EXPLORATION & PRODUCTION

Chemistry fueling possibilities

Innovation through chemistry is the core of our business, and it is the fundamental competitive advantage that Dow offers customers throughout all segments of the oil and gas value chain.

We combine our expertise as a global chemical leader and decades of experience in the oil and gas industry to create solutions that help our customers respond to today's demanding environment, both profitably and responsibly, while innovating for tomorrow.

Our goal is to strengthen every link of the industry value chain, continually breaking ground to help optimize supply, improve efficiencies and manage emissions.

See the many ways Dow chemistry is fueling possibilities in exploration and production.

Contents

EMBARK™ SF Surfactants

Table 1 2

EMBARK™ DF Defoamers

Table 2 4

Table 3 4

ROMAX™ Water Clarifiers

Table 4 4

DEMTROL™ Demulsifiers

Table 5 5

ACCENT™ Scale Inhibitors

Table 6 6

VERSENE™ and VERSENEX™ Chelating Agents

Table 7 7



Capabilities

Over the years, our exploration & production team has developed industry standard lab capabilities to support our customers by performance benchmarking, product selection, and field implementation. Our diverse chemistries, formulation expertise, and rich oilfield experience enables opportunities to collaborate and innovate to address specific product and application needs.

Exploration

Drilling, cementing, and stimulation

Accessing new frontiers is becoming increasingly necessary as reserves decline. Dow's exploration additives are designed to enable companies to extract the maximum amount of value from new endeavors.

EMBARK™ SF Surfactants

Dow TERGITOL™, ECOSURF™, TRITON™ and EMBARK™ SF Surfactants are very versatile and can serve in many upstream roles, including above and below ground cleanup, production enhancement, foaming, drilling fluid couplers, and as cloudpoint shale inhibitors. Dow surfactants are available as legacy products, biodegradable products and natural vegetable-sourced chemistries. Below are examples of the many products offered in these categories.

Table 1

EMBARK™ Surfactant examples						
Product	Typical use	Key performance	Properties			
			Cloud point (°C, 1 wt% actives aqueous solution)	CMC (ppm at 25°C)	Surface tension (dynes/cm at 1% actives, 25°C)	APE Based
EMBARK™ SF120	Excellent stability and solubility in acid, base, emulsifier	– Anionic – Stable foam – Dispersant, emulsion stabilizer	>100	—	34	No
EMBARK™ SF601	Stable in high caustic concentration	– Nonionic – Stable foam	>100	1591	28	No
EMBARK™ SF315	High HLB emulsifier, excellent wetting properties	– Nonionic – Emulsifier	>100	162	36	No
TERGITOL™ Surfactant Examples						
Product	Typical use	Key performance	Properties			
			Cloud point (°C, 1 wt% actives aqueous solution)	CMC (ppm at 25°C)	Surface tension (dynes/cm at 1% actives, 25°C)	APE Based
TERGITOL™ 15-S-7	Excellent wetting and rinseability	– Nonionic – Formulation aid	37	38	30	No
TERGITOL™ 15-S-9	Excellent detergent and dispersant	– Nonionic – Rapid dissolution	60	52	30	No
TERGITOL™ 15-S-12	Excellent detergent and dispersant	– Nonionic – Higher temperature wetting – Surface tension 33	89	104	33	No Readily biodegradable



ECOSURF™ Surfactant examples						
Product	Typical use	Key performance	Properties			
			Cloud point (°C, 1 wt% actives aqueous solution)	CMC (ppm at 25°C)	Surface tension (dynes/cm at 1% actives, 25°C)	APE Based
ECOSURF™ EH-6	Excellent oil soluble emulsifier and hard surface cleaning	– Low foam – Low odor	40	914	30	No
ECOSURF™ EH-9	Exceptional wetting	– Low foam – Low odor	61	1066	31	No
ECOSURF™ EH-14 (90%)	Exceptional wetting, excellent handling and formulation	– Low foam – Low odor	86	4018	31	No

