

# Oilfield product overview



The complete chemistry set

**Cargill**<sup>®</sup>



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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 alkoxyated 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.

Product name	Chemistry	Physical properties							
		Appearance	HLB	Activity (%)	Density at 25°C (g/cm <sup>3</sup> )	Viscosity at 25°C (cP)	Pour point <sup>1</sup> (°C)	Flash point (°C)	Solubility in water
<b>Anionic surfactants</b>									
<b>Synpatico 3100</b>	Alkyl aryl sulfonate	Amber liquid	-	100	1.03	4,000	-	149	Dispersible
<b>Cationic surfactants</b>									
<b>Kemelix 3216X</b>	Polyimine derivative	Yellow liquid	-	88	1.02	1,400	-33	100	Dispersible
<b>Esters</b>									
<b>Kemelix D104</b>	Modified polyol	Yellow liquid	-	100	1.06	1,800	-30	320	Soluble
<b>Kemelix D317</b>	Modified polyol	Amber liquid	-	80	1.00	1,900	-27	63	Insoluble
<b>Priolube 1407</b>	Saturated polyol ester	Yellow liquid	-	100	0.96 <sup>3</sup>	-	0	215	Insoluble
<b>Priolube 1415</b>	Unsaturated mono ester	Yellow liquid	-	100	0.87 <sup>3</sup>	11	-	220	Insoluble
<b>Priolube 1502</b>	Methyl laurate	Colorless liquid	-	100	0.87 <sup>3</sup>	2	-	140	-
<b>Priolube 1937</b>	Saturated polyol ester	Yellow liquid	-	100	0.99 <sup>3</sup>	-	-40	240	Insoluble
<b>Priolube 3970</b>	Saturated polyol ester	Yellow liquid	-	100	0.94 <sup>3</sup>	33	-	250	Insoluble
<b>Pluvia S 120</b>	Sorbitan isostearate	Yellow liquid	4.7	100	1.00	2,500	-	100	Insoluble
<b>Pluvia S 20</b>	Sorbitan laurate	Amber liquid	8.6	100	1.00	4,250	10	149	Insoluble
<b>Pluvia S 40</b>	Sorbitan palmitate	White solid	6.7	100	1.00	-	47	149	Insoluble
<b>Pluvia S 60</b>	Sorbitan stearate	White solid	4.7	100	-	-	55	100	Insoluble
<b>Pluvia S 65</b>	Sorbitan tristearate	Brown solid	2.1	100	-	-	53	93	Insoluble
<b>Pluvia S 80</b>	Sorbitan oleate	Amber liquid	4.3	100	1.00	-	-16	148	Dispersible
<b>Pluvia S 83</b>	Sorbitan sesquioleate	Amber liquid	3.7	100	1.00	1,500	-	100	Insoluble
<b>Pluvia S 85</b>	Sorbitan trioleate	Amber liquid	1.8	100	0.95	266	-	>149	Insoluble

<sup>1</sup>Where product is a solid the melting point has been quoted.

<sup>2</sup>Product does contain contaminates listed however these are below declarable limits on MSDS.

<sup>3</sup>Density at 20°C.

Environmental data						Functions																
BTEX free	NPE free	Biodegradation (%)	Aquatic toxicity			Acid thickener	Anti-sludge agent	Asphaltene inhibitor	Cold flow improver	Corrosion inhibitor	Demulsifier	Dispersant	Emulsifier	Flow back additive	Defoamer	Foamer	Green solvent	Lubricant	Non-emulsifier	Rheology modifier	Thinner	Wetting agent
			Algae (mg/l)	Crustacean (mg/l)	Fish (mg/l)																	
No	Yes	>60	1-10	1-10	1-10	●	●				●	●										●
No <sup>2</sup>	Yes	<20	-	10-100	10-100						●								●			
Yes	Yes	-	-	-	-						●								●			
No <sup>2</sup>	Yes	-	-	-	-						●											
Yes	Yes	Expected to be biodegradable	-	-	-							●						●				
Yes	Yes	>60	-	-	>100													●				
Yes	Yes	Readily biodegradable	-	<1	>1,000													●				
Yes	Yes	>60	>100	>100	>1,000													●				
Yes	Yes	>60	>100	>100	>1,000													●				
Yes	Yes	Readily biodegradable	-	-	-						●	●										●
Yes	Yes	>60	-	-	-							●	●					●				●
Yes	Yes	>60	-	-	-							●						●				●
Yes	Yes	Readily biodegradable	-	-	-							●						●				●
Yes	Yes	Expected to be biodegradable	-	-	-						●	●						●				●
Yes	Yes	>60	-	-	-						●	●						●				●
Yes	Yes	>60	-	-	-						●	●						●				●
Yes	Yes	Readily biodegradable	-	-	-						●	●						●				●

