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CALIDRIA "PELLETIZED SG-210"

FOR READY-MIX TAPE JOINT COMPOUNDS

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CALIDRIA "PELLETIZED SG-210"

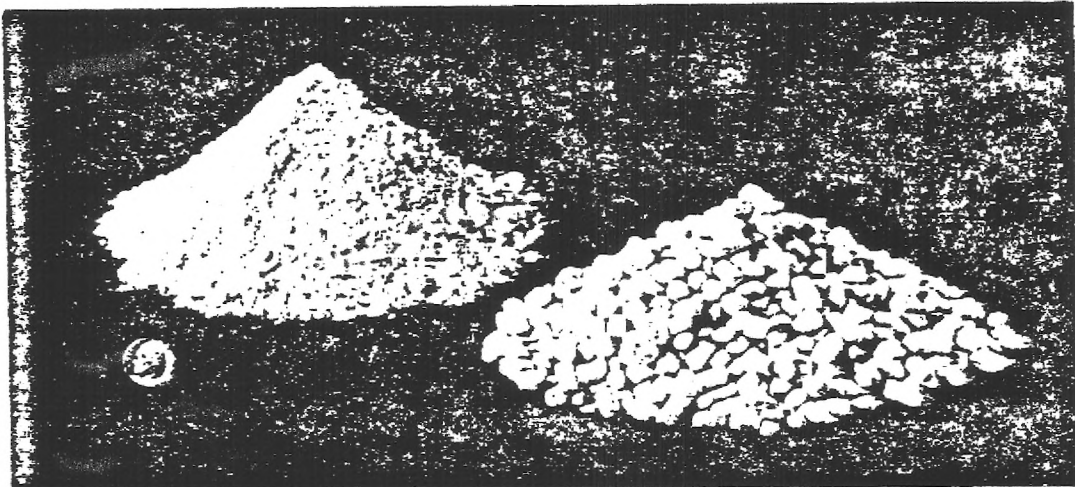
FOR READY-MIX TAPE JOINT COMPOUNDS

INTRODUCTION

Over the past several years, "Calidria" asbestos SG-210 has become widely established as the preferred form of asbestos for the manufacture of ready-mix tape joint compounds. The high fiber content of this well-refined asbestos permits a substantial reduction in the quantity of asbestos needed in typical formulations. Its fine grind and uniform quality give a whiter, smoother mud with consistent properties from batch to batch.

Users of the various types of ground or "powdered" asbestos are well aware of the new occupational safety and environmental regulations which require careful control of airborne asbestos dust levels. They are also aware of the energy shortage and its effects on transportation costs. As a means to minimize the impact of these problems, Union Carbide is introducing a pelletized version of SG-210, specifically designed for use in tape joint compounds.

The pellets, about 1/4" in diameter and 3/8" long, are shown below in comparison with ground asbestos. The pellets are free-flowing and can be handled and metered in conventional solids handling equipment. Dust levels will obviously be sharply reduced or essentially eliminated.



Ground Asbestos

Pelletized Asbestos

The bulk density of the pellets is 45 pounds per cubic foot or about three times that of SG-210. A carload contains 120,000 pounds which results in a freight savings in the range of 0.6-1.0 cents per pound depending on destination. Bulk carloads of 180,000 pounds are available at further savings if the usage is sufficiently large to justify the storage facilities.

The advantages of reduced freight costs and lower dust generation of the pelletized form of asbestos are partially offset by one problem, i.e., the mixing equipment ordinarily used to blend tape joint compounds does not have

enough shear to open the pellets completely. It is thus necessary to add a pellet feeder, a small high-shear wet mixing device, and a means to transport the slurry from the mud mixer to the processing sequence. It is estimated that a capital expenditure in the range of \$4,000-10,000 would be required to provide this equipment. It is also well known that the order of addition of ingredients can effect the mud properties. Some rebalancing of the formulation may be required.

At the present time, pelletized "Calidria" asbestos is widely used in the manufacture of vinyl-asbestos floor tile and in certain grades of paper. Extensive experience is available on pellet handling and the preparation of asbestos slurries. Union Carbide is also prepared to provide slurry samples for testing and several "repulpers" are available for extended loan for in-plant use. We are not, however, in a position to provide complete mud formulations and must rely on you for this. This report, therefore, summarizes the concept, indicates the economies, and provides additional background information to help you assess how pellets might fit into your manufacturing operation. We feel that pellets are the way of the future and stand ready to assist wherever possible in your evaluation of this new approach to asbestos use.

PELLET OPENING

A schematic diagram of one equipment arrangement of a "pellet repulper" is shown in Figure 1. One pallet of 40 bags (2000 lbs.) of pelletized asbestos is dumped into a feed hopper. This quantity can easily be dumped in 10-20 minutes and in a typical installation is about a day's supply of asbestos. The pellets have a bulk density of about 45 pounds per cubic foot so the hopper would be only about 3 feet square and 6 feet high.