TERGITOL™ L Ethylene Oxide/Propylene Oxide (EO/PO) Copolymers examples						
Product	Typical use	Key performance	Properties			
			Cloud point (°C, 1 wt% actives aqueous solution)	CMC (ppm at 25°C)	Surface tension (dynes/cm at 1% actives, 25°C)	APE Based
TERGITOL™ L101	Foam control agent	– Low temperature foam control	18	—	33	No
TERGITOL™ L61	Foam control agent	– Efficient foam control	24	—	40	No
TERGITOL™ L64	Foam control agent	– Higher temperature foam control	62	—	44	No

TERGITOL™ NP Nonylphenol Ethoxylates examples						
Product	Typical use	Key performance	Properties			
			Cloud point (°C, 1 wt% actives aqueous solution)	CMC (ppm at 25°C)	Surface tension (dynes/cm at 1% actives, 25°C)	APE Based
TERGITOL™ NP-9	Emulsifier and wetting	– Nonionic – Wetting agent	54	60	31	Yes
TERGITOL™ NP-15	Emulsifier and wetting	– Nonionic – Stability at higher temperature	>100	90	41	Yes
TERGITOL™ NP-70 (70%)	Emulsifier and stabilizer	– Nonionic – Stability at higher temperature	>100	287	51	Yes

TERGITOL™ PAE examples						
Product	Typical use	Key performance	Properties			
			Cloud point (°C, 1 wt% actives aqueous solution)	CMC (ppm at 25°C)	Surface tension (dynes/cm at 1% actives, 25°C)	APE Based
TERGITOL™ 91-6	Wetting agent	– Nonionic – Dispersant and wetting agent	53	238	28	No
TERGITOL™ 26-7	Wetting agent	– Nonionic surfactant – Dispersant and wetting agent	54	55	30	No
TERGITOL™ TDA-6	Wetting agent, emulsifier	– Nonionic – Dispersant and wetting agent	61	92	29	No
TERGITOL™ TDA-9	Emulsifier	– Low foam – Emulsifier	70 (10% (w/w) in DB Solution)	59	27	No

EMBARK™ DF Defoamers

EMBARK™ DF Defoamers can help maintain well control by blocking the formation of intractable foam to enhance pump, storage and fluid transport efficiency. They can be used in mud pits, circulating tanks, production gathering equipment or processing systems, where they can even break up any foam that already exists.

EMBARK™ DF Defoamers work as surface defoamers and subsurface bubble coalescers to offset incompatibility between oilfield fluids, air, or reservoir fluids that can create excessive foam.

The EMBARK™ Defoamer product line includes basic alcohol defoaming agents, insoluble polyglycols, silicones, and specialty surfactants to meet virtually any requirement.

Table 2

Product	Description	Flashpoint	Performance criteria
2-Ethyl Hexanol	Secondary alcohol organic defoamer component; sparingly soluble in water	82°F (28°C)	Biodegradable defoamer component used in defoamer and treating chemical blends
EMBARK™ DF220	Organic soluble antifoam agent partially soluble in water	345°F (174°C)	Polyglycol biodegradable defoamer
EMBARK™ DF240	Organic soluble antifoam agent partially soluble in water	365°F (185°C)	Polyglycol biodegradable defoamer
EMBARK™ DF900 Series	Silicone defoamer		

Mutual solvents

Industry-leading mutual solvent products that, in conjunction with other EMBARK™ products, provide economical options that enable high flash point with complete water solubility and low surface tension.

Table 3

Product line	Chemistry	Attributes and application
CELLOSOLVE™/CARBITOL™	Glycol ether	Low surface tension surfactants with low VOC and unsurpassed hydrotropic characteristics
DOWANOL™	Glycol ether	High-flash-point coupling agent with complete water solubility

Production

Phase separation

ROMAX™ Water Clarifiers

Re-injecting even small quantities of oil can quickly add up, negatively impacting your bottom line. Dow offers a wide variety of water clarifiers to meet diverse final formulation needs. In conjunction with a blending guide, the ROMAX™ 7000 series of anionic and nonionic water clarifiers can be formulated with water or ancillary agents to meet operating conditions. Please refer to the ROMAX™ blending guide for more information on how to use these products.

