

# High Temperature Encapsulated Breaker KHF014

## 1. Introduction

Proppant-pack permeability can be severely damaged by gelling agents such as guar or its derivatives. The amount of damage increases as polymer concentration increases. Breakers are used to reduce the viscosity of the fracturing fluid by degrading the polymer that is concentrated in the proppant pack. KHF014 is the encapsulated version of KHF013, which is used for breaking polymers in fracturing fluids at high temperatures.

## 2. Physical Properties and Hazards

Additives	Form	S.G.	Water Solubility	Health Hazard	Physical Hazard	pH
KHF014	Light yellow granules	1.92-2.12	N/A	Eyes, Skin	Oxidizer	N/A

## 3. Chemical Properties and Application

KHF014 is a particulate material with specific size produced by coating (encapsulating) KHF013 with a water-resistant barrier. Encapsulation of the breaker greatly reduces fracturing fluid exposure to the breaker and enables the use of high concentrations of breaker that, without coating, would rapidly reduce the fluid viscosity. KHF014 cannot leak off and be lost to the formation, KHF014 remains in the fracture where it is needed to degrade concentrated polymers. After the fracturing treatment, release of the breaker occurs as reservoir temperature increase and the fracture closes.

The effective working temperature for KHF014 is in the range of 200-350°F.

KHF014 can be used in most guar and derivative based fracturing fluid systems such as OPTiFrac and EZFrac. It is compatible with most additives used in these systems except for reducers, acids, salts, and other oxidizers, which require extra care to confirm using them together.

## 4. Treatment

As much as 5 times of KHF013 loading (up to 10 lbs/Mgal) can be added into fracturing fluids by using encapsulation technique such as in KHF014.

## 5. Packaging

KHF014 is supplied in 55 lbs plastic-lining bags generally in buckets with net weight of 25 kg/package. Keep it away from extreme conditions such as places wet and humid or direct sunlight.