

## CMHPG Gelling Agent KHF031

### 1. Introduction

Gelling Agent KHF031 is a dispersible carboxymethyl hydroxyl propyl guar (CMHPG) for the use in hydraulic fracturing fluids. Addition of appropriate crosslinker and stabilizer converts it to the corresponding highly viscous gel fracturing fluid for applications at very high temperatures. CMHPG is known to be cleaner than the traditional guar, and yield better conductivity to the proppant pack.

### 2. Physical Properties and Hazards

Additives	Form	S.G.	Water Solubility	Health Hazard	Physical Hazard	pH
KHF031	Light Yellow Powder	1.4-1.6	Soluble	Eyes	Fire, Dust, Water slick	N/D

### 3. Chemical Properties and Application

KHF031 can be used to prepare fluids in batch mixing or on the fly. The fluid application temperature ranges from 80 to 350°F (27 to 177°C). It can be mixed with freshwater and salt water, depending on the application requirement.

Together with crosslinker, activator and the delaying agent, the gelling agent KHF031 provides wide range of delay time and rheological property at all temperature and shear. The pH should be below 6.0 for proper hydration of the polymer. Since normal fracturing water has a pH of above 7.0, it requires pH adjustment during hydration. Polymer Hydration Aid KHF023 is used to adjust the fluid pH for proper hydration of the polymer, and this is more important in the case of CMHPG fracturing fluids. The delay time can vary from 0~6 minutes depending on the amount of type of delay additive used.

The high temperature stabilizer KHF005 can be used to prevent degradation of fracturing fluids at temperatures greater than 200°F (93°C).

### 4. Treatment

The 20-60 lbs/Mgal gel loading is generally required to get enough viscosity to initiate fracture and transport of the proppant in to the fracture. The gel loading is dependent on the formation bottom hole temperature. Typically higher the temperature, higher the gel loading quantity is required to achieve sufficient viscosity.

### 5. Packaging

KHF031 is supplied in plastic-lined bags with net weight of 25 kg/bag or in super bags. It should be stored in shaded areas with good ventilation. Keep it away from high temperature, humidity and direct sunlight.