ROMAX™ 7100 Anionic Flocculant for oil-in-water separation

Description

ROMAX 7100 is a high molecular weight non-crosslinked acrylic polymer emulsion containing acid functional groups. Neutralization with bases converts ROMAX 7100 to viscous solutions of highly swollen polyelectrolytes useful for flocculating suspended oil particles in oilfield treatment aqueous media. Salts of ROMAX 7100 increase the settling rate of suspended solids and condition the particles for separation by filtration, centrifugation, sedimentation or flotation.

ROMAX 7100 is used conveniently because its low viscosity eliminates the handling difficulties often associated with solutions of high molecular weight polyelectrolyte. To prepare ROMAX 7100 for use, a solution (10% solids content) of a base is added to the diluted emulsion (2% solids content) immediately before treating the suspension.

Typical Properties

These properties are typical but do not constitute specifications.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspect</td>
<td>Milk-white liquid</td>
</tr>
<tr>
<td>Chemical nature</td>
<td>Acrylic polymer emulsion</td>
</tr>
<tr>
<td>Total solids (%)</td>
<td>18</td>
</tr>
<tr>
<td>pH as is (at 25°C)</td>
<td>2.9</td>
</tr>
<tr>
<td>Density (at 25°C)</td>
<td>1.05</td>
</tr>
<tr>
<td>Viscosity Brookfield</td>
<td>15</td>
</tr>
<tr>
<td>(mPa.s at 25°C), 60 rpm</td>
<td></td>
</tr>
</tbody>
</table>

Features and Benefits

ROMAX 7100 offers:

- Improved emulsion stability
- Less tendency to gel over a wide range of temperatures
- Excellent tolerance to ethylene glycol
- Ease in formulating
- Improved formulation stability

Applications

ROMAX 7100 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 flocculants 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 ROMAX 7100 anionic polyelectrolyte.

Other suspensions are best handled by adding ROMAX 7100 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 dependent on the unique challenges presented by the specific application. ROMAX 7100 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 ROMAX 7100. Add the ingredients in the listed order and agitate until mixing is complete.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Sodium salt</th>
<th>Potassium salt</th>
<th>Ammonium salt</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROMAX 7100</td>
<td>9.4</td>
<td>8.6</td>
<td>9.8</td>
</tr>
<tr>
<td>Water</td>
<td>85.1</td>
<td>84.5</td>
<td>87.8</td>
</tr>
<tr>
<td>Hydroxide (10% solution)</td>
<td>5.5</td>
<td>6.9</td>
<td>2.4</td>
</tr>
<tr>
<td>Water</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Total 200.0 200.0 200.0

Stability Of ROMAX 7100

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 ROMAX 7100 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 ROMAX 7100 flocculant exhibited good stability. However, the product totally gelled between 1-2 days at 60°C.

Formulation and Thermal Stability

ROMAX 7100 was added to different concentrations of ethylene glycol or methanol and placed in a 50°C oven for one week.

- Ethylene glycol

As the level of ethylene glycol increases from 30 to 50% the amount of polymer that can be used in the formulation decreases. Limits are:

- In 30% ethylene glycol : 30% ROMAX 7100 max.
- In 40% ethylene glycol : 20% ROMAX 7100 max.
- In 45% ethylene glycol : 15% ROMAX 7100 max.
- In 50% ethylene glycol : 15% ROMAX 7100 max.

- Methanol

As the level of methanol increases from 30 to 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 : 17% ROMAX 7100 max.
- In 40% methanol : 17% ROMAX 7100 max.
- In 50% methanol : 15% ROMAX 7100 max.
**Material Safety Data Sheets**

Rohm and Haas company maintains Material Safety Data Sheet (MSDS) on all of its products. These contain important information that you may need to protect your employees and customers against any known health and safety hazards associated with our products.

We recommend you obtain copies of MSDS for our products from your local Rohm and Haas technical representative or the Rohm and Haas company. In addition, we recommend you obtain copies of MSDS from your suppliers of other raw materials used with our products.

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