

SILICONE DEMULSIFIERS

OIL & GAS SOLUTIONS



Formations that were traditionally uneconomical to develop, based on difficulty to produce, are now being targeted based on recent advances in technology.

As a result, the industry must deal with extreme production situations such as heavy or high TAN crudes, oil sands, deep sea fields, and severe sludge. In many of these cases, difficult demulsification problems are encountered due to the nature of the crude and the presence of mineral and organic solids or surfactants.

Momentive Performance Materials Inc.'s **Silbreak™ silicone demulsifier** product line targets crude emulsions that are difficult to break. These products act as boosters for organic demulsifier formulations at low concentrations.

KEY FEATURES AND TYPICAL BENEFITS

- Boosters for organic demulsifier formulations at low concentrations
- Typically active at lower crude temperatures than other organic demulsifiers
- Improved clarity of the separated water
- Increased speed of separation
- Can contribute to a sharper, cleaner interface
- Reduced sludge, water wetting of solids
- Effective in most crudes, particularly heavy
- Easy to handle due to their medium to low viscosities

ENVIRONMENTAL REGULATIONS

The offshore petroleum industries in the North Sea are subject to the **Offshore Chemical Notification Scheme (OCNS)**¹, currently the strictest regulations for offshore chemical usage in the petroleum industry worldwide. The OCNS ranks chemical products proposed for use in the North Sea according to their Hazard Quotient (HQ). It designates products with the lowest HQ as Gold Banded.

Momentive's Silbreak 638 silicone demulsifier is Gold Banded and, therefore, an excellent solution to consider for use in the North Sea. This designation includes the following properties:

- Biodegradable according to OECD 306
- Non-bioaccumulative according to OECD 117 HPLC
- Non-toxic to certain marine organisms²



PRODUCT CONSIDERATIONS

The following table is a summary of Silbreak silicone demulsifier product and usage considerations, based on crude type from internal testing to be used as a guide. We recommend that these products are tested prior to use to determine the best selection due to the variety of crude and plant conditions possible.

GENERAL INSTRUCTIONS FOR USE

Silbreak silicone demulsifiers are intended to act as a booster for a variety of organic demulsifiers based on a variety of crude oil situations. Typically, a blend of 2% - 25% of the product will be added to the initial demulsifiers. In certain cases (such as those requiring very fast speed of separation, low demulsification temperature or very heavy crudes) Silbreak silicone demulsifiers may be used on their own or have an increased usage percentage. Typically, these products are compatible with organic demulsifiers and are soluble in aromatic solvents and alcohols. If diesel or similar are used as solvents, small amounts of compatibilizing alcohols may be needed.

PRODUCT AND USAGE CONSIDERATIONS

Silbreak Silicone Demulsifier	RSN**	Viscosity, cSt	Speed of Separation	Lower Temperature	Lower BS&W	Clean Water, Sharp Interface	Potential Applications and Typical Benefits
Silbreak 321	8.2	2,000	•			•	Heavy crudes. Cleaner water. Effective in combination with polyols.
Silbreak 322	15.3	720		•	•		Heavy, medium paraffinic crudes. Fast separation and cleaner water. Synergies with polyols. Low temperature demulsification with paraffinic crudes.
Silbreak 329	14.9	1,300			•	•	Heavy, medium crudes. Fast separation and cleaner water.
Silbreak 400	7	2,500	•	•	•		Effective in most crudes. Pronounced effect when combined with phenolic resins.
Silbreak 638	9.4	150	•		•		Light, medium crudes. Fast separation. Combines foam control separators and demulsification.
Silbreak 639	17.1	200			•	•	Light, medium crudes. Fast separation in the presence of solids.
Silbreak 987	TBD	1,000		•	•		Blends of paraffinic and asphaltenic crudes. Excellent low temperature demulsifier. Cleaner water.
Silbreak 1840	12	300	•	•		•	Light, medium crudes. May increase speed of separation. Cleaner water.

STEPS FOR TESTING

- 1 Select a Silbreak silicone demulsifier based on the initial organic demulsifier formulation.
- 2 Add the product starting at 2.5% based on weight of organic actives. This will prevent overtreatment (i.e., if the organic demulsifier actives is 40%, the Silbreak silicone demulsifier should be present at 1%).
- 3 Run the bottle tests testing for BS&W in the mixed cut.
- 4 Increase the level of Silbreak silicone demulsifier in increments of 2.5% on the weight of the organic actives and repeat the bottle tests.

1. The OCNS is regulated in the UK by the Department of Energy and Climate Change using scientific and environmental advice from the Centre for Environment, Fisheries & Aquaculture Science (Cefas) and Marine Scotland. In the Netherlands, the OCNS is regulated by the State Supervision of Mines with scientific and environmental advice from Cefas and Netherlands government agencies.

2. Algae (test method ISO/DIS 10253), crustacea (ISO TC 147/SC5/WG2), fish (PARCOM Protocol 1995 part B) and sediment reworker (PARCOM Protocol 1995 part A)

**The RSN (Relative Solubility Number) value was determined experimentally based on the method of J. Wu et al. Colloids and Surfaces A: 232 (2004) 229-237. Typical properties are average data and are not to be used as or to develop specifications.

CONTACT INFORMATION

For product prices, availability, or order placement, contact our customer service by visiting www.momentive.com or emailing commercial.services@momentive.com

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