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UNITED STATES TARIFF COMMISSION

ROLLER BEARINGS: WORKERS OF THE  
DETROIT, MICH., PLANTS OF THE  
BOWER ROLLER BEARING DIVISION  
OF THE FEDERAL MOGUL CORP.

Report to the President  
on Worker Investigation No. TEA-W-206  
Under Section 301(c)(2) of the Trade Expansion Act of 1962



TC Publication 612  
Washington, D. C.  
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**UNITED STATES TARIFF COMMISSION**

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**Address all communications to**

**United States Tariff Commission**

**Washington, D. C. 20436**

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Note.--The whole of the Commission's report to the President may not be made public since it contains certain information that would result in the disclosure of the operations of an individual concern. This published report is the same as the report to the President, except that the above-mentioned information has been omitted. Such omissions are indicated by asterisks.

REPORT TO THE PRESIDENT

U.S. Tariff Commission,  
September 28, 1973.

To the President:

In accordance with sections 301(f)(1) and 301(f)(3) of the Trade Expansion Act of 1962 (TEA) (76 Stat. 885), the U.S. Tariff Commission herein reports the results of an investigation made under section 301(c)(2) of the act in response to a petition filed on behalf of a group of workers.

On July 30, 1973, the Tariff Commission received a petition from the International Union, United Automobile, Aerospace and Agricultural Implement Workers of America-UAW for a determination of eligibility to apply for adjustment assistance on behalf of the former workers of the Detroit, Mich., plants of the Bower Roller Bearing Division of the Federal Mogul Corp., Southfield, Mich. The Commission instituted investigation TEA-W-206 on August 10, 1973, to determine whether, as a result in major part of concessions granted under trade agreements, articles like or directly competitive with roller bearings (of the types provided for in items 680.35 and 680.36 of the Tariff Schedules of the United States) produced by said firm are being imported into the United States in such increased quantities as to cause, or threaten to cause, the unemployment or underemployment of a significant number or proportion of the workers of such firm or appropriate subdivision thereof.

Public notice of the investigation was given by posting copies of the notice at the office of the Commission in Washington, D.C., at

the New York City office, and by publication in the Federal Register of August 17, 1973 (38 F.R. 22258). A public hearing was requested by the International Union, UAW, and was held on September 6, 1973.

The information herein was obtained from the Federal Mogul Corp., domestic producers of roller bearings, importers of roller bearings, the Michigan State Employment Office, trade association, the International Union, UAW, and from the Commission's files.

#### Finding of the Commission

On the basis of its investigation, the Commission 1/ finds (Vice Chairman Parker and Commissioner Young dissenting 2/) that articles like or directly competitive with tapered roller bearings having an outside diameter of less than 4 inches (except bearings for use in aircraft) produced by the Federal Mogul Corp. are, as a result in major part of concessions granted under trade agreements, being imported into the United States in such increased quantities as to cause the unemployment or underemployment of a significant number or proportion of the workers of such firm or appropriate subdivision thereof.

The Commission makes no finding (Vice Chairman Parker and Commissioner Young dissenting 2/) whether articles like or directly competitive with roller bearings other than tapered roller bearings having an outside diameter of less than 4 inches and not used in aircraft (of the types provided for in items 680.35 and 680.36 of the Tariff Schedules of the United States)

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1/ Commissioner Leonard did not participate in the decision.

2/ Vice Chairman Parker and Commissioner Young made a negative determination with respect to all the products stated in the notice of the investigation.

produced by that firm are, as a result in major part of concessions granted under trade agreements, being imported into the United States in such increased quantities as to cause, or threaten to cause, the unemployment or underemployment of a significant number or proportion of the workers of such firm or an appropriate subdivision thereof.

Statement of Reasons for Affirmative Determination by Chairman Bedell  
and Commissioners Moore and Ablondi

On July 30, 1973, the International Union, United Automobile, Aerospace and Agricultural Implement Workers of America - UAW filed a petition for adjustment assistance under section 301(a)(2) of the Trade Expansion Act of 1962 on behalf of former workers who had produced tapered roller bearings at the Detroit, Mich., plants of Federal Mogul Corp.'s Bower Roller Bearing Division.

During the period 1968-71, tapered roller bearings in sizes ranging from 0 to 8 inches outside diameter were produced in the Detroit plants. Aircraft roller bearings were also produced at the Shoemaker Ave. plant. In October 1971, Federal Mogul Corp. announced a schedule for closing the two Detroit plants. Federal Mogul proceeded to lay off workers during 1972-73, and the Shoemaker Avenue plant was closed in September 1973. Workers were also laid off and operations reduced at the Hart Ave. plant, which is scheduled to be closed by December 1973.

Under the Trade Expansion Act of 1962, four criteria must be met in order for an affirmative determination to be made. Those criteria are as follows:

- (1) Articles like or directly competitive with those produced by the workers concerned must be imported in increased quantities;
- (2) The increased imports must be a result in major part of concessions granted under trade agreements;



- (3) The workers concerned must be unemployed or underemployed, or threatened with unemployment or underemployment; and
- (4) The increased imports resulting from trade-agreement concessions must be the major factor causing or threatening to cause the unemployment or underemployment.

#### Increased imports

Imports of tapered roller bearings substantially increased during the 1968-72 period. The quantity of such imports of tapered roller bearings increased more than four times; increasing from 3 million pounds in 1968 to 16 million pounds in 1972. These imports increased in value almost three times during the same period, rising from \$4 million in 1968 to \$15 million in 1972. During January-June 1973, the value of such imports was 76 percent larger than during the corresponding period of 1972. The quantity of 0- to 4-inch tapered roller bearings increased during the 1968-72 period more than three times; from approximately 4 million units in 1968 to more than 18 million units in 1972. These imports are like or directly competitive with the tapered roller bearings manufactured by Federal Mogul Corp.'s Detroit plants. We, therefore, believe that the first criterion is satisfied.

#### In major part

The requirement that increased imports be due in major part to trade concessions is also met. The U.S. rate of duty applicable to imports of tapered roller bearings had been reduced from the statutory (1930) rate of 10 cents per pound plus 45 percent ad valorem to 1.7 cents

per pound plus 7.5 percent ad valorem by 1972 as a result of concessions granted by the United States under trade agreements. In addition to these concessions, a trade-agreement concession granted in 1965 by the United States-Canadian automotive agreement permits duty-free entry of tapered roller bearings produced in Canada for use in automobiles.

