

UNITED STATES TARIFF COMMISSION

HARD-FIBER AND MANMADE-FIBER ROPE:  
WORKERS OF PLYMOUTH CORDAGE COMPANY,  
PLYMOUTH, MASS.,  
DIVISION OF COLUMBIAN ROPE COMPANY

Report to the President  
on Investigation No. TEA-W-143  
Under Section 301(c)(2) of the Trade Expansion Act of 1962



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UNITED STATES TARIFF COMMISSION

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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,  
August 29, 1972.

To the President:

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

On May 22, 1972, the Tariff Commission received a petition for determination of eligibility to apply for adjustment assistance filed by the United Textile Workers Union of America (AFL-CIO) on behalf of workers formerly employed by the Plymouth Cordage Company, Division of Columbian Rope Company, Auburn, N.Y.

On May 30, 1972, the Commission instituted an investigation (TEA-W-143) to determine whether, as a result in major part of concessions granted under trade agreements, articles like or directly competitive with cordage of manmade fibers (of the types provided for in item 316.60 of the Tariff Schedules of the United States (TSUS)) and cordage of abaca, of stranded construction, measuring 3/16 inch or over in diameter (items 315.35 and 315.50 of the TSUS) manufactured at the Plymouth Cordage Division of the Columbian Rope Company 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 the company or appropriate subdivision thereof.

Public notice of the receipt of the petition and the institution of the investigation was given by publication in the Federal Register on June 3, 1972 (37 F.R. 11217). A public hearing was held on July 6, 1972.

On July 11, 1972, at the request of the petitioners, the Commission expanded the investigation to include cordage of manmade fibers (of the types provided for in item 316.60 of the TSUS) and cordage of hard (leaf) vegetable fibers of stranded construction, measuring 3/16 inch or over in diameter (items 315.35 through 315.60 of the TSUS). Notice of the broadening of the investigation was given to all witnesses scheduled to testify at the hearing, and they were allowed to testify on all aspects of the broadened investigation. The petitioners also requested, inter alia, that TSUS item 315.20 (binder twine and baler twine) be covered by the investigation; the Commission did not expand the scope of the investigation to cover such twine, however, inasmuch as the Plymouth Cordage Company had not produced binder or baler twine since 1964.

Public notice of the expansion of the investigation was given by publication in the Federal Register on July 15, 1972 (37 F.R. 14017). No additional hearing was requested and none was held.

The information in this report was obtained principally from officials of Columbian Rope Company and from the Commission's files.



Finding of the Commission

On the basis of its investigation, the Commission 1/ finds unani-  
mously that articles like or directly competitive with the cordage of  
manmade fibers and cordage of hard (leaf) vegetable fibers measuring  
3/16 inch or over in diameter manufactured by the Plymouth Cordage  
Division of the Columbian Rope Company are not, 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 signifi-  
cant number or proportion of the workers of the company or appropriate  
subdivision thereof.

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1/ Vice Chairman Parker did not participate in the decision.

Considerations Supporting the Commission's Finding 1/

## Views of Chairman Bedell and Commissioner Moore

The petitioning workers in this case had been employed at the Plymouth Cordage Co., Plymouth, Mass., which is a division of the Columbian Rope Co., Auburn, N.Y. The workers of the plant were engaged in the production of rope (i.e., cordage 3/16 inch or over in diameter) of hard (leaf) fibers and of manmade fibers.

Section 301(c)(2) of the Trade Expansion Act of 1962 has established four conditions that must be met in the judgment of the Commission if an affirmative determination is to be reached. The determination must be negative if any one of the four conditions is not met. These conditions as they apply to the instant case are as follows:

- (1) Imports of articles like or directly competitive with the rope of hard fibers and manmade fibers produced by the workers concerned must be increasing;
- (2) The increased imports must be in major part the result of concessions granted under trade agreements;
- (3) A significant number or proportion of the workers involved must be unemployed or underemployed, or threatened with unemployment or underemployment; and
- (4) The increased imports resulting in major part from trade-agreement concessions must be the major factor causing or threatening to cause unemployment or underemployment.

In the case at hand, we have determined that the fourth condition has not been met, i.e., any increased imports of like or directly competitive articles have not been the major factor causing or threatening to cause the unemployment on the petitioning workers. On the basis of

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1/ Commissioner Ablondi concurs in the result.

evidence available to the Commission, we have made a negative determination. The facts supporting our determination are discussed below.

The Plymouth Cordage Co., which was purchased by Columbian Rope Co. in 1965, was, prior to its closing January 1971, one of four rope-producing plants owned and operated by the Columbian Rope Co. The shut-down of the Plymouth plant was primarily an outgrowth of excess productive capacity at Columbian's rope plants--a circumstance prevalent through the domestic rope industry. The excess capacity was occasioned mainly by a decline in U.S. demand for rope and by the effects of a change in consumer preference from rope of natural fibers to rope of manmade fibers. Such small increases in imports of sisal, henequen, and manmade-fiber rope as have occurred in recent years did not contribute significantly to the closing of the Plymouth plant.

The combined U.S. consumption of hard-fiber and manmade-fiber rope--measured in poundage--has declined rather sharply in recent years, following a peak demand in 1966 caused mostly by the build-up of supplies for Vietnam. Apparent annual domestic consumption of such rope rose from 87 million pounds in 1964 to 102 million pounds in 1966, but then decreased steadily to 76 million pounds in 1971. This declining consumption resulted from a variety of factors, but mostly from a lessening of demand in some military and commercial uses and a growing preference for rope of manmade fibers.

In recent years, the consumption of rope of manmade fibers has increased somewhat (from 23 million pounds in 1966 to 31 million pounds in 1969 before declining to 26 million pounds in 1971), while the

the consumption of rope of hard fiber decreased substantially (from 79 million pounds in 1966 to 50 million pounds in 1971). Despite the increased consumption of rope of manmade fibers, however, the much greater decline in consumption of rope of hard fibers had a major impact on the operations of the domestic producers in general and on the Plymouth plant in particular.

Combined U.S. imports of rope of hard fiber and manmade fiber have risen slowly in recent years. Such imports aggregated about 18 million pounds in 1971 as compared with 16 million pounds in 1966. Moreover, imports of abaca rope, one of the two principal types of rope produced at Plymouth, were smaller in 1971 than in any of the preceding 7 years, and imports of manmade-fiber rope, the other principal type of rope produced at Plymouth, supplied only a very small share (2 percent or less) of the U.S. market in recent years. Under these circumstances, we believe, U.S. imports of rope clearly have had a less significant impact on Plymouth's operations than the domestic market changes that occurred in those years.

The Plymouth plant was closed in January 1971. The Columbian Rope Company shifted the rope production of the Plymouth plant to its other \* \* \* plants and, while continuing to manufacture and to market Plymouth cordage, it increased its total annual rope sales \* \* \* in 1971. The \* \* \* Columbian rope plants are now manufacturing Plymouth rope, and the parent concern markets such rope under the traditional Plymouth trademark.

In view of the foregoing, we have concluded that concession-generated increased imports have not been the major factor causing unemployment or underemployment of the petitioning workers, and for this reason we have made a negative determination.

## Views of Commissioners Leonard and Young

This investigation concerns a petition filed by former workers of the Plymouth plant of the Columbian Rope Company, Auburn, N.Y., for a determination of their eligibility to apply for adjustment assistance under the Trade Expansion Act of 1962. In recent years, the Plymouth plant has been engaged in the manufacture of hard-fiber and manmade-fiber rope. \* \* \* The plant was closed in January 1971.

Section 301(c)(2) of the Trade Expansion Act of 1962 has imposed four conditions, each of which must be satisfied if an affirmative determination is to be made. The conditions are:

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

A negative determination in the instant investigation is required because one or more of the above conditions are not fully met.

In recent years U.S. imports of rope made of various fibers have followed distinctly different trends. U.S. imports of rope of abaca fiber, on the one hand, have been stable, ranging from 6.6 million pounds to 8.6 million pounds annually; imports of such rope in 1971 (6.6 million pounds) were almost the same volume as in 1964 (6.7 million pounds). There is some question, therefore, whether abaca rope is being imported in increased quantities within the meaning of the statute. On the other hand, imports of rope of other hard fibers (sisal and henequen) and rope of manmade fibers have increased in recent years. U.S. imports of rope of sisal and henequen rose from 6.3 million pounds in 1964 to 11.1 million pounds in 1971, and those of rope of manmade fibers increased from 40,000 pounds in 1964 to 554,000 pounds in 1971.

