

DATE Jan. 6, 1969

TO F. S. Bettoli
LOCATION South Bound Brook

cc D. A. Davis

FROM W. C. Schwingen
LOCATION South Bound Brook

SUBJECT: CALSILITE - REDUCED DUSTING PROPERTIES

For several months, we have been actively engaged in a Research program designed to reduce the dusting tendency of Calsilite Calcium Silicate Thermal Insulation.

There are two approaches to this problem. First we might develop a means of post treating Calsilite after forming and curing to reduce the surface dusting. This means will allow us to treat the finished product without affecting the critical gel rate or structure. However, it has the disadvantage of only protecting the formed surfaces. If any cutting is done after treatment, the cut surface will not be protected. Most of our attention has been devoted to this approach.

The following variations have been tested:

1. Sodium Silicate (W. Brand) coating. Samples have been dipped in various solutions of sodium silicate. Samples dipped in a 10% solution for 15 seconds and dried show slight improvement in dusting. Samples dipped in 20% solution for 15 seconds and dried showed noticeable reduction in dusting but a crazed silicate surface coating was left which probably would be a sales disadvantage.
2. Silicone Solution - Samples were dipped in GE Silicone SN-201hC (2% solution) for 15 seconds and dried. No significant improvement.
3. Nitric Acid Dip - Samples were dipped in 1/2% HNO₃ solution for 15 seconds and dried. Slight improvement.
4. SBR Latex - Samples were dipped in 20% TCD latex (B-10 Resin felt Latex SP-976) for 15 seconds and dried. A significant reduction in dusting resulted. This approach resulted in a "dustless" product. The disadvantage of this approach is that this is an organic coating. On a hot pipe it tends to discolor the insulation and until the coating is burned off, it creates an odor. Further work is being done.

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With regard to the second approach of altering the product formulation, little work has been done to date. A series of laboratory formulations have been made adding up to 2% TCD-SBR latex to the gel without success. It is very difficult to add anything to this formulation to change one property without affecting the gel formation which usually increases product density and decreases product strength.

We have and are continuing to consider the source and type of water, adjusting the lime-silica ratio, adding silicones and the drying autoclaving cycles.

W. C. Schwingen

WCS/bjs

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