The strong causal relationship between increasing imports and the declining rates of duty is clearly evident when viewed side by side with competitive prices. The recent Kennedy Round trade-agreement concessions reduced the duty rate by 50 percent, from 3.4 cents per pound plus 15 percent ad valorem in 1967 to the present rate of 1.7 cents per pound plus 7.5 percent ad valorem.

In 2 of the last 3 years, competitive prices offered in the original-equipment market on 0- to 4-inch high-volume bearings produced by Federal Mogul at Detroit as compared with prices of identical imported bearings shows that had the latest round of duty reductions not taken place, 0- to 4-inch tapered roller bearings produced by Federal Mogul would have been competitive with imports in the domestic market. In many instances the price advantages of imports would have been eliminated entirely and in the remaining instances Federal Mogul's prices would have improved to a point where its tapered roller bearings would have been competitive with imports.

### Unemployment

The third criterion to be met for an affirmative determination-- that the workers producing the like or directly competitive article must be unemployed or underemployed--has been satisfied. All of the

production and related workers at the Shoemaker Avenue tapered-roller-bearing plant have been released by the company. The average employment at this plant in 1969, the peak year of employment, amounted to \*\*\* workers. By 1972 the average employment had fallen to \*\*\* workers, and by September 1973 none of the former employees remained.

Production at the Hart Avenue plant has not yet ceased. However, from peak average employment there of \*\*\* workers in 1969, employment fell to \*\*\* by January 1973 and declined each month thereafter to \*\*\* workers in July 1973. All workers are scheduled to be released by Federal Mogul in December 1973.

Some former employees of these two plants retired or found new jobs through a job placement program provided by the firm. However, evidence indicates that over 500 workers remain unemployed at this time. The third criterion, therefore, is satisfied.

#### Major factor

Since the first three requirements of the Trade Expansion Act of 1962 have been met, the only remaining requirement is that concession-generated imports are increasing in such quantities as to be the major factor causing or threatening to cause unemployment or underemployment at the Detroit plants of Federal Mogul.

We believe the evidence in this investigation shows clearly that increased imports of tapered roller bearings in the 0- to 4-inch sizes were the major factor causing the unemployment or underemployment of workers at the Detroit plants.

By January 1971 concession-generated imports of 0- to 4-inch tapered roller bearings had increased 112 percent above the 1968 level. This flood of imports into the United States market caused Federal Mogul to reevaluate its position in the original-equipment market. Confronted with such a critical situation, Federal Mogul conducted a survey of the bearing import potential and determined the future effect on its domestic sales from bearing imports. At that point Federal Mogul management made a decision to discontinue the production of 0- to 4-inch tapered roller bearings at Detroit and to transfer the production of 4- to 8-inch bearings to other locations. At the time of this decision by Federal Mogul, import penetration of the domestic market had increased to 7 percent of consumption compared with 3 percent in 1968. These concession-generated imports were aimed entirely at the original-equipment market, the market to which the bulk (\* \* \*) of Federal Mogul's 0- to 4-inch tapered roller bearings were sold. In addition, foreign bearing-manufacturing capacity was found to be increasing and further threatening greater U.S. market penetration which was determined by Federal Mogul to be a reason to cease production of 0- to 4-inch tapered roller bearings. As a matter of fact, this estimate was confirmed because by 1972 imports of 0- to 4-inch tapered roller bearings had captured 10.7 percent of the domestic market as compared with 2.9 percent of penetration in 1968.

A number of reasons were cited during the hearing and to the Commission during its investigation which would indicate why Federal Mogul was forced to close its Detroit plants. However, we believe

after evaluating all of these reasons that concession-generated imports of tapered roller bearings in the 0- to 4-inch sizes were the major factor causing the unemployment of former workers at Federal Mogul's Detroit plants. Thus, the fourth criterion is met.

#### Conclusion

In view of the foregoing, we find the petitioning workers employed in the production of 0- to 4-inch tapered roller bearings in the Bower Roller Bearing Division of Federal Mogul at Detroit, exclusive of tapered roller bearings for use in aircraft, have met the statutory requirements of the Trade Expansion Act of 1962, and therefore we believe that an affirmative determination is justified.

Dissenting Views of Vice Chairman Parker and  
Commissioner Young

This investigation relates to a petition filed on behalf of former workers of the Detroit, Mich., plants of Federal Mogul Corp. who were engaged almost entirely in the manufacture of tapered roller bearings. One plant--that on Hart Avenue--produced tapered roller bearings having an outside diameter of 4 to 8 inches. The other plant--that on Shoemaker Avenue--produced tapered roller bearings having an outside diameter of less than 4 inches, as well as a small volume of roller bearings for aircraft.

Under the Trade Expansion Act of 1962, four criteria must be met for an affirmative determination to be made in a worker case. If any one of the criteria is not met, a negative determination must be made. The criteria are as follows:

- (1) Articles like or directly competitive with those produced by the workers concerned must be imported in increased quantities;
- (2) The increased imports must be a result in major part of concessions granted under trade agreements;
- (3) The workers concerned must be unemployed or underemployed, or threatened with unemployment or underemployment; and
- (4) The increased imports resulting from trade-agreement concessions must be the major factor causing or threatening to cause the unemployment or underemployment.

In the case at hand, we have determined that the fourth criterion has not been met, i.e., increased imports have not been the major factor

causing or threatening to cause the unemployment or underemployment of the workers concerned. We note that in the Commission's finding, our colleagues have limited their affirmative determination to tapered roller bearings less than 4 inches in outside diameter. Our negative determination, however, applies to the full scope of bearings produced at the plants.

The closing of the two Detroit plants of Federal Mogul, and consequent unemployment of the workers involved, has been part of a long-run reorientation and relocation of roller bearing operations by the company. The company's plans, announced in the fall of 1971, have involved two major decisions--(1) to cease production of bearings for the automotive original-equipment market and for aircraft and (2) to improve its competitive position in other markets by moving its operations from Detroit, a high-labor-cost area to locations which would improve its competitive posture vis-à-vis both domestic and foreign competition. As indicated below, neither of these decisions was in major part in response to import competition. U.S. imports of tapered roller bearings, in the overall, have accounted for a very small share of the U.S. market. The value of annual imports of such bearings amounted to 2 percent or less of apparent U.S. consumption in the years leading up to the company's decision to close the plants, and the United States exported several times more roller bearings than it imported. In terms of the total quantity of tapered roller bearings shipped, Federal Mogul has maintained its relative position in the marketplace; its share of U.S. consumption was, in fact, higher in 1972 than in 1969, 1970, or 1971. Federal Mogul also increased its shipments

of 0- to 4-inch tapered roller bearings each year until 1971, the year in which it announced that it had decided to cease production at Detroit.