Product name	Chemistry	Physical properties							
		Appearance	HLB	Activity (%)	Density at 25°C (g/cm <sup>3</sup> )	Viscosity at 25°C (cP)	Pour point <sup>1</sup> (°C)	Flash point (°C)	Solubility in water
<b>Ethoxylated esters</b>									
<b>Pluvia T 20</b>	Polysorbate 20	Yellow liquid	16.7	100	1.10	400	-15	290	Soluble
<b>Pluvia T 21</b>	Polysorbate 21	Yellow liquid	13.3	100	-	-	-3	149	Dispersible
<b>Pluvia T 60</b>	Polysorbate 60	Amber liquid	14.9	100	1.04	600	24	149	Soluble
<b>Pluvia T 61</b>	Polysorbate 61	Brown liquid	9.6	100	1.06	-	37	149	Dispersible
<b>Pluvia T 65</b>	Polysorbate 65	Brown liquid	10.5	100	1.05	-	33	149	Insoluble
<b>Pluvia T 80</b>	Polysorbate 80	Yellow liquid	15.0	100	1.07	400	-20	100	Soluble
<b>Pluvia T 81</b>	Polysorbate 81	Amber liquid	10.0	97.5	1.00	450	-29	149	Dispersible
<b>Pluvia T 85</b>	Polysorbate 85	Amber liquid	11.0	100	1.00	300	-29	149	Dispersible
<b>Fatty acids</b>									
<b>Prisorine 3501</b>	Isostearic acid	Yellow liquid	-	100	0.89	-	-21	208	Insoluble
<b>Prisorine 3505</b>	Isostearic acid	Yellow liquid	-	100	0.89	56	-21	208	Insoluble
<b>Prisorine 3508</b>	Isostearic acid	Yellow liquid	-	100	0.90 <sup>3</sup>	-	28	204	Insoluble
<b>Prisorine 3515</b>	Isostearic acid	Yellow liquid	15.5	100	0.85	52	-	180	Insoluble
<b>Pristerene 4963</b>	Stearic acid	White solid	-	100	0.87	-	-	180	Insoluble
<b>Glycerine</b>									
<b>Pricerine 9091</b>	Glycerine	Colorless liquid	-	100	1.25	1,300	-	177	Soluble
<b>POE/POP adducts and alkoxyates</b>									
<b>Kemelix 3422X</b>	Polyimine derivative	Yellow liquid	-	100	1.00	3,900	-27	>100	Insoluble
<b>Kemelix 3501X</b>	Resin alkoxyate	Amber liquid	-	80	1.01	1,600	-24	64	Dispersible
<b>Kemelix 3515X</b>	Polyimine derivative	Yellow liquid	-	100	1.02	4,100	12	>100	Insoluble
<b>Kemelix 3551X</b>	Polyimine derivative	Amber liquid	-	100	1.02	4,400	3	>100	Insoluble
<b>Kemelix 3627X</b>	Resin alkoxyate	Amber liquid	-	80	1.02	>5,000	12	64	Insoluble
<b>Kemelix 3678X</b>	Resin alkoxyate	Amber liquid	-	86	1.04	2,300	-24	64	Dispersible
<b>Kemelix 3750X</b>	Resin alkoxyate	Yellow liquid	-	80	1.06	1,000	-30	64	Soluble
<b>Kemelix D309</b>	Resin Alkoxyate	Amber liquid	-	80	1.03	1,400	-27	64	Soluble
<b>Kemelix D310</b>	Resin Alkoxyate	Amber liquid	-	88	1.03	800	-33	64	Dispersible
<b>Kemelix D311</b>	Resin Alkoxyate	Yellow liquid	-	80	1.00	400	-39	64	Dispersible
<b>Kemelix D322</b>	Resin Alkoxyate	Amber liquid	-	80	1.02	5,900	-15	64	Insoluble
<b>Kemelix D400</b>	Modified polyol	Yellow liquid	-	80	0.98	900	-45	30	Insoluble
<b>Kemelix D501</b>	Modified polyol	Colorless liquid	-	100	1.03	800	1	>100	Soluble

<sup>1</sup>Where product is a solid the melting point has been quoted.

<sup>2</sup>Product does contain contaminates listed however these are below declarable limits on MSDS.

<sup>3</sup>Density at 20°C.



