AK,100471069

Historical Reports on
Defense Production
Report No. 29

MISCELLANEOUS METALS AND MINERALS

History of the Miscellaneous Metals and Minerals
Division of the National Production Authority

U. S. DEPARTMENT OF COMMERCE
NATIONAL PRODUCTION AUTHORITY
WASHINGTON 25, D. C.

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Declassified
10/5/64

II. ASBESTOS AND FIBROUS GLASS

In setting up the Asbestos and Fibrous Glass Section, the determining factor for assigning these products to the same Section was the interchangeability of these materials in the electrical and thermal insulation fields. Among the responsibilities of this Section, whose activities covered not only the basic materials, but also the many diversified end products fabricated from these materials, were the following:

Preparing reports on Loan Applications
Preparing reports on Requests for Tax Amortization
-> Priority Assistance
Directive Assistance
Assembling Supply and Requirement data
Rendering informal assistance to both Government agencies and industry members

Even before the Section was established, a shortage of spinning grades of asbestos had already developed, brought about mainly by increased requirements of the military. This in turn was due to the accelerated naval and air force programs, as these two branches of the services are the major consumers of products fabricated from both asbestos and fibrous glass.

Therefore, our immediate problem was to ascertain the extent of this shortage and to take whatever steps were necessary to bring these supply and requirement positions into balance. Since each of the basic types of asbestos and fibrous glass presented individual problems, the manner in which they were handled is shown in the discussion of the various types, which follows.

Chrysotile Asbestos

(a) Strategic grades - Rhodesian C & G 1 and C & G 2.

This is a fibrous mineral composed of silicon, magnesium, oxygen and hydrogen, formed as an alteration product in serpentine rock. Because of its low iron content, it is used almost exclusively in the manufacture of tape and roving for use in production of Navy cable and other electrical products. To a much lesser extent, it is also used in the manufacture of Navy types B and D cloth, for use where high temperatures are involved. These grades of asbestos are mined in Southern Rhodesia, the sole producer being Turner-Newall, Ltd. of London, England. In addition to the Rhodesian source of supply, there is a limited tonnage of low-iron chrysotile mined in the Globe area of Arizona. Plans are now being developed by DMEA to expand the Arizona operations.

(b) Canadian chrysotile (Spinning grades)

Canadian chrysotile asbestos fiber has a higher iron content than the Rhodesian fiber, and is therefore unsuited for use in Navy cable and other high grade electrical insulation. The main uses of Canadian fiber are in the production of yarn, tape, and textiles, friction materials, packings gaskets, wicking, etc. The main source

of supply is in the Thetford Mines area of the Province of Quebec. Other deposits are at Asbestos, Quebec, and there are scattered deposits throughout the entire provinces of Ontario and Quebec. An extensive deposit was recently discovered in British Columbia, and a mill and other facilities are now being erected, which, it is estimated, will produce from 6,000 to 10,000 tons of spinning fiber annually. Preliminary tests of this fiber indicate it to be of low iron content, and it may prove to be of stockpile quality.

Action taken

In order to get an accurate picture of the inventory, supply and production patterns, we initiated a reporting form through the Bureau of Mines, Form 6-1212X, entitled "Report on Asbestos Textiles and Chrysotile Asbestos Fiber." This report was sent to all users of record, and the information gained therefrom gave us exact figures as to the production of the industry for 1950 and the first six months of 1951, as well as the inventory position, receipts, and consumption of fiber for these periods. In order to attempt to reconcile the shortage of fiber with the increase in requirements, we took immediate steps to limit the use of strategic and spinning grades of chrysotile asbestos to those end uses considered most essential. To assist us in formulating this policy, we established the Asbestos Fiber and Textile Manufacturers Industry Advisory Committee, composed of the following Industry members:

A. J. Scanlon, American Asbestos Textile Corporation
Norristown, Pennsylvania

John G. Schoepf, Asten-Hill Manufacturing Company
Philadelphia, Pennsylvania

C. H. Carlough, Carolina Asbestos Company
Davidson, North Carolina

R. J. Hinkle, The Garlock Packing Company
Palmyra, New York.

Frank J. Wakem, Johns-Manville Corporation
New York, N. Y.

