it had fused. Tr. 1520.

The normal drying temperature for this glue is 120°C. If Glue G-1 were fusible at 120°C, Glue G-1 would have reached this temperature during the ordinary commercial drying process, and the bulges of individual particles would not be visible in the final Glue G-1 adhesive above the film that the adhesive forms when heated. These bulges are clearly visible in pictures of Glue G-1. See, for example, 3M Phys. Ex. W. The tests made by Mr. Seiple on the Glue G-1 adhesive were harsher than the normal commercial drying process used by Hopax. Nevertheless, the Glue G-1 did fuse before 150°C was reached, and Mr. Seiple's tests showed that Glue G-1 is not infusible as that word was construed herein, adopting 3M's proposed definition, (i.e., not melting or flowing below the temperature of 150°C).

In the first place, the applicants for the Baker patent did not have to require in claim 1 that their microspheres be infusible, especially since that term was defined in the Silver patent as not melting or flowing until their carbonization temperature was reached. Infusible, as defined in the Silver patent, is a difficult criterion to meet.

Once the Baker applicants decided to require that the Baker microspheres be infusible, they could have explained in the patent what infusible meant, if it did not mean melt and flow at the carbonization temperature. Or they could have suggested an appropriate test to determine fusibility. The Baker patent does not do either one. That leaves competitors free to make any reasonable test that they wanted to make. Mr. Seiple's test was reasonable under the circumstances for someone who was trying to prove that the microspheres were fusible.

3M proved that under normal manufacturing conditions, the larger Hopax particles did not melt and flow to the extent that they disappeared. As a practical matter, the particles that gave the adhesive their repositionable characteristic survived the drying process without excessive melting and flowing. Using 3M's definition of infusible, however, 3M has failed to prove by a preponderance of the evidence that Glue G-1 is infusible.

4. <u>Solvent-insoluble</u>

3M made tests to determine the solvent-insolubility of respondents' Glue G-1 adhesives (that were scraped off the finished product) in the organic solvent heptane. Tr. 739-743, 777-779; 3M Ex. 421A. 3M made multiple extractions, each time taking out a small amount of soluble material, until no more soluble material could be extracted. Tr. 742. The tests showed that 80% of Glue G-1 was insoluble. Tr. 743; 3M Ex. 421A. The amount of Glue G that dissolved in heptane was significant, but the 80% left was insoluble, and this is enough to support a finding that the microspheres made by the Glue G process are solvent-insoluble as that term has been defined herein.

Respondents' tests show that Glue G-1 was between 36% and 60% soluble in solvents depending on the solvent used. Tr. 1526-28.

Although a large part of Glue G-1 is soluble in common organic solvents, there is a functional remainder that is not solvent. This is enough to meet the definition of solvent-insoluble as that term has been construed herein.

5. **Solvent-dispersible**

The term "solvent-dispersible" means that solids disperse when placed in a solvent. To be solvent-dispersible, the particles cannot completely dissolve in the solvent, and the parts that do not dissolve will spread out in the solvent. The Glue G adhesive is solvent-dispersible in this sense.

Mr. Seiple testified that Dr. Wei and Mr. Hsieh, both Taiwan Hopax employees, taught him that a good batch of Glue G was one that could be put into a solvent and you could observe the barely visible particles dispersing from a clump. Tr. 1539-40. Mr. Seiple stated that he used this test to determine the solvent-dispersibility of Glue G. In a test that he made, the particles in Glue G dispersed in the solvent as described by Dr. Wei and Mr. Hsieh. Tr. 1540-41.

In Mr. Seiple's solubility tests, he had put dried Glue G-1 in a solvent. The Glue G-1 swelled and formed a gel, without discrete particles. Tr. 1527-1528. The Glue G-1 process involves treating Glue G after is made. The Glue G-1 process includes processing with a solvent. After the Glue G-1 process is completed, and the product is dried, and put in a solvent for a second time, it forms a gel. By that time any microspheres in Glue G already would have met the test of being solvent-dispersible.

The Glue G microparticles are solvent-dispersible as that term is defined herein.

6. An ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter

The adhesives made by the Glue G process have not been prepared "in the presence of ... an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter."

a. An ionic suspension stabilizer

[

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] Because these nonionic suspension stabilizers are polar, they can stabilize the process by steric stabilization, but not by electrostatic stabilization.

The Commission investigative attorney takes the position that the Glue G process does not infringe any of the claims of the Baker patent because Taiwan Hopax does not add an ionic suspension stabilizer to the recipe for Glue G before the reaction begins. I agree with this position.

3M contends that an ionic suspension stabilizer is created <u>in situ</u> in the Glue G process. Dr. Poehlein testified that the [CONFIDENTIAL] in the Glue G recipe would react with the excess anionic emulsifier to form an ionic suspension stabilizer <u>in situ</u>. Tr. 1141-44; 3M Ex. 336. During the reaction, part of the weakly ionic emulsifier in the Glue G process would combine with [C] and this combination would act as an ionic suspension stabilizer. Tr. 1140-41; 3M Ex. 336.

Dr. Poehlein's testimony on this point receives some support from published articles such as the Tadros article, which discusses the same suspension stabilizer [C] and the same emulsifier [CONFIDENTIAL] [C] found in the Hopax Glue G process. The article indicates that ionic surfactants interact with nonionic polymers, probably by "hydrophobic bonding" and that the resulting polymer-surfactant "complexes" behave as "association polyelectrolytes". Tr. 1146-48; 3M Ex. 287. Although the Glue G process uses steric stabilization for the most part, 3M contends that it also uses some ionic or electrostatic stabilization because [C] and anionic emulsifier combine during the reaction to form a weak electrostatic stabilizer. Tr. 1150-51, 2171, 2273, 2423, 2433-43, 2531; 3M Ex. 287.