The decision to leave the automotive original-equipment market (OEM) affected primarily the Shoemaker Avenue plant, where roller bearings of less than 4 inches in outside diameter were produced in high volume. The automotive OEM for roller bearings is a highly competitive market served predominantly by domestic producers. The major importer of roller bearings from Japan, the predominant foreign source, supplied only insignificant amounts of roller bearings to the automotive OEM market in 1971--the year in which Federal Mogul announced its decision to no longer attempt to supply that market. Imports of roller bearings from Canada for use as original equipment in motor vehicles, which enter free of duty as a result of the U.S.-Canadian automotive products agreement, have increased in recent years, but in total volume were equivalent to only a small share of Federal Mogul's sales of bearings of the sizes sold in that market. Thus, the company's decision to no longer attempt to supply the automotive OEM market was primarily in response to the competitive pressures of other domestic suppliers, not those of foreign suppliers. In order to be able to offer customers a full line of automotive bearings for replacement purposes, Federal Mogul has indicated that, for at least the foreseeable future, it will purchase bearings from other domestic suppliers.

The decision to cease the production of aircraft bearings, which employed a substantial number of workers at the Shoemaker plant before it was phased out, was virtually unrelated to import competition. For



the most part, the domestic production of aircraft bearings is not related to import competition because of Buy American clauses in military procurement contracts and the policy of the aircraft industry to buy domestically.

In conjunction with the closing of the two Detroit plants, Federal Mogul has expanded another bearing plant in Illinois and constructed a new plant in Alabama. The newer and more advanced equipment from both the Hart Avenue and Shoemaker Avenue plants has been, or will be, moved to the Illinois and Alabama facilities, and production for nonautomotive markets will be located there. Import competition in the markets for larger sized roller bearings, i.e., those from 4 to 8 inches in outside diameter is limited; domestic needs are generally more moderate and production runs by suppliers are for lesser volumes than those of smaller sized roller bearings. Thus, the shutdown of the Detroit operations producing bearings for the nonautomotive market and the shifting of production to other domestic locations resulted from a corporate decision to obtain more favorable operating conditions. This action by Federal Mogul is similar to that of a number of other companies which have transferred production facilities from the Detroit area to other parts of the United States. Representatives of the petitioning workers' union testified at the Commission's hearing of numerous companies that had transferred plants from Detroit to other areas with lower labor costs.

In light of the above, we have concluded that any unemployment or underemployment of the workers concerned was not in major part the result of increased imports resulting from trade-agreement concessions.



INFORMATION OBTAINED IN THE INVESTIGATION

Description and Uses

The primary function of antifriction bearings is to reduce the friction between a revolving part and a fixed part in mechanical devices. Bearings are essential components of practically every industrial and military device.

Antifriction bearings may be classified in two broad categories: ball bearings and roller bearings. The principal differences are in the rolling elements (balls or rollers), in their respective abilities to carry loads, and in their respective costs.

Generally, ball and roller bearings are not interchangeable because each type has characteristics that make it the better choice for a given application. The original selection is made to assure maximum bearing performance; therefore, a replacement would be made with the same type of bearing. The load-carrying ability of a bearing is largely determined by the contact between the rolling element and the raceway (the groove in which the rolling element moves). In a ball bearing this contact is initially only point contact, but it increases to area contact as the load is applied to the bearing and the ball tends to deform slightly. In a roller bearing the initial contact between the roller and the raceway is line contact, but this too increases as the load is applied to the bearing. When the roller deforms under load, the contact area becomes elliptical. The contact

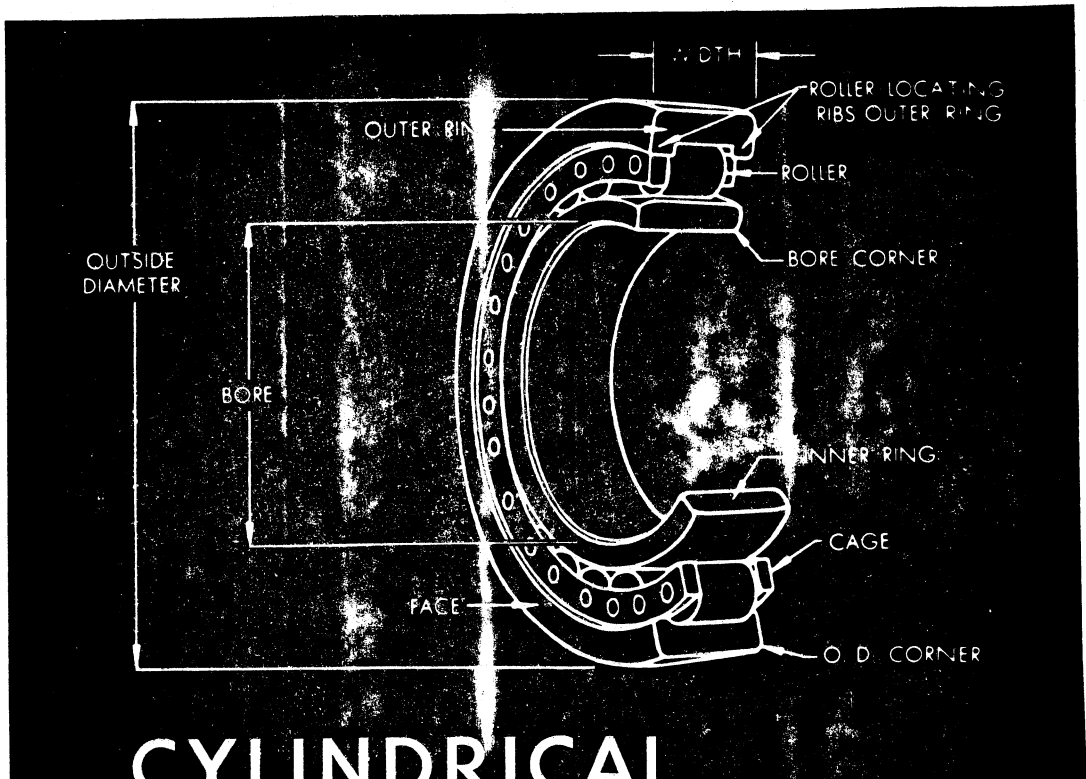
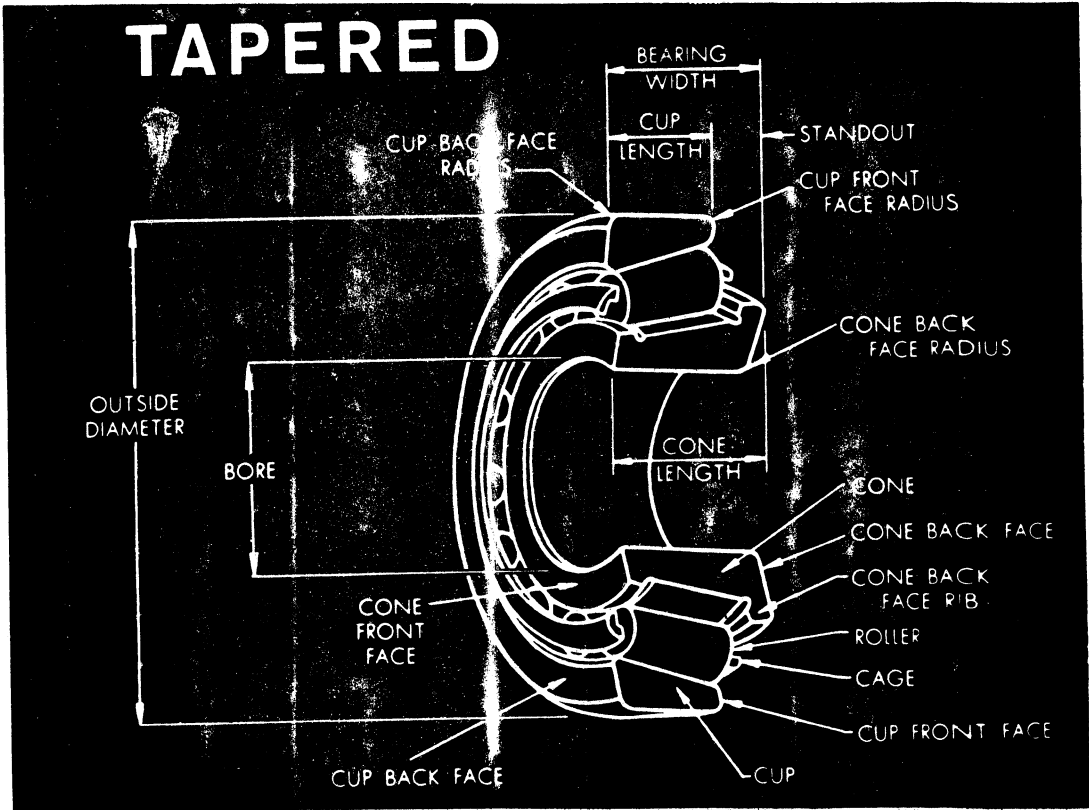
area of a roller bearing is much greater than that of a ball bearing; therefore, the roller bearing accommodates much greater loads.

