

## GB-102

## ENZYME BREAKER

### Description

GB-102 is a high pH stable enzyme breaker. It is the breaker of choice for fluids having a pH of 6.0 or higher. Conventional enzyme breakers exhibit maximum enzyme activity at a pH of 5 and are less than 50% active at pH 7. In contrast, GB-102 has maximum activity at pH 7-8 and greater than 60% activity at pH 10. This makes GB-102 ideally suited for the high pH of borate cross-linked fluids.

### Properties

Form: Liquid	Chemical Family: Protein
Color: Light brown	Solubility: Water, brine
Odor: Fermentation	Wt. per Gal: 9.0 lbs.
Charge: NA	Flash Point: None

### Application

GB-102 has a pH optimum range of 6.0 to 9.0 at 100<sup>0</sup> F (37.8°C). Effective activity is demonstrated over the range of pH 5.0 to 10.5. Values below 5.0 and above pH 10.0 rapidly deactivate the enzyme. GB-102 has a temperature optimum of 110<sup>0</sup>F (43.3°C) to 125<sup>0</sup>F (51.7°C) at pH 8.0. Temperatures above 150<sup>0</sup>F (65.6°C) rapidly deactivate the enzyme. Temperatures below 110<sup>0</sup>F (43.3°C) result in stability. The use rate or dosage of GB-102 will vary according to the application. Polymer type, fluid pH, fluid temperature and the presence of salts (KCl, CaCl<sub>2</sub>, etc...) all affect the amount of breaker required for a particular pump time, break time and/or bottom hole temperature. We recommend running break tests to determine the optimum and most economical dosage of GB-102. The desired amount of GB-102 may be diluted with water to a volume which can be metered easily and added continuously on the fly. Batch mixing GB-102 is not recommended as premature gel breaks may occur.

### Compatibility

GB-102 must not be blended with any other additives (except water) prior to use.

### Handling/Storage

GB-102 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. GB-102 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 impervious gloves are recommended when handling GB-102. Refer to Material Safety Data Sheet (MSDS) for handling and hazard data.

### Packaging

GB-102 is packaged in 1 gallon, 5 gallon, and 55 gallon containers.