Even if it is considered that abaca rope is being imported in increased quantities, we would have to conclude that any increased imports of such rope are not in major part the result of trade-agreement concessions. The United States has granted trade-agreement concessions on the most-favored-nation rate of duty applicable to abaca rope on only one occasion--in the initial negotiations under the General Agreement on Tariffs and Trade in 1947. As a result of those concessions, the rate of duty on abaca rope  $3/16$  inch but less than  $3/4$  inch in diameter was reduced from 2 cents per pound plus 15 percent ad valorem to 2 cents per pound plus 10 percent ad valorem, and the rate of duty on such rope  $3/4$  inch or over in diameter (2 cents per pound) was "bound" against increase.

U.S. imports of abaca rope increased in the late 1940's and early 1950's after the concessions were granted, but this increase represented largely a recovery of trade after World War II. Subsequently, imports remained generally stable for many years before rising somewhat to the present plateau. These changes appear to reflect mostly market changes rather than the effect of the moderate duty reduction made to carry out a trade-agreement concession in 1948. Moreover, the bulk of the U.S. imports of abaca rope are supplied by the Philippine Republic. Although this trade has been subject to preferential rates of duty as a result of concessions in the revised trade agreement with the Philippines concluded in 1955, imports of hard (leaf) fiber cordage from that country (which have been nearly all cordage of abaca) have been subject to an overall quantitative limitation. Moreover, in recent years, the U.S. imports of abaca rope from the Philippines have become subject to increasing rates of duty, as a result of the Philippine Trade Agreement Revision Act of 1955. 1/ In the light of the foregoing, we must conclude that increased imports of abaca rope, if any, are not in major part the result of trade-agreement concessions.

Similarly, we are unable to find that the increased U.S. imports of sisal and henequen rope are in major part the result of trade-agreement concessions. Like the U.S. trade-agreement commitments on abaca rope, the only U.S. concessions reducing the most-favored-nation rate of duty applicable to rope of sisal and henequen became effective in 1948--reducing the rates of duty from 2 cents per pound plus 15 percent ad valorem to 1 cent per pound plus 7½ percent ad valorem on rope measuring 3/16 inch or over but under 3/4 inch in diameter, and from

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1/ 69 Stat. 413.



2 cents per pound to 1 cent per pound on rope measuring  $3/4$  inch or over. Imports increased in the year immediately following the reduction in duty, but most of the increase represented a recovery of trade following World War II. Subsequently, annual imports of sisal and henequen rope were generally stable for a number of years, until they began to increase in recent years. Lacking any other information we cannot attribute the causation of the recent increase in major part of a concession granted two decades or more ago.

With respect to rope of manmade fibers, we have made no decision in this case on the second condition set forth above, but instead rest a negative determination on the fourth condition. As indicated above, imports of such rope have increased sharply in recent years. However, such imports, even at their greatest in 1970 and 1971, have been small relative to the domestic market; they accounted for only 2 percent of apparent U.S. consumption of rope of manmade fibers in those years and had accounted for 1 percent or less in earlier years. During the course of the investigation, the Commission obtained no evidence that the imported rope was of such types as to have a particular impact on Plymouth's markets for manmade-fiber rope. Hence, we do not believe that imports of such rope in the magnitude here present are the major factor causing or threatening unemployment or underemployment of the petitioning workers.

In view of the above, we have determined that articles like or directly competitive with the rope produced by Plymouth are not, as a result in major part of trade-agreement concessions, being imported in such increased quantities as to cause, or threaten to cause, unemployment or underemployment of a significant number or proportion of the



INFORMATION OBTAINED IN THE INVESTIGATION

Articles Under Investigation

Plymouth Cordage Co., a division of the Columbian Rope Co., Auburn, N.Y., ceased to operate on January 22, 1971. 1/ In recent years its facilities had been geared to the production of abaca, sisal, henequen, 2/ and manmade-fiber rope 3/16 inch or over in diameter. Plymouth's facilities were integrated from the fiber to the finished rope. \* \* \*

During most of its existence, Plymouth has primarily been a producer of rope, although in the late 1940's and early 1950's the company was heavily committed to the production of agricultural cordage (binder and baler twines). In the early 1960's manmade-fiber cordage was accepted in the U.S. market; \* \* \*.

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1/ Columbian Rope still advertises, produces, and sells rope under the Plymouth Cordage name. The rope is made in various Columbian plants.

2/ Abaca, also known as manila fiber, sisal, and henequen are referred to as hard fibers, which means fibers obtained from the leaf of certain plants. Other hard fibers, such as maguey, istle, and cantala, are an insignificant factor in ropemaking.

Cordage is defined in headnote 1 to part 2 of schedule 3 of the TSUS as follows:

- (a) the term "cordage" means assemblages of textile fibers or yarns, in approximately cylindrical form and of continuous length, whether or not bleached, colored, or treated, designed and chiefly used as an end product, and comprising cable, rope, cord, and twine, but the term does not include--
  - (i) yarns (see part 1 of this schedule), or
  - (ii) braids or elastic articles (see part 4A of this schedule and part 1B of schedule 7);
- (b) cordage "of stranded construction" is cordage composed of 3 or more strands composed of 2 or more yarns each, whether or not containing a core.

As used in this report, "rope" means cordage of stranded construction, 3/16 inch or over in diameter, and not braided or plaited. It is composed of a number of fibers that are twisted together to form a yarn, the twist usually being made clockwise. Then two or more yarns are twisted together in the opposite direction to the twist in the yarns to form a strand. Usually three but sometimes four or more strands are twisted together in the opposite direction to the twist in the strands so that one twist offsets the other, causing the strands to hold together.

Since ropemaking basically consists of twisting fibers together and then alternating the direction of twist when combining with other twisted fibers, the same rope-producing machinery can be used in the production of rope of different diameter sizes by simply changing a gear before the machinery is started. With minor adjustments, hard-fiber cordage and manmade-fiber cordage can also be made on the same machinery.

Abaca's tensile strength, flexibility, and resistance to rot, mildew, and abrasion are superior to those of the other natural fibers. Because of these qualities, abaca has generally been considered to be the most desirable natural fiber for making rope. Sisal and henequen are similar to abaca in many respects, but have a lower tensile strength.

Nylon and polypropylene are the two main manmade fibers used in the production of rope. Although polyester and other manmade fibers and blends are also important, they are used to a lesser degree.

Nylon's qualities are generally rated far superior to those of abaca in most uses. Nylon rope is the strongest, stretching about 40 percent of its original length before reaching the breaking point. It is generally somewhat lighter in weight than abaca rope of similar size. Polypropylene rope

is the lightest of the manmade-fiber ropes. It has a high resistance to chemical corrosion and is about one-half stronger and at least one-third lighter than abaca rope of comparable size. 1/ In addition to being a servicable product, polypropylene rope is the least expensive of the manmade-fiber ropes.

Although rope is made to specifications and to meet certain standards, there are two grades--first and second. First-grade hard-fiber rope is made of only the few top grades of fiber; second-grade rope consists of fibers of the numerous other grades. First-grade manmade-fiber rope is that which conforms to certain specifications; second-grade rope consists of a conglomeration or mixture of fibers. For both kinds of rope, the first grade is far superior.

#### U.S. Tariff Treatment

##### Abaca rope

Abaca rope is classified in TSUS item 315.35 if measuring  $3/16$  inch or over but under  $3/4$  inch in diameter, and in TSUS item 315.50 if measuring  $3/4$  inch or over in diameter.

Abaca rope measuring  $3/16$  inch but under  $3/4$  inch in diameter was dutiable at 2 cents per pound plus 15 percent ad valorem in 1930. This rate was reduced pursuant to a

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1/ Polypropylene rope of tensile strength comparable to that of abaca rope is about two-thirds lighter than the abaca product.

trade-agreement concession granted by the United States in the General Agreement on Tariffs and Trade to 2 cents per pound plus 10 percent ad valorem, effective January 1, 1948; the rate has remained unchanged since then. Abaca rope measuring  $3/4$  inch or over in diameter was dutiable at 2 cents per pound in 1930; the rate has not been the subject of a trade-agreement concession (tables 1 through 3).

Although the rates of duty on abaca rope have remained almost unchanged since 1930, there have been legislation and quotas pertaining to the Philippine Republic, which has supplied the great bulk of abaca-rope imports since before 1930. U.S. imports of abaca rope from the Philippine Republic were free of duty from the Tariff Act of 1922 until January 1, 1956. The Philippine Trade Agreement Revision Act of 1955 (effective August 1, 1955) then required that on imports of abaca rope from the Philippine Republic the following percentage of the lowest existing rates of duty during the specified periods would be payable (dates inclusive):

(a) From January 1, 1956, to December 31, 1958, 5 percent.