Conversely, the heat developed within a bearing is related to the load contact area and for this reason a ball bearing can usually be run at higher speeds than a roller bearing. Ball bearings are highly versatile and are adaptable to a wide range of loads, speeds, temperatures, and environments. Roller bearings are not so adaptable and, therefore, are more limited in their use.

Roller bearings generally consist of two steel rings separated by rollers rolling on hardened precision-ground faces in the rings (see diagram on following page). The rollers are usually spaced by a cage or retainer. Roller bearings may also contain shields or seals. Shields are metal plates which are attached to the outer ring. Seals are closures similar to shields but are made from elastomeric material. Shields and seals protect the bearings from foreign materials and retain lubricants.

Oil and grease serve to reduce friction between moving parts, to dissipate heat caused by elastic deformation and sliding friction at contact areas, and to prevent rust and corrosion. Oil is usually the most effective lubrication and provides longer life than grease. Retention and sealing problems are more difficult, however. Grease lubrication is most effectively done by the bearing manufacturer at the time of assembly, when the bearing can be adequately cleaned and the correct amount of grease inserted. Bearings with integral seals

Comparison of basic roller bearing structure and components



to retain lubricants and exclude contaminants are ideally designed for grease lubrication.

Roller bearings may be radial, thrust, or tapered; they are not interchangeable. They may also be classified as single-row, double-row, four-row, self-aligning, spherical, and so forth. The most widely used tapered roller bearing is the single-row type. Roughly two-thirds of all roller bearings produced domestically or abroad are radial roller bearings, and approximately one-third of all roller bearings are tapered roller bearings. Roller bearings are produced in sizes which range from units of 6 or more feet in outside diameter to units of under 1 inch in diameter. Roller bearings of the type manufactured at the Detroit plants of the Federal Mogul Corp., were tapered roller bearings. The tapered roller bearings have rollers and raceways which are truncated cones. This cone shape is to assure that a true rolling motion is maintained at the raceway. Tapered roller bearings are precision-ground products designed to carry radial and thrust loads at low to moderate speeds. These bearings have high radial load capacities and a thrust capacity of about 60 percent of its radial capacity. The actual ratio depends on the size of the bearing. The application of a thrust, as well as a radial load to a tapered roller bearing, develops a force which tends to squeeze the rollers out of the bearing. The ability to contain this force is a function of the cone backface rib design, which holds the rollers in place.

Tapered bearings are used in auto and truck wheels, transmissions and differentials for all types of civilian and military autos, trucks, and self-propelled vehicles, farm machinery and implements, industrial trucks, forklifts, gear reducers, geared shafting, steering mechanisms, machine-tool spindles, printing presses, steel mill rolling and furnace tilting equipment, railroad rolling stock, and aircraft engines.

Dimensions and tolerances for bearings are established by the Annular Bearing Engineers Committee (ABEC) of the Anti-Friction Bearing Manufacturers Association, Inc. (AFBMA). The committee maintains universal standards for dimensions and tolerances used in the manufacture of roller bearings. The International Organization for Standardization has established standards which are similar to the ABEC standards. Representatives from bearing-manufacturing companies, both domestic and foreign, sit in on the regular meetings of these standard control groups. Both domestic and foreign companies manufacture bearings to ABEC standards for the U.S. market.

## U.S. Tariff Treatment

The roller bearings covered in this investigation are provided for in items 680.35 and 680.36 of the Tariff Schedules of the United States (TSUS).

Roller bearings from Canada for original equipment use in the manufacture of motor vehicles are duty free under TSUS item 680.36; all others are currently dutiable at 1.7 cents per pound plus 7.5 percent ad valorem under TSUS item 680.35. Roller bearings were originally dutiable at 10 cents per pound plus 45 percent ad valorem under the Tariff Act of 1930. Following the most recent international tariff negotiations (Kennedy Round, 1968), the rate of duty on tapered roller bearings was reduced from 3.4 cents per pound plus 15 percent ad valorem in 1967 to 1.7 cents per pound plus 7.5 percent ad valorem in 1972--a reduction of 50 percent in the specific and ad valorem duty rate. Duty reductions and the effective dates of such reductions of the rates of duty in effect during each of those years are shown in the table on the following page.

