

Mr. L. R. Calkins - New York

June 6, 1944

SINGLE LAYER CALSILITE HIGH TEMPERATURE PIPE COVERING

According to "Asbestos" magazine of May, 1942, the production of high temperature material in the future will be on the increase. I quote:

"High pressure insulation. Never since the world began has man been so insulation minded. It is not a mental state either, because higher and still higher working temperatures compel the limiting of engine room air to level at which man can live. So long as the tendency is ever upwards, look for enormous demand for both quantity and quality of heat confining insulation."

According to "Asbestos" magazine of April, 1944, last year's production of high temperature insulation pipe coverings was 33,800 tons, with a total value of about \$5,000,000.

Until now all specifications of high temperature pipe coverings insulation called for a double layer combination insulation, using high temperature pipe coverings (Superox, HIFemp 12, Enduro, etc.) as the inner layer and low temperature pipe coverings (85% Magnesia and Asbestos felted pipe coverings) as outer layer.

85% Magnesia and Asbestos felted pipe coverings could not be used for a single layer high temperature insulation because they decompose when used over 600°F. and 700°F., respectively. High temperature pipe coverings could not be used as single layer because of high density (23-27 lbs. per cubic foot) and high K-factors. Only for small pipes of 1½" and smaller single layer high temperature pipe coverings are used, and certainly don't represent a satisfactory insulation.

The main reason that no single layer high temperature pipe covering has been in use until now (with one exception) is the fact that there was no preformed single layer pipe covering existing which would have met the requirements of a double layer insulation.

Calsilite, the one formula high and low temperature preformed insulation material, will justify a change from double layer high temperature combination to the single layer high temperature pipe covering.

The disadvantages and advantages are as follows:

Disadvantages:

1. While using single layer high temperature pipe coverings for pipes up to 1½", some manufacturers of double layer pipe coverings may claim that in a single layer high temperature pipe covering the heat would "escape" through the joints and therefore an outer layer has to be used to cover or overlap the joints. The heat loss through joints on the surface of a 2" pipe covering will not be higher than about 1.25% of the heat loss of the bare pipe; on a 10" pipe, not higher than .60%. This would be the case when the joint is considered as an open air space. However, the canvas jacket on the surface closes this air space so that in fact the heat loss will not be greater

(continued on page 2)

MICH01042

01-0201753

then 1% and 0.3%, respectively. (This small amount of heat loss, while not considered negligible, could even be entirely eliminated by filling the joints with a small amount of Calsilite cement, brushed over the respective areas of the pipe covering.)

2. In manufacturing a single layer pipe covering, one will probably need some more heat to dry than for the same size of double layer pipe covering.

3. Objection may be raised that through the heat of the open joint space the part of the canvas jacket covering this joint would be affected. I don't know if this ever happened on single layer high temperature pipe covering used at present for 1 1/2" pipes and smaller. The combination Super and Standard Unibestos Pipe Covering for 751-1200°F. single layer construction (the only high temperature single layer construction on the market) recommends the following method of application:

With combination Super and Standard Unibestos single layer construction, provision for expansion is readily made. This particularly applies to temperatures of 600°F. and over and pipe 6" and larger. For the purpose of making this operative, the pipe covering is furnished slightly oversize than the largest O.D. of the pipe. This permits the pipe to move inside the covering and expand and contract without opening the joints, except where provided. Canvas or asbestos cloth finish therefore can be applied and will not be affected by the heat. The sections are stapled together.

Advantages:

1. Considerable application costs would be saved when using single layer Calsilite. Therefore, applicators using Calsilite would be able to quote much lower price than those applicators using double layer high temperature combination insulation. The job of the applicator would be simpler because only half the number of half-sections has to be assembled.

2. Probably very little breakage would occur during shipping and handling because, in using pipe coverings about twice as thick, it will be much stronger.

3. A one-layer pipe covering will always fit better around the pipe than a double layer combination.

4. Due to its outstanding low density, single layer Calsilite is also easier to handle. For example:

For a 2" pipe with steam 800-1000°F., an inner layer of high temperature pipe covering of 2-1/8" wall thickness and an outer layer of 85% Magnesite of 1 1/2" wall thickness is recommended.

The weight of the inner layer is	16.90 lbs.
outer layer	12.84
Weight of the double layer pipe covering	29.74 lbs.
Single layer Calsilite	18.14 lbs.

The single layer Calsilite of 3-3/8" wall thickness weights only 8% more than the inner layer high temperature pipe covering of 2-1/8" wall thickness by itself.

(continued on page 3)

- Page 3 -

5. Because the highest price discount of high temperature pipe coverings is only 50% against 60% on 85% Magnesia pipe coverings, better prices and higher profit could be obtained in selling this special type of "mono layer high temperature Calsilite".

6. In manufacturing there would be less handling for molding, trimming, packing, etc., and would require less space in the dryer. The material loss in the trimming will be very much reduced.

7. The largest size single layer Calsilite for a 10" pipe with 4" wall thickness would weigh not more than approximately 40 lbs.

This report is submitted -

1. Because the outstanding superiority of Calsilite pipe covering seems to be especially in the high temperature field.

2. During my experiences in installations in more than 20 oil refinery plants in Europe, I have had best results with single layer pipe covering construction. These installations were under supervision of leading construction firms such as, Universal Oil Products (Chicago, New York City), McKee (Cleveland), Kellogg (New York City), Foster Wheeler (London, New York City), and Babcock-Wilcox (London, New York City).

I feel that this entire question deserves consideration.

PAUL GUTHIC

PG:IA

MICH01046

01-0201753