FILE NAME: Asbestos Sacks and Bags (ASB)

DATE: мфул

DOC#: ASB0мс

DOCUMENT DESCRIPTION: / l·yl·Řλl·y˝W2dzNyl·f ! NűλŐfŜ π t l·Ŏ] l·∃λy∃ ! ăōŜăű2ă ɞ ! ăōŜăű2ă {dzōăűλűdzűŜă a 2NŜ 9ÈLJŜyãλØŜ

Bulletin

PUBLISHED BY L'ASSOCIATION DES MINES D'AMIANTE DU QUÉBEC JUL./AUG./SEPT. 1980 VOL. 4/NO 4

Substitutes: higher cost, lesser quality

"If asbestos were banned in roof cements, the market would be flooded with products so inferior in quality that they cannot perform the purpose for which they are intended."

Such is the opinion expressed by an American expert at a symposium of national scope held in the United States on the whole question of substitutes for asbestos (National Workshops on Substitutes for Asbestos).

Mr. Eric Wormser, of Gibson-Homans, the largest U.S. manufacturer of sealing and coating compounds, was invited to review the numerous problems posed by the replacement of asbestos in various products. His analysis was based on the results of several studies and tests conducted by his company in an attempt to find and develop valid substitutes for asbestos.

According to Mr. Wormser, all the money and efforts invested in the search for substitutes have yet to give satisfactory results, particularly in the case of sealing and coating compounds for roofs. In these products, the asbestos fibre acts as a binding agent and helps to increase the cohesion, viscosity, elasticity and plasticity of the mixtures. Being inert, it is not subject to aging, and so enhances the resistance and the durability of the products.

Conclusive experiments

"In spite of the tremendous amount of work that has been done to try to find a substitute raw material that will produce satisfactory roof coatings and roof cements, to the best of our knowledge no one has found such a material. As the result of our company's vast research, by complicated formulating techniques, utilizing a variety of ingredients and techniques, we are now able to produce solvent base asphalt roof coatings and roof cements which do not include asbestos fibre. We do not yet offer these asbestos free roof coatings and cements for sale in the United States because they are about 15% more expensive to produce and we believe they are not as good as comparable products made with asbestos. It is difficult to justify selling an inferior product for more money."

"We are shipping considerable quantities of asbestos free coatings and cements to Sweden, where the use of asbestos fibre in such products has been banned. Therefore, we are gaining experience in the volume manufacture of such products and have the opportunity to observe their performance in large scale use."

Furthermore, Mr. Wormser feels that a ban on the use of asbestos in the manufacture of roof coatings and cements would be a great disservice to the public. *"Once the asbestos is bound in the roof coating and cement vehicles, it can do no harm to anyone. Therefore, a ban would not benefit anyone. On the other hand, it would force on the public a flood of very poor products at high prices."*

Energy savings

While admitting that it is possible to produce asbestos free products, Mr. Wormser further pointed out that such production goes against the current trends in industry and government policies regarding energy consumption.

"The only method we know for manufacturing reasonably satisfactory asbestos free roof coatings and roof cements is to combine some less than satisfactory substitute fibres with a variety of mineral fillers, wetting agents, plasticizers and synthetic thixotropes."

"We manufacture about 250 different roof coatings, cements and mastics. A variety of techniques must be used to achieve acceptable results in each of these products. The end result in every case is a product that contains considerably less asphalt, tar or other waterproofing oil and much more filler material than when asbestos is used. These fillers contribute nothing to the waterproofing properties or weathering of the products. To the contrary, these filler materials often detract from the desirable properties. These formulas require from 30 to 70% more energy in our plants to manufacture."

Health

Finally, bringing up the subject of health problems which are said to be

▶

Packaging asbestos:

27 million bags, 500 000 cu m.

What a long way we have come from the early part of the century when the men had to use their ingenuity to think up better, faster and easier ways of filling sacks with fibre. Nowadays, technicians monitor dials and signal lights as the bags of fibre roll by on conveyors.

It is doubtless because they dreamed of advanced automation that the workers in the mills were also inventors. We owe to their experience and creative minds, along with considerable investments, many of the machines and techniques which have made it possible to improve working and environmental conditions.

Burlap, needle and thread

There was a time when asbestos fibre was not bagged but "sacked". The burlap sacks were made in Québec with imported jute, mostly from India. The problem of recycling the asbestos sacks was non-existent back then since they were used over and over, as long as they could still be mended. Mending was moreover an important activity which kept several dozen people busy at the mill.

