

Phase Separation Solutions

DEMTROL™ High-Performance Crude Oil Demulsifier Bases

Exceptional Emulsion Breaking in Oilfield Operations



The Most Cost-Effective Separation Solutions

Breaking emulsions is a critical step in the oil production process for meeting production targets, adhering to commercial crude oil specifications and yielding cleaner produced water for discharge or reinjection. Determining the most effective solution to separating emulsions is one of the most difficult projects a service company faces. Customers can count on DEMTROL[™] crude oil demulsifier, or emulsion breaker bases from Dow to help produce the most cost-effective solutions possible.

Comprehensive Portfolio Combined with Experienced Formulation Expertise

DEMTROL[™] Demulsifiers provide excellent performance in resolving a variety of crude oil emulsions. Combined with Dow's world-class formulation expertise across the globe, we help service companies deliver winning cost-performance solutions.

Dow has a proven track record of high performance built through more than 30 years of field experience in the Eastern and Western Hemispheres and over 100 years of innovation in chemistry. Our formulation expertise, global manufacturing footprint and regional portfolio help provide solutions on time and on location. Several important performance targets are achieved when Dow intermediates are incorporated into a demulsifier package:

- Rapid water drop Quickly reduce water-in-oil to levels of 0.1 to 0.5 percent
- **Clear oil/water interface** Provide sharper interface between the two phases for easier separation
- **Increased crude oil dehydration** Remove more water to get closer to commercial crude oil specifications
- **High performance in heavy oil** Address problems arising from high viscosity
- Superior performance at low temperature Reduce the expense needed to heat oil
- **Cleaner produced water quality** Reduce oil-in-water levels for easier discharge or reinjection of water

A Portfolio Built on Precise Performance

Dow's portfolio of DEMTROL[™] crude oil demulsifier bases includes products across several chemistry types. This growing range of products is known in the industry for consistent product quality. Our experience in alkoxylation enables us to quickly develop tailor-made products based on customer specifications and performance requirements.

Product	Water Dropper ¹	Emulsion Breaking ²	Drying ³	Interface Control⁴	Water Quality⁵	Lower Temperature ⁶
DEMTROL™ 1000 series base	••	••		•••	•••	
DEMTROL™ 2000 series base	••••	••••	••	••	••	••••
DEMTROL™ 3000 series base	••	••••	••••	••		
DEMTROL™ 4000 series base	•••	•••	••	••	••	
DEMTROL™ 6000 series base	••••	••	••	••••		••••

DEMTROL™ Grade Comparisons

¹ Speed of emulsion breaking

² Emulsion residual levels

³ Flocculation process of water extraction from oil phase

⁴ Interface sharpness between oil/water

⁵ Clarity of produced water

⁶ Emulsion-breaking performance at room temperature, no heating

Making It Perfectly Clear with ROMAX[™]

Dow also offers ROMAX[™] water clarifiers and reverse demulsifiers for separating oil from produced water. Our ROMAX[™] portfolio significantly lowers the oil and contaminant content of your injection water so that it can be safely and sustainably discharged into the environment.



Average
•• Above Average
••• Good
•••• Excellent

Formulating for Each Well's Specific Needs

A demulsifier is a complex formulation of solvents and bases designed to meet a well's specific needs. Since DEMTROL[™] crude oil demulsifier bases perform specific functions in these formulations, we recommend the entire DEMTROL kit be used in formulation testing.

