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TO: G. C. VAN CLEAVE
FROM: M. F. HENNESSEY, JR.



A REVIEW OF INSULATION FOR PROJECTS 9098, 9099 & 9210

"Unibestos", which is the primary insulation used on the current projects, is an inhibited asbestos product. The inhibitor, 20% sodium silicate, is also the binder for the asbestos. It is intended to protect stainless steel from stress corrosion cracking caused by chlorides in a coastal and chemical plant atmosphere. An insulation material, even if chloride free at the time of installation, would not remain so without an inhibitor. The protection mechanism of sodium silicate is based on the anion SiO_3 in an alkaline medium. Acidification gives crystalline silica SiO_2 which is inert and gives no protection. Sodium silicate in water solution has a pH of 10.5.

An insulation primer paint (a thin asphalt) is necessary to penetrate the surface of the insulation approximately one-half inch to act as a binder and sealer to bond the weatherproof mastic and cloth topping. The primer also shields the PVA (polyvinyl acrylic) mastic from attack by the sodium silicate in the insulation.

After the "Unibestos" has been coated with the insulation primer paint, a heavy coat of PVA mastic is applied and a layer of cloth is placed on the mastic and a top coating of PVA mastic is applied.

Causes for Difficulties Encountered in Insulation
in Project 9098 & 9099

The primary problem was water saturation of the "Unibestos" due to incomplete waterproofing. After the insulation was wet the sodium silicate became an electrolyte and the aluminum cover was attacked electrolytically, the aluminum becoming the anode and the steel the cathode. The wet sodium silicate attacked the PVA mastic and left the asbestos cloth without waterproofing, thus allowing more water to enter the insulation.

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The asbestos cloth, used on the tops and bottoms of tanks and vessels, being coarse and heavy, is difficult to bond to the PVA mastic and allows water to enter the insulation.

The insulation primer paint, Code 707, is used as a bonding medium and barrier. This has been brush applied and it is difficult to apply a sufficient quantity to get the desired penetration depth of one-half inch.

The Construction Department has undertaken methods to correct these procedures.

The insulation primer paint is now being spray applied. This insures greater penetration and encourages the mechanics to apply a more uniform and effective coverage.

Glass cloth is being substituted for asbestos cloth. The glass cloth will bond more readily to the PVA mastic and is compatible with "Unibestos" when insulation primer paint is used.

The aluminum and stainless steel metal covering is being "Z" crimped at the vertical seams to prevent windblown water from the insulation.

Flashing protection is also being emphasized.

MFH:vs