Specialty Oil Field Chemicals

Thermax Chemical Division
Sustainable Solutions in Energy & Environment

Thermax is an engineering company that helps business enterprises perform competitively and sustainably in global markets. In over 75 countries, clients make use of Thermax’s products and solutions for energy efficient and eco-friendly operations: heating equipment and power plants that use a wide variety of fuels including solar energy; absorption chillers that use heat in place of electricity; waste heat recovery units; water & waste water management, air pollution control systems; performance improving chemicals.

The company provides its customers value added services – audits of energy and water, system modifications for optimal use of resources, annual maintenance contracts, energy rentals and O&M of power and water installations.

Thermax operations are supported by innovative R&D and partnerships with global technology majors. It has an international sales & service network spread over 24 countries and state-of-the-art facilities (in India, Denmark and China) that manufacture to international standards.

Chemical Division

Thermax Chemical Division has been moving with a mission for decades: Innovation in the business areas of water, fuel and oil treatment—the three pillars of industrial processes. As the globe shifts towards ecological production techniques, we too are concentrating on cost-effective solutions to the growing problems of fuels, water, effluents and environment.

The oil field specialty chemicals from Thermax focus on treating crude oil and water, efficiently and cost effectively.

Thermax Oil Field Chemicals

- MAXDIP: Pour Point Depressant Flow Improver
- OILMIN: Deoiler Reverse Demulsifier
- SCALEMIN: Scale Inhibitor
- SULFAMIN: H₂S Scavenger FeS Scavenger
- CORROMIN: Biocide
- BIOMIN: H₂S Scavenger FeS Scavenger
- DEEMAX: Demulsifier
- MAXOLYTE: Coagulant Flocculant
- MAXDIP: Pour Point Depressant Flow Improver
- OILMIN: Deoiler Reverse Demulsifier
- SCALEMIN: Scale Inhibitor
- SULFAMIN: H₂S Scavenger FeS Scavenger
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- DEEMAX: Demulsifier
- MAXOLYTE: Coagulant Flocculant
Flow Assurance

**Pour Point Depressant-Flow Improver - Rheology Modifier**
A wide variety of in-house developed polymers suitable for different crude characteristics. Reduces Pour Point along with Rheology parameters at lower temperature.

**Paraffin Dispersant**
A mixture of surfactants and polymers to maintain paraffin in dispersed form and prevent its accumulation on pipeline walls.

**Asphaltene Inhibitor**
Unique blend of polymeric additives, an asphaltene inhibitor inhibits and disperse asphaltenes in crude oil.

**Hydrate Inhibitor**
Chemistry of amido amine salt, these products effectively control hydrates by not allowing them to deposit on the pipeline.
<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Oil Line Corrosion Inhibitor</td>
<td>Distinctive blend of Imidazoline and amine surfactants designed for corrosion prevention in production lines carrying oil, water and gases including H₂S.</td>
</tr>
<tr>
<td>Gas Line Corrosion Inhibitor</td>
<td>Distinctive blend of Imidazoline and amine surfactants designed for corrosion prevention in pipelines carrying mixture of gases.</td>
</tr>
<tr>
<td>FeS Scavenger</td>
<td>Proprietary mixture to dissolve and disperse FeS in problematic wells.</td>
</tr>
<tr>
<td>Antifoam</td>
<td>Silicon and glycol base antifoams to treat oil and water phases.</td>
</tr>
<tr>
<td>Scale Inhibitor</td>
<td>Advanced polymers namely ter-polymers and tetra-polymers are developed in house. These can be combined with organophosphonates to treat various scale formation in a wide range of oilfield waters.</td>
</tr>
<tr>
<td>Acid Corrosion Inhibitor</td>
<td>Distinctive blend of Imidazoline and amine surfactants designed for acidizing at high temperature and pressure.</td>
</tr>
<tr>
<td>H₂S Scavenger</td>
<td>Cyclic amine base and glycol base scavengers to treat liquid and gaseous fluids.</td>
</tr>
<tr>
<td>Biocide</td>
<td>Special chemistry to treat SRB and GAmb.</td>
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</tbody>
</table>
Water Injection

Injection Water Corrosion Inhibitors
Distinctive blend of imidazoline and amine surfactants designed for water injection lines carrying various commingling waters.

Biocide
Broad spectrum Biocides with quaternary or surfactants to treat SRB and GAnB.
Unique blend of Biocides with polymer effectively control sessile bacteria.

H₂S Scavenger
Cyclic amine base and glycol base scavengers to treat liquid and gaseous fluids.

Coagulants, Flocculants, Water Clarifiers
Polymers and iron compounds to treat the inlet water from rivers, sea, bore wells.

Scale Inhibitor
Phosphonate free polymers namely ter-polymers and tetra-polymers developed in house to treat various scale formation in various commingling waters.

Oxygen Scavenger
Bisulphite base chemicals are used to reduce the oxygen content in injection water which will in turn reduce the corrosion severity.

Antifoam
Silicon and glycol base antifoams to treat oil and water phases.
Pour Point Depressant – for Lubricating Oil, Middle Distillate

Variety of in-house developed polymers to treat different lubricating oils and middle distillates. Reduces Pour Point along with CFPP parameters at lower temperature.

Viscosity Index Improver

Different polymers to improve viscosity index of base oils to meet the norms.

De-Waxing Aid

Wide range of polymers to improve wax filtration rate and filtration cake quality.