Mr. Seiple made a test for respondents in which he substituted an ionic suspension stabilizer for the Hopax nonionic polar stabilizer, and produced a gelled mass, or total agglomeration. Tr. 1468-1470. Because the sodium bicarbonate was left out of the recipe, this test was disregarded. Tr. 2453-2455.

It is difficult to determine whether a person with ordinary skill in the art who read the Baker patent would be likely to understand that the use of a nonionic suspension stabilizer in the initial recipe could meet the requirement in the Baker claims for an ionic suspension stabilizer. While he might be able to predict that there would be a loose steric bonding between [CONFIDENTIAL] and a weakly ionic emulsifier, and that this might produce a weak ionic suspension stabilizer, it is unlikely that he would think that the Baker patent claims would be infringed if there were no ionic suspension stabilizer in the initial recipe. Claim 7 makes it clear that the ionic suspension stabilizer must be added to the initial recipe. There is no reason to think that the inventors intended claim 1 to be read differently with respect to whether the ionic suspension stabilizers had to be in the initial recipe.

The Baker patent taught the use of ionic suspension stabilizers as a distinction over the Silver patent, which used an ionic comonomer to stabilize. The Glue G recipe includes only the opposite: nonionic suspension stabilizers.

The applicants amended the Baker patent claims during the prosecution of the patent by adding the following limitation to overcome the examiner's rejection over the prior art: "and an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter." Resp. Ex. 3. This amendment estops 3M from using the doctrine of equivalents to substitute any stabilizer that is not ionic for one that is, or to substitute an ionic stabilizer that does not have an interfacial tension of at least about 15.0 dynes per centimeter for one that has. If the product does not literally meet the limitations in the claims, no infringement can be found. 3M cannot now recapture what was surrendered.

3M argues that the examiner was not rejecting the applicants' prior arguments, but wanted the applicants' claim language to match the arguments made in response to the first office action. The applicants had not made any argument relating to the suspension stabilizer in the response to the first office action. The examiner was referring to the argument distinguishing Pohlemann from the applicants' invention, in which the applicants argued that they were claiming a homopolymer. 3M Ex. 3.

Nevertheless, the examiner had rejected the claims, and the applicants had submitted the ionic suspension stabilizer limitation as part of the response to this rejection. The applicants could have submitted the homopolymer language revision without the ionic suspension stabilizer argument, to get the claims allowed. They then could have added the suspension stabilizer limitation. Or they could have made it clear that the ionic suspension stabilizer limitation was not being relied upon by applicants to get the claims allowed. The applicants did not make this clear. The doctrine of prosecution history estoppel limits the use of the doctrine of equivalents in connection with the ionic suspension stabilizer limitation which was added only after the final rejection of the claims. The file history does not show that the ionic suspension stabilizer limitation was not the reason that the examiner finally allowed the claims.

At the time the Baker patent application was filed, [

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] Disclosing this information could have jeopardized the claim. The applicants cannot change the construction of the claim now to include additional stabilizers that did not fit the original limitations, [

CONFIDENTIAL] Nor can 3M use the doctrine of equivalents to expand the scope of this claim after the applicants withheld [CONFIDENTIAL

]

Respondents' nonionic suspension stabilizers do not infringe any of the Baker patent claims under the doctrine of equivalents because prosecution history estoppel precludes 3M from using the doctrine of equivalents to prove infringement of the ionic suspension stabilizer limitation. Even if the doctrine of equivalents could have been used, a nonionic suspension stabilizer (a steric stabilizer) does not work in substantially the same way as an ionic suspension stabilizer, so it would not be covered by the doctrine of equivalents.

The doctrine of equivalents cannot be used to construe a requirement for an ionic suspension stabilizer as met by a nonionic suspension stabilizer. To do so would deprive the claim of all meaning.

b. **Interfacial tension of less than about 15.0 dynes per centimeter**

Both of the suspension stabilizers in the recipe for Glue G have an interfacial tension of less than about 15.0 dynes per centimeter. When combined in the proportions found in the commercial Glue G process and compared with the combination of monomers in the Glue G recipe, the interfacial tension of the stabilizers was measured by respondents as 11.0 dynes per centimeter. Seiple Tr. 1467-1468, 1551-1552; Resp. Ex. 266.

3M contended that a measurement of 11.0 dynes per centimeter would be covered by the word "about" in the term "about 15.0 dynes per centimeter."

These stabilizers do not meet the requirement that the stabilizers have at least an interfacial tension of about 15.0 dynes per centimeter. The claim was intended to refer to the interfacial tension of the combination of the suspension stabilizers used in the process, as this would be the interfacial tension that would achieve the stabilization.

The ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter would not be the substantial equivalent of the suspension stabilizers used in Glue G, if this limitation of the claims could be met under the doctrine of equivalents. Tr. 1163-64, 1168.

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] These [

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] and he did not tell the Patent Office or give notice to the reader of the patent that they [CONFIDENTIAL] To the contrary, he warned the public in the Baker patent that stabilizers having an interfacial tension of less than about 15.0 dynes per centimeter would not be stable. Resp. Ex. 2.

No equivalent for the ionic suspension stabilizer limitation can be substituted under the doctrine of equivalents because the ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter was a teaching of the Baker patent that was described as essential. Resp. Ex. 2. This also was a teaching that the applicants relied upon to distinguish their invention from the prior art.

For this reason alone, none of the Baker claims has been infringed, either literally or under the doctrine of equivalents, because this limitation is found in all of the claims of the Baker patent.

<u>Claims 7, 8 and 10</u>

Claim 7 of the Baker patent reads as follows:

> A suspension polymerization process for preparing infusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres comprising the steps of:
>
> (a) charging to a reaction vessel
>
> (i) at least one alkyl acrylate or methacrylate ester monomer; and
>
> (ii) at least one anionic emulsifier at a concentration above its critical micelle concentration; and
>
> (iii) a substantially water-insoluble polymerization initiator; and
>
> (iv) an ionic suspension stabilizer, having an interfacial tension of at least about 15.0 dynes per centimeter;
>
> (b) agitating the reaction vessel charge to create an emulsion;

(c) heating said emulsion while maintaining said agitation;

whereby elastomeric, solvent-dispersible polymeric microspheres are formed from said emulsion.