Table 4

Product name	Type	Chemistry	% active	pH	Viscosity (cP)
ROMAX™ 7000	Anionic	Acrylic latex	18	3.0	39
ROMAX™ 7001	Anionic	Acrylic latex	20	3.7	20
ROMAX™ 7005	Anionic	Acrylic latex	28	4.0	10
ROMAX™ 7010	Anionic	Acrylic latex	18	3.0	53
ROMAX™ 7011	Anionic	Acrylic latex	28	4.3	100
ROMAX™ 7020	Anionic	Acrylic latex	30	2.7	15
ROMAX™ 7023	Anionic	Acrylic latex	30	3.2	30
ROMAX™ 7030	Anionic	Acrylic latex	28	2.7	10
ROMAX™ 7035	Anionic	Acrylic latex	29	2.7	150
ROMAX™ 7080	Nonionic	Hydrophobically modified polymer	35	7.0	11000
ROMAX™ 7100	Anionic	Acrylic latex	18	2.9	15

These properties do not constitute specifications. These are typical value of products.

DEMTROL™ Demulsifiers

Determining the most effective solution to separating emulsions is one of the most difficult projects a service company faces. DEMTROL™ Demulsifiers provide excellent performance in resolving a variety of crude oil emulsions. Combined with Dow's world-class formulation expertise across the globe, service companies are equipped to deliver winning solutions.

Table 5

Product	Chemical class	Solids content %	RSN
DEMTROL™ 1010	Polyol Block Copolymer	100	12.1
DEMTROL™ 1015E	Polyol Block Copolymer	100	12
DEMTROL™ 1020	Polyol Block Copolymer	100	11.5
DEMTROL™ 1020E	Polyol Block Copolymer	100	12
DEMTROL™ 1030	Polyol Block Copolymer	100	17.8
DEMTROL™ 1030 US	Polyol Block Copolymer	100	18
DEMTROL™ 1040	Polyol Block Copolymer	100	19
DEMTROL™ 1110E	Polyol Block Copolymer	100	9.5
DEMTROL™ 1114L	Polyol Block Copolymer	100	10
DEMTROL™ 1115	Polyol Block Copolymer	100	9.8
DEMTROL™ 1120E	Polyol Block Copolymer	100	10
DEMTROL™ 1130	Polyol Block Copolymer	100	16.4
DEMTROL™ 1135E	Polyol Block Copolymer	100	15.5
DEMTROL™ 1150E	Polyol Block Copolymer	100	17
DEMTROL™ 2020	Alkoxylated Alkyl Phenol Formaldehyde Resin	80-90	12.4
DEMTROL™ 2025	Alkoxylated Alkyl Phenol Formaldehyde Resin	70-80	12.8
DEMTROL™ 2030	Alkoxylated Alkyl Phenol Formaldehyde Resin	75-85	15.2
DEMTROL™ 2045	Alkoxylated Alkyl Phenol Formaldehyde Resin	60-70	15
DEMTROL™ 2130	Alkoxylated Alkyl Phenol Formaldehyde Resin	70-80	10
DEMTROL™ 3000	Epoxy Resin Alkoxylate	70-80	6
DEMTROL™ 3005	Epoxy Resin Alkoxylate	80-90	5.5
DEMTROL™ 3010	Epoxy Resin Alkoxylate	80-90	6.3
DEMTROL™ 3020	Epoxy Resin Alkoxylate	80-90	7.6
DEMTROL™ 3027	Epoxy Resin Alkoxylate	75-85	10
DEMTROL™ 3030	Epoxy Resin Alkoxylate	80-90	12
DEMTROL™ 3120	Epoxy Resin Alkoxylate	80 -90	8
DEMTROL™ 4017	Amine-initiated Polyol Block Copolymer	100	13
DEMTROL™ 4026	Amine-initiated Polyol Block Copolymer	100	17
DEMTROL™ 4120	Amine-initiated Polyol Block Copolymer	100	11
DEMTROL™ 4225	Amine-initiated Polyol Block Copolymer	100	12
DEMTROL™ 6046	Modified Silicone Polyether	100	8.9
DEMTROL™ 6047	Modified Silicone Polyether	100	8
DEMTROL™ 6055	Modified Silicone Polyether	100	15.6
DEMTROL™ 6233	Modified Silicone Polyether	100	7.9
DEMTROL™ 6237	Modified Silicone Polyether	100	13.1

