

Univer CLEAN 350

Dispersant for Industrial Water Treatment

Univer CLEAN 350 is a superior scale and corrosion inhibition polymer for industrial boiler/cooling water systems and other related applications. It is highly stable in a wide range temperature and, also, effective dispersant and stabilizer for calcium carbonate, calcium phosphate, iron or zinc oxide either naturally occurring in the feed water or introduced via processing.

Typical Properties

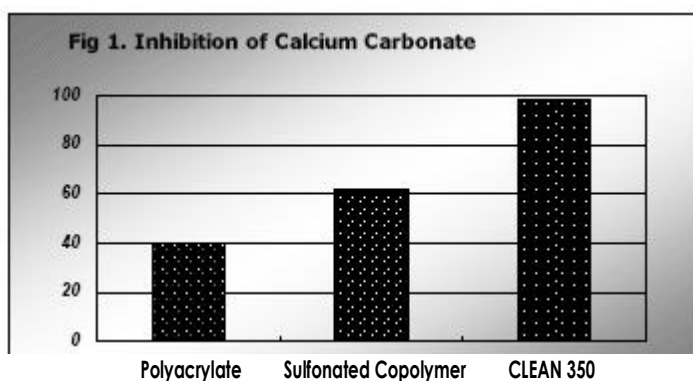
Appearance	Clear to Slightly Turbid Yellow
Solid Contents	approx. 43%(w/w)
pH(undiluted)	2.5-3.0
Molecular Weight, GPC	4500
Specific Gravity	1.23-1.25
Viscosity(Brookfield Viscometer)	300-400cps

Features

CLEAN 350 is an excellent antiscalant and a stabilizing agent for corrosion inhibitors such as phosphate and zinc ions. The metal surface of heat transfer systems maintain low corrosion rates since CLEAN 350 well prevents the precipitation of phosphates, and zinc in circulating water with high concentration of calcium, iron, or high pH to allow controlled film formation of these corrosion inhibitors at the metal surface

Test Result

1. Calcium Carbonate Scale Inhibition Efficiency



Conditions

Ca ²⁺ : 400 mg/L as CaCO ³	HCO ³⁻ : 250 mg/L as CaCO ³
CO ₃ ²⁻ : 100 mg/L as CaCO ³	Mg ²⁺ : 195 mg/L as CaCO ³
pH 8.5	60 minutes at 60°C
Dosage 5ppm (actives)	

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CLEAN 350 was compared with a sulfonated copolymer and polyacrylate in bottle tests.

The result is shown in figure 1. CLEAN 350 outperforms the both sulfonated copolymer and polyacrylate in bottle test.

2. Calcium Phosphate Scale Inhibition Efficiency

Table 2: Threshold Efficiency for Calcium Phosphate		
Inhibitor	Mw (approx)	Turbidity, NTU
None	-	60
Polyacrylate	2000	40
Sulfonated Copolymer	4700	16
Clean 350	4500	7

Condition :

Ca^{2+} : 400 ppm as CaCO_3

PO_4^{3-} : 200ppm

pH : 8.5

Dosage Level 50mg/l

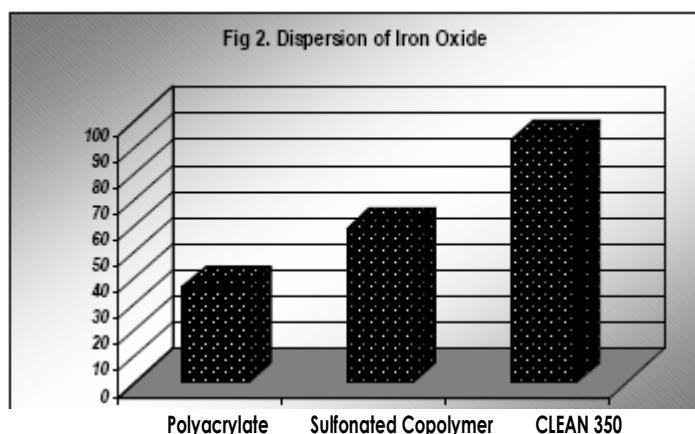
Mechanism :

$$3\text{CaCl}_2 + 2\text{Na}_2\text{HPO}_4 + 2\text{NaOH} \xrightarrow{\text{pH}=8.5} \text{Ca}_3(\text{PO}_4)_2 + 6\text{NaCl} + 2\text{H}_2\text{O}$$
$$\xrightarrow{\text{INHIBITOR}} 3\text{Ca}^{2+} + 2\text{PO}_4^{3-}$$

The performance of CLEAN 350 as a calcium phosphate inhibitor and dispersant was compared with that of polyacrylate and a sulfonated copolymer.

The result is shown in Table 2. CLEAN 350 outperforms the both sulfonated copolymer and polyacrylate in bottle test.

3. Dispersion of Iron Oxide



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Conditions

Fe³⁺ : 100 mg/L Ca²⁺ : 100 mg/L as CaCO₃
HCO₃⁻ : 60 mg/L as CaCO₃
pH 8.5 40hr at 60°C

CLEAN 350 outperforms the both sulfonated copolymer and polyacrylate in iron oxide test.

Thermal and Chemical Stability

CLEAN 350 has excellent thermal and chemical stability and can be used and stored over a broad range temperature and pH. It is not affected by chlorine or other oxidizing agents under normal use conditions.

Handling precautions

- Wear protective eyeglasses, protective glove or goggles on handling.
- In case of contacts with skin, wash thoroughly with soap.
- In case of contacts with eye, wash thoroughly with plenty of water immediately and get medical aid.
- In case of ingestion, get medical aid as soon as possible.
- Wash your hands with soap thoroughly and gargle after handling.
- Keep away from fire, heat or any other possible source of ignition on handling and storage.
- Store 5~40°C and Keep away from freezing to maintain high efficiency.

Additional handling information is contained in the material safety data sheet which is available on request.

Package

Drum 220Kg
CNTR 1,100kg

The information given in this bulletin is to the best of our knowledge accurate. It is intended to be helpful but no warranty is expressed or implied regarding the accuracy of such data. This is a chemical product developed and produced for industrial use. It is strictly requested not to use this product(s) to the application to be taken into human body.

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