(b) From January 1, 1959, to December 31, 1961, 10 percent.

(c) From January 1, 1962, to December 31, 1964, 20 percent.

(d) From January 1, 1965, to December 31, 1967, 40 percent.

(e) From January 1, 1968, to December 31, 1970, 60 percent.

(f) From January 1, 1971, to December 31, 1973, 80 percent.

(g) From January 1, 1974, to July 3, 1974, 100 percent.

Thus the rate of duty applicable to abaca rope imported from the Philippine Republic has increased since 1958.

In addition, the Philippine Republic has had an absolute quota of 6 million pounds per year on abaca rope imported into the United States since legislation passed by Congress became effective May 1, 1935. The absolute quota of 6 million pounds per year was continued under the Philippine Trade Agreement Revision Act and will terminate on July 3, 1974. 1/ The quota has not been filled in some recent years.

#### Sisal and henequen ropes

Sisal and henequen ropes are classified in TSUS item 315.40 if measuring 3/16 inch or over but under 3/4 inch in diameter, and in TSUS item 315.55 if measuring 3/4 inch or over in diameter.

The U.S. rates of duty on sisal and henequen ropes have been reduced by one-half since 1930. Sisal and henequen ropes measuring 3/16 inch but under 3/4 inch in diameter were dutiable at 2 cents per pound plus 15 percent ad valorem in 1930.

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1/ The Government of the Philippine Republic regulates the quota, presently allocating 3.5 million pounds to the Elizalde Rope Factory and 2.5 million pounds to Manila Cordage Co. All abaca rope from the Philippine Republic imported into the United States must be produced by one or both of the two producers.



This rate was reduced effective January 1, 1948, to 1 cent per pound plus 7-1/2 percent ad valorem and has remained unchanged. Sisal and henequen ropes measuring 3/4 inch or over in diameter were dutiable at 2 cents per pound in 1930. This rate was reduced, also effective January 1, 1948, to 1 cent per pound and has remained unchanged (tables 4 and 5).

Imports of sisal and henequen ropes, if the product of Cuba, would be classified in TSUS item 315.41 if measuring 3/16 inch or over but under 3/4 inch in diameter, and in TSUS item 315.56 if measuring 3/4 inch or over in diameter. Such imports were dutiable at 0.8 cent per pound plus 6 percent ad valorem and 0.8 cent per pound, respectively, pursuant to preferential treatment granted by the United States in a trade agreement with Cuba effective January 1, 1948. By virtue of section 401 of the Tariff Classification Act of 1962, the application of either a preferential or other reduced rate of duty to products of Cuba was suspended. However, the provisions for preferential Cuban rates continued to be reflected in the schedules because, under section 401, the rates therefor in column 1 still form the bases for determining the rates applicable to certain products, including "Philippine articles."

Other hard-fiber rope

Imports of other hard-fiber rope, which are insignificant, are dutiable in TSUS item 315.45 if measuring 3/16 inch or over but under 3/4 inch in diameter, and in TSUS item 315.60 if measuring 3/4 inch or over in diameter. The rates of duty on such rope in the Tariff Act of 1930 were 2 cents per pound plus 15 percent ad valorem and 2 cents per pound, respectively, and have remained unchanged.

Manmade-fiber rope

At the time of the enactment of the Tariff Act of 1930 there were no known synthetic textiles other than those such as rayon and acetate, and the statutory language "rayon or other synthetic textile" was later administratively determined not to apply to textile articles of nylon. It was the administrative opinion that these articles were classified by similitude to the conventional articles they most resembled (in par. 1559(a) of the 1930 act). Regarding cord or rope, such articles were at first considered for tariff purposes to be dutiable at the rate for articles made of wool, cotton, manila, hemp, istle, linen, ramie, silk, and so forth. However, after a Customs Court decision in 1951 (C.D. 1366) in which it was held that textile articles of nylon were classifiable directly as articles of rayon or other synthetic textile, the

administrative practice was to classify nylon cord and rope under paragraphs 1308 and 1312 of the tariff schedules. Other court decisions which were interpreted as possibly overturning C.D. 1366 soon followed. In order to preserve the administrative practice, legislation was enacted in 1958 (P.L. 85-645) defining the words "rayon or other synthetic textile" as including noncellulosic textile materials.

It is emphasized that there was little commerce in nylon rope before 1951. Secondly, if there were any imports of this item before then, it would be guesswork at this time to try to ascertain what rate or rates of duty would have applied more often. Therefore, rates of duty are shown only for the period beginning in 1951.

In 1951 the trade-agreement rate for manmade-fiber rope not over 1/2 inch in diameter (par. 1308) was 25 cents per pound plus 22-1/2 percent ad valorem, and the statutory rate was 45 cents per pound plus 60 percent ad valorem. The rate applying to nylon rope over 1/2 inch in diameter (par. 1312) was 25 cents per pound plus 33 percent ad valorem. Such rate was thereafter reduced to 25 cents per pound plus 30 percent ad valorem in 1958 pursuant to a trade-agreement concession, the reduction taking effect in three stages from 1956 to 1958 (table 6). Under the TSUS, which became effective on August 31, 1963, the applicable tariff item for manmade-fiber

rope of all sizes became TSUS item 316.60, with duty at the trade-agreement rate of 25 cents per pound plus 30 percent ad valorem and the statutory rate of 45 cents per pound plus 60 percent ad valorem.

The TSUS rate was reduced by one-half in the Kennedy Round, with the reductions occurring in five annual stages beginning on January 1, 1968. The 1972 rate of 12.5 cents per pound plus 15 percent ad valorem--the final stage of the Kennedy Round concessions--has an ad valorem equivalent of 33 percent, based on 1971 imports.

#### U.S. Consumption

The rope consumed in the United States consists almost wholly of rope made of abaca, sisal, henequen, and manmade fibers. The apparent annual U.S. consumption of rope increased from 87 million pounds in 1964 to 102 million pounds in 1966 and then declined consistently to 76 million pounds in 1971 (table 7). The increase in 1966 was due mostly to the demand for rope during the Vietnam buildup. Apparent consumption in 1971 was about 12 percent below that in 1964. A little more than half of the apparent U.S. consumption of rope during the 1964-71 period consisted of abaca rope; its share of consumption, however, declined from 62 percent in 1964 to 43 percent in 1971.

The consumption of sisal and henequen ropes remained fairly constant during 1964-71, but their share of the total consumption of rope increased from 19 percent to 23 percent. During the same period, the share of U.S. rope consumption accounted for by manmade-fiber rope rose from 19 percent to 34 percent.

In terms of weight, aggregate consumption of rope in 1971 was about 26 percent lower than in 1966. However, manmade-fiber rope is considerably lighter than its hard-fiber-rope equivalent. It is estimated that on the average 1 pound of manmade-fiber rope would be twice as long as 1 pound of hard-fiber rope of the same diameter. Thus, in terms of footage consumed, U.S. consumption was probably about stable during that period.

Although the price per pound of manmade-fiber rope is higher than that of natural-fiber rope of similar size, consumption of the former has been increasing. In a rather simplified comparison, manmade-fiber rope is about twice as expensive as natural-fiber rope, usually more than twice as strong, and will last more than twice as long. Thus consumers have found that they need about half the size of rope to provide equal strength. If they are initially paying more for the manmade-fiber rope, it is still more economical in the long run.

Domestically produced abaca and manmade-fiber ropes are consumed by four main types of users. The shipping lines are the largest consumers, accounting for approximately 40 percent of the poundage. The general utilities, the Coast Guard, and the construction industry are second, with about 25 percent. Third is the commercial fishing industry, with about 20 percent. Recreation activities are fourth, accounting for 10 percent or less. Sisal rope is sold mostly through discount or hardware stores; it is used when the strength of the rope is not as important as the cost.

In recent years virtually all of the consumption of rope 2 inches or more in diameter has consisted of manmade-fiber ropes used mainly as large hawsers and towing ropes (ranging in size from 2 to 8 inches in diameter) by the shipping lines. Virtually all the rope consumed by the commercial fishing industry consists of that made from manmade fibers.

#### U.S. Producers

There are about 10 domestic cordage producers operating approximately 15 plants throughout the United States. Columbian Rope Co. is the largest, \* \* \* Other important cordage producers are Tubbs Cordage Co., San Francisco, Calif., and Wall Industries, Inc., Beverly, N.J. The remaining companies are small in comparison with the above-mentioned three.