Flow assurance

ACCENT™ Scale Inhibitors

New challenges continue to arise with worsening water qualities. Designed to reduce scale formation in complex operations, the ACCENT™ line of inhibitors can be injected continuously downhole, topside, and in squeeze applications to help maintain oil and gas production. These scale inhibitors can also be applied at produced water handling facilities.

ACCENT™ Traceable Scale Inhibitors include a tracer in the polymeric chain, allowing for quick and easy concentration measurement using an ACCENT™ T test kit. The portable test kit is used to measure free polymer concentration to prevent overfeeding and accurately predict squeeze lifetime to maximize effectiveness.

Table 6

Scale inhibitor	Chemical nature	$CaCO_2$ inhibition	$BaSO_4$ inhibition	$CaSO_4$ inhibition	Thermal stability	Squeeze performance	Divalent brine	Methanol compatibility	MEG compatibility
ACCENT™ 1100	Carboxylic homopolymer	••	•••	•••	•••	•••	•••	•	•••
ACCENT™ 1102	Carboxylic homopolymer	•••	••••	••••	•••	•••	•••	•••	•••
ACCENT™ 1103	Carboxylic homopolymer	••	•••	•••	•••	••	•	••	•••
ACCENT™ 1105	Carboxylic homopolymer	•••	••••	•••	•••	•••	•	•	•••
ACCENT™ 1106	Carboxylic homopolymer	••	•	•	•••	•	•	•	•••
ACCENT™ 1120	Carboxylic suffonated copolymer	••••	•••	••••	••	••	••	••	•••
ACCENT™ 1121	Carboxylic suffonated copolymer	•••	•••	•••	•	••	••	••	•••
ACCENT™ 1123	Carboxylic copolymer	••••	••••	••••	•••	•	•	•	•••
ACCENT™ 1124	Carboxylic nonionic copolymer	•••	•••	•••	•	•	•	••	•••
ACCENT™ 1125	Carboxylic copolymer	••••	••••	••••	••	••	••	••	•••
ACCENT™ 1126	Carboxylic copolymer	••••	••••	••••	•••	••	•••	••	•••
ACCENT™ 1128	Carboxylic copolymer	•••	•••	••••	•••	••	••	••	•••
ACCENT™ 1130	Carboxylic suffonated nonionic terpolymer	••••	•••	•••	••	••	•••	•••	•••
ACCENT™ 1131	Carboxylic suffonated nonionic terpolymer	••••	•••	•••	••	••	•••	•••	•••

Scale inhibitor	Chemical nature	$CaCO_2$ inhibition	$BaSO_4$ inhibition	$CaSO_4$ inhibition	Thermal stability	Squeeze performance	Divalent brine	Methanol compatibility	MEG compatibility
ACCENT™ 1100T	Carboxylic homopolymer	••	•••	•••	•••	•••	•••	•	•••
ACCENT™ 1102T	Carboxylic suffonated copolymer	••••	•••	••••	••	••	••	••	•••
ACCENT™ 1103T	Carboxylic suffonated nonionic terpolymer	••••	•••	•••	••	••	••	•••	•••

VERSENE™ and VERSENEX™ Chelating Agents

Chelating agents are often used to prevent and remediate scale formation. Dow offers a variety of chemistry and activities to meet formulation needs.