Down Stream

Demulsifiers

Tailor made combination of surfactants to separate water-in-oil emulsions. Effective on diverse oil emulsions with water cut ranging from 5% to 40%.

Deoilers / Reverse Demulsifiers

Indigenous cationic polymers and modified polymers to treat oil-in-water emulsions. Aid to meet environmental norms for produced water.

Separation
### Oilfield Chemicals Product Selection Guide

<table>
<thead>
<tr>
<th>Application</th>
<th>Location</th>
<th>Field Parameters</th>
<th>Base/Type</th>
<th>Brand Name</th>
<th>Typical recommended dosages</th>
</tr>
</thead>
</table>
| Produced Water Corrosion Inhibitor | Crude oil carrying pipelines containing oil, water & gas (CO₂, H₂S)     | CO₂ <= 1250 ppm  
H₂S <= 1450 ppm  
Salinity <= 25000 ppm  
Temp ~70°C | Filming Amine type           | CORROMIN 3125                | Range: 10-50 ppm based on gross liquid basis  
Typical: 35 ppm based on gross liquid basis |
| Produced Water Scale Inhibitor | Crude oil carrying pipelines containing oil, water & gas                 | Temp ~70°C  
Ca <=2000 ppm  
Phosphorus base                        | SCALEMIN 3640               | Range: 5-50 ppm  
Typical: 35 ppm |
| Produced Water Scale Inhibitor | Crude oil carrying pipelines containing oil, water & gas                 | Temp ~70°C  
Ca <=2000 ppm  
Phosphorus base                        | SCALEMIN 4200               | Range: 5-50 ppm  
Typical: 35 ppm |
| Produced Water Biocide        | Crude oil carrying pipelines containing oil, water & gas (CO₂, H₂S)     | SRB > 100 counts  
THPS base                                 | BIOMIN 2750               | Range: 300 - 1000 ppm once in week 4 hrs  
Typical: 500 ppm once in week 4 hrs |
| Gas Line Corrosion Inhibitor  | Gas carrying pipelines containing after dehydrator and desulfuriser     | Mixture  
Filming Amine type                      | CORROMIN 2066               | Range: 0.5-1 ltr/mmscft  
Typical: 1 ltr/mmscft |
| Demulsifier                  | Oil Water Separators                                                     | Water cut 1 - 60%  
Temp 55 - 80°C  
Surfactant mixture                       | DEEMAX 8812, 3543, 3535, 3593, 3555 | Range: 10-75 ppm  
Typical: 25 ppm |
| Pour Point Depressant        | Net Oil, after separator                                                 | Free from water & gas  
Polymer                                  | MAXDIP 2245, 2270, 1622, SM1822, SM1622, 2278 | Range: 100 - 1500 ppm  
Typical: 250 ppm |
| Deoiler, Reverse Demulsifier | Produced Water after Separator                                           | Free from Free water & gas  
Cationic Polymer                          | OILMIN 1000, 1190           | Range: 25-200 ppm  
Typical: 50 ppm |
| Coagulant                    | Bore well, River, Sea water inlet                                        | Raw water after filter  
Ferric compound                          | MAXOLYTE 4700               | Range: 1-5 ppm  
Typical: 3 ppm |
| Flocculant                   | Bore well, River, Sea water inlet                                        | Raw water after filter  
Cationic Polymer                          | MAXOLYTE 2000               | Range: 0.2-2 ppm  
Typical: 1 ppm |
| Oxygen Scavenger             | Bore well, River, Sea water, Produced water mixture tank                  | After Deoxygenation Tower  
Bisulphite solution                      | CORROMIN 3165               | Range: 9-12 ppm to treat 1 ppm DO  
Typical: 10 ppm to treat 1 ppm DO |
| Injection Water Corrosion Inhibitor | Injection water carrying pipelines containing water                     | DO <= 10 ppb  
Temp ~30°C                                 | Filming Amine type           | CORROMIN 3159                | Range: 5-50 ppm  
Typical: 15 ppm |
| Injection Water Scale Inhibitor | Injection water carrying pipelines containing water                     | Temp ~30°C  
Ca <=2000 ppm  
Non phosphate base                       | SCALEMIN 3640               | Range: 5-20 ppm  
Typical: 15 ppm |
| Produced Water Biocide type 1 | Injection water carrying pipelines containing water                     | SRB > 100 counts  
THPS base                                 | BIOMIN 2750               | Range: 500 - 1500 ppm alternate once in week 4 hrs  
Typical: 1000 ppm alternate once in week 4 hrs |
| Produced Water Biocide type 2 | Injection water carrying pipelines containing water                     | SRB > 100 counts  
Glute, BKC base                           | BIOMIN 4020               | Range: 500 - 1500 ppm alternate once in week 4 hrs  
Typical: 1000 ppm alternate once in week 4 hrs |
| Acid Corrosion Inhibitor     | Acid Injection                                                           | HCL or HCL HF mixture, 1000 psi, 120°C  
Organino inorganic compound mixture      | ACIMIN 1400               | Range: 0.1-1% v/v of acid  
Typical: 0.2% v/v of acid |
| Pour Point Depressant        | Lubricating base oils                                                   | 150N, 500N type  
Polymer                                   | MAXDIP 2810, 8733           | Range: 1000-4000 ppm  
Typical: 1500 ppm |
This brochure presents only some of our products and we reserve the right to amend any product details without notice. The photographs used in the brochure are indicative and may not match the actual plant.

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