TSUS item 680.36 was created pursuant to Public Law 89-283 (Automotive Products Trade Act of 1965) and put into effect by Presidential Proclamation No. 3682, October 21, 1965, with respect to articles entered on or after January 18, 1965.



Roller bearings: U.S. rate of duty in 1930 and changes  
through 1972

(Cents per pound; percent ad valorem)

Effective date	Rate of duty	Ad valorem equivalent <sup>1/</sup>	Authority
June 18, 1930-----	10¢ + 45%	-	Tariff Act of 1930.
Aug. 5, 1935-----	8¢ + 35%	-	Trade agreement with Sweden.
Apr. 30, 1950-----	4¢ + 17.5%	-	Gatt concession.
June 30, 1956-----	3.8¢ + 16.5%	-	Do.
June 30, 1957-----	3.6¢ + 15.5%	-	Do.
June 30, 1958-----	3.4¢ + 15%	-	Do.
Aug. 31, 1963-----	3.4¢ + 15%	-	Adoption of TSUS (item 680.35).
Jan. 1, 1968-----	3¢ + 13.5%	16.7	Gatt concession.
Jan. 1, 1969-----	2¢ + 12%	14.1	Do.
Jan. 1, 1970-----	2¢ + 10.5%	12.6	Do.
Jan. 1, 1971-----	2¢ + 9%	11.1	Do.
Jan. 1, 1972-----	1.7¢ + 7.5%	9.3	Do.

<sup>1/</sup> The ad valorem equivalent shown applies only to tapered roller bearings. Data on imports of tapered roller bearings were not available prior to 1968.

Note.--A surcharge of 10 percent ad valorem was applicable to certain imported articles, including ball bearings and parts under item 680.35, from Aug. 16 to Dec. 19, 1971. During that period the aggregate duty applicable to such articles was 2 cents per pound plus 19 percent ad valorem. The surcharge was imposed by Presidential Proclamation No. 4074 and removed by Presidential Proclamation No. 4098.

U.S. Producers

Four firms, The Timken Co., New Departure-Hyatt Division of General Motors Corp., Federal Mogul Corp., and SKF Industries, Inc., a wholly-owned subsidiary of Aktie Bolaget Svenska Kullager Fabriken, produce over \*\*\* percent of all tapered roller bearings manufactured in the United States. These four major firms plus two smaller firms, Torrington Co., Torrington, Vt., and Brinco, Inc., Petersburg, Va.,

presently operate a total of 18 tapered roller bearing plants, 12, of which, are situated in the Midwest (Ohio, 8; Michigan, 2; Illinois, 1; Kentucky, 1) and one plant in each of these States: Alabama, Colorado, South Carolina, New Jersey, Vermont, and Virginia. Timken Co. is by far the major producer, operating nine individual plants and accounting for \*\*\* percent of the total domestic tapered roller bearing production in 1972. \* \* \*

The bearing industry is highly capital intensive and as such, few firms can afford to manufacture complete lines of bearings (a full line of tapered roller bearings may approach 10,000 separate items.) 1/ Virtually all of the high-volume (0 to 4 inches) tapered roller bearings, which are primarily designed for the automotive original-equipment markets (OEM's) and the automotive aftermarket, are produced by the four companies mentioned above.

Most intermediate (4 to 8 inches) and large (over 8 inches) 2/ tapered roller bearings are made by the same four firms, Timken, New Departure-Hyatt, Federal Mogul, and SKF, that produce the high-volume, 0- to 4-inch bearings. However, several smaller firms also produce bearings in these sizes, in particular, Torrington Co., Torrington, Conn., which specializes in the larger made-to-order tapered roller bearings, and Brinco, Inc., Petersburg, Va., which until recently

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1/ \* \* \*  
2/ Tapered roller bearings over 4 inches account for \* \* \* [roughly 9.5] percent of total annual production from 1968-71.

manufactured only railroad tapered journal bearings. Brinco recently expanded its line to include small quantities of other standard tapered roller bearings.

\* \* \* \* \*

#### U.S. Consumption

Annual U.S. consumption of tapered roller bearings has increased since 1968. In terms of value, U.S. consumption of such bearings, which amounted to \$328 million in 1968, fluctuated between \$337 million and \$362 million in 1969-71, and then rose sharply to \$412 million in 1972 (table 1). Both annual U.S. shipments of domestically produced tapered roller bearings and annual imports of such articles followed much the same pattern, but imports increased by a greater proportion than shipments. Consequently, imports supplied 3.6 percent of consumption in 1972, compared with 1.2 percent in 1968.

Apparent consumption of high-volume, 0- to 4-inch tapered roller bearings increased an estimated 21 percent from 1968 to 1972. Much of this increase is attributed to the surging auto and recreational vehicle sales in 1972 (table 2). Withstanding extended auto strikes during the 1973 contract negotiations and any further deterioration in the sales of mobile homes, consumption of these sizes of tapered roller bearings should exceed 200 million units in 1973. Consumption figures developed in table 2 were \* \* \* derived by converting import and export data to units based on the value and the estimated unit weight equivalent thereof.

## U.S. Shipments

The annual U.S. shipments of tapered roller bearings increased from \$352 million (161 million units) in 1968 to an estimated \$434 million (213 million units) in 1972 (tables 1 and 3). U.S. shipments of 0- to 4-inch tapered roller bearings on a unit basis increased from 144 million units in 1968 to 169 million units in 1972 (table 2). Output in 1970 was lower due, at least in part, to a drop in the number of automobiles produced that year. New-car production increased the following year and tapered roller bearings also showed a rise in output.

\* \* \* \* \*

Shipments of the high-volume, 0- to 4-inch tapered roller bearings by the four major producers followed the trend of total shipments closely from 1968-72. The shipments of these sizes of bearings accounted for an annual average of \* \* \* percent of the four major producers' total shipments of tapered roller bearings during the 5-year period.

\* \* \* \* \*

## U.S. Exports

The Department of Commerce reports exports of tapered roller bearings in dollar values only. Exports of such bearings rose from \$28 million in 1968 to a peak of \$41 million in 1970 and thereafter declined steadily to \$37 million in 1972, or by 10.7 percent (table 4). Canada was by far the major customer, accounting for about 32 percent of aggregate exports during the 5-year period. Tapered roller bearing exports to Canada are primarily automotive tapered roller bearings. France and Mexico were significant but smaller markets.