Mending was also part of the day-to-day work of the men who filled and handled the sacks; they always had needle and thread on them so they could immediately repair any ripped or split sacks, in short the result of some miscalculated move.

Before the advent of pressure packing, the fibre used to be shovelled into sacks and packed down with a few good thrusts of the knee.

With a little experience, a "hand sewed" sack could be filled, packed and closed in three minutes. The full sacks were sent up to the warehouse roof where they were tossed down through a trap to the floor 25 feet below. Not everyone was handy at tossing the sacks without splitting them open, and according to the few who remember, more than one was split and mended before one got "the knack"!



The past: *at the beginning of the century, bagging of the fibre and bag handling were entirely manual.*

Around 1935, the operation was modernized: the sack was now held open on a cylindrical rack rather than by the worker and the knee which packed the fibre was replaced by a piston.

A major improvement: pressure packing

Pressure packing, which was developed by Johns-Manville in 1950, was adopted by the other mills a few years later and marked the beginning of automation which from then on was very rapid. Although still packaged in burlap, the fibre was soon being emptied, weighed and conveyed by machines, man's role being confined to stacking and loading.

The discovery of pressure packing was a turning point for the asbestos industry, to such an extend in fact that research is still being done to improve this technique and derive the greatest benefit from it.

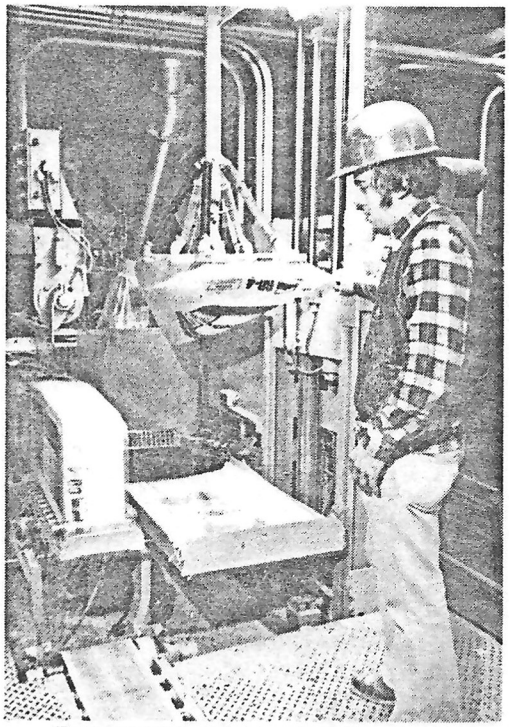
In addition to solving part of the dust problems, pressure packing has made handling easier, reduced the amount of storage and transportation space required and, in so doing, cut down the cost inherent in these operations.

From burlap to paper

A world burlap shortage in 1970, combined with a growing preoccupa-

m. of wood, 435 tons of nails

tion with health and environmental problems, brought into question the use of burlap sacks which did not offer a sufficiently hermetic wrapping,



The present: *bagging is automatic and man's role is essentially limited to monitoring the machines.*

allowing fibres to escape during handling and shipping. From this moment, the asbestos industry was to become one of the most important customers of the packaging industry in Québec, consuming an average of 98 sq. km of paper annually (based on an average consumption of 30 million 3-ply paper bags, before plastic came into use). Paper was gradually replaced by polyethylene and polypropylene, later lined with a reinforcing fabric thread.

In 1976, in order to further reduce contact with the fibre and to make handling easier, the asbestos mines began to offer their customers a completely soluble wrapping — paper, ink and glue — which could be incorporated into the mixtures used in the manufacturing of finished products.

In 1973, an engineer at Asbestos Corporation's Normandie Mine designed a machine which could



The container, the lift truck, the pallet, all are elements contributing to the safe transportation of asbestos fibre.

automatically position the bags to receive the fibre and shortly afterwards, all the companies adopted this technique. That same year, all the machines in the mills were covered and closed off, so as to further diminish exposure of the employees to dust.

Bagging has changed over the years because environmental protection demanded it but also because technology allowed it. Thus in 1970 the growing popularity of containers and the appearance of lift trucks made the use of pallets indispensable to ensure the stability of the loads and the safety of the operations.

Pallets: an industry in their own right

From this time on, a veritable pallet industry developed near the mines, thus creating local activity which grew rapidly. For the customer, the pallet which is available in 40 different models, represents an additional cost of $4 to $14 for every two tons of fibre, depending whether he orders a reusable pallet for shipping his own finished product or a disposable model. North American customers may even rent pallets, under an agreement with the rail companies which allows them to send back free of charge one wagonload of pallets for each order to five wagons of fibre.

