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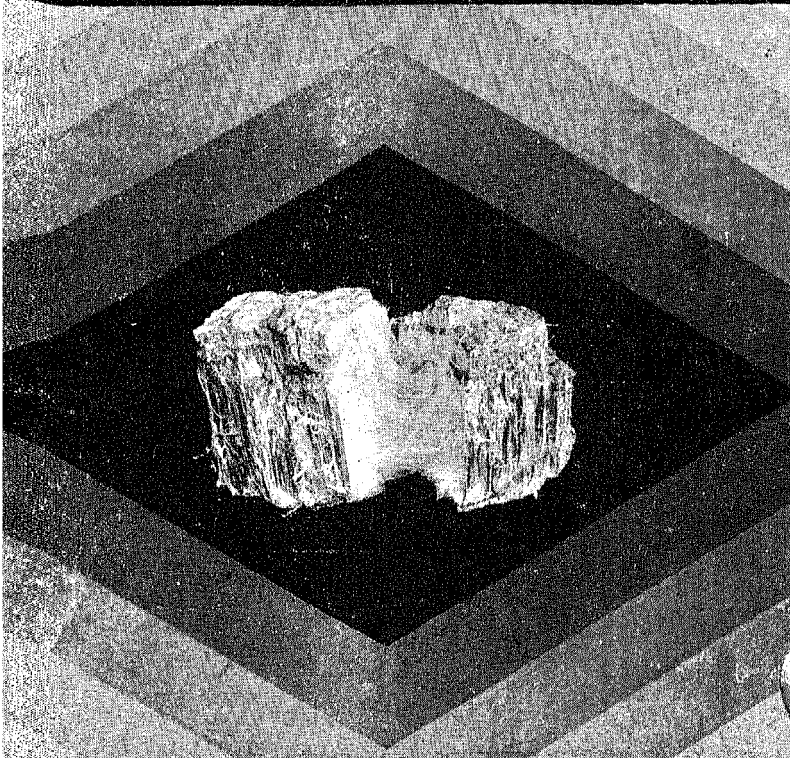

Published at
1701 Winter Street
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SEPTEMBER 1929

The History of the Powhatan Mining Corporation

The Powhatan Mining Corporation was incorporated in March 1923. For several years previous to that date, Fred A. Mett, now President of the Corporation, actively produced asbestos filter fibres, the chief product made by the company. Mr. Mett was, in fact, the pioneer, at least in this country, in the preparation of asbestos filter fibre.

The deposits from which the technical asbestos is prepared are located in the vicinity of Pylesville, Harford County, Maryland, occurring in an extensive serpentine belt.

The formation, according to J. S. Diller, Geologist, U. S. Geological Survey, in a Bulletin issued in 1917, is "a weathered gneissoid schist." This, in other words, is decomposed serpentine. The asbestos occurs in slip-fibre veins, some of these veins extending to a depth of 50 feet. The slip-fibre amphibole is found chiefly along fault planes. About three years ago the company put in a stiff-leg derrick with clam-shell bucket, for removing the overburden. This was replaced last year with an Erie steam shovel.

After the asbestos is quarried it is brought to the company's plant at Woodlawn, where it is carefully selected, hand cobbed, washed and concentrated by special machines which remove all gangue (non-fibrous) matter and extraneous impurities. The remaining fibres, having been dried are then ready for the acid washing process. This consists of digesting the fibres with pure hydrochloric acid until the iron and other impurities are completely dissolved. By a special filter apparatus, and an abundance of wash water, all traces of acid are completely eliminated, as well as "fines," or dust-like matter (very minute fibres). What is left are the thoroly separated Asbestos fibres, now chemically pure and stable. There remains only the drying of these fibres, grading them according to length and packing them.

Prior to 1916 the United States imported practically all of its laboratory asbestos from Italy. During the war, the

lack of ships cut off the supply. It was at that time that Mr. Mett, with the cooperation of the Geological Survey and the Bureau of Standards, developed an asbestos fibre which was found to be equal if not superior to the Italian amphibole.

After the fibre, which is known by the trade name of Powminco, has been prepared, it can be ignited in a Meker burner (such as used in the laboratory) for 15 minutes with an extremely low loss. After this ignition it becomes chemically stable and will not show any further loss upon continued ignition. This interesting characteristic alone determines its suitability for laboratory work, particularly in chemical analysis where it is necessary to burn off organic matter. A recent comparative test showing losses on ignition and digestion in hot concentration HNO_3 between Powminco and the Italian asbestos gave the following results:

	Powminco	Italian
Loss on 15 minutes ignition in a Meker Burner	0.31%	1.39%
Loss after 5 minutes digestion in hot concentrated HNO_3	0.31%	0.52%

In 1923 the company started to develop commercial deposits of amphibole asbestos, particularly anthopyllite. This type of asbestos has very unique properties, particularly in the way of acid-resistance, being practically inert and insoluble in sulphuric acid. In addition to acid resisting qualities, the fibres possess some tensile strength and low iron content.

