Oilfield product overview

The complete chemistry set
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**Introduction**

We create, make and sell specialty chemicals and additives for the global energy market. For over 30 years we have offered a wide range of technology platforms and chemistries, showcasing differentiated solutions and high-performance additives in challenging environments. Our products can support your operations, from drilling and completion, production and pipeline, to transportation and refinery.

Our specialist additives support functions including:

- Greener alternatives to traditional chemistries in environmentally sensitive applications
- Overcoming temperature, pressure and brine tolerant conditions
- The quick and economical separation and purification of crude oil
- Prevention of blockages in production pipelines
- Maximisation of oil recovery
- Reduction in crude oil processing time

We are global manufacturers of high quality products from across a range of technology platforms including alkoxylation, esterification and polymerisation. Proven strengths include:

- Demulsifier intermediates (Kemelix™)
- Flow assurance additives (FlowSolve™)
- Polymeric surfactants (Celevida™, Synpatico™)
- Esters and alkoxylated esters (Pluvia S™, Pluvia T™)
- Fatty acids (Pripol™)

The following guide is designed to give an overview of some of the chemistries and applications associated with the oilfield and fuels markets. We are committed to working collaboratively with our customers and actively seek opportunities to develop innovative products that deliver superior performance through application expertise, dedicated market teams and scientific resources.
## Oilfield Product Overview

### Physical Properties

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Chemistry</th>
<th>Appearance</th>
<th>HLB</th>
<th>Activity (%)</th>
<th>Density @ 25°C (g/cm³)</th>
<th>Viscosity @ 25°C (cP)</th>
<th>Pour Point (°C)</th>
<th>Flash Point (°C)</th>
<th>Solubility in Water</th>
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¹Where product is a solid the melting point has been quoted.
²Product does contain contaminants listed however these are below declarable limits on MSDS.
³Density at 20°C.
## Oilfield Product Overview

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<th>Aquatic toxicity</th>
<th>Functions</th>
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*Note: BTEX refers to benzene, toluene, ethylbenzene, and xylene.*

*Note²: Data for some products is not available or not applicable.*
# Oilfield Product Overview

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<th>Viscosity at 25°C (cP)</th>
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¹Where product is a solid the melting point has been quoted.
²Product does contain contaminates listed however these are below declarable limits on MSDS.
³Density at 20°C.
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<th></th>
<th>Environmental data</th>
<th>Aquatic toxicity</th>
<th>Functions</th>
<th>Acid thickener</th>
<th>Anti-sludge agent</th>
<th>Asphaltenes inhibitor</th>
<th>Cold flow improver</th>
<th>Corrosion inhibitor</th>
<th>Demulsifier</th>
<th>Dispersant</th>
<th>Emulsifier</th>
<th>Flow back additive</th>
<th>Foam</th>
<th>Green solvent</th>
<th>Lubricant</th>
<th>Non-emulsifier</th>
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<td>Crustacean (mg/l)</td>
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<td>Anti-sludge agent</td>
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## Oilfield product overview

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<th>Chemistry</th>
<th>Physical properties</th>
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1. Where product is a solid the melting point has been quoted.
2. Product does contain contaminants listed however these are below declarable limits on MSDS.
3. Density at 20°C.
## Oilfield Product Overview

### Environmental Data

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### Functions

- Acid thickener
- Anti-slug drive agent
- Asphaltene inhibitor
- Cold flow improver
- Corrosion inhibitor
- Defoamer
- Demulsifier
- Dispersant
- Emulsifier
- Flow back additive
- Foamer
- Green solvent
- Lubricant
- Non-emulsifier
- Rheology modifier
- Thinner
- Wetting agent

### Physical Properties

- Appearance
- HLB
- Activity (%)
- Density at 25°C (g/cm³)
- Viscosity at 25°C (cP)
- Pour point 1 (°C)
- Flash point (°C)
- Solubility in water
- BTEX free
- NPE free
- Biodegradation (%)
- Aquatic toxicity
  - Algae (mg/l)
  - Crustacean (mg/l)
  - Fish (mg/l)

### Environmental Data

- POE/POP adducts and Alkoxylates
- Kemelix D503
- Modified polyol
- Colorless liquid
- 100
- 1.03
- 1,100
- >100
- Dispersible
- Yes
- Yes
- >60
- -
- >100
- 10-100
- Yes
- Yes
- >100
- 10-100
- No
- Yes
- -
- >1,000
- >1,000
- >1,000
- Yes
- Yes
- -
- -
- No
- Yes
- -
- -
- -
- Yes
- Yes
- Readily biodegradable
- -
- -
- Yes
- Yes
- -
- 10-100
- -
- Yes
- Yes
- -
- -
- -
- Yes
- Yes
- Readily biodegradable
- <1
- -
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- Yes
- Yes
- Readily biodegradable
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### Polymeric Dispersants