Environmental data						Functions																
BTEX free	NPE free	Biodegradation (%)	Aquatic toxicity			Acid thickener	Anti-sludge agent	Asphaltene inhibitor	Cold flow improver	Corrosion inhibitor	Demulsifier	Dispersant	Emulsifier	Flow back additive	Defoamer	Foamer	Green solvent	Lubricant	Non-emulsifier	Rheology modifier	Thinner	Wetting agent
			Algae (mg/l)	Crustacean (mg/l)	Fish (mg/l)																	
Yes	Yes	>20<60	-	-	-				●			●			●							●
Yes	Yes	-	-	-	-		●					●	●									
Yes	Yes	>60	-	-	10-100							●										●
Yes	Yes	-	-	-	>100							●										●
Yes	Yes	-	-	-	-							●										●
Yes	Yes	>20<60	-	>100	>100							●	●									●
Yes	Yes	>60	-	-	-		●					●	●									●
Yes	Yes	>60	-	-	-							●	●									●
Yes	Yes	>60	>1,000	>1,000	10-100							●	●				●	●				●
Yes	Yes	>60	>1,000	>1,000	10-100							●	●				●	●				
Yes	Yes	>60	10-100	10-100	10-100							●	●				●	●				●
Yes	Yes	>60	-	-	>100							●					●					
Yes	Yes	>60	<1	10-100	>1,000							●	●									
Yes	Yes	>60	-	>1,000	>1,000							●										
Yes	Yes	-	-	-	-							●								●		
No <sup>2</sup>	No <sup>2</sup>	-	-	1-10	10-100							●										
Yes	Yes	-	-	-	-							●										
Yes	Yes	-	-	-	-							●										
No <sup>2</sup>	No <sup>2</sup>	-	-	-	-							●										
No <sup>2</sup>	No <sup>2</sup>	-	-	1-10	10-100							●										
No <sup>2</sup>	No <sup>2</sup>	-	-	-	-							●								●		
No <sup>2</sup>	No <sup>2</sup>	<20	-	10-10	10-100							●										
No <sup>2</sup>	No <sup>2</sup>	-	-	10-10	10-100							●										
No <sup>2</sup>	No <sup>2</sup>	-	-	10-10	10-100							●										
No <sup>2</sup>	No <sup>2</sup>	-	-	10-100	10-100							●										
No <sup>2</sup>	Yes	-	-	-	-							●										
Yes	Yes	Expected to be biodegradable	-	10-100	10-100							●										

Product name	Chemistry	Physical properties							
		Appearance	HLB	Activity (%)	Density at 25°C (g/cm <sup>3</sup> )	Viscosity at 25°C (cP)	Pour point <sup>1</sup> (°C)	Flash point (°C)	Solubility in water
<b>POE/POP adducts and Alkoxylates</b> continued									
<b>Kemelix D503</b>	Modified polyol	Colorless liquid	-	100	1.03	1,100	9	>100	Dispersible
<b>Kemelix D506</b>	Modified polyol	Clear liquid	-	100	1.02	900	-9	224	Dispersible
<b>Kemelix D510</b>	Polyimine derivative	Yellow liquid	-	100	1.02	1,600	-3	>100	Insoluble
<b>Kemelix D511</b>	Modified polyol	Colorless liquid	-	100	1.02	1,100	3	>100	Soluble
<b>Kemelix D513</b>	Polyimine derivative	Yellow liquid	-	100	1.00	2,800	-30	>100	Insoluble
<b>Polymeric dispersants</b>									
<b>FlowSolve 110LN</b>	Polyolefin ester	Brown liquid	-	50	0.94	300	-33	61	Insoluble
<b>FlowSolve 150</b>	Polyolefin ester	Brown liquid	-	50	0.89	200	-63	70	Insoluble
<b>FlowSolve 212LN</b>	Polyolefin ester	Brown liquid	-	50	0.94	210	-33	61	Insoluble
<b>FlowSolve 250AF</b>	Polymeric dispersant	Clear brown liquid	-	50	0.95	>250	<-20	130	Insoluble
<b>FlowSolve 430</b>	α-olefin-maleic anhydride co-polymer	Opaque, amber	-	48-52	0.89 <sup>3</sup>	6-12 at 60°C	18	>60	Insoluble
<b>Perfad 9000</b>	Ester/imidazoline blend	Amber liquid	-	100	0.97 <sup>3</sup>	-	-	93	-
<b>Perfad 9013</b>	Ashless organo nitrogen compound	Amber liquid	-	100	1.01 <sup>3</sup>	1,200	-18	194	Insoluble
<b>Synpatico 2200</b>	Polymeric dispersant	Brown solid	-	100	0.94	-	42	100	Insoluble
<b>Synpatico 9200</b>	Alkoxylated amine	Amber liquid	-	100	1.02	450	-	200	-
<b>Polymeric surfactants</b>									
<b>Celevida 1900A</b>	Ester based	Brown solid	5.5	90	0.96	200	-63	95	Insoluble
<b>Celevida 2600</b>	Ester based	Brown liquid	5.0	90	0.98	1,360	-24	105	Dispersible
<b>Celevida 4550</b>	Ester based	Brown liquid	-	-	-	-	-	-	Insoluble
<b>Celevida 6300SF</b>	Ester based	Brown solid	5.5	100	0.94	1,300 at 50°C	43	110	Insoluble
<b>Priamine 1071</b>	Dimer diamine	Yellow liquid	-	100	0.90	232	-63	200	Insoluble
<b>Priamine 1074</b>	Dimer diamine	Brown liquid	-	100	0.90	200	-33	200	Insoluble

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<sup>3</sup>Density at 20°C.

