

LP™ 100

For Crude Oil

Background

LP™ 100 Flow Improver is a part of the LiquidPower 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.

LP™ 100 Flow Improver dissolves well into flowing crude oils and increases throughput while reducing crude oil heat loss.

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 affinity to many crude oils and is able to attain elevated levels of drag reduction under varied operating scenarios. It also has the strength to effectively endure pipeline 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.

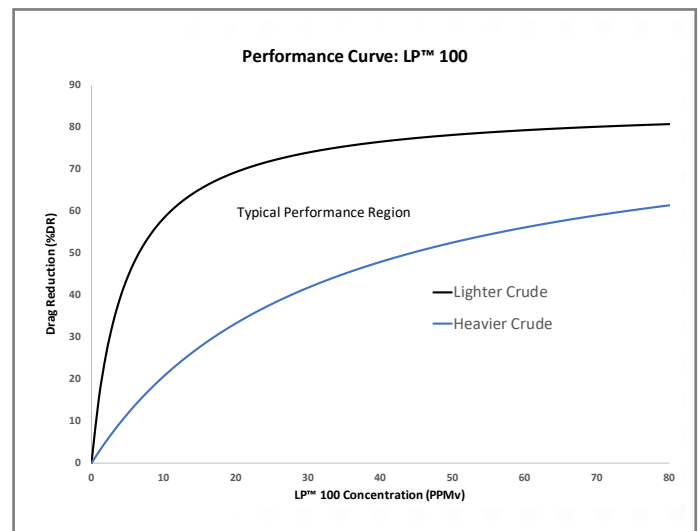
Benefits

Great Performance:

- Greater than 80% drag reduction
- 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 crude oil heat loss



This performance curve demonstrates the range in which LP™ 100 Flow Improver can operate, depending on pipeline and fluid conditions.

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	7.0 – 8.1 lbs/gal (0.84 – 0.97 g/cm ³)
Typical Density	8.09 lbs/gal (0.97 g/cm ³)
Flash Point	Not applicable
Viscosity	50 – 200 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 120 °F (0 °C to 49 °C)
Product Stability	Stable suspension Intermittent agitation required
Pressure and Heating	No nitrogen or pressurized vessels required 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	Standard

SAFETY AND ENVIRONMENTAL

Reference country specific Safety Data Sheet for local requirements

Safety & Health	Nonflammable. This material is not classified as hazardous under the criteria of the U.S. OSHA Hazard Communication Standard 29 CFR 1910.1200.
Environmental	Not classified as an environmental hazard per GHS. Uncontaminated waste product is non-hazardous as defined by U.S. RCRA.

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