

## Typical Alkaline Materials (Bases) for Neutralization of HF

Alkaline Material	Common Names	Form Available	Hazards and Reaction	Lb. / Lb. 100% HF	Salt Properties
Sodium Hydroxide (NaOH)	Caustic Soda	100% Solid Beads or Flake <50% Solution	Dot Class 8 (Corrosive) Very High Heat of Dilution & Neutralization*	4.0 lb. / lb. 100% HF	Sodium Fluoride (NaF) DOT Class 6 (Poison) Sol. in Water = 4.0%
Potassium Hydroxide (KOH)	Caustic Potash	85% Solid Beads or Flake <45% Solution	Dot Class 8 (Corrosive) Very High Heat of Dilution & Neutralization*	6.23 lb. / lb. 100% HF	Potassium Fluoride (KF) DOT Class 6 (Poison) Sol. in Water >40%
Sodium Carbonate (Na <sub>2</sub> CO <sub>3</sub> )	Soda Ash	Dry Powder	Rapid Evolution of Carbon Dioxide Gas (CO <sub>2</sub> )	2.85 lb. / lb. 100% HF	Sodium Fluoride (NaF) DOT Class 6 (Poison) Sol. in Water = 4.0%
Sodium Bicarbonate (NaHCO <sub>3</sub> )	Bicarb Baking Soda	Dry Powder	Rapid Evolution of Carbon Dioxide Gas (CO <sub>2</sub> )	4.20 lb. / lb. 100% HF	Sodium Fluoride (NaF) DOT Class 6 (Poison) Sol. in Water = 4.0%
Calcium Carbonate (CaCO <sub>3</sub> )	Limestone	Pebbles	Slow Reaction Slow Evolution of Carbon Dioxide Gas (CO <sub>2</sub> ) Pebble Surface Can Become Passivated	2.69 lb. / lb. 100% HF	Calcium Fluoride (CaF <sub>2</sub> ) Non-hazardous Sol. In Water = 0.004%
Calcium Oxide (CaO)	Quicklime	Dry Powder	DOT Class 8 (Corrosive) Very High Heat of Hydration & Neutralization*	1.46 lb. / lb. 100% HF	Calcium Fluoride (CaF <sub>2</sub> ) Non-hazardous Sol. In Water = 0.004%
Calcium Hydroxide [Ca(OH) <sub>2</sub> ]	Hydrated Lime	Dry Powder Slurry in Water	High Heat of Neutralization* Slippery When Wet	2.01 lb. / lb. 100% HF	Calcium Fluoride (CaF <sub>2</sub> ) Non-hazardous Sol. In Water = 0.004%

\* NOTE: To better control heat of neutralization, the HF spill and neutralizing base should be diluted as much as practical, considering the need to control all effluents.

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