Environmental data						Functions																
BTEX free	NPE free	Biodegradation (%)	Aquatic toxicity			Acid thickener	Anti-sludge agent	Asphaltene inhibitor	Cold flow improver	Corrosion inhibitor	Demulsifier	Dispersant	Emulsifier	Flow back additive	Defoamer	Foamer	Green solvent	Lubricant	Non-emulsifier	Rheology modifier	Thinner	Wetting agent
			Algae (mg/l)	Crustacean (mg/l)	Fish (mg/l)																	
Yes	Yes	>60	-	10-100	>1,000						●								●			
Yes	Yes	>60	-	10-100	>1,000						●								●			
Yes	Yes	-	-	-	-						●								●			
Yes	Yes	<20	-	>100	10-100						●								●			
Yes	Yes	-	-	-	>100						●								●			
No	Yes	-	>1,000	>1,000	>1,000			●														
Yes	Yes	-	-	-	-			●														
No	Yes	-	>1,000	>1,000	>1,000			●														
Yes	Yes	-	-	-	-			●														
No	Yes	-	-	-	-				●		●											
Yes	Yes	-	-	-	-				●			●										
Yes	Yes	Readily biodegradable	-	-	-				●			●										
Yes	Yes	-	-	10-100	-						●	●										
Yes	Yes	-	-	-	-		●				●	●										
No	Yes	-	-	-	-						●	●										
Yes	Yes	-	-	-	-			●			●	●										
Yes	Yes	-	-	-	-							●										
Yes	Yes	Readily biodegradable	<1	-	-				●			●										
Yes	Yes	Readily biodegradable	<1	-	-				●			●										

Product name	Chemistry	Physical properties							
		Appearance	HLB	Activity (%)	Density at 25°C (g/cm <sup>3</sup> )	Viscosity at 25°C (cP)	Pour point <sup>1</sup> (°C)	Flash point (°C)	Solubility in water
<b>Polymerized fatty acids</b>									
<b>Pripol 1013</b>	Distilled dimer acid	Yellow liquid	-	100	0.94	7,100	-15	304	Insoluble
<b>Pripol 1017</b>	Standard dimer/trimer acid	Yellow liquid	-	100	0.95	8,000	-15	275	Insoluble
<b>Pripol 1022</b>	Standard dimer/trimer acid	Yellow liquid	-	100	0.94	5,800	-15	304	Insoluble
<b>Pripol 1025</b>	Hydrogenated dimer acid	Yellow liquid	-	100	0.95	8,900	-15	275	Insoluble
<b>Pripol 1029</b>	Standard dimer/trimer acid	Yellow liquid	-	100	0.94	9,000	-15	304	Insoluble
<b>Pripol 1040</b>	Trimer acid	Brown liquid	-	100	1.00	45,000	15	320	Insoluble
<b>Pripol 1045</b>	Trimer acid	Brown liquid	-	100	0.95	20,000	-	>300	Insoluble

<sup>1</sup>Where product is a solid the melting point has been quoted.

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<sup>3</sup>Density at 20°C.

Environmental data						Functions																
BTEX free	NPE free	Biodegradation (%)	Aquatic toxicity			Acid thickener	Anti-sludge agent	Asphaltene inhibitor	Cold flow improver	Corrosion inhibitor	Demulsifier	Dispersant	Emulsifier	Flow back additive	Defoamer	Foamer	Green solvent	Lubricant	Non-emulsifier	Rheology modifier	Thinner	Wetting agent
			Algae (mg/l)	Crustacean (mg/l)	Fish (mg/l)																	
Yes	Yes	<20	>1,000	>1,000	>100				●											●		
Yes	Yes	<20	>1,000	>1,000	>100				●											●		
Yes	Yes	<20	>1,000	>1,000	>100				●								●		●			
Yes	Yes	<20	>1,000	>1,000	>100				●											●		
Yes	Yes	<20	>1,000	>1,000	>100				●								●		●			
Yes	Yes	Not readily biodegradable	>1,000	>1,000	>100				●											●		

# Notes

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# Notes

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## 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](mailto:energy_technologies@cargill.com)**

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