

PRODUCT DATASHEET

RP™ II

For Refined Products

Background

RP™ II Flow Improver is a high-performing product for refined products pipelines within the Lubrizol Specialty Products, Inc. (LSPI) product portfolio. With its improved heat stability, specially designed polymer and superior performance, RP™ II Flow Improver is the answer to many refined products pipeline needs.

Characteristics

RP™ II Flow Improver's rapid dispersion and dissolution characteristics and the high efficiency of its polymer make it the most effective flow improver for refined products to date.

Benefits

Great performance:

- Greater than 80% drag reduction.

Superior Technology:

- Less polymer required to achieve a given performance.
- Lower injection rates than other drag reducers.
- Faster dissolution in cold fuels than other drag reducers.
- Reduces internal corrosion rate by 40%.

Proven compatibility with refined products:

- Nonaqueous base.
- Extensively tested, including ASTM engine testing.

Improved handling:

- Superior handling qualities.

This means less total polymer is required to achieve a given performance in your pipeline. By adding just a few parts per million of RP™ II Flow Improver, more than 80% drag reduction can be achieved. The graph below shows the expected performance of RP™ II Flow Improver in gasoline and diesel.

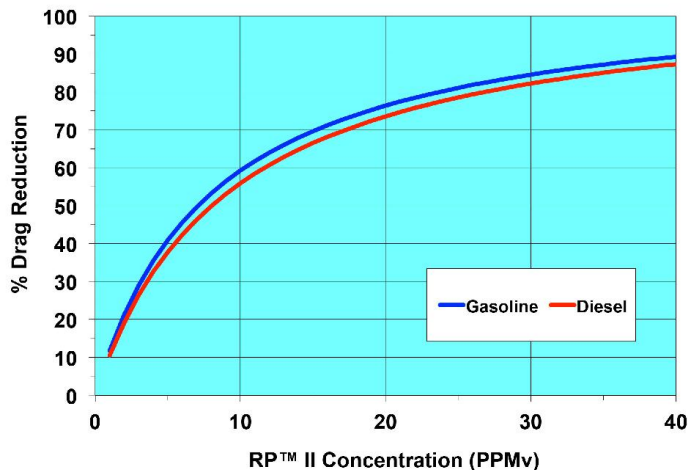
The re-engineered polymer in RP™ II Flow Improver is suspended in a nonaqueous base. It does not contain inorganic components, surfactants or other elements that could be harmful to refined products. Extensive field and ASTM testing have proven that RP™ II Flow Improver has no effect on refined products' quality at the accepted polymer loading level. Reports of tests are available through a LSPI representative.

Handling

RP™ II Flow Improver is easy to handle, store and clean up. Its low viscosity allows it to flow readily.

See back pages for product properties.

RP™ II Performance Graph



RP™ II

Product Properties

GENERAL

| | |
|---------------------|-----------------------------|
| Designed for use on | Refined hydrocarbon liquids |
| 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 | 181°F (83°C) |
| Viscosity | 175 cP @ 511s ⁻¹ (Non-Newtonian) @ 77°F/25°C |
| Freezing Point | <-35°F (<-37°C) |
| Boiling Point | 365°F (185°C) |
| Vapor Pressure | 0.02 psia (1.0 mm Hg) @ 100°F/37.8°C |

HANDLING

| | |
|-------------------|---------------------------------------|
| Operating range | -40°F to 100°F (-40°C to 37.8°C) |
| Product stability | Stable emulsion |
| | Intermittent agitation required |
| Heating | 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.

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|------------------------------------|---|
| Safety & Health (per U.S. OSHA) | Low hazard; Combustible; Nonflammable liquid Low toxicity. Conventional protection equipment |
|------------------------------------|---|

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|---------------------------------|-----------------------------------|
| Environmental (per U.S. EPA) | Not classified as hazardous waste |
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