

ZX-D3-01

Anionic Flocculant

General Description

ZX-D3-01 Anionic Flocculant is a low viscosity acrylic emulsion polymer used as a superior anionic flocculating agent, offering improved emulsion stability and excellent effectiveness over a wide range of temperatures.

ZX-D3-01 Anionic Flocculant advantages:

- Highly efficient oil in water clarifier
- Highly effective flocculating agent
- Improve emulsion stability
- Less tendency to gel over a wide range of temperatures
- Excellent tolerance to ethylene glycol
- Ease in formulating
- Improved formulation stability

Composition

Product

Appearance	Milk-white liquid
Chemical nature	Acrylic polymer emulsion
Total solids (%)	18
pH as is (at 25℃)	2.9
Density (at 25℃)	1.04
Brookfield Viscosity (mPa.s/cps at 25℃)	40

These properties are typical but do not constitute specifications.

Application

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Used in:

- Industrial processes
- Produced and injected waters in oilfields
- Commercial or industrial waste streams

Product features

ZX-D3-01 Anionic Flocculant is a high molecular weight, slightly crosslinked, acrylic polymer emulsion containing acid functional groups. Neutralization with bases converts ZX-D3-01 Anionic Flocculant to viscous solutions of highly swollen polyelectrolytes useful for flocculating suspended oil particles in oilfield treatment aqueous media. Salts of ZX-D3-01 Anionic Flocculant increase the settling rate of suspended solids and condition the particle for separation by filtration, centrifugation, sedimentation or flotation.

ZX-D3-01 Anionic Flocculant is used conveniently, because its low viscosity eliminates the handling difficulties often associated with solutions of high molecular weight polyelectrolyte. To prepare ZX-D3-01 Anionic Flocculant for use, a solution (10% solids content) of a base is added to the diluted emulsion (2% solids content) immediately before treating the suspension.

Applications

ZX-D3-01 Anionic Flocculant is a very effective flocculating agent and can further increase the floc size of previously flocculated suspensions. A greater floc promotes faster settling and improves the filtration rate.

Suspended materials may carry a positive electric charge and, therefore, will not interact with inorganic flocculant such as alum, ferric chloride, or with cationic polyelectrolytes. These agents, therefore, cannot produce flocculation of the systems. Examples of such difficult substances are certain suspended organic or inorganic materials from industrial processes, produced and injected waters in oilfields, and commercial or industrial waste streams. Such systems can often be treated successfully with ZX-D3-01 Anionic Flocculant anionic polyelectrolyte.

Other suspensions are best handled by adding ZX-D3-01 Anionic Flocculant and a cationic flocculant. In all cases, jar test should be run to establish the most suitable agents and the optimum dosage levels.

Method of use

The exact method of use is dependant on the unique challenges presented by the specific application. ZX-D3-01 Anionic Flocculant can be diluted as the emulsion and then added directly to alkaline systems to begin flocculation. For lower pH systems, this product may

provide optimal performance if first prepared as 1% water soluble salt solutions.

Preparation of Salt Solutions

The table below lists the amount of emulsion, hydroxide and water needed to prepare 1% solutions of the sodium potassium or ammonium salts of ZX-D3-01 Anionic Flocculant. Add the ingredients in the listed order and agitate until mixing is complete.

1% solids content

Ingredient	Sodium Salt	Potassium Salt	Ammonium Salt
ZX-D3-01 Anionic Flocculant	9.4	8.6	9.8
Water	85.1	84.5	87.8
Hydroxide (10% solution)	5.5	6.9	2.4
Water	100.0	100.0	100.0
Total	200.0	200.0	200.0

Solubility

Freeze Thaw

Samples of the emulsion product were stored at -3°C and -18°C for 16 hours (samples froze solid). After four freeze-thaw cycles, ZX-D3-01 Anionic Flocculant flocculant exhibited very good stability. No coagulum or gelling occurred.

Thermal Stability

Samples of the emulsion product were stored at 50°C and 60°C . After one week at 50°C , ZX-D3-01 Anionic Flocculant exhibited good stability. However, the product totally gelled between 1-2 days at 60°C .

Formulation and Thermal Stability

ZX-D3-01 Anionic Flocculant was added to different concentrations of ethylene glycol or methanol and placed in 50°C oven for one week.

- Ethylene glycol
 - As the level of ethylene glycol increases from 30-50%, the amount of polymer that can be used in the formulation decreases. Limits are:
 - ◆ In 30% ethylene glycol: 30% ZX-D3-01 Anionic Flocculant max
 - ◆ In 40% ethylene glycol: 25% ZX-D3-01 Anionic Flocculant max
 - ◆ In 45% ethylene glycol: 20% ZX-D3-01 Anionic Flocculant max
 - ◆ In 50% ethylene glycol: 20% ZX-D3-01 Anionic Flocculant max

- Methanol
 - As the level of methanol increases from 30-50%, the amount of flocculant that can be added decreases only slightly compared to the much larger decrease observed in the ethylene glycol formulation. However, the level of polymer that can be added is lower in methanol than in ethylene glycol. Limits are:
 - ◆ In 30% methanol: 15% ZX-D3-01 Anionic Flocculant max
 - ◆ In 40% methanol: 15% ZX-D3-01 Anionic Flocculant max
 - ◆ In 50% methanol: 12% ZX-D3-01 Anionic Flocculant max

Packaging

Use 200-liter metal or plastic drums., or IBC tanks, or per clients' requests

Storage

Keep away from sources of ignition. Store in a well-ventilated area. Handle with care. Prevent package damage.

Shelf life is 2 years.

Safety operation guidelines

1, Personnel requirements: Operators must undergo professional training before starting work. During operations, they should wear protective gloves, safety goggles, and other personal protective equipment.

2, Job environment requirements

- Ensure good ventilation in the work area.
- Prohibit open flames and smoking.
- Equip with complete fire-fighting facilities and emergency equipment.

Personal protective measures:

- Avoid contact with eyes and skin
- Do not swallow
- Wash thoroughly after use
- If clothes are contaminated, change immediately and wash thoroughly

Emergency response plan

1. Fire handling

- Suitable extinguishing agents: dry powder, foam, carbon dioxide, sand, or large amounts of water (specific for B-class fires)
- Cool surrounding containers during firefighting
- For large-scale fires, use sprinkling to ensure complete wetting of burning materials

2. Leak handling

- Immediately isolate the leak area

- Use specialized absorbent materials for treatment
- Prevent leakage from entering drainage systems

3. First aid measures

- Skin contact: rinse immediately with plenty of water
- Eye contact: flush with water for at least 15 minutes
- Ingestion: do not induce vomiting, seek medical attention immediately