When asbestos is needed, the pellets are moved by a screw or vibratory feeder into the top of a small impact mill. Water is fed simultaneously to the mill at a controlled rate to give a slurry of about 5% solids. The slurry drops into a holding tank. One hundred pounds of asbestos in a 5% slurry will require about a 250 gallon tank. At the start of each mud blend, the required amount of slurry is pumped over to the mud mixer.

Once the pellet hopper is loaded, the entire slurry preparation can be operated very easily by remote push-button control or by automatic cycle timer. The pellets flow freely from the bottom of the feed hopper. They are virtually dust free but the feeder can be totally enclosed if desired.

This kind of equipment has been used commercially for the continuous preparation of slurry for feed to paper making systems. A photograph of a self-contained, portable pellet repulper is shown in Figure 2. A unit as small as this with a 10-15 H.P. Fitz or Reitz mill can open 200-900 pounds per hour of pellets. It would thus operate only a moderate portion of the time in tape joint compound manufacture. This particular unit is intended for continuous operation and has a smaller sump than indicated in the schematic layout of Figure 1. It is estimated that the total cost of a repulper setup of this general type is \$5,000-10,000.

There are obviously a number of other ways to arrange the slurry opening equipment. The mill could discharge directly into the mud mixer and eliminate the slurry hold tank. Slurry would enter the mixer over roughly a 10-minute period

while the other dry ingredients were added simultaneously. If bagged pellets are used, the size of the hopper could also be reduced and two or three bags could be dumped manually for each batch of mud.

FORMULATING WITH CALIDRIA "PELLETIZED SG-210"

The maximum solids content for a repulper slurry is approximately 5% by weight. This is about the highest solids content in a well-opened slurry that can be pumped. If some part of the surfactant used in the formulation is introduced into the water to the mill, however, it is possible to attain several percent higher solids.

It is also well recognized that the order in which the ingredients are added can have a significant bearing on rheological properties of the mud. Mixing a specific tape joint formulation starting with an asbestos slurry may give a different mud than the one obtained when the same ingredients are dry blended and added together into the water in the mud mixer. For this reason, it is necessary to check and probably adjust your formulation to allow for the asbestos slurry base. Limited experience indicates that this is not a serious problem but it obviously must be checked for each formulation. Union Carbide is, therefore, prepared to supply, at your request, gallon and larger quantities of slurry, prepared in a repulper like that shown in Figure 2, for your use in checking formulations.

PELLET PACKAGING

"Calidria" asbestos pellets are packaged in 50-pound multiwall paper bags stacked 40 to a pallet. A carload is made up of 60 pallets for a total of 120,000 pounds. Pelletized asbestos is also available in 180,000-pound bulk hopper cars and is now being handled this way on a regular commercial basis. The pellets flow freely from the cars and can be moved by conventional pneumatic or mechanical equipment.

Asbestos usage at even the largest mud manufacturing plants may be too small to justify the investment in bulk asbestos facilities. If, however, bulk handling equipment is available for limestone or other large volume raw material, the incremental cost to apply it to the asbestos may be minimal.

In addition to these two "packages" Union Carbide is investigating the use of large, one-way bags containing 1000-2000 pounds each. These bags are typified by the St. Regis "Sling-Bins" for which illustrative literature is included in Appendix II. With the Sling-Bins, the Feed Hopper in Figure 2 would become the receptical for the large bag of pellets. It could be lowered in, the lid closed, and the bag opened by external control. With the pellets, the bag should drain clear of asbestos. We feel that this kind of material handling is the optimum for the usage levels typical of plants manufacturing tape joint compounds. Its adoption, however, will depend on the interest expressed by the end man who receives the package. For the immediate future, it is probably best to think in terms of the pellets in 50- or 100-pound bags.

ECONOMICS

"Pelletized SG-210" is priced the same as SG-210. The higher bulk density, however, allows substantial savings in freight. This saving ranges

from 0.6 to 1.13¢/lb. for the 50-pound bags, depending on the part of the country to which the shipment is sent. This is illustrated in Table I. Bulk shipment provides additional savings of about 0.15¢/lb.

As a specific example of these figures, consider a tape joint compound manufacturing plant using 50,000 pounds of asbestos per month. At a freight saving of 1¢/lb., a \$5,000 investment in repulping equipment would pay off in 10 months. It is important to realize that these figures do not include any credit for the substantial reduction in warehouse requirements, reduced dust levels that are characteristic of pelletized asbestos, and the potential saving in dust control equipment. Dust control could be the overriding factor in a decision to change to the use of pellets.

CONCLUSIONS

We feel that pelletized asbestos in the "Sling-Bin" type package is the efficient, economical "way of the future" for the asbestos usage rates typical of the tape joint manufacturing industry. The higher bulk density of the pellets keeps transportation, storage, and handling costs under control. Dust problems are greatly reduced and automatic operation is easy to achieve. A capital investment for "opening" equipment is needed but this is relatively modest and the freight savings of 0.6-1.0¢/lb. of asbestos give rapid payoff.

Union Carbide stands ready to supply you with technical consultation on pellet handling and opening. Typical asbestos slurries for checking your formulations can be provided easily and several portable repulpers are also available for loan for in-plant testing.

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