

LP Arctic Grade

For Crude Oil in Cold Climates

Background

LP Arctic Grade Improver is part of ConocoPhillips Specialty Products' range of innovative and technologically superior Flow Improver Solutions. As part of the portfolio, LP Arctic Grade Flow Improver has been designed for use in colder environments.

Characteristics

LP Arctic Grade Flow Improver is a non-aqueous based suspension product with freeze protection, allowing for use in temperatures below -40°F (-40°C). Like our other LP Flow Improvers, it can provide greater than 80% drag reduction.

LP Arctic Grade Flow Improver allows companies to strategically reduce pipeline operating costs, increase throughput, decrease pressure or shut down intermediate pump stations.

LP Arctic Grade Flow Improver offers the same advanced polymer technology as other LP Flow Improvers. It dissolves into flowing product without coating pipeline walls, and increases throughput while reducing internal corrosion rates. It allows greater amounts of active polymer to be deployed in a fixed amount of product while improving dissolution dynamics. The polymer of choice offers 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 Arctic Grade Flow Improver is easy to handle, store and clean up. It is environmentally friendly and non-flammable. It flows easily and does not require nitrogen pressurized storage tanks.

Benefits

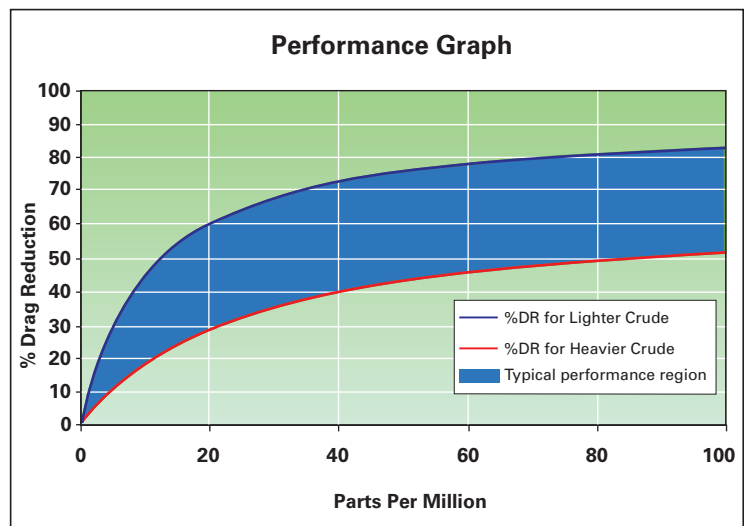
Great performance

- Drag reduction with freeze protection
- Suitable for use in arctic conditions
- 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 internal corrosion rate by 40%
- Reduces crude heat loss

See back page for product properties



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

Contact us at www.LiquidPower.com

PRODUCT PROPERTIES

GENERAL	
Designed for use on	Petroleum Crude Oil in Arctic conditions
Flow Improver type	Suspension
Carrier/Solvent	Primary alkyl alcohol
PERFORMANCE	
Maximum drag reduction	Greater than 80%
Typical concentration	5 to 50 ppm
TYPICAL PROPERTIES	
Color	White
Density	7.3 lbs/gal (0.88 g/cm ³)
Flash Point	>175°F (>79°C)
Viscosity	145 - 150 cP @ 511s ⁻¹ (Non-Newtonian)
Freezing Point	-60°F (-51°C)
Boiling Point	365°F (185°C)
Vapor Pressure	0.02 psi @ 100°F
HANDLING	
Operating range	-40°F to 90°F (-40°C to 32°C)
Product stability	Very stable suspension Intermittent agitation recommended
Heating	Not required
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 (See Material Safety Data Sheet)	
Safety	Low hazard Combustible, non-flammable liquid
Health	Low toxicity. Conventional protection equipment
Environmental	Non-hazardous waste per Environmental Protection Agency (EPA)

The data presented is based on test results and experiences that ConocoPhillips believes reliable and are supplied for information purposes only. ConocoPhillips disclaims any liability, damage or injury that results from the use of the data and nothing contained herein shall constitute a guarantee, warranty or representation (including freedom from patent liability) by ConocoPhillips with respect to the data, the products described or their use for any specific purpose, even if that purpose is known to ConocoPhillips.

North America
Latin America
 P.O. Box 2197
 Houston, TX 77252-2197
 USA
 Tel: +1.832.486.2834
 +1.800.897.2774 (USA Toll Free)
 Fax: +1.832.486.2881

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
 1st Brestskaya str. 29, 8th Floor
 Moscow, Russia 125047
 Tel: +7.095.785.2859
 Fax: +7.095.785.2803