

Depressant KMN011

1. Introduction

Flotation depressant in mining process is a flotation regulator that enhances the hydrophilicity of the mineral surface and destroys or weakens the adsorption of collectors on minerals. Flotation depressants are generally classified into inorganic depressant and organic depressant.

KMN011 is an inorganic zinc salt widely adopted as selective flotation depressant in mineral processing. It serves as a low-cost, eco-friendly flotation reagent to improve concentrate-grade and reduce metal impurity contamination. Besides flotation depression, it also assists cyanide-containing wastewater treatment in gold mines and regulates slurry ion environment in hydrometallurgy processes.

2. Physical Properties and Hazards

Additive	Form	Specific Gravity	Water Solubility	Melting/Flash Point (°C)	Health Hazard	Physical Hazard	pH
KMN011	White Powder	3.2-3.4	Soluble	-	Eyes, Skin, Throat	None	≥4 (50 g/L)

3. Chemical Properties and Application

In alkaline pulp, KMN011 ionizes to release Zn^{2+} , which generates hydrophilic zinc hydroxide film adsorbed on sphalerite surfaces to block collector attachment, enabling selective mineral separation. It dissolves rapidly in ordinary mine water without adverse effect on water quality and maintains stable inhibition at pulp temperatures of 20°C to 90°C.

As a core flotation depressant, it suppresses sphalerite to separate lead/copper minerals, lowers impurity content in concentrates, and can cooperate with sodium silicate to restrain talc gangue. It also complexes cyanide in gold mine wastewater for non-hazardous treatment, adapting to various polymetallic ore flotation and mine water treatment systems.

4. Treatment

Slowly add KMN011 into circulating clean water under continuous stirring to prepare uniform aqueous solution, common preparation concentration ranges from 5 wt.% to 10 wt.%.

For Pb-Zn ore flotation: 500–3000 g per ton raw ore.

For complex Cu-Pb-Zn ore flotation: 800–4000 g per ton raw ore.

Optimal Lab compatibility and field trials are required to optimize KMN011 concentration based on ore composition, particle size distribution, pulp pH and concentrates quality requirement.

5. Packaging

KMN011 is supplied in triple plastic-lining bags with net weight of 55 lbs/sack.

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