Each company produces hard-fiber cordage as well as manmade-fiber cordage, but in different proportions. The larger companies provide a more complete line of cordage than the smaller ones. The major companies have also started diversifying their production to include noncordage items such as paper products.

#### U.S. Production (Sales)

As most rope is produced to order, production is usually equivalent to sales. The total domestic production of abaca, sisal and henequen, and manmade-fiber rope was 73.6 million pounds in 1964, increased to 85.9 million pounds in 1966, and then declined consistently to 57.6 million pounds in 1971. (table 7). Production in 1966, the peak year, was 17 percent above that in 1964, whereas in 1971 it was 22 percent below that in 1964 and 33 percent below that in 1966. However, since manmade-fiber rope is considerably lighter than its abaca equivalent, the decline in production was probably considerably less in terms of footage than when measured in pounds.

The composition of U.S. production of rope, on a poundage basis, has changed from about 63 percent abaca, 14 percent sisal and henequen, and 23 percent manmade-fiber rope in 1964 to 45 percent abaca, 11 percent sisal and henequen, and 44 percent manmade-fiber rope in 1971. The U.S. Government purchased

9.9 percent of the production in 1964; such purchases increased to 20.5 percent in 1966, amounted to 18.7 percent in 1967, and then declined to 8.4 percent in 1971 (table 8). The increase in 1966 resulted from the large demand for rope by the military.

#### Abaca rope

The domestic production of abaca rope was 46.7 million pounds in 1964, reached a peak of 53.7 million pounds in 1966, and then declined consistently to 26.2 million pounds in 1971. Production in 1966 was 15 percent above that in 1964; in 1971 it was 44 percent below that in 1964 and 51 percent below that in 1966 (table 7).

U.S. Government purchases amounted to 14 percent of domestic production in 1964, increased to 28.7 percent in 1966, and then declined to 15.6 percent in 1971. The production of abaca rope for commercial uses is predominately first-grade rope, whereas that for Government uses is mostly second-grade rope. Since the Government purchases most of its rope for the military and much of it is intended for one-time use only, quality is not an important factor. U.S. output of second-grade rope only ranged between 14 and 19 percent of the total domestic production of abaca rope during 1964, 1965, and 1969-71; it ranged from 27 to 32 percent in the peak years of the military buildup in Vietnam (1966-68). \* \* \*



\* \* \* \* \*

### Sisal and henequen ropes

The domestic production of sisal and henequen ropes was 10.1 million pounds in 1964 and declined consistently to 6.3 million pounds in 1971. Production in 1971 was 38 percent below that in 1964 (table 7).

U.S. Government purchases averaged 1 percent or less of domestic production during most years of the 1964-71 period (table 8). The production of second-grade sisal and henequen ropes, averaging 3.6 million pounds during 1964-71, was larger than the production of first-grade or of special-construction rope. The output of sisal and henequen ropes of special construction was second in importance and averaged 2.6 million pounds during 1964-71.

\* \* \* \* \*

### Manmade-fiber rope

The domestic production of manmade-fiber rope increased from 16.8 million pounds in 1964 to 30.5 million pounds in 1969 and then declined to 25.2 million pounds in 1971 (table 7). Although production fluctuated during 1964-71, in 1971 it was 50 percent above that in 1964. Nylon and polyester ropes accounted for 30 to 38 percent of the production during the period; the remaining share consisted mostly of polypropylene rope (table 9).

The U.S. Government purchased 4.1 percent of the domestic production of manmade-fiber rope in 1964, from 9.0 to 10.9 percent during 1966-69, and 2.7 percent in 1971. The production for commercial purposes was mostly polypropylene rope during 1964-71; the production of nylon and polyester ropes for commercial purposes ranged between 28.6 and 31.9 percent of the total production of commercial rope in the same period.

\* \* \* \* \*

#### U.S. Importers

There are numerous U.S. importers of rope; the heaviest concentration is located on the west coast. Some only import and sell to distributors, while others import in addition to buying from domestic producers. It is also a common practice for domestic rope producers to import certain types that are unprofitable for them to produce domestically. Three importers, located in San Francisco, Calif., account for the majority of the imports of hard-fiber rope. Manmade-fiber rope is imported by many concerns; they range in size from small one-man operations to large trading companies with many branch offices.

#### U.S. Imports

During 1964-71, total U.S. imports of abaca, sisal and henequen, and manmade-fiber ropes rose irregularly from 13 million pounds in 1964 to 18 million pounds in 1971; peak

imports of 19 million pounds occurred in 1970. The ratio of imports to consumption increased fairly consistently from 15.1 percent in 1964 to 24 percent in 1971 (table 7).

In terms of weight, imports of rope in 1971 were about 40 percent larger than in 1964. However, since manmade-fiber rope is considerably longer pound for pound than its hard-fiber equivalent, aggregate imports increased slightly more in terms of footage than when measured in pounds. Abaca, sisal, and henequen rope account for virtually all of the U.S. imports of rope. The share supplied by manmade-fiber rope was less than 1 percent in 1964, although it rose to 3 percent in 1971 (table 10).

#### Abaca rope

U.S. imports of abaca rope increased from 6.7 million pounds in 1964 to 8.6 million pounds in 1967, coinciding with the Vietnam buildup. Imports then declined to 6.9 million pounds in 1969, increased to 8.2 million pounds in 1970, and declined to 6.6 million pounds in 1971, the lowest of the 1964-71 period (table 10). The ratio of imports to consumption increased from 12.5 percent in 1964 to 22.2 percent in 1970, and then declined to 20.1 percent in 1971 (table 7).

The Philippine Republic is the source of more than 95 percent of the world's abaca fiber, and that country supplied an average of 77 percent of the abaca rope imported by the

United States during 1964-71. 1/ These imports from the Philippine Republic ranged from a high of 6 million pounds in 1965 to a low of 5 million pounds in 1969. The United Kingdom was a distant second source of abaca rope, with Denmark, the Netherlands, Portugal, and Mexico as even less important sources.

Imports of abaca rope 3/16 inch but under 3/4 inch in diameter were slightly larger than those of abaca rope 3/4 inch or over in diameter. Imports of the former averaged 57 percent of the total imports of abaca rope in 1964-71, peaking at 4.8 million pounds in 1970 (table 11), while imports of the latter were at their peak of 3.9 million pounds in 1967 (table 12).

The foreign unit value of imported abaca rope fluctuated between 20 and 22 cents per pound during the 1964-71 period. The foreign unit value for abaca rope from the Philippine Republic ranged between 18 and 21 cents per pound, the abaca rope 3/4 inch or over in diameter being a cent or two per pound less than the abaca rope 3/16 inch but under 3/4 inch in diameter.

#### Sisal and henequen ropes

U.S. imports of sisal and henequen ropes increased almost consistently from 6.3 million pounds, valued at \$1,299,000, in 1964 to 11.1 million pounds, valued at \$1,568,000, in 1971,

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1/ Since the producers in the Philippine Republic are the only major source of abaca fiber, they sell their abaca fiber and abaca rope at approximately the same price.

representing an increase of 75 percent in quantity and 21 percent in value (tables 13 and 14). The ratio of imports to consumption increased consistently, from 38.5 percent in 1964 to 63.9 percent in 1971 (table 7).

Mexico is the largest source of sisal and henequen ropes, and supplied an average of 66 percent of the sisal rope imported by the United States during 1964-71. These imports from Mexico ranged from 4.3 million pounds in 1964 to 7.4 million pounds in 1971. Portugal is the only other important source, accounting for 24 percent of the imports in 1971.

Imports of sisal and henequen ropes 3/16 inch but under 3/4 inch in diameter account for the vast majority of the imports of those types of rope. These imports increased from 6.2 million pounds in 1964 to 10.4 million pounds in 1971. Imports of sisal rope 3/4 inch or over in diameter increased from 140,000 pounds in 1964 to 657,000 pounds in 1971.

The foreign unit value of imported sisal rope of smaller diameter decreased from 21 cents per pound in 1964 to 14 cents in 1971. The rope of larger diameter declined from 18 cents per pound in 1964 to 13 cents in 1971.

#### Other hard-fiber rope

U.S. imports of other hard-fiber rope declined irregularly from 310,000 pounds, valued at \$69,000, in 1964 to 78,000 pounds, valued at \$20,000, in 1971, representing a decrease of 75 percent in quantity and 71 percent in value (table 15).

The Philippine Republic and the United Kingdom have been the leading sources of other hard-fiber rope imported into the United States in recent years. However, imports of other hard-fiber rope averaged less than 1 percent of the total hard-fiber rope imported. There is no domestic production of other hard-fiber rope; therefore, U.S. consumption is equal to imports.

