

HP-FILMMAX

A Novel Filming Amine Corrosion Inhibitor Formulations for CDU unit

Corrosion in the overhead system of the crude distillation unit is caused by hydrogen chloride produced by hydrolysis of chloride salts found in crude oil. The desalter unit in the refineries typically removes salts and the escaped salts are hydrolyzed to produce the corrosive HCl gas. To mitigate the corrosion caused by HCl gas, neutralizing amines and film forming amines are dosed at overhead section of the crude unit.

HPGRDC has developed the filming amine formulations (HP-FILMMAX). The mechanism includes formation of a film which can act as a hydrophobic barrier against corrosive species, such as, HCl. Film forming amine formulations typically contain two components, namely, (i) neutralizing amines to control the pH and (ii) Long chain alkyl amine to form a protective film.

The major desirable characteristics of any film forming amine formulations includes high temperature pH control,

corrosion mitigation and strong film formation. Accordingly, the in-house developed formulations were evaluated for pH neutralization, solubility, rotating cage corrosion rate and QCM film strength.

The best identified formulation have been scaled up to 9 MT for field trials. The field trials continued for the period November 2020 to May 2021. During the trials, the HP-FILMMAX met the required specifications less than 0.3 ppm of iron content in the stream.

Table 1: Laboratory scale rotating cage corrosion rate data

SAMPLE NAME	CORROSION RATE (mpy)	EFFICIENCY (%)
HP-FILMMAX	3.17	93.0
Benchmark	6.68	85.3

