millennium energy
Drilling Fluids & Chemicals

PRODUCTS TECHNICAL DATA

PRODUCT NAME : ME-FILM, Amine compound corrosion inhibitor

COMPOSITION / INFORMATION ON INGREDIENTS AND APPLICATIONS

ME-FILM, Amine-based corrosion inhibitor, ME-FILM is composed of organic ammonium and concentrated special functional agents. It is mainly used as the additive of annulus corrosion inhibitor for oil and gas wells. Amine-based corrosion inhibitor has the functions of anti-corrosion, scale inhibition, sterilization and deoxidization, and can effectively prolong the service life of oil, gas and water well strings.

Application scope and main features:

1. First, it can be sprayed on dry drill pipe and other tubulars to protect from atmospheric corrosion or in preparation for use down hole.
2. Second, it can be used in a fluid system. It is suitable for use in all brines and water-based drilling fluid systems. When used in a fluid system, **ME-FILM** corrosion inhibitor is most effective as a slug treatment. **ME-FILM** corrosion inhibitor is particularly useful to help protect metal surfaces in air, mist, and foam drilling operations.
3 .For treatment of clear brine fluids, one 208-L drum of **ME-FILM** should be added to 100 15.9 m3 of brine.

Benefits:

- Protects metal surfaces in both the shallow, upper part of the well and in the deeper, hotter areas. At the recommended concentration, **ME-FILM** amine provides protection at bottomhole temperatures up to 120 ° C.
- Protects both tubular goods and completion tools exposed to workover or clear completion brines.
- Compatible with sodium chloride, potassium chloride, calcium chloride, sodium bromide, and calcium bromide.

Items	Index
Appearance	Light yellow or brown liquid
PH	6-9
Freezing point °C,≤	-5
Sterilization eficiency %, Saprophytic bacteria ≥	90
Sterilization fficiency %, Sulfate reducing bacteria ≥	90
Corrosion inhibition rate %,≥	70
Scale inhibition rate %,≤	**70**

ME-FILM, Amine compound corrosion inhibitor

Operator: CNPC Karamay Drilling Company

Location: Tarim Basin, Yangtak Well section , Xinjiang ,China

In Yangtak well section of Tarim Basin, when operator drilled to formation at 8.5", they faced Evaporite & gypsum layer around 250 m depths . Gypsum absorbed water and expanded, which leaded to borehole shrinkage, wall collapsed, composite salt layer occurred creep, borehole shrinkage and wall collapse were continued by salt dissolution, operator decided to use organic brine drilling fluid with a density of 2.28 g/cm3 . The result: the drilling fluid effectively inhibited the dissolution of Evaporite & Gypsum layer, the borehole diameter expansion was made by 5% rate, and passed through the Evaporite & Gypsum layer smoothly, but the corrosion of chloride ion in saturated brine to the drilling rig (Material of drilling rig :N80 grade) was serious.

The formula of Saturated brine that the operator selected :

Free water + 0.11% NaoH + 0.14%Na2C03 + 0.37% **ME-VISL** + 0.19% NaCl + 3.8%KCl + 6% Sodium Formate +0.22% PAC—LV+ 1.9% Starch Fluid loss control + Barite to weighting the density to 2．28／cm3。

The operator determined to add **ME-FILM** into previous formula, and got a good result as below: With the addition of **ME-FILM** corrosion inhibitor volume fraction of 1%, the corrosion rate of drill pipe steel table was controlled at about 0.02mm/a.