#### Manmade-fiber rope

U.S. imports of manmade-fiber rope increased sharply during 1964-71; such imports, however, were small relative to U.S. consumption. Imports in 1964 were 40,000 pounds, valued at \$45,000, increasing to 554,000 pounds, valued at \$385,000, in 1971 (table 16). Imports as a percentage of consumption increased from less than 0.05 percent in 1964 to 2.2 percent in 1971 (table 7).

Japan has been the principal source of imports of manmade-fiber rope since 1964. In 1971 Japan supplied 258,000 pounds, valued at \$208,000, or about half the total imports of manmade-fiber rope. Portugal, the United Kingdom, and the Republic of Korea are other leading sources, but are less important than Japan.

The foreign unit value of imported manmade-fiber rope declined during 1964-71. The peak was \$1.38 per pound in 1965, compared with \$0.69 per pound in 1971. The unit value

of Japanese rope remained fairly constant during the period, averaging \$0.83 per pound. Owing to the different prices of the various fibers used in manmade-fiber rope, there is a wide range of unit values for each country.

Data on U.S. imports of manmade-fiber braided and plaited cordage, \* \* \* were not available prior to 1971. Imports in 1971 of braided and plaited cordage were 164,512 pounds, valued at \$104,424 (table 17). These imports were equal to 30 percent of the imports of manmade-fiber cordage in 1971.

#### U.S. Exports

Export statistics for rope are not separately reported, but exports are known to be small. During 1964-71, exports of all hard-fiber cordage and some soft-fiber cordage, 1/ as reported by the Cordage Institute, ranged between 57,000 and 456,000 pounds, less than 1 percent of the domestic production. Manmade-fiber rope is also exported to a minimal degree. The majority of exports are specialty ropes made to exact specifications which are used for commercial fishing in Latin American countries. The rope is usually of polyethylene or polyester fibers and is priced between \$1.35 and \$1.40 per pound.

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1/ Soft fibers (flax, ramie, and so forth) are obtained from the stem of the plant.

## Columbian Rope Co.

Plants

Columbian Rope Co., founded in 1903 by Col. E. D. Metcalf, is still owned and operated by his family. It is the largest domestic cordage producer. In addition to the plant located in Auburn, N.Y., Columbian operated four more plants until the closing of Plymouth, January 22, 1971. All plants produce cordage except one. The Warrick, Va., plant produces only paper products which are unrelated to cordage, the main product being twisted paper cable filler, which is used as insulation in electric cables.

\* \* \* \* \*

Data relating to Plymouth Cordage Co.

History, plant, and equipment

The Plymouth Cordage Co. was founded in 1824. Its original purpose was to manufacture rope for the shipping industry, which it continued to do successfully through the years. In 1888 Plymouth first started producing agricultural twine, and by 1921 such twine constituted about 40 percent of the value of the company's output. Plymouth increased its production of agricultural twine until the early 1950's, when imports of binder and baler twines became free of duty. Plymouth then reduced the production of agricultural twine and concentrated on manufacturing rope.



In October 1965 Plymouth Cordage Co. was purchased by the Columbian Rope Co. of Auburn, N.Y. Columbian continued to operate Plymouth as a rope manufacturer. Manmade-fiber rope increased its share of the production \* \* \* by the time of the closing of Plymouth in January 1971.

\* \* \* \* \*



STATISTICAL APPENDIX



Table 1.--Cordage of abaca, sisal, and henequen, measuring 3/16 inch or over in diameter, and of manmade fibers: U.S. rates of duty, specified years 1930 to 1972

Description	(Cents per pound; percent ad valorem)										
	1930	1948	1956	1957	1958	1967 1/	1968	1969	1970	1971	1972
Abaca, stranded	2¢ + 15%	2¢ + 10%	2¢ + 10%	2¢ + 10%	2¢ + 10%	2¢ + 10%	2¢ + 10%	2¢ + 10%	2¢ + 10%	2¢ + 10%	2¢ + 10%
Sisal and henequen, stranded	2¢ + 15%	1¢ + 7.5%	1¢ + 7.5%	1¢ + 7.5%	1¢ + 7.5%	1¢ + 7.5%	1¢ + 7.5%	1¢ + 7.5%	1¢ + 7.5%	1¢ + 7.5%	1¢ + 7.5%
Manmade fibers	2¢	2¢	2¢	2¢	2¢	2¢	2¢	2¢	2¢	2¢	2¢

re-Kennedy Round rates. Manmade-fiber rope formerly covered by pars. 1308 and 1312 of the Tariff Act of 1930 has been dutiable at various rates. Since 1963 manmade-fiber rope has been dutiable under TSUS item 316.60.



Table 2.--Rope of abaca measuring 3/16 inch but under 3/4 inch in diameter: Changes in U.S. rates of duty and in U.S. rates applicable to imports from the Philippines, ad valorem equivalents of the rates, and dutiable U.S. imports for consumption, 1930-71

Year	Change in rate of duty, with rate applicable to Philippine imports shown in parentheses	Ad valorem equivalent of rate of duty, based on imports in 1971, with rate applicable to Philippine imports shown in parentheses	Dutiable imports <sup>1</sup>	
			Quantity	Value
		Percent	1,000 Pounds	1,000 dollars
1930 1/	2¢ per lb. + 15% ad val. (Free)	24.0 (Free)	5,784	754
1931 1/			2,690	273
1932 1/			2,476	223
1933 1/			397	378
1934 1/			498	457
1935 1/			548	456
1936 1/			1,379	159
1937 1/			2,460	275
1938 1/			1,635	155
1939 1/			3,134	283
1940 1/			2,656	276
1941 1/			2,082	219
1942 1/			161	20
1943 1/			2/	3/
1944			2/	3/
1945			2/	85
1946			390	177
1947			662	107
1948		19.0	363	131
1949	2¢ per lb. + 10% ad val.		523	
1950			1,473	378
1951			1,429	406
1952			1,449	361
1953			1,913	466
1954			873	192
1955			1,668	310
1956	(0.1¢ per lb. + 0.5% ad val.)	(1.0)	1,934	396
1957			1,920	433
1958			2,465	603
1959	(0.2¢ per lb. + 1% ad val.)	(1.9)	2,692	601
1960			2,071	534
1961			2,764	653
1962	(0.4¢ per lb. + 2% ad val.)	(3.9)	2,741	620
1963			2,984	617
1964			3,789	761
1965	(0.8¢ per lb. + 4% ad val.)	(7.8)	3,840	805
1966			3,790	794
1967			4,721	1,036
1968	(1.2¢ per lb. + 6% ad val.)	(11.6)	4,709	1,022
1969			4,027	825
1970			4,829	985
1971	2¢ per lb. + 10% ad val. (1.6¢ per lb. + 8% ad val.)	(15.5)	3,842	851

<sup>1</sup> Imports are partly estimated. <sup>2</sup> Less than 500 pounds. <sup>3</sup> Less than \$500.

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

Table 3.--Rope of abaca measuring 3/4 inch or over in diameter: Changes in U.S. rates of duty and in U.S. rates applicable to imports from the Philippines, ad valorem equivalents of the rates and dutiable U.S. imports for consumption, 1930-71

Year	Change in rate of duty, with rate applicable to Philippine imports shown in parentheses	Ad valorem equivalent of the rate of duty, based on imports in 1971, with rate applicable to Philippine imports shown in parentheses	Quantity	Value
		Percent	1,000 pounds	1,000 dollars
1930 1/	2¢ per lb.	(Free)	5,784	754
1931 1/		(Free)	2,690	273
1932 1/			2,476	223
1933 1/			397	378
1934 1/			498	457
1935 1/			548	456
1936 1/			1,336	156
1937 1/			3,427	386
1938 1/			1,918	204
1939 1/			3,858	349
1940 1/			2,499	283
1941 1/			3,096	342
1942 1/			239	31
1943 1/			242	36
1944			2/	3/
1945				
1946			933	214
1947			1,568	390
1948			1,599	369
1949			1,476	417
1950			3,062	764
1951			4,871	1,402
1952			2,842	727
1953			2,462	546
1954			1,978	462
1955			2,600	492
1956		(0.5)	2,984	605
1957			3,646	838
1958			3,503	715
1959		(1.0)	2,984	644
1960			3,379	845
1961			3,098	725
1962		(2.0)	3,246	708
1963			2,835	570
1964			2,831	580
1965		(4.0)	2,986	601
1966			3,292	685
1967			3,911	830
1968		(6.0)	3,154	654
1969			2,842	562
1970			3,329	677
1971		(8.0)	2,756	608

1/ Imports are partly estimated. 2/ Less than 500 pounds. 3/ Less than \$500.

