

# HP-FILMMAX-HT

## A Novel Filming Amine Corrosion Inhibitor Formulations for Hydrotreating unit

Corrosion in the hydrotreating unit is caused by H<sub>2</sub>S and HCl formed during the hydrodesulphurization and dehydrohalogenation. The source of the chloride is organic chlorinated compounds frequently used in the Petroleum exploration and production. The mechanism of corrosion inhibitors is the formation of a film which can act as a hydrophobic barrier against corrosive species, such as, H<sub>2</sub>S and HCl. The formulation typically contains (i) solvent and (ii) Long alkyl chain amine to form the film.

The major desirable characteristics of any film forming amine formulations includes, corrosion mitigation and strong film formation. Accordingly, the in-house developed formulations were evaluated for rotating cage corrosion rate and QCM film strength.

Table 1: Laboratory scale rotating cage corrosion rate data

Sample Name	Corrosion Protection Efficiency (%)
HP-FILMMAX	86.1
Benchmark	42.0

The best identified formulation have been scaled up to 1.2 MT for field trials. The field trials continued for the period November 2021 to May 2022. During the trials, the HP-FILMMAX met the required specifications less than 0.3 ppm of iron content in the stream. HP-FILMMAX has two nitrogen atoms and can form the stronger film in comparison with the mono amine based samples. Due to the stronger association onto the surface and weaker dissociation from the surface, the bivalent amine stabilizes the film due to concept of “bivalent effect (or multivalent effect)”.