3M Ex. 2.

Claims 8 and 10 are dependent claims relating to the process of claim 7. Claim 8 requires that the acrylate or methacrylate ester monomer be selected from a group that includes 2-ethyl hexyl acrylate and isooctyl acrylate. [CONFIDENTIAL]

Claim 10 requires that the suspension stabilizer be present at up to about 10% of the monomer. In the Glue G process, the stabilizer is present in an amount [C] Tr. 1167-70; 3M Exs. 2, 36.

Claims 7, 8 and 10 require a "substantially water-insoluble polymerization initiator." This requirement is not found in claims 1-5, although it is implied in those claims because those claims require that the microspheres be prepared by aqueous suspension polymerization.

The Hopax process for making Glue G does not literally infringe claim 7 because it does not include the steps of:

1. Substantially water-insoluble polymerization initiator

The Hopax process literally does not include the step of charging to a reaction vessel a substantially water-insoluble polymerization initiator. The Hopax recipe includes [CONFIDENTIAL], the water-soluble monomer that may act like an oil-soluble initiator. Assuming that the [C] converts into a water-insoluble polymerization initiator, the step of charging to a reaction vessel a substantially water-insoluble polymerization initiator is still missing.

An equivalent step (the combination of [C] and radicals <u>in situ</u>) will not be found in the Hopax process under the doctrine of equivalents. Although [C] may combine with radicals created by the water-soluble redox initiators of the Glue G process and function as an oil-soluble initiator, Tr. 1137, one with skill in the art would not be expected to predict that this would occur. There was compelling testimony that it is not likely to occur. One with skill in the art would expect that a claim requiring an oil-soluble initiator would not be met under the doctrine of equivalents by starting with a water-soluble initiator.

3M did not prove by a preponderance of the evidence that the addition of [C] at the beginning of the reaction was the equivalent of adding an oil-soluble initiator to the reaction vessel at the beginning of the process.

2. <u>**An ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter**</u>

The Hopax process does not include the step of charging to a reaction vessel an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter. In the Glue G process, no ionic suspension stabilizer is charged to a reaction vessel. (A weakly ionic suspension stabilizer may be formed during the reaction.) Combined, the nonionic suspension stabilizers have an interfacial tension of about 11.0 dynes, less than about 15.0 dynes per centimeter. Tr. 444-445, Tr. 1457-1486. This limitation must be met without using the doctrine of equivalents. It is not met in the Hopax Glue G process.[2]

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[2] 3M states in its posthearing reply findings of fact that the district court found that the same suspension stabilizer [C] [CONFIDENTIAL] used in the Glue G process was found by the district court to be the equivalent of the ionic suspension stabilizer required in the Baker patent. Ex. A-1 to 3M's brief contains this conclusion of the Special Master. Beautone was not a party to that

3. The step of heating the emulsion

The step of heating said emulsion while maintaining said agitation (step (c) of claim 7) is met literally by the Glue G process. The process steps for making Glue G disclose that the ingredients interact with one another and heat up during several stages in the reaction. [CONFIDENTIAL] No outside heating source is required by claim 7, step (c). The reaction itself heats the emulsion.

For the reasons stated in paragraphs (2) and (3) above, the Hopax Glue G process does not infringe claim 7 or dependent claims 8 or 10 literally or under the doctrine of equivalents.

The weight given to the evidence

(a) The weight given to evidentiary admissions of both parties

The Taiwan Hopax respondents made representations to their own customers and to the U.S. Patent and Trademark Office that are inconsistent with the positions taken by the respondents in this case. In effect, they represented that the Glue G process was a suspension polymerization process that formed relatively large microspheres, and not tiny particles that agglomerated into large irregular shapes.

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case and the record here is different from that in district court. Most of that record is not before me. I do not know why the Special Master did not find that prosecution history estoppel limited the use of the doctrine of equivalents in connection with this claim limitation. My decision is based on the record before me.

Part of the district court record is before me. Dr. Silver was unable to testify at the ITC hearing, and some of his testimony in the district court case was admitted into the record here as admissions of 3M. The testimony was very helpful, but incomplete, because the parties designated the parts of Dr. Silver's testimony that they wanted to have in this record, and parts of his testimony were cut off abruptly.

Mr. Hsieh obtained two patents in the United States, the Hsieh '083 patent (U.S. Letters Patent No. 5,109,083) and the Hsieh '329 patent (U.S. Letters Patent 5,194,329.) The Hsieh '083 patent and prosecution history indicate that the attorney for the patent applicant represented to the U.S. Patent and Trademark Office that it was using a suspension polymerization process to make microparticles from 5-200 microns in size. 3M Exs. 20, 21. The Hsieh '083 patent describes large spherical microparticles from 5-200 microns in size. Tr. 1295-1296; 3M Ex. 20, Col. 2, lines 24-25. This is also a description of a Baker microsphere, not a description of the smaller latex particles that could be expected to form from an emulsion polymerization process.

For some time after the Hsieh patent issued, Hopax took the position that it practiced the Hsieh patent in making Glue G. Hopax changed its position in this proceeding, however, arguing that the Hsieh patent technology disclosed a suspension polymerization system, while the Glue G process used emulsion polymerization. The admissions in which Hopax represented to others that it was practicing the Hsieh patent when it produced Glue G are evidence of infringement of the Baker patent, because the invention of the Hsieh patent is described by the patent applicant's attorney as a suspension polymerization system.