Exports of tapered roller bearings amounted to 11.1 percent (by value) of domestic shipments in the peak year of 1970 and 8.5 percent in 1972. In the period January-June 1973, exports increased 29.3 percent over the same period of 1972 (table 5). Following the devaluation of the dollar in February 1973 and the general economic conditions in the industrial world, the export of tapered roller bearings would be expected to increase in 1973.

Total exports of tapered roller bearings from 1968 to 1972 exceeded total imports of tapered roller bearings by approximately three to seven times. This level of exports was attained in part by shipments to domestically owned auto assembly operations in Canada, Mexico, and Brazil. Except for Canada and possibly Mexico and Brazil, other exports were largely for the replacement market in autos, machines, and off-road equipment.

## U.S. Imports

The value of imports of tapered roller bearings increased from \$3.9 million in 1968 to \$14.7 million in 1972, or by 278 percent (table 6). During the 6-month period, January-June 1973, imports valued at \$11.7 million entered the United States, as compared with \$6.6 million worth of imports during January-June 1972 (table 7).

The value of monthly imports ranged from approximately \$300,000 to over \$800,000 from 1969-71. Following the announcement and subsequent reduction in operations at the high-volume bearing plant, Federal Mogul Corp., in Detroit in March 1972, imports of tapered roller bearings jumped to over \$1.3 million in value and fluctuated monthly around the new level, reaching a high of \$3.0 million in March 1973.

Imports as a percent of consumption, based on value, increased from 1.2 percent in 1968 to 3.6 percent in 1972. Imports of the high-volume, 0- to 4-inch products increased from approximately 3 percent to over 10 percent in the same period.

Japan is by far the major foreign source of tapered roller bearings accounting for 92.7 percent by weight of imports in 1972 of such bearings and 85.0 percent of the value. The United Kingdom accounted for 3.9 percent by weight and 7.2 percent of the value. The automobile industry is the main user of imported tapered roller bearings in the 0- to 4-inch range. Recently the agricultural implement industry has

turned to imported bearings as one of its major sources of supply.

\* \* \*. The quality of imported tapered roller bearings is on a par with similar domestically produced bearings.

The value of imports of tapered roller bearings from Canada would be expected to be substantial as a result of the Automotive Products Trade Act (APTA) of 1965. However, data on imports of tapered roller bearings from Canada under the APTA are included under TSUSA item 680.3640 which includes other types of roller bearings; imports in this class were reported to be \$3.7 million in 1972. The value of dutiable imports of tapered roller bearings from Canada peaked in 1971 at \$82,000 but have since fallen off rapidly; imports during January-June 1973 amounted to \$8,000. \* \* \*.

## Federal Mogul Corp.

The corporation

The Federal Mogul Corp. was incorporated in the State of Michigan on May 1, 1924, and maintains corporate and international headquarters at the Federal Mogul Building, Southfield, Mich. The Federal Mogul Corp. was founded with the merger of two bearing manufacturing companies, the Muzzy-Lyon Co. and the Bearing and Bushing Corp. Antifriction bearings remain the principal product of the corporation. The Federal Mogul Corp. has a long history of mergers and acquisitions in the United States and abroad. It now owns or holds controlling interest in companies manufacturing ball bearings, roller bearings, sleeve bearings, pistons, powder-metal parts and bars, rubber and plastic oil seals, O-rings, precision plastic components and aerospace systems, plastic plumbing fittings and pipe, cutting tools, abrasives, and selective aftermarket auto parts. Federal Mogul's 16 divisions, 1 of which is the Bower Roller Bearing Division, operate 48 plants worldwide (11 foreign) covering 3,726,000 square feet of manufacturing area. Products from these plants are sold directly to OEM's or through Federal Mogul's distribution division, \* \* \*.

The closing of the two Detroit plants entailed a very sizable one-time write-off of close to \$15 million; this plus an additional investment of \$20 million was required to expand the Macomb, Ill., plant and to build the new bearing plant in Hamilton, Ala.



\* \* \* \* \*

The corporate decision to close these plants will entail the movement of equipment and most of the product lines from the low-volume Hart Avenue plant to an existing facility in Macomb, Ill., and the cessation of all production at the high-volume Shoemaker Avenue plant where the 0- to 4-inch bearings are made. \* \* \*

Bower Roller Bearing Division (Detroit plants)

The Detroit plants of the Bower Roller Bearing Division consist of two plant sites within the city of Detroit. The Hart Avenue plant is situated at 3040 Hart Ave., Detroit, Mich., covers 530,000 square feet, and manufactured a wide range of tapered roller bearings of 4 to 8 inches. Production in these sizes of tapered roller bearings is moderate compared with the production of the 0- to 4-inch tapered roller bearing. The Hart Avenue building is over 30 years old; however, management maintains the building and the equipment in excellent repair. Some of the technology utilized at this plant is the most advanced in the industry. \* \* \*. The Hart Avenue plant is scheduled to be closed by the end of 1973 with the newer and more advanced equipment and the product lines transferring to another Federal Mogul plant in Macomb, Ill. Some bearing lines have already been transferred to the Macomb plant, which was rearranged and enlarged in late 1972 to accommodate this move. The Hart plant and remaining equipment will be put up for sale in 1974.

Production at the Shoemaker Avenue plant, the other Federal Mogul Detroit plant, situated at 11031 Shoemaker Ave., Detroit, Mich., has virtually ceased; \* \* \*. The plant is scheduled to close the end of September 1973. The Shoemaker Avenue plant consists of a series of additions to the original 50-year-old structure and presently encompasses a total of 268,000 square feet of office and manufacturing area. The main product at this plant was high-volume tapered roller bearings (0- to 4-inches) for the automotive market; one of the major markets for imported bearings. Like the Hart Avenue plant, this facility was well maintained and utilized advanced equipment and technology, \* \* \*. Much of the modern equipment has already been removed from the plant and installed in a new tapered roller bearing facility in Hamilton, Ala. The remaining equipment and the plant will be put up for sale before the end of 1973.

The aircraft bearing production operation is housed in a building adjoining the main Shoemaker plant. This one-shift operation will close down \* \* \* by the end of September 1973. In 1969 over \*\*\* persons were employed in this operation which catered to small-job shop orders for straight roller bearings of exacting precision. Aircraft bearings are, for the most part, not subject to import pressures because of the Buy American Act for military procurement and the aircraft industry's buying policies. These facilities will be sold along with the Hart Avenue plant. \* \* \*.