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



Table 4.--Ropes of sisal and henequen, measuring 3/16 inch but under 3/4 inch in diameter: Changes in U.S. rates of duty, ad valorem equivalents of the rates, and U.S. imports for consumption, 1930-71

Year	Change in rate of duty	Ad valorem equivalent of rate of duty, based on imports in 1971	Imports	
			Quantity	Value
			<u>1,000 pounds</u>	<u>1,000 dollars</u>
		<u>Percent</u>		
1930-----	2¢ per lb. + 15% ad val.	29.1	190	21
1931-----			339	26
1932-----			963	70
1933-----			617	39
1934-----			517	39
1935-----			508	36
1936-----			318	28
1937-----			412	34
1938-----			234	16
1939-----			746	47
1940-----			1,145	78
1941-----			496	30
1942-----			1,002	132
1943-----			6,416	956
1944-----			3,513	570
1945-----			27	4
1946-----			138	24
1947-----			43	9
1948-----	1¢ per lb. + 7 1/2% ad. val.	14.5	1,354	288
1949-----			1,431	251
1950-----			2,514	400
1951-----			4,265	883
1952-----			3,505	710
1953-----			3,258	507
1954-----			3,176	455
1955-----			3,572	471
1956-----			3,830	474
1957-----			3,222	429
1958-----			4,043	523
1959-----			4,708	615
1960-----			4,172	571
1961-----			4,491	601
1962-----			4,239	623
1963-----			4,737	884
1964-----			6,183	1,274
1965-----			7,485	1,304
1966-----			8,573	1,312
1967-----			8,267	1,191
1968-----			9,415	1,269
1969-----			9,140	1,286
1970-----			9,574	1,347
1971-----			10,411	1,481

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

Table 5.--Ropes of sisal and henequen, 3/4 inch or over in diameter:  
Changes in U.S. rates of duty, ad valorem equivalents of the rates,  
and U.S. imports for consumption, 1930-71

Year	Change in rate of duty	Ad valorem equivalent of rate of duty, based on imports in 1971	Imports	
			Quantity <u>1,000</u> pounds	Value <u>1,000</u> dollars
		Percent		
1930-----	2¢ per lb.	1.5	462	53
1931-----			1,090	104
1932-----			946	67
1933-----			716	48
1934-----			940	80
1935-----			799	66
1936-----			66	7
1937-----			38	3
1938-----			21	2
1939-----			14	1
1940-----		15	1	
1941-----		109	9	
1942-----		311	24	
1943-----		7,495	1,097	
1944-----		8,048	1,241	
1945-----		521	84	
1946-----		11	2	
1947-----		25	7	
1948-----	1¢ per lb.	0.8	85	50
1949-----			21	9
1950-----			236	39
1951-----			2,141	515
1952-----			410	81
1953-----			354	36
1954-----			153	19
1955-----			213	27
1956-----			172	22
1957-----			220	31
1958-----		293	40	
1959-----		294	40	
1960-----		286	38	
1961-----		211	26	
1962-----		213	28	
1963-----		265	43	
1964-----		140	25	
1965-----		216	34	
1966-----		391	57	
1967-----		563	80	
1968-----		365	42	
1969-----		383	51	
1970-----		634	81	
1971-----		657	87	

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

Table 6.--Rope of manmade fibers covered by TSUS item 316.60: Changes in U.S. rates of duty, ad valorem equivalents of the rates, and dutiable U.S. imports for consumption, 1951-71

Year	Change in rate of duty		Par. 1308	Par. 1312	Par. 1308	Par. 1312	Quantity	Value	Dutiable imports
	Ad valorem equiv- alent of rate of duty, based on imports in 1971	Percent							
1951	25¢ per lb. + 22.5% ad val.	58.5	25¢ per lb. + 33% ad val.	69.0	1/	1/	1/	1/	
1952					1/	1/	1/	1/	
1953					1/	1/	1/	1/	
1954					1/	1/	1/	1/	
1955					1/	1/	1/	1/	
1956			25¢ per lb. + 33% ad val.	69.0	1/	1/	1/	1/	
1957			25¢ per lb. + 31.5% ad val.	67.5	1/	1/	1/	1/	
1958			25¢ per lb. + 30% ad val.	66.0	1/	1/	1/	1/	
1959					1/	1/	1/	1/	
1960					1/	1/	1/	1/	
1961					1/	1/	1/	1/	
1962					1/	1/	1/	1/	
1963					1/	1/	1/	1/	
1964	25¢ per lb. + 30% ad val.	2/ 66.0	2/	40	44	39			
1965					28				
1966					144	131			
1967					183	145			
1968	22¢ per lb. + 27% ad val.	2/ 58.7	2/	311	209				
1969	20¢ per lb. + 24% ad val.	2/ 52.8	2/	264	202				
1970	17¢ per lb. + 21% ad val.	2/ 45.5	2/	590	417				
1971	15¢ per lb. + 18% ad val.	2/ 39.6	2/	554	385				

1/ Not available.

2/ Since Aug. 31, 1963, rope formerly covered by pars. 1308 and 1312 of the Tariff Act of 1930 has been dutiable under TSUS item 316.60.

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

Table 7.--Rope of abaca, sisal, and henequen, measuring 3/16 inch or over in diameter, and of manmade fibers: U.S. production, imports for consumption, and apparent consumption, by types, 1964-71

Type and year	Production <u>1/</u>	Imports	Apparent consumption <u>2/</u>	Ratio of imports to consumption
	1,000 pounds	1,000 pounds	1,000 pounds	Percent
Abaca rope: <u>3/</u>				
1964-----	46,720	6,675	53,395	12.5
1965-----	46,172	6,826	52,998	12.9
1966-----	53,731	7,082	60,813	11.6
1967-----	46,060	8,632	54,692	15.8
1968-----	40,059	7,864	47,923	16.4
1969-----	33,313	6,869	40,182	17.1
1970-----	28,514	8,159	36,673	22.2
1971-----	26,223	6,598	32,821	20.1
Sisal and henequen ropes:				
1964-----	10,105	6,323	16,428	38.5
1965-----	9,341	7,701	17,042	45.2
1966-----	9,156	8,965	18,121	49.5
1967-----	7,471	8,830	16,301	54.2
1968-----	7,243	9,780	17,023	57.5
1969-----	7,028	9,523	16,551	57.5
1970-----	6,455	10,207	16,662	61.3
1971-----	6,260	11,068	17,328	63.9
Manmade-fiber rope: <u>4/</u>				
1964-----	16,763	40	16,803	.2
1965-----	19,737	28	19,765	.1
1966-----	23,051	144	23,195	.6
1967-----	24,845	183	25,028	.7
1968-----	28,459	311	28,770	1.1
1969-----	30,530	264	30,794	.9
1970-----	26,736	590	27,326	2.2
1971-----	25,155	554	25,709	2.2
Total:				
1964-----	73,588	13,038	86,626	15.1
1965-----	75,250	14,555	89,805	16.2
1966-----	85,938	16,191	102,129	15.9
1967-----	78,376	17,645	96,021	18.4
1968-----	75,761	17,955	93,716	19.2
1969-----	70,871	16,656	87,527	19.0
1970-----	61,705	18,956	80,661	23.5
1971-----	57,638	18,220	75,858	24.0

1/ Production is derived from quantities of sales reported by the Cordage Institute.

2/ Exports--which are small--are not separately reported and have not been deducted in deriving the apparent consumption. During 1964-71, exports of all hard-fiber cordage and some soft-fiber cordage reported by the Cordage Institute ranged between 57 thousand and 456 thousand pounds.

3/ Production figures also include cordage that is under 3/16 inch in diameter.

4/ Production figures include a small amount of braided cordage, which is not classified as cordage in the TSUS.

Source: Compiled from official statistics of the U.S. Department of Commerce and statistics reported by the Cordage Institute.

Note.--Manmade-fiber rope is considerably lighter than abaca, sisal, and henequen rope. It is estimated that 1 pound of manmade-fiber rope is equal to about 2 pounds of abaca rope.

