

DISPERSANTS CATALOGUE

Bringing Value to the Surface™





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PETROSTEP® DISPERSANTS: COMBAT ASPHALTENE AND PARAFFIN BUILD-UP

Stepan Oilfield Solutions has developed a wide range of high-performance chemical solutions to help mitigate asphaltene and paraffin deposits, enabling smooth operating conditions during production.

Asphaltene and long-chain paraffins in crude oil are susceptible to precipitation when environmental conditions change due to pressure and temperature drops, carbon dioxide (CO₂) injection and incompatible production fluids mixing. These events can occur anywhere in the system and, if left untreated, can decrease the efficiency of the oil recovery and transfer system, potentially causing delays or stoppages that result in production loss and added expense.

The PETROSTEP dispersants product line can play a vital role in boosting system reliability and preventing production inefficiency by providing flow assurance solutions that reduce the amount of deposits in wells and flowlines. These specialty surfactants come in oil/water-soluble and oil/water-dispersible forms to suit your preferred treatment method.

For more than 50 years, Stepan has continually refined its dispersant technologies to bring oilfield services companies reliable production chemistries backed by decades of research and on-going technical support.

PETROSTEP® DISPERSANTS PRODUCT LINE

SULFONIC ACIDS AND SALTS

PETROSTEP S-101 and PETROSTEP H-100 are oil-soluble dispersants with moderate wetting, cleaning and degreasing properties. They enhance the solubilization of paraffins and asphaltene colloids to increase flow assurance and reduce contamination in pipelines, downhole tubulars and the surface processing systems.

PETROSTEP D-1 to D-4 are oil-soluble and water-dispersible surfactants that work for both oil and water treatment. They can help prevent paraffins and asphaltenes from settling in pipelines, vessels and fluid interfaces. By helping to remove blockages and prevent future build-up, these partially and fully neutralized acids can bring back or improve operating efficiency and increase production.

PETROSTEP D-5L and D-5S are water-soluble dispersants that have strong wetting, cleaning and degreasing properties to help remove asphaltene or paraffins from water-based workover fluids.



PRODUCT NAME	APPEARANCE	PH	% ACTIVES	SOLUBILITY IN WATER	SOLUBILITY IN XYLENE	GENERAL CHEMISTRY	APPLICATIONS
ALKYL BENZENE SULFONIC ACIDS (NON-NEUTRALIZED)							
PETROSTEP S-101	LIQUID	<1	96	DISPERSIBLE	SOLUBLE	LINEAR	OIL-BASED DISPERSANT INTERMEDIATE, DEMULSIFIER INTERMEDIATE
PETROSTEP H-100	LIQUID	<1	96	DISPERSIBLE	SOLUBLE	BRANCHED	
ALKYL BENZENE SULFONIC ACIDS (NEUTRALIZED WITH AMINES)							
PETROSTEP D-1	LIQUID	3.5	90	DISPERSIBLE	SOLUBLE	LINEAR	OIL-SOLUBLE DISPERSANT FOR WAX, ASPHALTENE AND SOLIDS IN CRUDE OILS; MODERATE WATER WETTER, CLEANER AND DEGREASER
PETROSTEP D-2	LIQUID	3.6	88	DISPERSIBLE	SOLUBLE	BRANCHED	
PETROSTEP D-3	LIQUID	7.13	60	DISPERSIBLE	SOLUBLE	MIXED	
PETROSTEP D-4	LIQUID	3.5-4	90	DISPERSIBLE	SOLUBLE	MIXED	
ALKYL BENZENE SULFONIC ACIDS (NEUTRALIZED WITH SODIUM HYDROXIDE)							
PETROSTEP D-5L	LIQUID	7.5	38	SOLUBLE	DISPERSIBLE	MIXED	WATER-SOLUBLE DISPERSANT FOR WAX, ASPHALTENE AND SOLIDS USED IN WATER-BASED WORKOVER FLUIDS; STRONG WATER WETTER, CLEANER AND DEGREASER
PETROSTEP D-5S	SLURRY	8	55	SOLUBLE	DISPERSIBLE	MIXED	



REDUCE ASPHALTENE DEPOSITS

Asphaltenes are massive organic molecules that are present in most petroleum materials and all heavy oils and oil sands. They are the heaviest component of crude oil and can appear in almost all parts of production, transportation and processing. If asphaltenes precipitate in pipelines or safety equipment, they can cause blockages that can lead to extensive damage and loss of crude oil recovery. Build-up can be caused by:

- CO₂ injection
- Incompatible production fluids mixing
- condensate injection
- pH changes
- pressure drops

In the photos below, Petrostep S-101 displays advantaged asphaltene dispersion in Texas Crudes 1, 2 and 3.

ASPHALTENE DISPERSION TEST RESULTS



TEXAS CRUDE 1

API ~ 30, asphaltene content 15% (C6)



TEXAS CRUDE 2

API ~ 38, asphaltene content 6% (C6)



TEXAS CRUDE 3

API ~ 45, asphaltene content 0.6% (C6)

Testing method: Mix 2% (by volume) crude in n-hexanes, at high speed for 15 seconds; photos taken 30 minutes after mixing.

Treating rate: 0.05% (by volume) of PETROSTEP S-101.

REDUCE PARAFFIN DEPOSITS

Paraffins are waxes made of long-chain, linear or branched alkane compounds that are naturally present in crude oils and some condensates. The longer the carbon chain (> C18), the higher its melting point.

When paraffins start to crystallize in the oil, they increase fluid viscosity and can form deposits on pipeline walls and vessels. If left untreated, they can plug pipelines and production tubing, increase pressure and slow or stop production.

The photos below highlight wax dispersion by Petrostep D-3 in two waxy crudes.

PARAFFIN DISPERSION TEST RESULTS



WAXY CRUDE 1

API ~ 35,
pour point (-15°C)

WAXY CRUDE 2

API ~ 30,
pour point (0°C)

Testing method: Treated and untreated crude oil heated to 60°C for 30 minutes, then placed into a -15°C freezer for 16 hours.

Tubes are then removed from the freezer and inverted to allow the crude oil to coat the bottle walls.

Treating rate: 0.2% (by volume) of PETROSTEP D-3.

**Results may vary based on the crude oil. We highly recommend testing the products with the particular crude oil prior to treatment.*



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STEPAN OILFIELD SOLUTIONS, a market vertical within Stepan Company, is a global leader in oilfield intermediates for both conventional and unconventional oil and gas recovery applications. Our R&D Center of Excellence is located in Houston, with a dedicated team to support the global energy market. Stepan Oilfield Solutions offers components and formulations into the upstream sector, covering drilling, cementing, completions, hydraulic fracturing, production and Improved Oil Recover/Enhanced Oil Recovery (IOR/EOR) technologies. For more information about our products and technologies, visit stepan.com/oilfield or contact your Stepan Oilfield Solutions sales representative.