

## High-Salinity HVFR high-viscosity friction reducer

Improves proppant transport and environmental stewardship



**Temperature:**  
40 to 350 degF [4 to 177 degC]



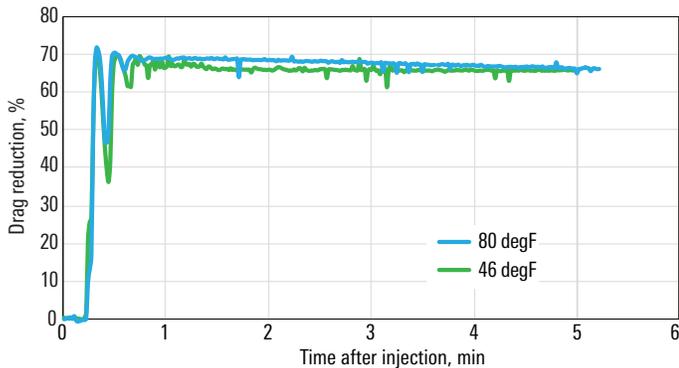
**Mix water:**  
up to 300,000-mg/L total dissolved solids (TDS)

### Applications

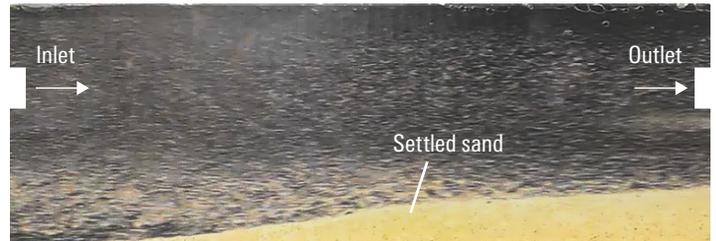
- High-rate hydraulic fracturing operations using freshwater to high-TDS brine and produced water
- Openhole or cased hole completions
- Refracturing operations
- Hydraulic fracturing operations in shale, carbonate, tight sand, and coalbed methane reservoirs
- Producers and injectors

### How it improves wells

- Improves flexibility to design treatments that balance technical, economic, and operational goals
- Simplifies operations using a single product for hybrid friction reduction and high proppant concentration
- Reduces logistics and wellsite footprint
- Conserves freshwater sources and reduces water procurement and disposal-related costs through the recycling of produced or flowback water
- Improves proppant carrying capacity, simplifying operations and reducing screenout risks
- Delivers excellent dispersion and hydration at temperatures as low as 40 degF



Friction reduction of 2-lbm/1,000-galUS high-salinity HVFR in 150,000-mg/L-TDS brine with 15,000-mg/L divalent cations in 3/8-in pipe at 20 kg/min.

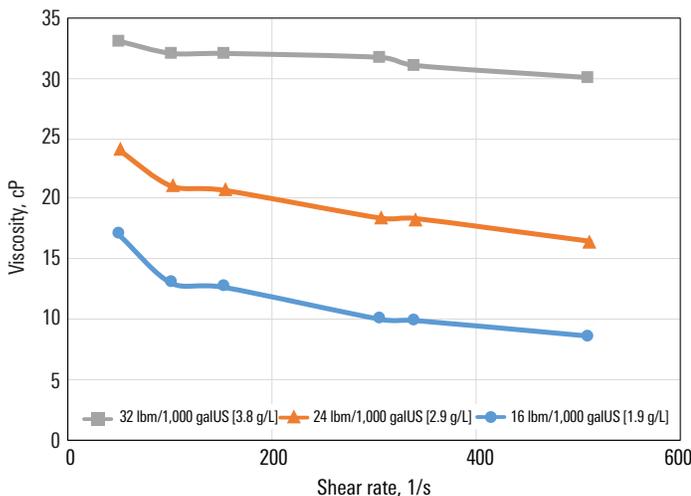


**High-salinity, high-viscosity friction reducer (HVFR)**



**Regular friction reducer with 52% more settled sand**

By delivering viscosity, the high-salinity HVFR improves proppant transport, as demonstrated in dynamic settling tests comparing 16-lbm/1,000-galUS high-salinity HVFR (top) and ordinary friction reducer (bottom) in 150,000-mg/L-TDS brine, carrying 2-ppa 40/70-mesh sand at ambient temperature.



Viscosity of high-salinity HVFR in 150,000-mg/L-TDS brine with 15,000-mg/L divalent cations at ambient temperature.

# High-Salinity HVFR

## How it works

The high-salinity HVFR is a copolymer powder that hydrates rapidly into solution on contact with water at 40 degF or above to enable hydraulic fracturing with any water source, from freshwater to very high-salinity water.

At low concentrations (1 to 3 lbm/1,000 galUS [0.12 to 0.36 g/L]), the high-salinity HVFR can be used as a friction reducer for high-rate slickwater treatments.

At high loadings, the high-salinity HVFR generates higher viscosities than conventional friction reducing agents, improving proppant transport.

## What it replaces

As a replacement for conventional friction reducers and guar-based linear gel fluids, the high-salinity HVFR is more sustainable and improves production performance. It provides cost-effective and simpler operations with a single additive.

### Typical Physical Properties

Appearance	White or off-white powder
Bulk density at 70 degF [21 degC]	5.0 to 7.1 lbm/galUS [0.60 to 0.85 g/mL]
Solubility in water	Soluble and viscous

[slb.com/stimulation](https://slb.com/stimulation)

**Schlumberger**