At the time that the applicant filed his application for the Hsieh patent, and later when Hopax corresponded with its customers about the Hsieh patent, Hopax either thought that it was using a suspension polymerization system, or wanted to represent this to its customers. Statements made in the prosecution history of the Hsieh patent may not reflect the current views of Hopax about its Glue G process. More importantly, what Taiwan Hopax

representatives said in the Hsieh patent may not reflect what is really going on in the Hopax Glue G process.

The admissions made by Hopax about the Hsieh patents are evidentiary admissions, and will be considered along with the other evidence in this case. They are not judicial admissions that would be binding on respondents.

Not much weight will be given to the Hopax correspondence with its customers in which Hopax implied that Glue G practiced the Hsieh '803 patent. This correspondence apparently was intended to allay the fears of Hopax customers.

By the same token, evidentiary admissions made by Mr. Ketola, for example, his definition of infusible in the Baker patent as being the same as the Silver patent definition (615-616) that is inconsistent with his other testimony, and his testimony relating to the [CONFIDENTIAL] practicing claim 7 (Tr. 590) that did not discuss all of the limitations in claim 7, have been given little weight.

(b) **Testimony created at the hearing**

At the hearing, Dr. Kuo made two drawings, one relating to the Glue E process and the other relating to the Glue G and Glue G-1 process. Tr. 1304-1307; Resp. Phys. Exs. AA, BB. The drawing of the Glue E product showed a round microparticle or a microsphere. The drawing of the Glue G and Glue G-1 product showed a microparticle with an irregular shape. Dr. Kuo testified that he made these two drawings based on what he had observed while looking at the products through a microscope. By the time that Dr. Kuo testified, respondents were trying to prove that their Glue G process did not produce microspheres, but large irregularly-shaped polymer microparticles. If these drawings had been made before this litigation commenced, they would have more weight.

Dr. Kuo's testimony about what he saw when he looked through a microscope at slides taken at various stages during the Glue G process is given some weight because there are not many better ways to determine whether microspheres or irregular microparticles are being formed by the Glue G process, than to look at them under a microscope.

(c) <u>Microtrac measurements</u>

The measurements made by the Microtrac did not prove whether microspheres were being formed. They gave the "average" sizes of the particles measured. Average sizes do not disclose the sizes of individual particles which may vary considerably. For example, if a droplet loses monomer to a micelle, and then the droplet is polymerized, it would be expected that the microsphere would be smaller than microspheres formed from other droplets polymerized earlier in the process. Moreover, the Microtrac does not disclose the shape of the particles it measured. These measurements were believed, but they did not disclose much relevant information.

(d) <u>Complainant's analog tests</u>

3M's expert witnesses were unable to reproduce respondents' Glue G process in the laboratory. 3M did not use commercial-grade ingredients. This fact may not be relevant to 3M's inability to reproduce the Hopax process successfully without modifying the ingredients, but Mr. Seiple testified for respondents that when he did not use commercial-grade monomers, the materials would coalesce early and form larger than normal particles. Tr. 1457. Whatever the reason, all of 3M's efforts to reproduce the Hopax process resulted in total agglomeration. Instead of making tests on products using

the Hopax recipe and made by the Hopax process steps, 3M relied upon tests of models containing different ingredients, or upon theoretical tests and calculations. Less weight was given to analog tests than to the tests using the Glue G process.

(e) **Theories on controlled agglomeration**

Respondents' witnesses testified that they thought that the Glue G process was an emulsion polymerization process, and that it produced latex particles less than a micron in size which then coagulated or agglomerated only enough to form tacky irregularly-shaped particles from 5 microns to 200 microns in size. For example, Tr. 1304-1307, 1675. They testified that when the microparticles reach this size range, coagulation or agglomeration of the microparticles stops. The process was described as finicky.

Respondents' witnesses' testimony that they were controlling agglomeration is given little weight because they did not know how much stabilization was required or what types of stabilizers were necessary to promote some agglomeration but stop agglomeration when the particles reached a particular size range. They testified that the Glue G process controlled agglomeration by using closely controlled amounts of stabilizers, but tests in which the amount of emulsifier was varied, for example, made no difference in the outcome. Tr. 1461, 1921-22, 1947-49, 1953, 2136-37, 2185-86.

3M contends that it is not possible to control agglomeration in an emulsion polymerization process once it has started, and that if the Hopax process let the small latex particles begin to agglomerate, the whole product immediately would be fused into a worthless mass.

Mr. Hsieh's notebooks, 3M Exs. 129-139, cover eight years of tests. 3M points out that there was no reference in these notebooks to a controlled agglomeration theory, and argues that the theory was litigation-induced. Tr. 970. Mr. Hsieh, however, did write an article on May 18, 1993, disclosing his controlled agglomeration theory before 3M notified Hopax that 3M was alleging that Hopax was infringing the Baker patent. Resp. Ex. 271A, 271B. <u>See</u> Resp. Ex. 221. In addition, at least one of Mr. Hsieh's notebooks, although it did not mention "controlled agglomeration," contained an observation about Glue F indicating that particles appeared to be agglomerating into irregular shapes. 3M Ex. 136 at ITC 003855 (Most are glomerate [sic] into irregular shape--reaction 15 hours). This was before Hopax developed Glue G. The Hopax controlled agglomeration theory may have been given more attention because of litigation, but it was not litigation-induced.

Dr. Poehlein testified that it is very difficult to stop a coagulating process that goes from a tenth of a micron particle to a 20 micron particle, without coagulating the whole batch. There has to be some mechanism to stop the coagulation once it starts. Tr. 1122. There was little chance that a tacky system, such as the Glue G system, could be stopped at a particular point, once it had begun to agglomerate. Tr. 1123-24, 2421-30. [

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] 3M Physical Exhibit EE shows that as the volume fraction is increased, the viscosity does not change much until it suddenly increases dramatically. Total agglomeration occurs suddenly, and once started, it will not stop. Dr. Delgado testified

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never stops -- [

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Dr. Poehlein calculated the amount of surface area that could be stabilized by the amount of emulsifier and stabilizer present in the Glue G recipe. 3M Ex. 472; Tr. 2455-58. His calculations indicated that there is only enough stabilizer and emulsifier in the Glue G process to stabilize particles having an average size of 0.2-0.6 microns. Tr. 2455-58. Based on Dr. Poehlein's calculation, 3M argues that the Hopax process had only enough stabilizer and emulsifier to stabilize latex of 0.5 microns or less in size during polymerization.