The Company's Research Laboratory has made a number of comparative tests between the various types of amphiboles, with the following results:

Loss in Sulphuric Acid	
Powminco Asbestos	.3%
African Amosite	8.8%
African Blue	17.5%
Iron Soluble in Sulphuric Acid	
Powminco Asbestos	.40%
African Amosite	2.50%
African Blue	9.00%

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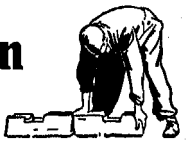

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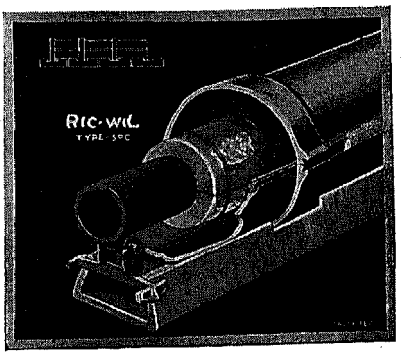

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Anthopyllite asbestos, and particularly the varieties of asbestos possessing low tensile strength, are milled in specially designed mills. They must be subjected to a more gentle action than the methods generally employed in the Canadian mills. Special processes, both dry and wet fiberization, have been developed by the Powhatan Mining Corporation, the wet process being patented.

In the dry milling process, the ore is first crushed down as small as possible, so as to free or separate the bundles or radiating masses of anthopyllite with a minimum breakage of the fibrous bundles. The material then goes to a specially constructed mill of a hammer, or impact type, which produces the first stage of fiberization. The fibres are then concentrated in special machines which separate the gangue from the fibre. The resulting separated fibre is then fiberized in a rapid discharge type beater mill. It is interesting to note the difference in extraction between the amphiboles and the chrysotiles. In the former we obtain anywhere from 50 to 95% recovery. The latter runs around 6%.

Wet process milling consists chiefly of the following stages: The rock is first crushed down as in the dry method, followed by wet concentration closely on the order of jigging. The fibrous asbestos then goes into another specially designed mill which completely fiberizes the asbestos with a minimum breakage of the individual fibres. The mill is so designed as to permit a very free and rapid discharge, using, of course, an excess amount of water to carry the fibre out to the comminuting chamber as rapidly as these fibres themselves become detached from the masses. The fibre is next washed and dewatered and finally dried, screened as to their respective fibre lengths and packed for shipment. The advantage of the wet process over the dry, particularly in amphiboles, is the preservation of the individual fibre, thereby obtaining longer fibre lengths, improved flexibility, greater resiliency, more fluffiness, which accounts for its being lighter in weight and naturally, a cleaner asbestos fibre.

These fibres are used for the following purposes: Fire-proofing, Asphaltic and Bituminous Composition,

Heat Insulation, Composition Flooring, Furnace Linings, Fire Brick, Paints, Furnace Cement, Retort Cement, Waterproofing.

Besides the above, there are quite a number of uses which the manufacturers themselves prefer to keep strictly confidential.

While the amphiboles are generally known to posssess low tensile strength as compared with chrysotiles, they are slowly but surely finding uses in industry, and in a good many cases, particularly because of their high acid resistant qualities and their ability to resist high temperatures, they function far better than the chrysotiles. A great deal of research work is still necessary, however, in order to promote the uses to which the amphiboles may be profitably put.

Suggested Amosite Association

A suggestion has been made in Africa of the formation of an Amosite Asbestos Association, for the purpose of co-operation in the marketing of Amosite Asbestos.

Opinion seems to vary considerably as to the advisability of forming such an Association, and while there would probably be many obstacles to overcome and disadvantages to be considered, such an Association would undoubtedly serve some very useful purposes.

Despite the sale of many thousands of tons of Amosite Asbestos during the last few years many of the persons connected with the mining and sale of it are very hazy as to the uses to which it can be put (to say nothing of the uses for which it is not adapted) and particularly as to proper methods of preparation.

Exact knowledge as to uses, grades, qualities, etc., is very desirable as many manufacturers are timid about experimenting with what is a comparatively new product, and when they do try it out, if the quality or the grade is not exactly right, the result is often failure and the manufacturer will have nothing more to do with it.

A month or more ago two Directors of the S. A. Consolidated Asbestos Company visited Europe with the idea of learning more about the uses of amosite and the character of the prepared fibre which was most suitable for