\* \* \* \* \*

Employment

\* \* \* \* \*

The Detroit job market in June 1973 showed an increase in demand for workers. The unemployment rate fell to 8.1 percent compared to 9.7 percent unemployment in June 1972. Federal Mogul needed skilled workers for job setup, for tool-and-die work, and for operation of machines. Companies looking for tool-and die-personnel interviewed these people in their plants. Tool-and-die people are in high demand in the Detroit area. Many of the more skilled workers who lost their jobs as a result of Federal Mogul's plant closing were readily able to find other employment in Detroit. A Chrysler auto plant nearby accepted job applications and Federal Mogul provided its employees transportation to the Chrysler plant for job interviews. However, according to the UAW's statistics, 500 people remain unemployed at this time.

Copies of the news release and the letter to the workers at the Detroit plants announcing the closing of the two facilities are shown in Appendix B.

The union and management conducted separate surveys of the workers to determine the number of people that would be willing to relocate to the Macomb, Ill., and Hamilton, Ala., bearing plants; these surveys differed considerably. The UAW found that of \*\*\* inquiries, \*\*\* people replied that they wished to relocate. Federal Mogul found \*\*\* people willing to move. However, no one has actually done so to date.

\* \* \* \* \*



APPENDIX A  
STATISTICAL TABLES



Table 1.--Tapered roller bearings: U.S. shipments, imports for consumption, exports of domestic merchandise, and apparent consumption, 1968-72

Year	U.S. shipments	Imports	Exports	Apparent consumption	Ratio of imports to consumption
	<u>1,000</u> <u>dollars</u>	<u>1,000</u> <u>dollars</u>	<u>1,000</u> <u>dollars</u>	<u>1,000</u> <u>dollars</u>	<u>Percent</u>
1968-----	351,596	3,888	27,930	327,554	1.2
1969-----	391,204	7,239	35,829	362,614	2.0
1970-----	372,105	6,188	41,340	336,953	1.8
1971-----	380,897	8,354	38,220	351,031	2.4
1972-----	<sup>1/</sup> 434,470	14,711	36,931	412,250	3.6

<sup>1/</sup> Estimated in part.

Source: Data compiled from official statistics of the U.S. Department of Commerce.

Table 2.--Tapered roller bearings, 0 to 4 inches: U.S. shipments, imports for consumption, exports of domestic merchandise, and apparent consumption, 1968-72

Year	U.S. shipments	Im-ports <sup>1/</sup>	Ex-ports <sup>1/</sup>	Apparent consumption	Ratio of imports to consumption
	<u>1,000 units</u>	<u>1,000 units</u>	<u>1,000 units</u>	<u>1,000 units</u>	<u>Percent</u>
1968-----	144,339	3,921	12,413	135,847	2.9
1969-----	157,201	10,638	15,924	151,915	7.0
1970-----	135,203	8,259	18,373	125,089	6.6
1971-----	143,728	10,368	16,986	137,110	7.6
1972-----	<sup>2/</sup> 169,237	18,378	16,413	171,202	10.7

<sup>1/</sup> Import and export data converted to pieces based on Commission estimates of unit weight and value.

<sup>2/</sup> Estimated in part.

Source: Compiled from official statistics of the U.S. Department of Commerce, except as noted.



Table 3.--Tapered roller bearings: Domestic production of tapered roller bearings by size range, 1968-72

(In thousands of units)

Size range in inches	1968	1969	1970	1971	1972
0-2-----	38,958	43,789	40,295	38,736	1/
Over 2-4-----	105,381	113,412	94,908	104,992	1/
Over 4-6-----	14,088	15,849	12,519	12,860	1/
Over 6-8-----	***	***	***	***	1/
Over 8-10-----	711	819	881	694	1/
Over 10-30-----	233	443	480	245	1/
Over 30-----	3	3	***	***	1/
Total-----	***	***	***	***	2/ 213,356
	[159,374]	[174,315]	[149,083]	[157,527]	

1/ Breakout by size not yet available from the U.S. Department of Commerce.

2/ Estimated.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 4.--Tapered roller bearings: U.S. exports of domestic merchandise, by principal markets, 1968-72

(In thousands of dollars)

Principal market	1968	1969	1970	1971	1972
Canada-----	10,628	11,381	10,355	12,855	12,037
France-----	1,284	3,916	3,704	3,005	3,607
Mexico-----	2,678	3,285	2,800	2,340	2,780
Brazil-----	1,309	1,754	1,323	1,956	1,634
United Kingdom-----	877	1,577	2,967	1,369	1,485
Venezuela-----	566	677	679	832	1,433
All other-----	10,588	13,239	19,512	15,863	13,955
Total-----	27,930	35,829	41,340	38,220	36,931

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 5.--Roller bearings: U.S. exports of domestic merchandise, January-June 1972 and January-June 1973

Month	1972	1973
January-----	\$ 3,189,454	\$ 3,453,493
February-----	3,081,167	3,398,921
March-----	2,881,907	3,989,402
April-----	3,366,355	3,872,314
May-----	2,806,541	3,952,414
June-----	2,616,259	4,528,720
Total-----	17,941,683	23,195,264

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 6.--Tapered roller bearings: U.S. imports for consumption, by principal sources, 1968-72 and January-June 1973

Source	1968	1969	1970	1971	1972	Jan.-June 1973
Quantity (1,000 pounds)						
Japan-----	2,570	8,301	6,599	8,122	14,482	9,632
United Kingdom----	361	144	155	217	605	519
West Germany-----	121	225	165	287	325	131
France-----	133	240	55	114	70	21
Canada <sup>1/</sup> -----	19	43	21	44	41	4
All other-----	129	90	24	29	99	270
Total-----	3,333	9,042	7,020	8,813	15,621	10,577
Value (1,000 dollars)						
Japan-----	2,252	5,617	4,868	6,836	12,497	9,332
United Kingdom----	751	430	439	423	1,064	1,269
West Germany-----	311	418	593	686	742	488
France-----	268	512	156	261	202	59
Canada <sup>1/</sup> -----	56	70	58	82	37	8
All other-----	250	192	73	66	169	501
Total-----	3,888	7,239	6,188	8,354	14,711	11,656

<sup>1/</sup> Data shown do not include imports of tapered roller bearings from Canada under the provision of the Automotive Products Trade Act.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note.--Because of rounding, figures may not add to totals shown.