But the early stages of the Glue G process show smaller particles (less than 1/2 a micron in size) being polymerized. The larger particles appear later (except when HEMA is omitted). The threat of agglomeration may be less after the initial polymerization reaction has taken place, or perhaps the use of short-range steric stabilization allows some agglomeration to take place without getting total agglomeration.

Mr. Seiple testified for respondents that he ran a series of experiments with modifications of the Glue G recipe in which he varied the amount of emulsifier from one-half the normal emulsifier concentration to twice the normal emulsifier concentration. Tr. 1461-62. His tests showed that the modified Glue G process produced a successful product through this range of emulsifier concentrations. He produced acceptable adhesive. Tr. 1461-62. This indicates that as a practical matter, there is more than enough stabilizer in the Glue G recipe. The use of a precise amount of stabilizer is not what controls agglomeration in this process, if it is in fact controlled.

Respondents relied upon prior art references to show that others had said that they were able to control agglomeration, but respondents could not prove that they were controlling agglomeration, or if they were, how this was accomplished. See Resp. Ex. 270.

Complainant had the burden of proof. 3M was unable to prove that the Glue G process was predominantly a suspension polymerization process just by showing that respondents did not know how to control agglomeration. 3M was unable to prove that the particles with irregular shapes produced by the Glue G process were distorted microspheres.

(f) **The SEMs**

The SEMs offered by Hopax show that during the early stages of making Glue G, tiny particles can be seen, while during later stages, the large irregularly-shaped particles are seen as well as one or two microspheres.

Most of the microparticles produced by the Hopax process simply do not look like the microspheres produced by the Baker process. Compare, for example, Resp. Ex. C-4, No. T409 (3M microspheres) with No. T418 and T419, the Glue G-1 adhesive. 3M argues that when Hopax was successful in getting a useful product, it must have been using suspension polymerization, forming discrete microspheres in the monomer droplets. If this were true, the solid particles in Glue G would be expected to look like microspheres, i.e., relatively large and perfectly round shapes like the droplets in which they formed, similar to the perfectly round Baker patent microspheres. Most of the particles do not look like this; they look like amorphous blobs with rounded arms coming out at various places. The monomer droplets before they are polymerized are clearly visible, and they look spherical, so the SEMs did not distort the shapes.

Some particles in the Glue G adhesives look as if they might be microspheres. For example, in 3M Physical Ex. W, there is one relatively large sphere on the left side in the lower half of the picture that has a highlight showing the spherical shape. The lower part of this sphere is not hidden by another particle (although it appears to be covered by a film), and there is nothing irregular in the shape of this sphere. It looks like the large round and regular microspheres seen in the 3M microsphere adhesives. This exhibit provides some support for a finding that the Glue G process produces at least a few microspheres.

If the Glue G process were a classical emulsion polymerization process, the monomer droplets would diminish in size and eventually disappear as the monomer migrated to the micelles where it would be polymerized. Small round droplets are not seen in the later stages of the Hopax process. Nor are many round microspheres seen. When solvent is added to Glue G, the particles swell up, and it should be easier to see perfectly round microspheres. There are some round mounds in the finished adhesive, covered by a film, but it is not always possible to tell what the shape of a particle is when it is covered by a film.

Dr. Poehlein testified that the samples photographed by respondents could have been improperly prepared because Ms. Wang, who prepared the samples for the SEMs and TEMs used in respondents' case, had diluted the samples with pure water. He testified that diluting a sample with water would increase the likelihood of agglomeration right in the sample because the water would tend to take away the emulsifier and the stabilizers that were keeping the particles from agglomerating. Tr. 2416-2419. Dr. Quirk testified that it was possible if you were not careful and not experienced that you could flocculate the sample by adding pure water to the sample. Tr. 9598.

This argument was made just before the hearing closed. Because the SEMs and the TEMs were such a major part of respondents' evidence proving that the large irregularly shaped particles in Glue G were not microspheres, I asked complainant's attorneys if they wanted to bring in a witness. Perhaps a witness could show a sample that was not diluted and compare it with a sample that was diluted in water, and establish that agglomeration would occur in a sample diluted with water. The 3M attorneys first asked for an opportunity to bring in a witness to testify about this, and a hearing was scheduled. Later, they asked that the hearing be cancelled. What is now in the record is Dr. Poehlein's testimony that the Beautone samples were not properly prepared (Tr. 2407-2411), and testimony offered by respondents that Ms. Wang, who prepared the samples, had been trained in Japan to make samples properly, and that she had made the samples for the SEMs and TEMs properly. Tr. 2483-2484. After consideration of the evidence on this issue, it is found that 3M did not prove that respondents' samples were prepared improperly, and that the particles did not agglomerate in the samples after pure water was added to the samples. If one of the samples had been prepared improperly, it probably would not have looked like the rest of the samples. It is unlikely that all of the samples would have been prepared improperly. Yet all of the samples looked similar.

Perhaps SEMs of different areas would have shown more microspheres, but 3M submitted no other evidence that there was anything wrong with respondents' SEMs, or that the SEMs were not representative of the Glue G process.

There is no evidence in this record that these large irregular microparticles could not function as a repositionable adhesive. Complainant has the burden of proving that these irregular microparticles were microspheres, and it has failed to do so here.

