

From : Lester Divs. - Stds. Eng.  
WIN  
Date : May 22, 1972  
Subject: Turbine Insulation

G-2  
General-Order Projects South  
Mr. J. D. Dickinson



CC:  
~~A2E - Mr. R. L. Shollenberger.~~  
A3S - Dr. B. B. Seth

This is in reply to your letter of 5/8/72 requesting a list of all insulation materials used on our turbines containing more asbestos than allowed by OSHA.

In actuality, the limitation by OSHA is not to materials containing asbestos, but to the amount of airborne asbestos dust to which employees are exposed. OSHA states the 8 hour time weighted average airborne concentration of asbestos dust shall not exceed 5 fibers per milliliter greater than 5 microns in length. Higher concentrations are allowed for shorter periods of time. Various methods to meet these exposure limits are recommended, i.e., enclosures, vacuum sweeping and exhaust ventilation. When these methods are not feasible or effective, respirators are prescribed.

Our process specifications call for several asbestos or asbestos containing materials, as follows:-

| <u>Material</u>                                                                    | <u>Process Spec.</u> | <u>Applications</u>                                                                  |
|------------------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------|
| 54251AH<br>(Calcium silicate<br>pipe covering - molded)                            | 600433 Pt. 2         | Pipe insulation up to 10 in. dia. incl.<br>Temp. to 1050° incl.                      |
| 46601BA<br>(Calcium silicate plus<br>diatomaceous earth<br>pipe covering - molded) | 600433 Pt. 2         | Pipe insulation up to 10 in. dia incl.<br>Temp. over 1050°F                          |
| 46102BB<br>(Calcium silicate block)                                                | 600433 Pt. 1         | Pipe over 10 in. dia. or Small Turb.<br>Cylinder Insulation<br>Temp. to 1050°F incl. |
| 54251AC (SOUND DEADENER-<br>INSULATOR) RESIN, ASBESTOS,<br>FILLER                  | 600111               | TURBINE ENCLOSURE INSULAT                                                            |

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| <u>Material</u>                                                      | <u>Process Spec.</u> | <u>Applications</u>                                                                                                            |
|----------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------|
| 46601AA<br>(Hi-temp. cal. silicate<br>or diatomaceous earth - block) | 600433 Pt. 1         | Pipe over 10 in. dia. or Small Turb.<br>cylinder insulation temp. over 1050                                                    |
| 41511AP<br>(12 oz./sq. yd. asbestos<br>cloth)                        | 600433 Pt. 2<br>& 3  | Pasted over pipe covering and gas<br>turbines.                                                                                 |
| 46110BA<br>(asbestos finishing<br>cement)                            | 600433 Pt. 1, 2 & 3  | Finishing coat over pipe & block<br>insulation.                                                                                |
| 41511BF<br>(2.5 lb./sq. yd.<br>asbestos cloth)                       | 600359 Pt.1          | Blanket insulation covering for<br>temperature to 600°F incl. (To be<br>replaced by high temp. blanket using<br>knitted wire.) |
| 42331AA (ASBESTOS PAPER)                                             | 600729               | INSULATION JOINT SEPARATOR                                                                                                     |

In the table preceding, the only materials containing large amounts of asbestos are the cloths and finishing cement. The calcium silicates have from 6 to 14% asbestos depending on the supplier and the diatomaceous earths are believed to contain about the same percentages. Since diatomaceous earth is only used at temperatures over 1050°F (mostly on pipe) there is believed to be practically no application for this material.

I am informed by insulation manufacturers that in the plants where calcium silicate is produced there is no problem in complying with OSHA asbestos dust requirements and that insulation contractors using reasonable precautions should have no problem meeting these requirements.

If, however, due to customer demands there is no alternative but to supply an asbestos free insulation, the following may be substituted:

| <u>Present Material</u>                | <u>Proposed Replacement and Supplier</u>                                                                                                                                   |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Asbestos Cloth<br>(over pipe covering) | Fiberglass cloth -<br>(Louis Halprin & Son,<br>J. P. Stevens)<br>Aluminum sheet                                                                                            |
| Asbestos Cloth<br>(blanket covering)   | Knitted Cloth (wire)<br>(Presently used for hi-temp. blankets)                                                                                                             |
| Asbestos Finishing<br>Cement           | Mineral Wool Hydraulic Setting Cement<br>Philip Carey - MW - one, 48 Insulations -<br>O. J. ... Eagle-Picher - One Cote,<br>Johns-Manville - 301, Keene - Super Powerhouse |
| ASBESTOS PAPER                         | FIBERGLASS CLOTH AS ABOVE 2800284                                                                                                                                          |
| SOUND DEADENER                         | NO KNOWN REPLACEMENT                                                                                                                                                       |

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Present Material

Calcium Silicate and  
Diatomaceous Earth  
Block and Pipe covering

Proposed Replacement and SupplierExpanded Perlite

Philip Carey - Careytemp  
Pabco in California is supposed to have an asbestos  
free insulation but markets only as far east as  
Chicago.

While Careytemp can withstand temperatures up to 1500°F and has a good K factor there are several problems. It has rather low mechanical strength (compressive, tensile, abrasion resistance) as compared to most calcium silicates. A long lead time (12 weeks at present) is required to obtain delivery due to Carey's limited facilities and heavy backlog.

Johns - Manville and Owens - Corning are developing asbestos free calcium silicates which are expected to be available about July at a premium price.

Attached is a copy of a letter from Johns - Manville which should be of some interest on this subject.

Lester Divisions - Standards Engrg. - Materials & Processes - M. Dorfman

df  
Attachment

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