

SHELL CHEMICAL COMPANY

DATE DECEMBER 20, 1972

TO HEAD OFFICE - ENGINEERING SERVICES -
MANAGER

FROM MANAGER - HOUSTON PLANT

CAB

Asbestos free

PLAINTIFF'S EXHIBIT

SH-1373

SUBJECT SHELL CHEMICAL
INSULATION STANDARDS

In response to your letter of November 8, 1972, regarding Shell Chemical Insulation Standards, we offer the following information to assist you in developing material recommendations and application procedures for asbestos free materials.

Insulation work in the Plant usually adheres closely to Shell Chemical Standard 501 (Hot Service Insulation), dated February 1969, and Standard 502 (Cold Service Insulation), dated March 1969. Standard 501 does permit the use of available non-asbestos materials such as Pabco's "Caltemp" and Carey's "Careytemp". However, the utilization of these materials has not been preferred in the Plant because of the fragile nature of these materials. Field supervision estimates that as much as 40% of this material is sometimes broken in shipping and handling. Additionally, these materials are prone to disintegrate after prolonged exposure to elevated temperatures or mechanical abuse after installation. Application of these materials to 650 psi and 1200 psi superheated steam service often results in a "powdering" of the insulation. For these reasons, asbestos reinforced materials such as Johns-Manville "Thermobestos" and Owens-Corning "Kaylo" have been preferred materials. At present, "Thermobestos" is used almost exclusively in the Plant due to a favorable pricing agreement with the J. T. Thorpe Company, local distributors of J-M products.

In view of the current trend to eliminate asbestos from insulation materials, we feel that Plant experience with two types of non-asbestos material may be of some significance. In our noise abatement program we have acoustically insulated several thousand feet of piping up to 30" diameter with fiberglass insulation. Fiberglass is generally an economical selection, has a favorable coefficient of thermal conductivity, and is an excellent sound absorbant. The majority of our experience to date has been with 7.25 lb/ft³ Owens-Corning "Fiberglas". All piping applications have been with preformed pipe insulation, while flat surfaces are usually insulated with fiberglass board. Owens-Corning materials, supplied by Sabine Insulators, have generally been used since extensive acoustical data have been generated by their laboratories. Some experience with J-M fiberglass indicates that it is fully equivalent to the Owens-Corning product.

While fiberglass materials are readily installed using standard insulation practices, its useful upper temperature is limited to about 450°F. For higher temperatures, we have had a limited amount of experience with an asbestos free, thermal/acoustical mineral fiber product with good handleability characteristics. This material is Forty-Eight Insulators product "MF Pipe Covering". This product is 9 lb/ft³ density, rated for service to 1200°F, and has a thermal conductivity similar to the calcium silicates. The main drawback to "MF" is that is not available in pre-molded shapes for piping installations. Use of the "MF" material requires more time to install than pre-molded fiberglass. However, we have recently examined a very similar product which is now being marketed by Eagle-Picher Company, i.e. "Epithem 1200". Besides offering the resiliency of "MF" materials, this product is molded in two pieces for piping insulation. It is our intention to test this material in the near future, as we believe that it may be a viable substitute for asbestos reinforced materials.

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As mentioned previously, our current program of noise abatement in the Houston Plant indicates the desirability of including noise abatement specifications in the insulation standard. Depending upon the temperature conditions, we are presently installing either fiberglass or mineral fiber with a suitable transmission barrier and protective jacket. Subject to the noise level reduction required, lead is frequently used as a barrier. For further clarification, a copy of the work scope for a typical noise abatement piping job at Houston Plant is attached.

The break point between insulators and sheet metal workers for the installation of metallic jacketing is .016" thickness where union affiliated craftsmen are utilized, such as in the OP-II Unit. Elsewhere in the Plant we are presently using non-affiliated craftsmen and, as such, there are no restrictions upon the thickness of jacketing which can be installed by insulators.

Our selection of lead as a sound transmission barrier is based on the typical requirement to install a material of about 1 lb/ft² surface weight to obtain the desired noise attenuation. The lead thickness to obtain this surface weight is about .016" and is installed by insulators throughout the Plant.

In revising the existing standards we feel that galvanized carbon steel or painted steel jacketing should be specifically precluded from use at the Houston Plant. Use at locations other than Houston should be reviewed in detail regarding location atmospheric corrosion history. Our experience at OP-II indicates that this material becomes highly oxidized after two to three years of service. Oxidation initiates at trimmed edges, screw holes, etc., and rapidly attacks the remainder of the jacketing.

Due to the increased emphasis on the control of asbestos dust, special procedures and equipment are presently being utilized in the Plant Insulator's Shop. All material which has been uncrated is now stored in special "tight" cabinets in the shop area. A work table with a self contained filtration unit has been installed to control dust where hand cutting is necessary. A specially modified band saw with a dust collector is being used for power cutting of insulation material. Special clean-up and disposal methods have also been instituted.

Insulator contractors are, of course, responsible for their own procedures and equipment, and do not usually provide facilities equal to those mentioned above. However, they do make available dust masks which are generally worn when working in confined spaces.

Please advise us if you require additional information or clarification of the above items.

RML:mlp
Attachment

bc - HJB/JGM/RPS, EWS, RML, File, Chron, Eng Chron

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for E. S. Martin

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