It is unnecessary to reach the issue of whether controlled agglomeration actually is achieved in the Hopax Glue G process. Neither side was able to prove precisely what was going on in the Glue G process. Respondents did show that for many reasons the Glue G process and product are not the same as the Baker process and product; and that the Baker patent teaches away from the Hopax process.

In summary, 3M did not prove by a preponderance of the evidence that the Hopax process for making Glue G was predominantly a suspension polymerization process that produced more than a relatively small number of microspheres. 3M failed to prove that respondents are making a product that is like the Baker microspheres or using a process that is like the Baker process. It failed to prove by a preponderance of the evidence that the Hopax Glue G process infringed the Baker patent claims.

DOMESTIC INDUSTRY

Findings:

1. The microsphere adhesive used by 3M on its Easel Pad product [

CONFIDENTIAL

]

2. [

CONFIDENTIAL]

Easel Pad product. Because the microspheres used by 3M on its Easel Pad product are [CONFIDENTIAL] 3M does not literally practice claims 1, 2, 4, or 5 of the Baker patent in making the Easel Pad product.

3. 3M cannot practice claims 1, 2, 4 and 5 of the Baker patent under the [

CONFIDENTIAL

]

4. [CONFIDENTIAL **]**

Discussion:

In Order No. 9 it was found that 3M had met its burden of proving that a domestic industry exists if 3M proved at the hearing that it was practicing the Baker '152 patent. 3M has the burden of proving that 3M practices each claim that respondents are alleged to have infringed.

A domestic industry is required for each claim

The Commission investigative attorney takes the position that requiring a complainant to practice the claim of his patent that he alleges to be infringed, rather than requiring the complainant to practice at least one claim in his patent, adds a requirement to the statute that is not found in the statutory language. I agree with this position, but I am bound to follow the Commission's precedent to the contrary in Certain Chemiluminescent Compositions, Inv. No. 337-TA-285, Initial Determination unreviewed on this issue (Order No. 25, March 22, 1989). This case held that there must be a domestic industry practicing each claim asserted by a complainant.

The Commission investigative attorney points to dicta of the Commission in its opinion on remedy, bonding and the public interest in Certain Plastic Encapsulated Integrated Circuits, Inv. No. 337-TA-315, at pp. 18-19 n. 37 (March 24, 1992). There, the Commission discussed "claim correspondence" as an open question but did not reach this issue. The Commission may overrule its precedent in Chemiluminescent Compositions, but an administrative law judge cannot.

There is a domestic industry practicing claims 7 and 8

[

CONFIDENTIAL

]

Claims 1, 2, 4 and 5

The Easel Pad microspheres are "infusible" as the term is used in the Baker '152 patent. The carbonization temperature of microspheres is about 210°C. Tr. 1662-3. The Easel Pad microspheres are infusible up to 210°C.

The 3M Easel Pad microspheres are solvent-insoluble as this term has been defined herein. The product has [CONFIDENTIAL] Tr. 741-746; 3M Ex. 421A. After the microspheres have been placed in a solvent, and a small part has been dissolved away, the solid parts of the microspheres are left. These can function as a repositionable adhesive. The insoluble remainder of the microsphere is still a microsphere, and it meets this requirement of the claim.

The Easel Pad microspheres are "solvent-dispersible" as the term has been defined herein. When microspheres are placed in a solvent, part of the microsphere will dissolve in the solvent, and the solid remainder of the microspheres will disperse in the solvent. To be solvent-dispersible, the

microspheres cannot completely dissolve away in the solvent, and they must spread out in the solvent. The Easel Pad microspheres meet this definition.

Formed from nonionic monomers

Claim 1 of the Baker patent requires that microspheres be "formed from non-ionic monomers". 3M requested that this phrase be construed as meaning that the microspheres in the product claims must be formed "completely and 100%" from nonionic monomers to distinguish the Baker microspheres from the Silver patent microspheres, and the phrase was so construed. The phrase must be given the same construction here.

In making the microspheres for the Easel Pad, [

CONFIDENTIAL

] Tr. 2150-2153.

3M and respondents agree that [CONFIDENTIAL] is an ionic monomer, and that [CONFIDENTIAL] Kesti Tr. 831-832, Atwood 2152-2153.

3M contends that although [

CONFIDENTIAL

] Tr. 2343.

Respondents contend that the Easel Pad microspheres are "formed from" an ionic monomer [CONFIDENTIAL]

[

CONFIDENTIAL

]

Dr. Atwood testified for respondents that nearly all of the [

CONFIDENTIAL

] Tr. 2520-2521. [

CONFIDENTIAL]

Tr. 2520-2522, 2341-2344.

Dr. Atwood testified that if as little as [

CONFIDENTIAL

] He based this on the Silver patent teaching that stated

[

CONFIDENTIAL

] Tr. 2522-2523.

Dr. Kesti testified that an [

CONFIDENTIAL

] Tr. 2336. At this concentration he was not sure whether [C]

[CONFIDENTIAL] Tr. 2343.

3M offered no testimony to rebut Dr. Atwood's testimony that nearly [C]

[CONFIDENTIAL

[C] Even if his estimate were cut in half, some [

CONFIDENTIAL]

It is found that enough [CONFIDENTIAL] to assure that some [CONFIDENTIAL]

3M had the burden of proof to show that it practiced the patent claims in issue. It failed to prove that the Easel Pad microspheres [

CONFIDENTIAL]

When the issue is whether a complainant practices a claim of his own patent, the same test should be applied as when the issue is infringement of that patent claim.

Claim 1 is a product-by-process claim. In a product-by-process claim, all process limitations are considered in determining infringement, even though only the structural characteristics of the product are considered in determining whether the product is anticipated by the prior art.

Because the microspheres will be formed from [CONFIDENTIAL] the Easel Pad microspheres are not literally covered by claim 1 of the Baker patent as that claim has been construed herein.