Today, of the seven million pallets manufactured in Québec annually, around 600 000 are used by the asbestos producers. The manufacturing involves 500 000 cubic metres of wood, 435 tonnes of nails and creates, at the regional level, about a hundred jobs.

Metric conversion

Since the bagging of fibre began, the industry has used 100 and 125 pound burlap sacks, then 100 pound paper or plastic bags, such standardization making it easier for the manufacturers to develop their mixtures.

The adoption of the metric system by producers in January 1980, required numerous adjustments to the packaging machinery and the reinforcement of several machines which were not meant to handle the additional weight and pressure.

In fact, the conversion from 100 lb to 50 kg bags which means an additional 4.4 kg of fibre, without changing the dimensions of the sacks, required an increased pressure of 55 lb/cu. ft. as opposed to 50 lb/cu. ft. To help them correct the dosage in their mixtures accordingly, the asbestos manufacturing industries received samples of this more compressed fibre before generalized conversion to the metric system was completed.

▶

Comment - burlap was certainly replaceable before 1970, [illegible]

Packaging asbestos...

As regards packaging, metric conversion will reduce consumption of bags by about 5% for both producer and their customers. At present, this consumption can be estimated at approximately 27 million bags annually, of which 90% are plastic and 10% are paper. Altogether the plastic bags used on a yearly basis by the asbestos mines of Québec (excluding the production of Asbestos Hill) would cover an area of 26 sq. km. Moreover, a drop in shipping costs may also be anticipated as a result of metric conversion, as an identical volume of fibre now weighs 5% more than before and the container which used to transport 18 tons can now carry 20 tons.

Fibre shipped in blocks

In spite of the considerable progress made in the last century in the area of fibre packaging, research is still being done in order to discover a technique which will ensure maximum safety in accordance with the strictest regulations.

Thus it is that Johns-Manville Canada Inc., after many years of research, has perfected a technique which appears to bring a solution to the few remaining safety problems posed by the handling and shipping of asbestos.



Wrapping of high density blocks of fibre.

Numerous tests

Around 1972, Gérard Lambert, Project Director, perfected the process and the machine for manufacturing high density blocks of fibre. Before arriving at the block we know today, which is compressed to 100 lb/cu.ft. contains 4% humidity and measures 9"x12"x16", a good deal of testing was necessary at various degrees of humidity and with different-sized molds in which the mixing was done manually. Finally, the first machine was put into operation in the pilot plant and shortly afterward four units, with an annual production capacity of 35 000 tons, were installed at the mill.

Although the fibre is literally locked-in by the pressure and the humidity, for maximum safety the blocks are individually wrapped in paper or polyethylene and then stacked on pallets. The whole pallet can then be wrapped in plastic film if desired.

Future prospects

In 1981, four other machines will be installed, thus bringing the production capacity for high density blocks up from 35 000 to 70 000 tons. The advantages inherent in an expanded marketing of the blocks are twofold: safety and profitability.

In bulk shipments to countries not equipped to handle containers, the bags of fibre are frequently damaged, releasing the fibre into the air and thus increasing the risk of exposure for the workers. This is the case for instance in India where the dockworkers use hooks to unload the shipments. In an attempt to solve this problem and as an experiment, Johns-Manville has just shipped 50 tons of the high density blocks of fibre to this country.

Promising technique

Another advantage is that this process ensures a greater stability of the pallets by diminishing the height of the load, for the same weight; it also makes it possible to cut back the consumption of paper and plastic wrapping and to reduce the required storage space by half. There can be no doubt that all these factors together point to a substantial saving for fibre producers and even more for customers, particularly in terms of transport. Currently, Johns-Manville ships its entire production to the United States, Great Britain and Japan.



For an equal weight of fibre, high density blocks (at right) occupy half the space.

The technical problems related the high density blocks have now been solved for all grades of fibre, as regards both the manufacture of the blocks and their use by manufacturers. Nevertheless, rare are the manufacturing industries which are already equipped with machines adequate enough to break up the blocks of fibre, a necessary operation before incorporating the asbestos into any kind of mixture.

Even though the production capacity of Johns-Manville Canada Inc. does not, for the moment, make it possible to consider wide scale marketing of the high density blocks of fibre, the technique is still the one for the future because of the solutions it offers for environmental problems.