



Case History – AD00121

## Internal Lining of Hydrochloric Acid (33% Concentration) Storage Vessel with Duromar HPL - 4310

### Problem:

*A large petrochemical refinery in India was experiencing excessive damages on their rubber lined carbon steel tanks that stored Hydrochloric Acid (33% concentration). The damages were primarily a result of aggressive corrosion that not only caused the parent metal of the vessel to weaken, but also contaminate the HCl used for critical refinery operations. Even though these tanks were rubber lined internally (built up to a thickness level of 6mm), it was noticed that the aggressive nature of HCl caused cracks to the rubber within a year of continuous operation and attacked the parent metal of the vessel.*

*This led the refinery to replace large storage vessels once every two years, whilst experiencing extended downtime and incurring high maintenance costs.*

### Solution:

Upon assessing the situation, Arudra proposed the installation of **Duromar HPL – 4310** built up to a thickness of 1.5mm. **Duromar HPL – 4310** is a high functionality, 100% solids (Zero VOC) novolac material with outstanding chemical and temperature resistance when applied onto a well-prepared surface.

The surface of the tank was prepared as per SA 2.5 standard and all debris & salts were removed.

**Duromar SAR**, a high build ceramic putty was applied to the weld joint of the vessel as a stripe coat and let to cure for 8 hours.

**Duromar HPL - 4310** was then applied throughout the internals of the storage vessel at a thickness level of 1.5mm, using a singular airless spray machine.

### Results:

The HCl tank protected with **Duromar HPL - 4310** was inspected on a timely basis and it was noted that there were **NO** corrosion related damages or any contamination to the HCl used for operation. The condition of the tank remained unchanged even after a period of 2 years, helping the refinery overcome all possible operational & maintenance issues that were encountered before.

### Current Status:

Upon inspection, it was noted that even after 2 years of operation there was no contamination to the HCl or any noticeable damages to the parent metal of the storage vessel. The 1.5mm coating of **Duromar HPL – 4310** was intact and provided outstanding resistance to the 33% concentrated HCl. Given the enormous asset life enhancement and cost saving benefits, the refinery is now looking to protect all their acid storage vessels with **Duromar HPL – 4310** and other chemical resistant Duromar coatings.

### Comments:

An added advantage of using **Duromar HPL - 4310** to protect storage vessels is that they can be applied very easily using a singular spray system. This takes a fraction of the time it takes to either rubber line a storage vessel or install a protective coating manually.

Additionally, 100% solid epoxies are highly flexible in nature and can be very easily repaired in the instance of mechanical damages. **Duromar's R&M products** such as **Duromar SAR & EXP-Thixset** are often used to repair any such damages. This flexibility greatly helps in reducing operational downtime & maintenance costs.