

SGA Iron Control Agent KMA022B

1. Introduction

The reaction of hydrochloric calcium carbonate is very vigorous and is even faster at very high temperature. This will result in the stimulation of the highest permeable area without stimulating other sections of the productive zone. To get a uniform stimulation of the entire target zone, several methods are employed, and diversion using an in-situ gelled acid is very effective.

In-situ gelled acids generally use a cationic polyacrylamide crosslinked with a trivalent metal ion such as iron. In the acidic medium, the metallic ion will not crosslink with the polymer. When the acid is spent it reacts with CaCO_3 and the pH will go up, resulting in very high viscosity for the fluid. This viscosity will help to divert the newly pumped acid into unstimulated zones and result in the uniform stimulation of the entire pay zone.

The metal crosslinked polyacrylamide is very viscous and needs to be broken down to low viscosity for the well to clean up and produce. The KMA022B added into the formulation at a pH above 5 will chelate with the crosslinked metal resulting in the de-crosslinking and breaking of the gel.

2. Physical Properties and Hazards

Additives	Form	S.G.	Water Solubility	Health Hazard	Physical Hazard	pH
KMA022B	Colorless liquid	1.10-1.15	Soluble	Toxic	Irritant	<1.5

3. Chemical Properties and Application

For the in-situ gelled acid system, KMA022B is mixed with the Cationic polyacrylamide and iron crosslinker solution. The resulting diverting acid is a thin solution. When the acid is spent, and the pH raises around 3, the metal crosslinks with the polymer and results in high viscosity. On further expenditure, at a pH above 5, the Iron Control Agent KMA022B will chelate with iron, and thus de-crosslinks the system resulting in the breakdown and loss of viscosity.

Normally, 15 to 28% HCl is pumped in stages with the in-situ gelled acid system to get a uniformly stimulated well-bore. KMA022B is dispersible in acids. KMA022B is compatible with most additives and acid systems. Lab testing is required when acids other than HCl based are used. Special attention is required for KMA022B design for sour gas (H_2S and CO_2) wells.

4. Treatment

Typical concentration of KMA022B used in the field ranges from 8 to 12 Gal/Mgal.

5. Packaging

KMA022B is supplied in 55 gallons high density polyethylene (HDPE) drums. Keep it away from extreme conditions such as places near flames or direct sunlight.