— deceased. Per Sheila Driscoll

Ernest Muehleck, Keasbey & Mattison Company
Ambler, Pennsylvania

J. A. Bettes, Jr., Raybestos-Manhattan, Inc.
Manheim, Pennsylvania

Custan Walters, The Russell Mfg. Company
Middletown, Connecticut

George S. Fabel, Southern Asbestos Company
Charlotte, North Carolina

T. C. McCluskey, Tallman-McCluskey Fabrics Company
Kirkwood, Missouri

R. E. Cryor, Union Asbestos & Rubber Company
Chicago, Illinois

H. E. Sunbury, United States Rubber Company
New York, N.Y.

This committee was called in July 1951, to discuss the general situation. It was decided to postpone any definite action until further consideration could be given as to what steps should be taken. The committee was again called in October 1951, by which time a proposed order limiting the uses of strategic and spinning grades of chrysotile fiber had been set up in draft form. Further discussion with industry members and representatives of the military resulted in the issuance of NPA Order M-96, which became effective February 1, 1952. This order has unquestionably been of great value in channeling the strategic and spinning grades of chrysotile asbestos fiber into the most essential end uses. In addition to limiting the use of these grades of fiber to certain end uses, the order also restricted the manufacture of a limited use of end products to percentages of a base period. This latter restriction was in effect a compromise between the thinking of the military, who favored complete elimination of these items (theatre safety curtains, gun covers, ironing board covers, passenger car woven brake linings less than 1/4 inch thick by 2 inches wide, and oil burner wicking) and the thinking of the industry members who felt that no restrictions need be placed on these items.

Despite the favorable effects of Order M-96, it became apparent in the Spring of 1952 that the Navy requirements for lagging cloth could not be met with the supply of fiber that was available to American industry. A third meeting of the Industry Advisory Committee was called in May 1952 for the purpose of examining the defense requirements in the light of the total problems of the industry, and to see what action could be taken to meet these requirements. One of the industry members had developed a combination yarn, in which staple glass fiber was substituted for approximately 30% of the asbestos fiber content, and samples of Navy types B and D cloth had already been submitted for testing to the Naval Research station at Annapolis. At this meeting, the Navy agreed to accept this type of cloth providing it passed the tests. It was decided that the Navy requirements could be met by the acceptance of this combination cloth. We were subsequently advised that this material had been approved by the Naval Research station, and the industry was so advised.

In addition to the Asbestos Fiber and Textile Manufacturers Industry Advisory Committee, the following Industry Advisory Committees were also set up:

85% Magnesia Manufacturers
Mechanical Packings and Gaskets Manufacturers
Friction Materials Manufacturers
Asbestos-Cement Producers

It was not necessary to call any of these four committees in, as there were no problems of sufficient importance to necessitate such action.

Recommendations

1. Since present supply is inadequate for actual requirements, assistance through DMEA and DMPA is urged where necessary to bring in new deposits and to expand present known deposits.

2. In the event of full mobilization, complete allocation should be established, patterned after the system of allocation used in World War II under WPB Orders M-79 and M-283.

3. Continued research on removing the iron content of Canadian fiber to permit its substitution for Rhodesian fiber in the manufacture of electrical insulation.

4. Negotiations through high levels to secure a larger allocation of Rhodesian chrysotile for Government purchase for the stockpile.

Amosite Asbestos

This type of asbestos, which is a ferrous magnesium silicate, is the preferred type for the manufacture of turbine blankets and other forms of Marine insulation. Its one superior property is resilience and regain of loftiness after exposure to water. In the lower grades, M-1 and below, the chief use is in the production of 85% magnesia insulation.

