



Hempel sets the standard for CUI protection at major Indian refinery

In March 2023, Hempaprime CUI 275 was applied on two sections of high temperature pipelines at an oil and gas refining company in India.

Since most piping, equipment, and associated structures in refineries are insulated, Corrosion Under Insulation (CUI) is a serious threat, thereby making process safety and asset integrity a priority.

Hempel proposed Hempaprime CUI 275, a newly developed fast drying, alkylamine cured epoxy, for the protection of these key assets. Hempaprime CUI 275 was specially formulated for superior crack resistance against thermal cycling and shocks. The product meets the latest ISO standard for CUI, ISO 19277:2018 across all six categories in one product, reducing the need for multiple coating systems. Hempaprime CUI 275 was applied on the hot running pipelines without need for a shutdown. Engineers at the client's facility were satisfied with the trial results and endorsed the use of Hempaprime CUI 275 for asset maintenance in other key locations within the refinery.

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A successful trial with guaranteed CUI protection

Country	Major refinery in Mumbai, India.
Project	Hempaprime CUI 275 Trial on exterior of two high temperature carbon steel pipelines
Year	2023
Asset reference	Pipeline
Project size	Trial area
CUI system	Hempaprime CUI 275
Total	300 µm

	Product	DFT
1st & 2nd Coat	2 X Hempaprime CUI 275	300µm
Application	Application was carried out by brush and roller	

The challenge

The customer’s refining operations have a large network of insulated pipes that operate at temperatures ranging from -4 °C to 177 °C and are highly susceptible to CUI. Typically, epoxy phenolics and novalacs are specified for this service environment, however, these types of materials are prone to cracking under cyclic conditions. The customer requested a maintenance scenario test of CUI 275, using only hand tool cleaning (SSPC-SP-2) to prepare the surface, which must meet ISO 8501-1 Grade D (steel surface with rusted mill scale removed and general pitting visible under normal vision). Additionally, the product had to be applied to hot surfaces ranging from 45 °C to 177 °C, which were then re-insulated.

The trial

Using Hempaprime CUI 275, the trial was conducted on the exterior of two carbon steel pipelines with substrate temperatures of 45 °C and 177 °C respectively. The sections were mechanically prepared to SSPC-SP 2 (hand tool cleaning) and Hempaprime CUI 275 was roller applied in 2 coats on the hot pipes. The applicator found Hempaprime CUI 275 easy to work with and was able to complete the required maintenance very quickly due to ease of application and short overcoating interval. The Hempel Services team witnessed and verified the surface preparation, paint application, and post-curing adhesion test. The piping sections were then re-insulated and allowed to operate for a defined period of time. After the insulation was removed, the coating performance was evaluated.



The result

Hempaprime CUI 275 is a superior piping and vessel coating for the CUI temperature range, with performance testing that proves its fast recoat and dry-to-handle characteristics. It provides advantages in both new construction and maintenance and repair projects, and works well on both carbon and stainless steels, for insulated and uninsulated service. After the trial period, Hempaprime CUI 275 met and exceeded all required performance requirements and the product was added to the customer’s specification.