- FlowSolve 110LN
- Polyolefin ester
- Brown liquid
- 50
- 0.94
- 300
- -33
- 61
- Insoluble
- No
- Yes
- -
- >1,000
- >1,000
- >1,000
- Yes
- Yes
- -
- -
- FlowSolve 150
- Polyolefin ester
- Brown liquid
- 50
- 0.89
- 200
- -63
- 70
- Insoluble
- Yes
- Yes
- -
- -
- FlowSolve 212LN
- Polyolefin ester
- Brown liquid
- 50
- 0.94
- 210
- -33
- 61
- Insoluble
- No
- Yes
- -
- >1,000
- >1,000
- >1,000
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- Yes
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### Polymeric Surfactants

- Celevida 1900A
- Ester-based
- Brown solid
- 5.5
- 90
- 0.96
- 200
- -63
- 95
- Insoluble
- No
- Yes
- -
- -
- -
- Yes
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- Readily biodegradable
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### Chemicals

- Kemelix D506
- Modified polyol
- Clear liquid
- -
- 100
- 900
- -9
- 224
- Dispersible
- Yes
- Yes
- >60
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- >100
- 10-100
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### Oilfield product overview

#### Polymerized fatty acids

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<th>Viscosity at 25˚C (cP)</th>
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<td>Pripol 1029</td>
<td>Standard dimer/trimer acid</td>
<td>Yellow liquid</td>
<td>-</td>
<td>100</td>
<td>0.94</td>
<td>9,000</td>
<td>-15</td>
<td>304</td>
<td>Insoluble</td>
</tr>
<tr>
<td>Pripol 1040</td>
<td>Trimer acid</td>
<td>Brown liquid</td>
<td>-</td>
<td>100</td>
<td>1.00</td>
<td>45,000</td>
<td>15</td>
<td>320</td>
<td>Insoluble</td>
</tr>
<tr>
<td>Pripol 1045</td>
<td>Trimer acid</td>
<td>Brown liquid</td>
<td>-</td>
<td>100</td>
<td>0.95</td>
<td>20,000</td>
<td>-</td>
<td>&gt;300</td>
<td>Insoluble</td>
</tr>
</tbody>
</table>

1. Where product is a solid the melting point has been quoted.
2. Product does contain contaminants listed however these are below declarable limits on MSDS.
3. Density at 20°C.
<table>
<thead>
<tr>
<th>BTEX free</th>
<th>NPE free</th>
<th>Biodegradation (%)</th>
<th>Algae (mg/l)</th>
<th>Crustacean (mg/l)</th>
<th>Fish (mg/l)</th>
<th>Aquatic toxicity</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Acid thickener</td>
<td>Anti-sludge agent</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>&lt;20</td>
<td>&gt;1,000</td>
<td>&gt;1,000</td>
<td>&gt;100</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>&lt;20</td>
<td>&gt;1,000</td>
<td>&gt;1,000</td>
<td>&gt;100</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>&lt;20</td>
<td>&gt;1,000</td>
<td>&gt;1,000</td>
<td>&gt;100</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>&lt;20</td>
<td>&gt;1,000</td>
<td>&gt;1,000</td>
<td>&gt;100</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Not readily biodegradable</td>
<td>&gt;1,000</td>
<td>&gt;1,000</td>
<td>&gt;100</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Who are we?

The Energy Technologies business in Cargill Bioindustrial creates, makes and sells specialty chemicals and additives for the global energy market. Working in close collaboration with our customers, we apply sustainable concepts and deep scientific expertise so that together we can efficiently power the world of tomorrow.

At our core, we are experts in synthetic ester and polyalkylene glycol chemistries, taking products from lab scale through to full manufacturing. Investing in the development of new chemistries allows us to support our customers in meeting new industry challenges.

For those who dare to imagine a brighter future, we establish long lasting relationships and create bespoke industry solutions through our integrated research & development and global manufacturing capabilities. Being both global and local, you have direct access to our network of technical experts. We look forward to talking to you.

Further information

Cargill Bioindustrial sales and distribution are coordinated through an extensive worldwide network of technical and commercial experts. For further information or guidance please contact us:

energy_technologies@cargill.com

Non-warranty

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