Table 8.--Rope of abaca, sisal, and henequen, measuring 3/16 inch or over in diameter, and of manmade fibers: Sales <sup>1/</sup> by U.S. manufacturers to consumers, 1964-71

(In thousands of pounds)

Year	Commercial	Government	Total
<u>Abaca rope</u>			
1964-----	40,196	6,524	46,720
1965-----	38,586	7,586	46,172
1966-----	38,316	15,415	53,731
1967-----	33,799	12,261	46,060
1968-----	31,265	8,794	40,059
1969-----	27,915	5,398	33,313
1970-----	25,330	3,184	28,514
1971-----	22,132	4,091	26,223
<u>Sisal and henequen ropes</u>			
1964-----	10,027	78	10,105
1965-----	9,265	76	9,341
1966-----	9,066	90	9,156
1967-----	7,352	119	7,471
1968-----	7,149	94	7,243
1969-----	6,950	78	7,028
1970-----	6,371	84	6,455
1971-----	6,196	64	6,260
<u>Manmade-fiber rope</u>			
1964-----	16,080	683	16,763
1965-----	18,971	766	19,737
1966-----	20,943	2,108	23,051
1967-----	22,601	2,244	24,845
1968-----	25,726	2,733	28,459
1969-----	27,187	3,343	30,530
1970-----	25,457	1,279	26,736
1971-----	24,479	676	25,155
<u>Total, all rope</u>			
1964-----	66,303	7,285	73,588
1965-----	66,822	8,428	75,250
1966-----	68,325	17,613	85,938
1967-----	63,752	14,624	78,376
1968-----	64,140	1,621	75,761
1969-----	62,052	8,819	70,871
1970-----	57,158	4,547	61,705
1971-----	52,807	4,831	57,638

<sup>1/</sup> Sales are equal to production for all practical purposes and are considered as such.

Source: Compiled from statistics of the Cordage Institute.

Note.--Manmade-fiber rope is considerably lighter than abaca, sisal, and henequen rope. It is estimated that 1 pound of manmade-fiber rope is equal to about 2 pounds of abaca rope.

Table 9.--Manmade-fiber rope 1/ measuring 3/16 inch or over in diameter: Sales 2/ by U.S. manufacturers for commercial and Government uses, by types, 1964-71

Year	Commercial			Government			Total		
	Nylon and polyester	Other	Total	Nylon and polyester	Other	Total	Nylon and polyester	Other	Total
1964	4,835	11,245	16,080	429	254	683	5,264	11,499	16,763
1965	5,420	13,551	18,971	528	238	766	5,948	13,789	19,737
1966	6,680	14,263	20,943	1,888	220	2,108	8,568	14,484	23,051
1967	6,639	15,962	22,601	1,945	299	2,244	8,584	16,262	24,845
1968	7,996	17,730	25,726	2,429	304	2,733	10,425	18,038	28,459
1969	8,570	18,618	27,188	3,076	266	3,342	11,646	18,883	30,530
1970	7,327	18,130	25,457	1,092	187	1,279	8,420	18,317	26,736
1971	7,714	16,765	24,479	495	181	676	8,209	16,946	25,155

1/ A small percent is of braided construction.

2/ Sales are equal to production for all practical purposes and are considered as such.

Source: Compiled from statistics of the Cordage Institute.

Table 10.--Abaca, sisal, henequen, and manmade-fiber rope: U.S. imports for consumption, 1964-71

Year	Abaca rope		Sisal and henequen ropes		Man-made fiber rope	Total
	3/16 inch but under 3/4 inch in diameter	3/4 inch or over in diameter	3/16 inch but under 3/4 inch in diameter	3/4 inch or over in diameter		
	Quantity (1,000 pounds)					
1964--	3,844	2,831	6,193	140	6,323	40
1965--	3,840	2,986	7,483	216	7,701	28
1966--	3,790	3,292	8,574	391	8,965	144
1967--	4,721	3,911	8,267	563	8,830	183
1968--	4,709	3,154	9,415	365	9,780	311
1969--	4,027	2,842	9,140	383	9,523	264
1970--	4,829	3,329	9,574	634	10,207	590
1971--	3,842	2,756	10,411	657	11,068	554
	Value (1,000 dollars)					
1964--	768	580	1,274	25	1,299	44
1965--	805	601	1,304	34	1,338	39
1966--	794	685	1,312	57	1,369	131
1967--	1,036	830	1,191	80	1,271	145
1968--	1,023	654	1,269	42	1,311	209
1969--	826	562	1,286	51	1,337	202
1970--	986	677	1,347	81	1,428	417
1971--	851	608	1,481	87	1,568	385
	Unit value (per pound)					
1964--	\$0.20	\$0.21	\$0.21	\$0.18	\$20.60	\$1.11
1965--	.21	.20	.17	.16	17.40	1.38
1966--	.21	.21	.15	.15	15.30	1.10
1967--	.22	.21	.14	.14	14.40	.79
1968--	.22	.21	.14	.12	13.40	.67
1969--	.20	.20	.14	.13	14.10	.77
1970--	.20	.20	.14	.13	14.10	.71
1971--	.22	.22	.14	.13	14.20	.69

L/ Not meaningful.

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

Note.--Manmade-fiber rope is considerably lighter than abaca, sisal, and henequen rope. It is estimated that 1 pound of manmade-fiber rope is equal to about 2 pounds of abaca rope.

Table 11. Stranded rope, of stranded construction, measuring 3/16 inch but under 3/4 inch in diameter: U.S. imports for consumption, by principal sources, 1964-71

Country	1964	1965	1966	1967	1968	1969	1970	1971
	Quantity (1,000 pounds)							
Philippines	3,285	3,333	3,013	3,238	3,240	3,045	3,422	3,051
United Kingdom	53	31	66	185	398	332	316	183
Denmark	31	61	81	51	25	42	39	57
Netherlands	4	16	2	12	19	63	34	29
Portugal	-	13	6	38	65	47	103	33
Mexico	42	-	-	133	15	59	57	19
All other	374	386	621	1,065	947	439	858	470
Total	3,789	3,840	3,790	4,721	4,709	4,027	4,829	3,842
	Value (1,000 dollars)							
Philippines	657	691	618	679	651	593	669	648
United Kingdom	19	10	22	57	112	94	101	63
Denmark	8	16	21	14	5	9	12	16
Netherlands	1	4	1/	3	5	16	10	9
Portugal	-	3	1	9	14	11	19	4
Mexico	7	-	-	34	4	7	7	2
All other	69	81	131	240	232	96	168	109
Total	761	805	794	1,036	1,023	826	986	851
	Unit value (per pound)							
Philippines	\$0.20	\$0.21	\$0.20	\$0.21	\$0.20	\$0.19	\$0.20	\$0.21
United Kingdom	.35	.33	.33	.31	.28	.28	.32	.34
Denmark	.26	.27	.26	.26	.20	.21	.31	.28
Netherlands	.24	.23	.29	.27	.26	.26	.29	.31
Portugal	-	.20	.21	.23	.21	.23	.18	.11
Mexico	.17	-	-	.26	.27	.12	.12	.13
All other	.19	.21	.21	.23	.24	.22	.20	.23
Total	.20	.21	.21	.22	.22	.20	.20	.22

1/ Less than \$500.

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



Table 12.--Abaca rope, of stranded construction, measuring 3/4 inch or over in diameter: U.S. imports for consumption, by principal sources, 1964-71

Country	1964	1965	1966	1967	1968	1969	1970	1971
	Quantity (1,000 pounds)							
Philippines	2,532	2,661	2,682	2,589	2,286	2,012	2,492	2,106
United Kingdom	144	112	116	309	476	408	506	394
Denmark	32	69	66	32	27	30	22	24
Mexico	10	-	-	98	27	-	11	23
Portugal	4	-	2	48	-	15	11	12
Belgium	-	-	57	25	9	-	6	5
Netherlands	7	7	5	19	5	10	24	5
All other	102	137	364	791	324	367	257	187
Total	2,831	2,986	3,292	3,911	3,154	2,842	3,329	2,756
	Value (1,000 dollars)							
Philippines	492	510	526	504	436	353	443	419
United Kingdom	46	35	36	93	127	111	151	127
Denmark	9	19	19	8	5	6	7	7
Mexico	2	-	-	24	6	-	1	3
Portugal	1	-	1	10	-	3	2	2
Belgium	-	-	17	7	2	-	2	2
Netherlands	2	2	1	5	1	3	7	1
All other	28	35	85	179	77	86	64	47
Total	580	601	685	830	654	562	677	608
	Unit value (per pound)							
Philippines	\$0.19	\$0.19	\$0.20	\$0.19	\$0.19	\$0.18	\$0.18	\$0.20
United Kingdom	.32	.31	.31	.30	.27	.27	.30	.32
Denmark	.29	.27	.29	.25	.20	.21	.32	.27
Mexico	.16	-	-	.25	.21	-	.12	.15
Portugal	.40	-	.30	.20	-	.21	.15	.15
Belgium	-	-	.30	.28	.28	-	.28	.30
Netherlands	.31	.23	.26	.26	.28	.26	.27	.26
All other	.28	.26	.23	.23	.24	.23	.25	.25
Total	.21	.20	.21	.21	.21	.20	.20	.22

