



PRODUCT DATA

EnerFrac™ FR-1004 CAT

Cationic Friction Reducer

Description:

EnerFrac™ FR-1004 CAT is the next generation, patent pending cationic friction reducer that is an ultra-high molecular weight, salt tolerant polymer engineered to provide premium friction reduction. It is an ideal polymer for use in acid systems due to compatibility with inhibitors and the high cation content of spent acids. The unique polymer is more effective pound for pound than competitive products, providing better or equivalent drag reduction. This polymer optimization reduces formation damage potential. EnerFrac™ FR-1004 CAT was designed for higher salt and/or return frac fluid systems, providing a more cost effective performance.

Physical Properties:

Water-soluble polymer in emulsion form:	Cationic
Brookfield Viscosity @ 25°C:	1200 cP
Appearance:	Milky white liquid
Specific Gravity @ 25°C:	~1.06
Pour Point:	-15 to -20°F

Features and Benefits:

- Ultra-high molecular weight, optimized charge density, linear cationic co-polymer.
- Near instantaneous and complete inversion provides faster maximum friction reductions performance (min. 85% inversion in < 10 seconds).
- Stabilization package maximizes shelf life up to six months and minimizes storage separation and sedimentation. Any sedimentation is readily dispersed and non-agglomerating.
- Freeze protected to have a low pour point -15°F.
- Optimized for reduced formation damage.
- Polymer design affords more complete break using conventional breakers.
- Environmentally friendly solvent and surfactant package.

Packaging and Handling:

EnerFrac™ FR-1004 CAT is packaged in 275-gal tote bins and bulk tank trucks (approx. 45,000 lbs). Other packaging available upon request.

