

# SUNRISE CHEMICALS



## FR-400 CAT

(Friction Reducer)

### **Physical Properties**

Flash Point:	>200 °F (>93.3 °C)
Specific Gravity:	1.03
Solubility:	Water, Brine
Chemical Family:	Synthetic Polymer
Charge:	Cationic
Appearance:	Opaque Liquid
Odor:	Petroleum Distillates

### **Description**

FR-400 is a cationic, friction reducer that is a high molecular weight copolymer; this FR is salt tolerant and engineered to provide premium friction reduction in oil and gas wells specifically. This cationic, friction reducer can be used in freshwater, KCl waters, and water treated with KCl Substitutes. FR-400 yields quickly and will reduce friction pressures at very high flow rates. This unique copolymer can also be used as a thickening agent as well as providing better or equivalent drag reduction as other products.

FR-400 is available in 5 gallon pails and 330-gallon tote tanks.

### **Advantages**

- Functional in all brine types, high levels of TDS as well as high chloride content
- Specifically designed for oil and gas operations
- Salt tolerant friction reducer
- Compatible with fresh water, KCl waters, and water treated with KCl substitutes; especially produced water

### **Mixing/Treatment**

Prior to use, stir the container to ensure best results. Over time the product may settle out in the container. This is normal and does not affect product quality. Simply mechanically agitate to re-disperse. Do not air-stir as the moisture in the air will hydrate the polymer prematurely and a very viscous or semi-solid mass will result.

FR-400 may be used in higher concentration or other types of brines as well; however, compatibility and performance should be confirmed. May be batch mixed or added directly on the fly. Normal use rate to increase aqueous drilling fluid viscosity is 0.5 to 2.5 gpt (0.21 gal/10bbl - 1.05 gal/10bbl). For friction reduction use rate is 0.5-1.0 gpt (0.21 gal/10bbl – 0.42 gal/10bbl).

### **Handling/ Storage**

Store away from heat sparks and open flame. Keep container tightly sealed to prevent evaporation, contamination, and explosion hazards. Use only with adequate ventilation. Promptly remove any spilled material as it is extremely slippery, especially when wet. Rinse spill with copious amounts of water. It can cause eye, skin and respiratory tract irritation by contact. Do not breathe vapors, especially in a confined area. Recommend use of chemical splash goggles and rubber gloves during handling. FR 400 should be stored between 32-95 F and protected from freezing. If freezing occurs the product should be warmed to 32-95 F and mixed well before use. *Refer to Safety Data Sheet (SDS) for more information.*

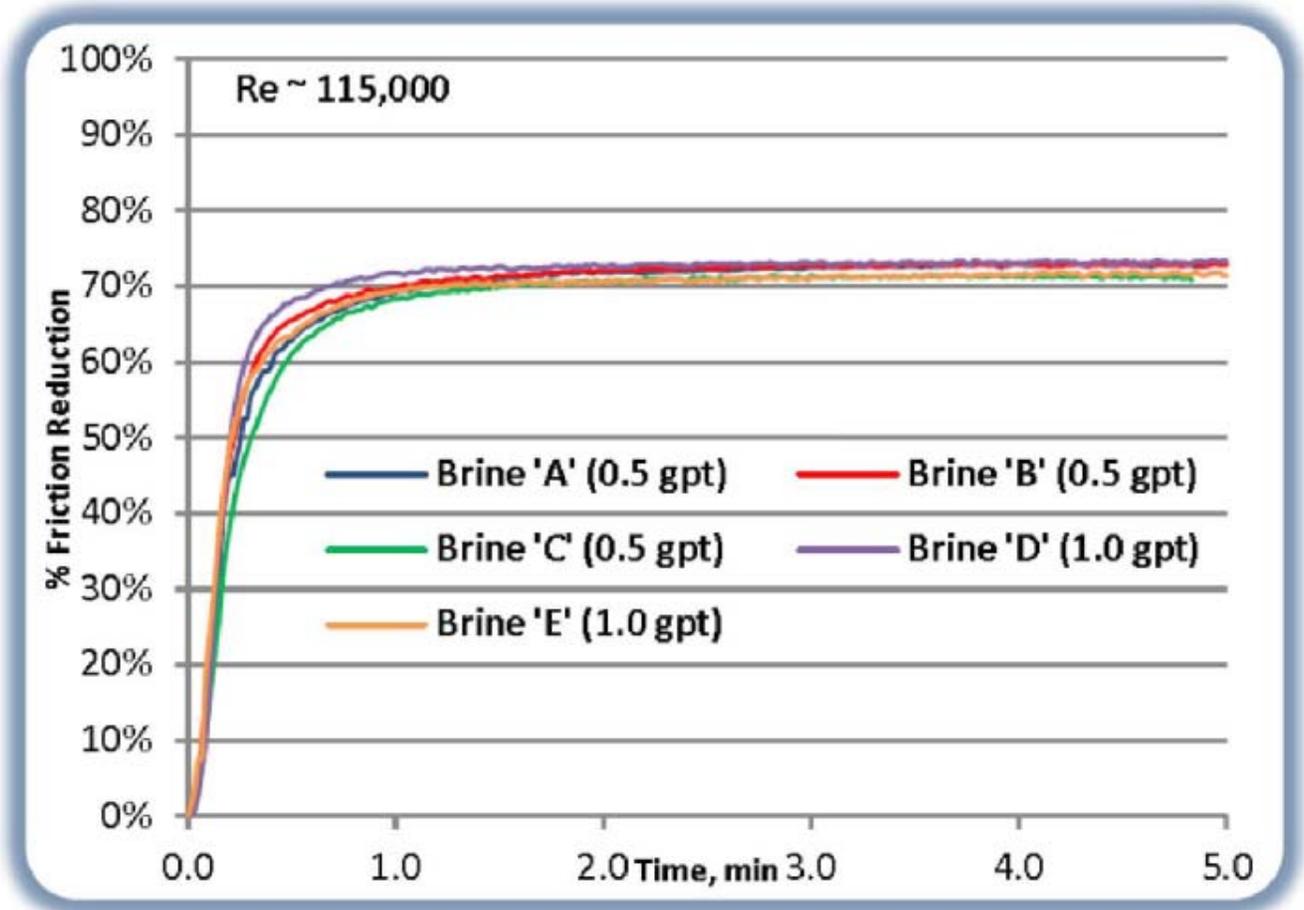
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### Technical Data



Brine	Na <sup>+</sup>	K <sup>+</sup>	Ca <sup>2+</sup>	Mg <sup>2+</sup>	Sr <sup>2+</sup>	Ba <sup>2+</sup>	Cl <sup>-</sup>	HCO <sub>3</sub> <sup>-</sup>	I <sup>-</sup>	Br <sup>-</sup>	Total, mg/L
A	26,625	0	2,200	1,701	0	0	49,482	732	0	0	80,740
B	33,439	0	9,029	0	0	0	67,533	0	0	0	110,000
C	77,250	2,835	11,472	1,735	2,232	2,217	148,858	63	19	2,593	249,274
D	73,609	0	11,600	2,673	0	0	141,606	366	0	0	229,854
E	0	0	100,399	0	0	0	177,601	0	0	0	278,000