Amosite has been in very short supply for a number of years. While the supply at the mines in the Union of South Africa has been increasing since World War II, the sole supplier, Cape Asbestos Company of London, England, have been diverting their supply of fiber to their own manufacturing plants and to the world market, with a resultant decrease in shipments to this country. It has become necessary for the 85% Magnesia industry to substitute Canadian fiber, in some cases, as high as 50% of their mix because of their inability to get Amosite.

American industry is now using the strategic grades of Amosite only for military end use items. The Navy has an approved specification for turbine blankets using fibrous glass instead of Amosite, and although the cost of the glass is several times that of asbestos, it may become necessary, in the event the supply of Amosite continues to dwindle, to resort to the use of glass fibers for this purpose.

There are no controls on Amosite at present, but it is now proposed to amend DPA Order M-6 to restrict the use of the strategic grades for the production of military end use items only. This will, in effect, make mandatory what the industry is already doing, but such action is felt necessary in view of the short supply of Amosite Fiber.

Crocidolite Asbestos

Crocidolite, or blue asbestos, is a silicate of iron and sodium. The outstanding advantage of this type of fiber is its high resistance to acids and alkalies, which makes it superior for certain types of packing and gasketing material. It is also used extensively as a filter medium. There are two sources of supply - The Union of South Africa, from which we receive all of our supply for industrial and commercial use; and Bolivia, from which we receive the stockpile grade. The Bolivian fiber is being purchased only for the stockpile and for use by the Army Chemical Corps for production of gas mask filters.

The South African crocidolite has presented no problem to date, as the supply has been adequate. The production of Bolivian crocidolite has not been sufficient to meet all requirements, and discussions have been held with other agencies to promote expansion of present mining facilities as well as exploration of new resources. Action is, at present, delayed on this matter because of the internal situation in Bolivia.

There have been no controls placed on crocidolite asbestos to date, nor are any deemed necessary, due to the fact that the United States Government is the sole purchaser of the strategic Bolivian fiber, and there has been no shortage of the African fiber.

Fibrous Glass

Fibrous glass, for which military uses were established during World War II, was in short supply at the outset of the Korean conflict. These uses are - (1) as a substitute for Kapok fiber in the manufacture of life belts, (2) electrical insulation for Navy and other electric cable, (3) thermal insulation for aircraft, (4) as an extender for asbestos fiber in the production of Navy lagging cloth, (5) as a substitute for amosite fiber in the production of Navy felt. The Fibrous Glass Industry, recognizing the increasing requirements for their products, had already started expanding, and it became the duty and responsibility of this Section to assist the members of this Industry through priorities assistance, and consideration of the various applications for tax amortization and loan applications which were filed by members of this Industry. In order to bring this expansion up to requirements, an expansion goal was finally established by DPA for the Fibrous Glass Industry covering the two main products, continuous filament textile fiber and superfine fiber.

In setting up this expansion goal, requirements were premised on the total military and essential civilian needs through a period embracing total mobilization. Because of the fact that the basic fiber producers do not fabricate many of the end use products, many of the requirements included in essential civilian figures are in reality military requirements. The information required to establish the expansion goal figures was secured (1) from the anticipated requirements of the military as established by the Munitions Board and (2) from actual sales figures furnished to this Section by the leading members of the Industry.

The total requirements, as set forth in Expansion Goal No.116, are 86,400,000 pounds of continuous filament and 18,300,000 pounds of superfine annually. Due to the expansion of facilities already undertaken by industry members, plus new facilities which have come into the picture as a result of Government assistance, both of these goals have been met.

No controls were placed on fibrous glass, although it was necessary several times in 1951 to place directives on industry members to secure certain military requirements within a specified time. It is now felt that this industry will be able to handle all foreseeable requirements without further expansion.

Raw materials used in the production of fibrous glass are all of domestic origin, and therefore have presented no problems.

CRMC-M&S-002631