The doctrine of equivalents cannot be used to find that the Easel Pad microspheres are covered by claim 1 because microspheres [C]
[CONFIDENTIAL]

[CONFIDENTIAL]

<u>Claim 2</u>

The recipe for making the adhesive for the Easel Pad [C]
[CONFIDENTIAL] Resp. Ex. 261. [C].
[CONFIDENTIAL] Since the 3M Easel Pad microspheres are made [CONFIDENTIAL]
[CONFIDENTIAL]

Claim 4

The Easel Pads form a substrate on which the 3M microsphere adhesive is applied. Since the 3M Easel Pad microspheres are [

] they do not practice claim 4 of the Baker patent for the reasons given under claim 1.

Claim 5

The additional limitation in claim 5 is met because [CONFIDENTIAL

] Since the 3M Easel Pad microspheres are [CONFIDENTIAL]
[C] they do not practice dependent claim 5.

Claim 7

Independent claim 7 of the Baker patent does not require that the monomers be formed entirely from nonionic monomers. [CONFIDENTIAL]
[CONFIDENTIAL]

Claim 8

The additional limitation in claim 8 is met by the Easel Pad process because it includes [CONFIDENTIAL]

There is a domestic industry practicing claims 7 and 8 of the Baker patent.

THE KUDOS RESPONDENTS

The two Kudos respondents are both located in Taiwan. On August 29, 1995, the Kudos respondents submitted a letter dated August 29, 1994, which was filed as the response of these two respondents to the complaint. In that letter, these respondents alleged that they were practicing the earlier Silver '140 patent, not the Baker patent.

The Kudos respondents did not participate in discovery or offer evidence at the hearing. Their letter of August 29, 1994 showed that they had adequate notice of the Commission's proceeding in which they were named as respondents. Their letter was deemed to be an adequate basis for finding that the Commission had personal jurisdiction over these two respondents who were at the time that the response was filed actively participating in the case, although to a very limited extent. See Order No. 3.

In Order No. 4, the Kudos respondents were ordered to answer certain discovery requests by September 23, 1994. No response was submitted. On October 18, 1994, in Order No. 11, the facts contained in the first set of requests for admission to the Kudos respondents were deemed admitted.

The following facts were deemed admitted:

Kudos Finder Trading Co. Ltd. and Kudos Finder Tape Industrial Ltd. have exported to the United States repositionable paper products containing infusible, solvent-insoluble, solvent-dispersible inherently tacky, elastomeric polymeric microspheres formed from non-ionic monomers and comprising a major portion of at least one oleophilic, water-emulsifiable, alkyl acrylate or methacrylate ester, said polymeric microspheres having a glass transition temperature below about -20°C, and having been prepared by aqueous suspension polymerization in the presence of at least one anionic emulsifier at a concentration level above said emulsifier's critical micelle concentration and an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter.

The facts that were admitted show that both Kudos respondents have infringed at least claims 1 and 7 of the Baker patent. Additional facts relating to other claims of the patent also were deemed admitted. See Order No. 11. A copy of the requests for admissions that were deemed admitted is included in the Appendix hereto.

There was no evidence as to what process was used by the Kudos respondents to make their products. They asserted in their response to the complaint that they were practicing the Silver '140 patent rather than the Baker patent. The finding that the Kudos respondents have infringed claim 1 is based solely on the failure of the Kudos respondents to respond to complainants' requests for admissions and other discovery requests.

CONCLUSIONS OF FACT AND LAW

1. Claims 1 and 2 of the Baker patent are invalid as anticipated under Section 102(f) and 102(g) of the Patent Act.

2. There is a domestic industry practicing claims 7 and 8 of the Baker patent pursuant to 19 C.F.R. § 1337(a)(2).

3. Complainant has not proved that the respondents who actively participated in this case infringed claims 1, 2, 4, 5, 7, 8 or 10 of the Baker patent.

4. Claim 1 of the Baker patent would have been infringed by Kudos Finder Trading Co. Ltd. and by Kudos Finder Tape Industrial Ltd. if it had been valid.

5. Claim 7 of the Baker patent was infringed by the Kudos respondents.

6. There is a violation of § 337 of the Tariff Act of 1930, as amended, by the Kudos respondents. 19 U.S.C. § 1337.

The evidentiary record in this proceeding consists of all exhibits identified in Staff Ex. 1, Beautone Respondents' Ex. 1, 3M Ex. 1, 3M Ex. 476, and 3M Ex. 478. The evidentiary record, which also includes the transcript of the testimony at the hearing, is hereby certified to the Commission. The pleadings record includes all papers and requests properly filed with the Secretary in this proceeding[3].

Janet D. Saxon

Janet D. Saxon
Chief Administrative Law Judge

March 23, 1995

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[3] Pursuant to § 210.53(h) of the Commission's Rules, this initial determination shall become the determination of the Commission unless a party files a petition for review of the initial determination pursuant to § 210.55 orders on its own motion a review of the initial determination or certain issues therein. For computation of time in which to file a petition for review, refer to §§ 210.54, 201.14 and 201.16(d).

APPENDIX A

The Baker '152 patent claims in issue are as follows:

> 1. Infusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres formed from non-ionic monomers and comprising a major portion of at least one oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester, said polymeric microspheres having a glass transition temperature below about -20° C., and having been prepared by aqueous suspension polymerization in the presence of at least one anionic emulsifier at a concentration level above said emulsifier's critical micelle concentration and an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter.
>
> 2. The microspheres of claim 1 wherein said ester is selected from the group consisting of n-butyl acrylate, sec-butyl acrylate, 2-methyl butyl acrylate, 4-methyl-2-pentyl acrylate, 2-ethyl hexyl acrylate, isooctyl acrylate, isodecyl methacrylate.
>
> 4. An article comprising a substrate having disposed on at least one surface thereon infusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres formed from non-ionic monomers and comprising a major portion of at least one oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester, said polymeric microspheres having a glass transition temperature below about -20° C., and having been prepared by aqueous suspension polymerization in the presence of at least one anionic emulsifier at a concentration level above said emulsifier's critical micelle concentration and an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter.
>
> 5. The article of claim 4 wherein said ester is selected from the group consisting of n-butyl acrylate, secbutyl acrylate, 2-methyl butyl acrylate, 4-methyl-2-pentyl acrylate, 2-ethyl hexyl acrylate, isooctyl acrylate, isodecyl methacrylate.
>
> 7. A suspension polymerization process for preparing infusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres comprising the steps of:
>
> (a) charging to a reaction vessel

