



PRODUCT DATA

EnerFrac™ LEB

Liquid Enzyme Breaker

Description:

EnerFrac™ LEB is a highly concentrated liquid enzyme breaker. It is used to break water based gels made from any guar or guar derivative including HPG and CMHPG. EnerFrac™ LEB reduces the viscosity of the gel to less than 15 cP, enhancing clean up and frac water return. When used properly, EnerFrac™ LEB can significantly reduce proppant pack permeability damage caused by unbroken gel.

Physical Properties:

| | |
|---------------------------------|---------------------------|
| Form: Liquid | Chemical Family: Protein |
| Color: Colorless to Light Amber | Solubility: Water, Brines |
| Odor: Glycol | Wt. per Gal: 8.5 lbs. |
| Charge: NA | Flash Point: None |

Application:

EnerFrac™ LEB should be added continuously on the fly to prevent premature gel breaks. The desired amount of EnerFrac™ LEB should be diluted with water to a volume which can be metered easily. Recommended use rate is 1 - 2 fluid ounces/Mgal in linear gels and 3 - 4 fluid ounces/Mgal in cross-linked gels. EnerFrac™ LEB has a pH optimum range of 3.5 to 4.5 at 104° F. Effective activity is demonstrated over the range of pH 3.5 to 6.0. Values below 3.5 and above pH 8.0 rapidly deactivate these enzymes. EnerFrac™ LEB has a temperature optimum of 122°F to 140°F at pH 4.5. Temperatures above 140°F rapidly deactivate the enzyme. Temperatures below 122°F at pH 4.5 result in extended stability.

Compatibility:

EnerFrac™ LEB must not be blended with any other additives (except water) prior to use.

Handling and Storage:

EnerFrac™ LEB should be stored in a cool, dry location. Shelf-life is typically 1 - 2 years but can be extended by storing under refrigeration. Keep all containers tightly closed. EnerFrac™ LEB is non-toxic and virtually harmless. It may be irritating if contacted with the eyes. It may irritate the skin of extremely sensitive individuals. Chemical splash goggles and cloth or rubber gloves are recommended when handling EnerFrac™ LEB. Refer to Material Safety Data Sheet (MSDS) for handling and hazard data.

Packaging:

EnerFrac™ LEB is packaged in 1 gallon plastic jugs, 4 gals. per case, 4 jugs per case.

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