DEMTROL[™] Crude Oil Demulsifier Bases

Product	Chemical Class	Solids Content %	RSN ⁽¹⁾
DEMTROL™ 1010 base	Polyol block copolymer	100	12.1
DEMTROL™ 1015E base	Polyol block copolymer	100	12
DEMTROL™ 1020E base	Polyol block copolymer	100	12
DEMTROL™ 1030 base	Polyol block copolymer	100	17.8
DEMTROL™ 1040 base	Polyol block copolymer	100	19
DEMTROL™ 1110E base	Polyol block copolymer	100	9.5
DEMTROL™ 1114L base	Polyol block copolymer	100	10
DEMTROL™ 1115 base	Polyol block copolymer	100	9.8
DEMTROL™ 1130 base	Polyol block copolymer	100	16.4
DEMTROL™ 1135E base	Polyol block copolymer	100	15.5
DEMTROL™ 2020 base	Alkoxylated alkyl phenol formaldehyde resin	80 - 90	12.4
DEMTROL™ 2025 base	Alkoxylated alkyl phenol formaldehyde resin	70 - 80	12.8
DEMTROL™ 2030 base	Alkoxylated alkyl phenol formaldehyde resin	75 - 85	15.2
DEMTROL™ 2045 base	Alkoxylated alkyl phenol formaldehyde resin	60 - 70	15
DEMTROL™ 2130 base	Alkoxylated alkyl phenol formaldehyde resin	70 - 80	10
DEMTROL™ 2140E base	Alkoxylated alkyl phenol formaldehyde resin	60 - 70	12.6
DEMTROL™ 3000 base	Epoxy resin alkoxylate	70 - 80	6
DEMTROL™ 3005 base	Epoxy resin alkoxylate	80 - 90	5.5
DEMTROL™ 3010 base	Epoxy resin alkoxylate	80 - 90	6.3
DEMTROL™ 3020 base	Epoxy resin alkoxylate	80 - 90	7.6
DEMTROL™ 3027 base	Epoxy resin alkoxylate	75 - 85	10
DEMTROL™ 4017 base	Amine-initiated polyol block copolymer	100	13
DEMTROL™ 4026 base	Amine-initiated polyol block copolymer	100	17
DEMTROL™ 4120 base	Amine-initiated polyol block copolymer	100	11
DEMTROL™ 6046 base	Modified silicone polyether	100	8.9
DEMTROL™ 6047 base	Modified silicone polyether	100	8
DEMTROL™ 6055 base	Modified silicone polyether	100	15.6
DEMTROL™ 6233 base	Modified silicone polyether	100	7.9
DEMTROL™ 6235 base	Modified silicone polyether	100	10.3
DEMTROL™ 6237 base	Modified silicone polyether	100	13.1

¹The relative solubility number (RSN) was determined by titrating water in a solution containing 1 g of DEMTROLTM demulsifier and 30 ml toluene (2.6 vol%) and ethylene glycol methyl ether (97.4 vol%). RSN is reported as the volume of water needed to make a solution turbid or cloudy.



A Commitment to Continual Innovation

Operators will continue to face mounting processing challenges. Dow is committed to the success of our customers through continuous innovation and application expertise. Dow continues to invest in the research and development of more efficient demulsifier building blocks, providing innovative polymer solutions for crude oil demulsification and reverse emulsion breaking to address the challenges of today and the future.

Providing Comprehensive Solutions for Market Needs

Dow also offers a suite of separation technology products for all your phase separation needs. Our formulation aid offerings include TERGITOLTM Surfactants, DOWANOLTM Solvents, CARBOWAXTM Polyethylene Glycols, Polypropylene Glycols and much more. To learn more about our products, innovations and technologies or other Dow services, please speak with your local Dow representative or visit www. dowoilandgas.com.

Call for Your Free Test Kit For your free test kit containing 60 ml samples of all DEMTROL[™] demulsifier bases, contact your local representative today.

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A Note About Product Safety

When considering the use of any Dow products in a particular application, you should review the latest Material Safety Data Sheets from Dow and ensure that they are intended for safe use. For other products mentioned in the text, you should obtain the current Material Safety Data Sheet and other available product safety information when reviewing and take necessary steps to ensure safety of use before handling.

No chemical should be used as or in a food, drug, medical device or cosmetic, or in a product or process in which it may contact a food, drug, medical device or cosmetic, until the user has determined the suitability and legality of the use. Since government regulations and use conditions are subject to change, it is the user's responsibility to determine that this information is appropriate and suitable under current, applicable laws and regulations.

Dow requests that the customer read, understand and comply with the information contained in this publication and the current Material Safety Data Sheet(s). The customer should furnish the information in this publication to its employees, contractors and customers, or any other users of the product(s), and request that they do the same.

Note: This guide is designed as a general product overview. Please contact your local Dow representative for up-to-date, detailed technical information including registrations and use limitations and to discuss individual applications or requirements.

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