Table 7.--Tapered roller bearings: U.S. imports for consumption,  
by months, 1969-72 and January-June 1973 <sup>1/</sup>

(In thousands of dollars)

Month	1969	1970	1971	1972	1973
January-----	496	531	801	868	1,788
February-----	485	350	408	662	1,386
March-----	429	531	884	1,344	3,034
April-----	618	301	593	1,348	1,585
May-----	618	709	522	1,144	2,240
June-----	483	468	493	1,227	1,622
First 6 months, total---	<u>3,128</u>	<u>2,890</u>	<u>3,700</u>	<u>6,593</u>	<u>11,656</u>
July-----	582	546	704	898	<u>2/</u>
August-----	646	388	508	1,529	<u>2/</u>
September-----	638	396	786	1,270	<u>2/</u>
October-----	684	475	546	1,794	<u>2/</u>
November-----	872	1,010	1,093	1,216	<u>2/</u>
December-----	690	482	1,018	1,411	<u>2/</u>
Second 6 months, total---	<u>4,111</u>	<u>3,298</u>	<u>4,654</u>	<u>8,118</u>	<u>2/</u>
First and second 6- month total-----	7,239	6,188	8,354	14,711	<u>2/</u>

<sup>1/</sup> Data shown do not include imports of tapered roller bearings from Canada under the provision of the Automotive Products Trade Act.

<sup>2/</sup> Not available.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Note.-- Because of rounding, figures may not add to totals shown.

APPENDIX B  
OTHER RELATED INFORMATION



# NEWS

A-26

**FEDERAL-MOGUL**  
DETROIT, MICHIGAN



FOR IMMEDIATE RELEASE  
October 27, 1971

## FEDERAL-MOGUL TO PHASE OUT OF ORIGINAL EQUIPMENT MARKET FOR PASSENGER CAR TAPERED ROLLER BEARINGS

DETROIT, Oct. 27 -- Federal-Mogul Corporation (NYSE) announced today that it will phase out of the original equipment market for passenger car tapered roller bearings within the next 12 to 24 months.

The company expects that its Detroit Shoemaker passenger car tapered roller bearing plant will be phased out and closed within 12 to 24 months. Also, Federal-Mogul expects that its Detroit Hart plant, which manufactures larger size tapered roller bearings, will be closed within 24 to 48 months. The Hart plant's production lines for the larger tapered roller bearings will be transferred to other existing and planned new Federal-Mogul facilities located in other areas of the country. Approximately 1,900 employees will be affected ultimately.





Samuel E. MacArthur, chairman and president, said the closing of the two plants will result in an extraordinary, one-time write-off estimated at \$10 million net of tax, equivalent to \$1.81 a share.

Mr. MacArthur said: "For the last two years, Federal-Mogul's management has been conducting an in depth study and evaluation of the world antifriction bearing market. Each year, we have seen a gradual erosion of our profit margins and of our share of the original equipment market for passenger car tapered bearings. This is due to several factors -- beyond the control of management -- which have worked against Federal-Mogul.

"Foreign made products have been gaining an increasing share of this market. Not only foreign companies but domestic companies which produce passenger car tapered roller bearings overseas have substantial competitive advantages. They enjoy lower wage costs lower capital equipment costs, and lower building and material costs. Many of the foreign companies are owned, partly owned, or subsidized by their governments. In addition, in comparison with our major competitors in the tapered roller bearing industry, Federal-Mogul's labor rates and fringe benefits are among the highest. As a result, Federal-Mogul has been unable to obtain high enough prices to maintain acceptable profit margins. The competition has been so intense that while we have been attempting to increase our prices, some of our competitors have actually decreased their

"We shall continue manufacturing tapered roller bearings for the original equipment market in trucks, construction equipment, farm equipment and leisure time vehicles. Also, we want to make it clear that Federal-Mogul has no intention of abdicating its position in the passenger car tapered roller bearing replacement market. This market is an important one for us and we expect continued growth.

"We regret and are deeply concerned about the eventual effect on our employees at these two plants. We are announcing our decision well in advance of terminations in order to assure that our employees will have the longest time available to make any necessary adjustments. Production will continue until commitments to our customers have been met. None of our employees are immediately affected and each employee will be notified well in advance of termination. The company will have an Employee Placement Service available to assist our people in finding new jobs."

Mr. MacArthur added, "We are optimistic about the future growth and profitability of Federal-Mogul. During the next several months, we will be announcing more specific information on our plans to build a new tapered roller bearing plant in another area of the country to serve our important markets in trucks, construction and farm equipment, and leisure time vehicles. At this time, we estimate that our new capital investment program will approximate \$20 million.

"In addition to our plans for a new plant, we shall also release -- in the near future -- greater detail on new ventures and continuing progress for Federal-Mogul. These will include our Sinta-Forge operation which represents a technological breakthrough in the hot forging of powdered metal components; expansion of our plastics products operation which is a market that continues to grow and one in which we expect to achieve a leading position; and our plans for expansion of our worldwide marketing efforts."

-30-

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July 18, 1973  
American Metal Market

## Poland Looks at US as a Major Market For Bearings; Starts Things Rolling

By MARTYN CHASE

WARSAW (FNS) — Poland is eyeing the United States as a major export market in the future for its FLT roller bearings.

"The outlook is very promising for FLT bearings," said Krzysztof Szwarc, general director of Impexmetal, the Polish foreign trade agency for nonferrous metals and roller and ball bearings. "We could sell much more than we now have available," he said.

Szwarc revealed that Impexmetal recently signed an agreement with General Bearing Co., West Nyack, N.Y., under which General Bearing will act as the American agents for Polish-made bearings.

General Bearing is now completing a market study and already importing the Polish bearings, according to George Kanof, vice-president. The products being imported include standard radial ball bearings, single- and double-row cylindrical bearings, single- and double-row self-aligning roller bearings, angular control ball bearings, and single-row taper rolling bearings.

"The market for foreign bearings has hardly been tapped in the single- and double-row cylindrical and self-aligning bearings," Kanof said. "We believe the market potential here is tremendous."

The company's sales force will approach original equipment manufacturers to acquaint them with the line.

Kanof declined to reveal the terms or size of the deal other than to say that it is substantial.

On a long-term basis, a top official at Impexmetal in Poland indicated that the Poles hope to export millions of dollars of bearings to the U.S. per year, though current Polish bearing exports to the States are only a tiny fraction of that amount.

A major expansion is already under way at the FLT roller bearing factory in Poznan, where output now totals 5.5-million bearings annually covering more than 300 typical bearing sizes and varieties in four design groups.

The expansion moves are being taken because of the export potential seen here for the bearing in-

dustry, plus the rapid growth of Poland's own engineering building industry.