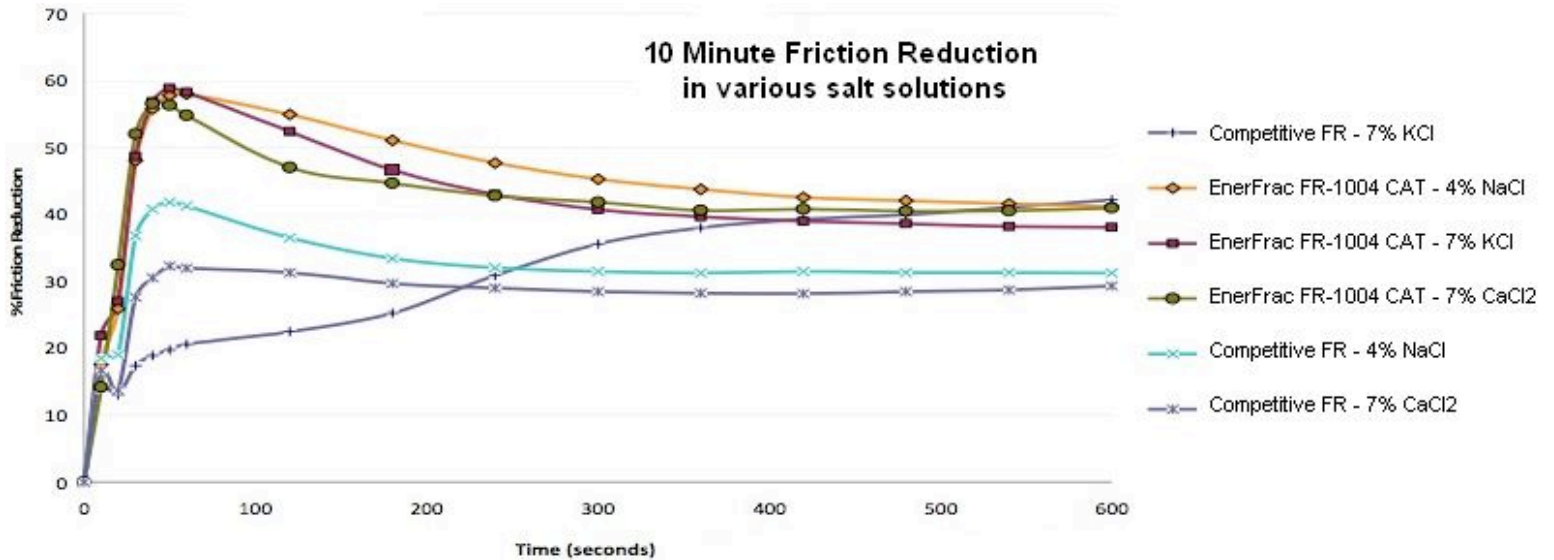
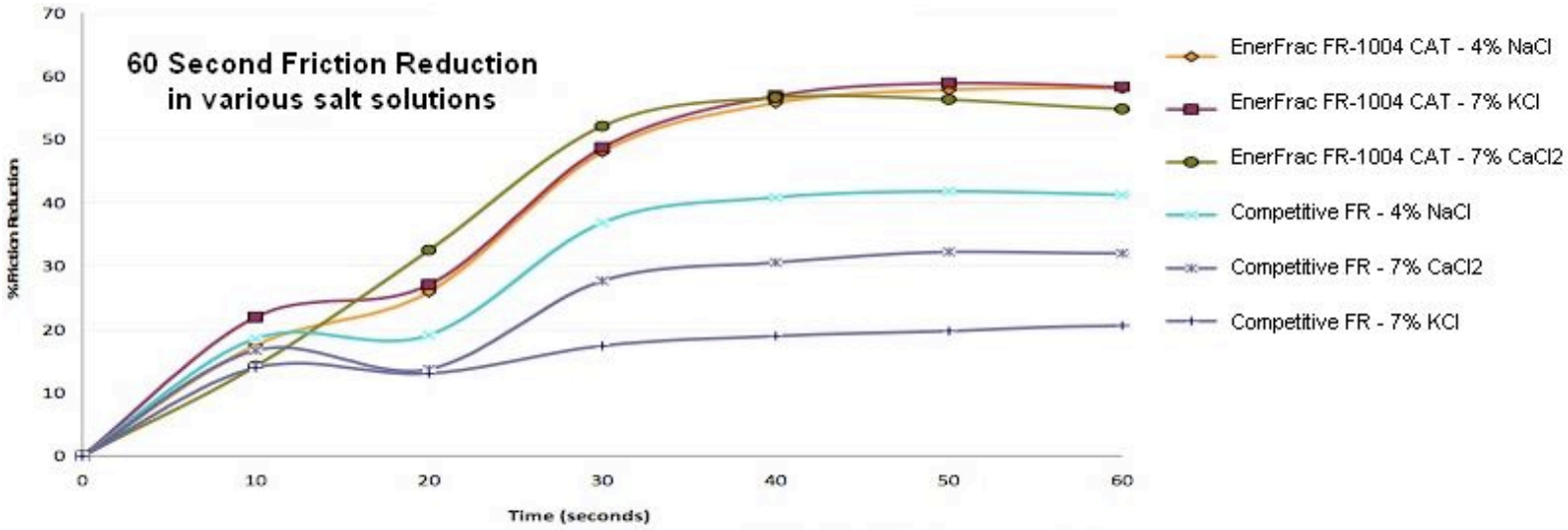
Observe all safety, storage and disposal precautions on the label and in the Material Safety Data Sheet.

1424 S. Hugh Wallis Road | Lafayette, LA 70508 • Tel: 337.291.2778 | Fax: 337.291.2781

Recommendations given in this bulletin are based on tests believed to be reliable. However, the use of the information is beyond the control of Rapid Energy Services, LLC and no guarantee, expressed or implied is made to the results obtained if not used in accordance with directions or established safe practice. The buyer must assume all responsibility, including injury or damage from the misuse of the product as such, or in combination with other materials. This bulletin is not to be taken as a license to operate under or recommendation to infringe any patent.



EnerFrac™ FR-1004 CAT Compared to a Commercial Available Cationic FR In Various High Salt Fluid Systems



1424 S. Hugh Wallis Road | Lafayette, LA 70508 • Tel: 337.291.2778 | Fax: 337.291.2781

Recommendations given in this bulletin are based on tests believed to be reliable. However, the use of the information is beyond the control of Rapid Energy Services, LLC and no guarantee, expressed or implied is made to the results obtained if not used in accordance with directions or established safe practice. The buyer must assume all responsibility, including injury or damage from the misuse of the product as such, or in combination with other materials. This bulletin is not to be taken as a license to operate under or recommendation to infringe any patent.