Table 7

VERSENE™ Chelating Agents from Dow	Description
VERSENE™ 100	39% aqueous solution of Na_2EDTA Fit for calcium scales and other carbonate and sulfate scales
VERSENE™ Na_2 Crystals	99% NA_2H_2EDTA powder Low impact in pH in formulations. Suitable for use in neutral and mildly acidic formulations Fit for carbonate and sulphate scales
VERSENE™ HEIDA	28% aqueous solution of Na_2HEIDA Biodegradable chelant Fit for calcium scales
VERSENE™ Diammonium	40% aqueous solution of $(NH_4)_2H_2EDTA$ Fit for acidic conditions against carbonate and iron containing scales
VERSENE™ Tetrammonium	38% aqueous solution of $(NH_4)_4EDTA$ Fit for carbonate- and iron-containing scales
VERSENE™ K_4EDTA	45% aqueous solution of K_4EDTA Fit for sulphate scales and particularly fit for high active load in carbonate and sulphate scales
VERSENOL™ 120	41% aqueous solution of Na_3EDTA Fit for iron-containing scales
VERSENEX™ 80	40% aqueous solution of Na_5DTPA Fit for sulphate scales
VERSENEX™ K	40% aqueous solution of K_5DTPA Fit for sulphate scales and particularly efficient for banium and strontium scales

Intermediates and formulation aids

Dow's wide portfolio of products can be used as reactionary intermediates for many finished goods such as corrosion inhibitors, scale inhibitors, pH modifiers, and solubility improvers. Many of these products are also commonly used to assist in the formulation of complex field-ready products.

- Ethylenediamine
- Diethylenetriamine
- Triethylenetetramine
- Aminoethylethanolamine
- Monoethanolamine
- Diethanolamine
- Triethanolamine
- Primene 81R
- Alcohols
- Esters
- Oxo acids
- Glycol ethers - E Series
- Glycol ethers - P Series
- Propropylene Glycols
- ECOSURF™
- TERGITOL™
- TRITON™
- DOWFAX™

Laboratory and analytical expertise

Our lab capabilities highlight our expertise in surfactant formulation, rheology evaluation, chemical analysis, and emulsion stability. For production chemicals, our experienced researchers can assist in recommending the right scale inhibition, demulsifier, and water clarifier formulations to maximize your well productivity.

Examples of our lab testing methods include:

- Surfactant formulation: Techniques such as surface tension, interfacial tension (IFT), and cloud point measurements.
- Scale inhibitor, demulsifier, and water clarifier testing: Bottle testing and dynamic scale loop analysis.

Additionally, the use of state-of-the-art high throughput testing helps to:

- Increase the number of experiments run.
- Allow investigations to be broader and more in-depth.
- Improve data quality (more quantitative and less operator-dependent).
- Increase speed to market.

These methods demonstrate our comprehensive approach to ensuring high-quality results in each area of expertise.



Sustainability

Dow uses science and innovation to develop more sustainable, safer solutions for the world. We look across the life cycle of our products to ensure our innovations continue to improve, creating a world that is better because of our products. Dow's "Delivering Breakthrough Innovations Goal" is focused on increasing the net positive impact of our products, based upon knowledge of where our feedstocks and energy come from, our processes, how our products are used by customers, and how they are treated at end-of-life.

About Dow

Dow (NYSE: DOW) is one of the world's leading materials science companies, serving customers in high-growth markets such as packaging, infrastructure, mobility and consumer applications. Our global breadth, asset integration and scale, focused innovation, leading business positions and commitment to sustainability enable us to achieve profitable growth and help deliver a sustainable future. We operate manufacturing sites in 30 countries and employ approximately 36,000 people. Dow delivered sales of approximately $43 billion in 2024. References to Dow or the Company mean Dow Inc. and its subsidiaries. Learn more about us and our ambition to be the most innovative, customer-centric, inclusive and sustainable materials science company in the world by visiting www.dow.com.

Images: AdobeStock_301874067, dow_85152789347, dow_60011834915

NOTICE: No freedom from infringement of any patent owned by Dow or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where Dow is represented. The claims made may not have been approved for use in all countries. Dow assumes no obligation or liability for the information in this document. References to "Dow" or the "Company" mean the Dow legal entity selling the products to Customer unless otherwise expressly noted. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

®™ Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

© 2025 The Dow Chemical Company. All rights reserved.

2000024567-75850

Form No. 812-01781-01-0225 S2D