HP Thermopro (W)

Anti-foulant additive for Waxy crude pre-heat exchangers

Fouling of refinery process equipment is a common problem resulting in severe economic penalties. Typical problem areas include preheat exchangers, furnaces and reactor beds. Multiple factors impact fouling including equipment design, flow rates, temperature, operational severity and fluid characteristics. Fouling in waxy crude preheat exchangers is classified into categories; 1. Inorganic fouling, caused by sand, silt and corrosion products such as iron sulfide or ferric oxide. 2. Organic fouling, caused by precipitation of organic components such as Asphaltene and high molecular weight paraffins (waxy type) which become insoluble in the system and can be precipitated out due to incompatible blending / operating conditions.

Fig.1: Fouled heat exchanger

Modern refineries strive for reliability and processing flexibility with longer run lengths and minimal equipment fouling. Antifoulant is required to mitigate fouling by keeping them in dispersed state and stopping deposition on the heat exchanger surfaces. HPGRDC has developed a novel, cost effective formulation (HP Thermopro-W) which will mitigate the fouling waxy crude preheat exchangers.

Series of in-house formulations were prepared and Performance evaluation of these formulations was carried out with Bombay high waxy crude using a lab scale Refinery Process Fouling Simulator (RPFS). The in-house developed formulations exhibited superior performance in comparison with the commercial benchmarks.

Formulation	**ΔT in ºC**
W/o Antifoulant	18.0
Commercial antifoulant	9.6
HP THERMOPRO-W	8.1

HP Thermopro-W was scaled upto 20 MT and field trials were successfully done for six months at HPCL Mumbai refinery and showed superior performance compared to commercial antifoulants.

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