

LP™ 100

For Crude Oil

Background

LP™ 100 Flow Improver is a part of the Lubrizol Specialty Products, Inc. (LSPI) portfolio of innovative and technologically superior flow improver solutions. This pioneering suspension product provides the answer to crude petroleum pipeline needs.

Characteristics

LP™ 100 Flow Improver is an aqueous suspension. Its robust characteristics make it an optimum drag reducer for many pipeline applications. LP™ 100 Flow Improver can provide greater than 80% drag reduction. This benefit allows companies to strategically reduce pipeline operating costs, increase throughput, decrease pressure or shut down intermediate pump stations.

Benefits

Great performance:

- Greater than 80% drag reduction in a more environmentally friendly formula
- Increases flow rates while maintaining current pipeline pressures
- Maintains flow while reducing pipeline pressures
- Allows shutting down of intermediate pump stations

Superior technology:

- Improves pipeline capacity without capital investment
- Less polymer required to achieve a given performance
- Lower injection rates than other drag reducers
- Faster dissolution rates than other drag reducers
- Reduces internal corrosion rate by up to 40%
- Reduces crude heat loss

LP™ 100 Flow Improver dissolves into flowing product without coating pipeline walls, and increases throughput while reducing internal corrosion rates.

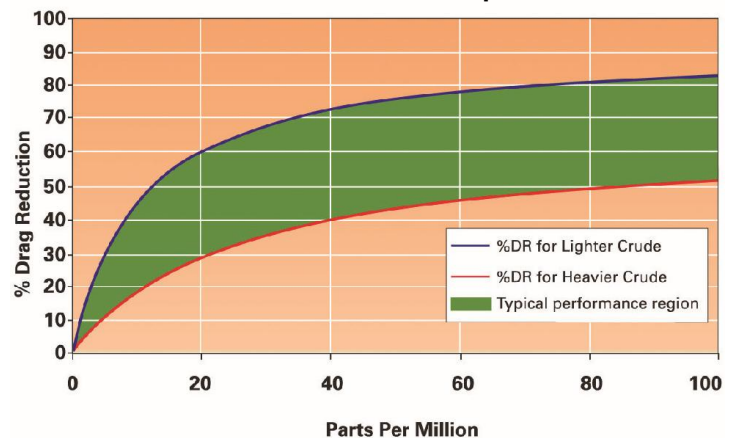
The polymer technology developed by LSPI allows greater amounts of active polymer to be deployed in a fixed amount of product while improving the dissolution dynamics. The polymer of choice shows excellent hydrocarbon affinity and is able to attain elevated levels of drag reduction under varied operating scenarios. It also has the strength to effectively endure shear forces.

Handling

LP™ 100 Flow Improver is easy to handle, store and clean up. LP™ 100 Flow Improver flows easily and does not require nitrogen pressurized storage tanks.

See back page for product properties.

Performance Graph



The performance curve shows the performance range in which LP™ 100 Flow Improver operates, depending on pipeline and crude conditions.

Learn more at www.LubrizolSpecialtyProducts.com

LP™ 100

Product Properties



GENERAL

Application	Light and medium petroleum crude oil
Flow Improver type	Suspension
Carrier	Water

PERFORMANCE

Maximum drag reduction	Greater than 80%
Typical concentration	5 to 50 ppm

TYPICAL PROPERTIES

Color	White
Density	8.0 lbs/gal (0.96 g/cm ³)
Flash Point	Not applicable
Viscosity	350 cP @ 511s ⁻¹ (Non-Newtonian) @ 77°F/25°C
Freezing Point	32°F (0°C)
Boiling Point	212°F (100°C)
Vapor Pressure	0.46 psia (23.8 mm Hg) @ 77°F/25°C

HANDLING

Operating range	32°F to 110°F (0°C to 43.3°C)
Product stability	Stable suspension Intermittent agitation required
Pressure	No nitrogen or pressurized vessels required
Heating	Heating tracing and heating required under freezing conditions Climate control environment available

INJECTION EQUIPMENT

Pumps	Various designs available for different injection range and environments
Range	5 to 2,500 gal/day (20 to 9,500 L/day)
Flow meter	Mass (Coriolis)
Automation	Available

SAFETY AND ENVIRONMENTAL

Reference country specific Safety Data Sheet for local requirements.

Safety & Health (per U.S. OSHA)	Nonflammable. This material is not hazardous under the criteria of the U.S. Federal OSHA Hazard Communication Standard 29 CFR 1910.1200. Low toxicity. Conventional protection equipment
Environmental (per U.S. EPA)	Not classified as hazardous waste

North America, Latin America
Lubrizol Specialty Products, Inc.
2000 W. Sam Houston Pkwy S.
Third Floor, Suite 320
Houston, TX 77042 USA
Tel: +1 713 339 8703
+1 800 897 2774 (USA toll free)

**Europe, Middle East, Africa
and Asia Pacific**
Mediaalaan 50
1800 Vilvoorde (Brussels)
Belgium
Tel: +32 2 263 0520
Fax: +32 2 267 5176

Russia and CIS
Lubrizol Specialty Products, Inc.
Zemlyanoy Val, bld. 9
BC Citydel, 4th floor, office 4003
Moscow, Russia, 105064
Tel: +7 495 9679335
Fax: +7 495 9679373

LSPI
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