(i) at least one alkyl acrylate or methacrylate ester monomer; and

(ii) at least one anionic emulsifier at a concentration above its critical micelle concentration; and

(iii) a substantially water-insoluble polymerization initiator; and

(iv) an ionic suspension stabilizer, having an interfacial tension of at least about 15.0 dynes per centimeter;

(b) agitating the reaction vessel charge to create an emulsion;

(c) heating said emulsion while maintaining said agitation;

whereby elastomeric, solvent-dispersible polymeric microspheres are formed from said emulsion.

8. The process of claim 7 wherein said ester monomer is selected from the group consisting of n-butyl acrylate, sec-butyl acrylate, 2-methyl butyl acrylate, 4-methyl-2-pentyl acrylate, 2-ethyl hexyl acrylate, isooctyl acrylate, isodecyl methacrylate.

10. The process of claim 7 wherein said stabilizer is present at up to about 10 percent of said monomer.

APPENDIX B

REQUEST NO. 1

Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. Ltd. exported repositionable paper products to the United States.

REQUEST NO. 2

Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. Ltd. has exported to the United States repositionable paper products containing a microsphere adhesive that is infusible.

REQUEST NO. 3

Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. Ltd. has exported to the United States repositionable paper products containing a microsphere adhesive that is solvent-insoluble.

REQUEST NO. 4

Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. Ltd. has exported to the United States repositionable paper products containing a microsphere adhesive that is solvent-dispersible.

REQUEST NO. 5

Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. Ltd. has exported to the United States repositionable paper products with microsphere adhesive that contains inherently tacky, elastomeric polymeric microspheres.

REQUEST NO. 6

Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. Ltd. has exported to the United States repositionable paper products containing microsphere adhesives formed from non-ionic monomers and comprising a major portion of at least one oleophilic, water-emulsifiable, alkyl acrylate or methacrylate ester.

REQUEST NO. 7

Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. Ltd. has exported to the United States repositionable paper products including microsphere adhesives that include polymeric microspheres having a glass transition temperature below about -20°C.

REQUEST NO. 8

Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. Ltd. has exported to the United States repositionable paper products including

microsphere adhesives having been prepared by aqueous suspension polymerization.

REQUEST NO. 9

Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. Ltd. has exported to the United States repositionable paper products including microsphere adhesives having been prepared by aqueous suspension polymerization in the presence of at least one anionic emulsifier at a concentration level above said emulsifier's critical micelle concentration.

REQUEST NO. 10

Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. Ltd. has exported to the United STates repositionable paper products including microsphere adhesives having been prepared by aqueous suspension polymerization int eh presence of at least one anionic emulsifier at a concentration level above said emulsifier's critical micelle concentration and an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter.

REQUEST NO. 11

Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. Ltd. has exported to the United States repositionable paper products that include a microsphere adhesive that includes infusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres formed from non-ionic monomers and comprising a major portion of at least one oleophilic, water-emulsifiable alkyl acrylate or methacrylate ester, said polymeric microspheres having a glass transition temperature below about -20°C and having been prepared by aqueous suspension polymerization in the presence of at least one anionic emulsifier at a concentration level above said emulsifier's critical micelle concentration and an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter.

REQUEST NO. 12

Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. Ltd. has exported to the United states repositionable paper products that include microsphere adhesive having been prepared by a suspension polymerization process.

REQUEST NO. 13

Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. Ltd. has exported to the United States repositionable paper products that include microsphere adhesives prepared by a suspension polymerization process, and said microsphere adhesive includes infusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres.

REQUEST NO. 14

Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. Ltd. has exported to the United States repositionable paper products that include a microsphere adhesive made by a process that includes the step of charging to a reaction vessel at least one alkyl acrylate or methacrylate ester monomer.

REQUEST NO. 15

Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. Ltd. has exported to the United STates repositionable paper products that include a microsphere adhesive made by a process that includes the step of charging to a reaction vessel at least one anionic emulsifier at a concentration above its critical micelle concentration.

REQUEST NO. 16

Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. Ltd. has exported to the United States repositionable paper products that include a microsphere adhesive made by a process that includes the step of charging to a reaction vessel a substantially water-insoluble polymerization initiator.

REQUEST NO. 17

Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. Ltd. has exported to the United States repositionable paper products that include a microsphere adhesive made by a process that includes the step of charging to a reaction vessel an ionic suspension stabilizer, having an interfacial tension of at least about 15 dynes per centimeter.

REQUEST NO. 18

Kudos Finder Tape Industrial Ltd. and Kudos Finder Trading Co. Ltd. has exported to the United States repositionable paper products that include a microsphere adhesive made by a suspension polymerization process for preparing infusible, solvent-insoluble, solvent-dispersible, inherently tacky, elastomeric polymeric microspheres comprising the steps of:

(a) charging to a reaction vessel

  (i) at least one alkyl acrylate or methacrylate ester monomer; and

  (ii) at least one anionic emulsifier at a concentration above its critical micelle concentration; and

  (iii) a substantially water-insoluble polymerization initiator; and

(iv) an ionic suspension stabilizer having an interfacial tension of at least about 15.0 dynes per centimeter;

(b) agitating the reaction vessel charge to create an emulsion; and

(c) heating said emulsion while maintaining said agitation; whereby elastomeric, solvent-dispersible polymeric microspheres are formed from said emulsion.