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

Table 13.--Sisal and henequen ropes, of stranded construction, measuring 3/16 inch but under 3/4 inch in diameter: U.S. imports for consumption, by principal sources, 1964-71

Country	1964	1965	1966	1967	1968	1969	1970	1971
Quantity (1,000 pounds)								
Mexico-----	4,223	5,397	5,959	5,431	6,469	5,586	5,447	7,236
Portugal----	1,161	1,383	1,583	1,710	1,789	2,383	2,667	2,221
Taiwan-----	-	81	517	600	585	764	988	693
U. K-----	212	132	218	210	219	218	205	129
All other---	587	492	297	316	353	189	267	132
Total----	6,185	7,485	8,574	8,267	9,415	9,140	9,574	10,411
Value (1,000 dollars)								
Mexico-----	846	926	883	761	849	777	734	1,011
Portugal----	229	231	245	246	246	335	364	319
Taiwan-----	-	10	64	68	67	98	152	92
U. K-----	63	37	57	53	46	51	54	35
All other---	136	100	63	63	61	25	43	24
Total----	1,274	1,304	1,312	1,191	1,269	1,286	1,347	1,481
Unit value (per pound)								
Mexico-----	\$0.20	\$0.17	\$0.15	\$0.14	\$0.13	\$0.14	\$0.14	\$0.14
Portugal----	.20	.17	.16	.14	.14	.14	.14	.14
Taiwan-----	-	.12	.12	.11	.12	.13	.15	.13
U. K-----	.30	.28	.26	.25	.21	.23	.26	.27
All other---	.23	.20	.21	.20	.17	.13	.16	.18
Total----	.21	.17	.15	.14	.14	.14	.14	.14

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

Table 14.--Sisal and henequen ropes, of stranded construction, measuring 3/4 inch or over in diameter: U.S. imports for consumption, by principal sources, 1964-71

Country	1964	1965	1966	1967	1968	1969	1970	1971
Quantity (1,000 pounds)								
Portugal-----	29	49	175	175	28	109	206	438
Mexico-----	109	146	182	352	329	239	293	191
Philippines---	2	-	9	-	-	29	6	15
All other-----	-	21	25	36	8	6	129	13
Total-----	140	216	391	563	365	383	634	657
Value (1,000 dollars)								
Portugal-----	6	8	25	25	4	15	28	58
Mexico-----	19	22	25	46	36	30	38	24
Philippines---	<u>1</u>	-	2	-	-	5	1	3
All other-----	-	4	5	9	2	1	14	2
Total-----	25	34	57	80	42	51	81	87
Unit value (per pound)								
Portugal-----	\$0.21	\$0.16	\$0.14	\$0.14	\$0.14	\$0.07	\$0.14	\$0.13
Mexico-----	.17	.15	.14	.13	.11	.13	.13	.13
Philippines---	.20	-	.22	-	-	.17	.16	.20
All other-----	-	.19	.20	.25	.25	.16	.11	.15
Total-----	.18	.16	.15	.14	.12	.13	.13	.13

1/ Less than \$500.

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

Table 15.--Other hard-fiber rope, of stranded construction, measuring 3/16 inch or over in diameter: U.S. imports for consumption, by principal sources, 1964-71

Country	1964	1965	1966	1967	1968	1969	1970	1971
	Quantity (1,000 pounds)							
Philippines	235	115	51	27	-	-	-	44
United Kingdom	28	-	-	-	20	8	54	19
Portugal	-	-	13	-	36	-	12	14
All other	47	43	39	38	13	6	-	1
Total	310	158	103	65	69	14	66	78
	Value (1,000 dollars)							
Philippines	47	21	7	5	-	-	-	10
United Kingdom	9	-	-	-	5	3	18	6
Portugal	-	-	3	-	7	-	3	4
All other	13	13	9	6	4	1	-	1/
Total	69	34	19	11	16	4	21	20
	Unit value (per pound)							
Philippines	\$0.20	\$0.18	\$0.14	\$0.19	-	-	-	\$0.23
United Kingdom	.32	-	-	-	\$0.25	\$0.38	\$0.33	.32
Portugal	-	-	.23	-	.19	-	.25	.29
All other	.28	.30	.23	.16	.31	.17	-	.36
Total	.22	.22	.18	.17	.23	.29	.32	.26
1/ Less than \$500.								

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

Table 16.--Manmade-fiber rope: U.S. imports for consumption, by principal sources, 1964-71

Source	1964	1965	1966	1967	1968	1969	1970	1971
Quantity (1,000 pounds)								
Japan-----	28	19	116	35	62	75	289	258
Portugal-----	-	-	-	8	51	77	85	114
United Kingdom-----	-	-	7	21	24	9	24	33
Switzerland-----	<u>1/</u>	1	-	-	<u>1/</u>	-	<u>1/</u>	9
Republic of Korea-----	-	-	-	24	65	25	60	41
Taiwan-----	-	-	6	5	12	7	29	22
Hong Kong-----	-	-	-	-	5	9	-	19
Canada-----	1	1	-	7	5	11	24	8
Spain-----	-	-	-	-	4	8	31	15
Norway-----	-	-	2	-	21	9	12	7
All other-----	11	7	13	83	62	34	38	28
Total-----	40	28	144	183	311	264	592	554
Value (1,000 dollars)								
Japan-----	23	18	93	25	55	63	237	208
Portugal-----	-	-	-	4	22	32	35	49
United Kingdom-----	-	-	9	24	18	9	24	35
Switzerland-----	1	2	-	-	1	-	<u>2/</u>	15
Republic of Korea-----	-	-	-	7	19	8	19	13
Taiwan-----	-	-	3	2	4	3	10	13
Hong Kong-----	-	-	-	-	2	5	-	10
Canada-----	1	2	-	5	4	17	30	7
Spain-----	-	-	-	-	1	3	11	6
Norway-----	-	-	2	-	10	4	5	7
All other-----	20	17	24	78	73	59	46	20
Total-----	45	39	131	145	209	203	417	385
Unit value (per pound)								
Japan-----	\$0.80	\$0.98	\$0.80	\$0.72	\$0.88	\$0.84	\$0.82	\$0.81
Portugal-----	-	-	-	.48	.43	.41	.42	.43
United Kingdom-----	-	-	1.33	1.10	.73	1.05	1.01	1.01
Switzerland-----	2.52	2.27	-	-	4.08	-	2.51	1.62
Republic of Korea-----	-	-	-	.31	.29	.31	.31	.36
Taiwan-----	-	-	.48	.42	.36	.43	.33	.59
Hong Kong-----	-	-	-	-	.48	.52	-	.54
Canada-----	1.34	1.18	-	.78	.81	1.55	1.29	.90
Spain-----	-	-	-	-	.30	.39	.37	.44
Norway-----	-	-	.85	-	.47	.40	.40	.94
All other-----	1.83	2.31	1.89	.93	1.18	1.79	1.22	.71
Total-----	1.11	1.38	1.10	.79	.67	.77	.71	.69

1/ Less than 500 pounds.

2/ Less than \$500.

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

Table 17.--Braids not suitable for making or ornamenting headwear,  
of manmade fibers: U.S. imports for consumption, 1964-71

Year	Tubular braids with a non- elastic core	Other	Total
	Quantity (pounds)		
1964-----	7,336	38,161	45,497
1965-----	15,419	80,621	96,040
1966-----	25,809	211,679	237,488
1967-----	25,130	141,558	166,688
1968-----	59,913	360,997	420,910
1969-----	97,255	563,686	660,941
1970-----	190,944	584,713	775,657
1971-----	249,640	1/ 338,293	587,933
	Value		
1964-----	\$8,131	\$50,828	\$58,959
1965-----	14,959	58,932	73,891
1966-----	21,588	144,124	165,712
1967-----	26,612	151,540	178,152
1968-----	67,746	303,746	371,492
1969-----	117,249	512,976	630,225
1970-----	278,288	493,960	772,248
1971-----	392,830	1/ 528,806	921,636

1/ Cable, rope, cord and twine--164,512 pounds, valued at \$104,424; other--173,781 pounds, valued at \$424,382.

Source: Official statistics of the U.S. Department of Commerce.



