



Potassium Fluoborate

Potassium Fluoborate (KBF₄) is a white crystalline salt material. It is offered in granular and fine powder. KBF₄ is a key ingredient in grain refining salts for aluminum, and can be used separately or combined with Potassium Titanium Fluoride (K₂TiF₆) to form a grain refining flux. Titanium and other elements to form TiB₂ and other borides, that act as grain nucleating agents, providing a cast structure of fine grain. Grain refiners improve mechanical properties and prevent cracking in aluminum castings.

KBF₄ is also used as a cleansing flux for nonferrous metals like aluminum and magnesium. In the molten state on the surface of molten metal it will absorb oxides and other surface debris. Once absorbed the oxide can be removed out of the furnace by surface skimming. It can also be combined with other salts to form fluxes. The fluorine content from the KBF₄ increases fluidity of any molten flux. In addition, it is used as an atmospheric barrier over molten magnesium providing an inert cover, preventing rapid oxidation of the molten magnesium. KBF₄ can also be used as an ingredient in welding, brazing, and soldering fluxes.

KBF₄ is used as a binder/filler in abrasive products. It has a melt point that is ideal for use in grinding wheels and other abrasives where baking of the product is involved. In the semi-solid state it, in effect, glues the various grits together providing a matrix for the particle.

KBF₄ is a key ingredient in "Boronizing" steel. This hard-faced steel is used in applications in which wear resistance is important, such as in oil and gas fields, drilling equipment, and more.

KBF₄ is a common ingredient in refractories that are pressed or formed into complex shapes for the nonferrous casting industry. These shapes include spouts, baffles, and other parts used in foundries.

Physical Chemical Properties	
Molecular Weight	125.91
Molar Volume	49.4 cm ³
Density	2.50-2.55 grams/cm ³
Melting Point	530°C
Decomposition	Decomposes starting slowly at approximately 615°C; at 700° to KF & BF ³ (gaseous)
Decomposition Pressure: (510-930°C)	Log Pmm = .6317/T+8.15
Heat of Decomposition	28900 cal/mole
Appearance	White, fine granular, free flowing crystals
Crystal structure	a) at 20°C, 4.5 gms per liter of water b) at 100°C, 62.7 gms per liter of water c) at 20°C, 14 mg per 1000 ml of ethyl alcohol
Flammability	Nonflammable
Reactivity	Does not react with air and moisture at normal temperature. Contact with acids or acid fumes may liberate hydrogen fluoride.



Potassium Fluoborate (cont.)

Specifications	
KBF ₄	98.0% min.
B	8.4% min.
K ₂ SiF ₆	0.50%max
Sodium	0.10%max.
Other Each	0.01%max.
Loss on ignition	0.5%max.
Particle size	(U.S. Standard)

Toxicity
Comparable with other inorganic fluorides. Effects of over exposure include skin, eye and mucous membrane irritation. Ingestion may cause vomiting and abdominal pain with potential for other complications. MSDS sheet available upon request.

Standard Forms	
Granular Powders	
+60 Mesh	10% max.
-200 Mesh	45% max.
Pulverized	
-200 mesh	85% max.

Packaging	
Department of Transportation fiber drums.	
Granular	400lbs per drum
	2000lbs super sack
Pulverized	400lbs per drum