

Migration Control Agent KCM051B

1. Introduction

The primary function of the fluid migration control additive is to prevent fluid migration, improve cement quality, and avoid fluid channeling, thereby avoiding cementing failures and wellbore instability to ensure the safe and efficient cementing operations of oil and gas wells.

KCM051B is specifically designed for oil well cementing systems to serve as a functional additive for fluid migration prevention. Through a synergistic dual mechanism of physical filling and chemical reactivity, it effectively suppresses annular fluid migration, ensuring cementing quality and the long-term safe production of oil and gas wells.

2. Physical Properties and Hazards

Additives	Form	S.G.	Water Solubility	Melting/Flash Point (°C)	Health Hazard	Physical Hazard	pH
KCM051B	Gray Powder	2.36-2.66	Insoluble	Not Combustible	Eyes, Inhalation	Dust	N/A

3. Chemical Properties and Application

During the cement hydration process, the active SiO_2 in KCM051B undergoes a secondary hydration reaction with the calcium hydroxide generated from cement hydration, producing calcium silicate hydrate (C-S-H) gel. This accelerates the cement hydration process and shortens the transition time.

With an average particle size ranging from 1/100 to 1/1000 of that of cement particles, KCM051B can effectively fill the pores between cement particles, conforming to the principle of close packing particle sizing. Through its "filling and bridging" action, it significantly increases the resistance to fluid invasion and forms a dense, low-permeability filter cake and cement sheath.

KCM051B is compatible with most cement additives and can be used in fresh-water, salt and seawater cement slurries.

4. Treatment

5-15% BWOC concentration is typically enough in designing slurries containing KCM051B. Excessive addition (such as >30%) may significantly alter the rheological properties of the slurry, and the optimized concentration needs to be verified through lab experiments.

5. Packaging

KCM051B is supplied in plastic-lining bags with net weight of 25 kg/sack.

It should be stored in shaded areas with good ventilation. Keep it away from high temperature, humidity, and direct sunlight.