ARMAND PRODUCTS COMPANY

Potassium Bicarbonate Handbook

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Facts, Applications & Opportunities

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I. About Armand Products Company

Armand Products Company is the world's largest producer of potassium carbonate and the only U. S. producer of potassium bicarbonate. Established in 1986, Armand Products is a joint venture of Occidental Chemical Corporation and Church & Dwight Co., Inc. Our two modern ISO 9002-certified production facilities in Muscle Shoals, Alabama, operate 24 hours a day, 365 days a year, with the capacity to produce 108,000 tons of potassium carbonate and 5,000 tons of potassium bicarbonate annually. Through active research and development efforts, we seek to continuously improve product performance and anticipate the needs of our customers.

II. The Potassium Bicarbonate Manufacturing Process

Potassium bicarbonate is produced by reacting potassium carbonate with carbon dioxide, then recrystalizing it. All equipment used from production to packaging is dedicated solely to potassium bicarbonate.

Pure potassium carbonate itself is produced from potassium hydroxide, also manufactured right at our ISO-certified Muscle Shoals facility. This control of all aspects of the manufacturing chain helps to achieve the highest possible standards of purity, while conforming to the Good Manufacturing Practices set forth by the FDA.

III. General Properties of Potassium Bicarbonate

Potassium bicarbonate is a GRAS food ingredient. It is an odorless, noncombustible, white crystalline powder. It is stable under normal conditions. Potassium bicarbonate contains no toxic chemicals and is not listed as a carcinogen or potential carcinogen. For an MSDS or additional product and safety information call Technical Service.

Empirical formulate	$KHCO_3$
CAS number	298-14-6
Appearance	White granular powder
Taste	Slightly salty
Molecular weight	100.12
Solubility in alcohol	Insoluble
Alkali equivalent	1 lb. $KHCO_2$ = 0.471 lb. K_2O
Acid equivalent	1 lb. $KHCO_2$ = 0.365 lb. HCl
Carbon dioxide equivalent	1 lb. $KHCO_2$ = 0.440 lb. CO_3
pH, 1% solution at 77º F	Approximately 8.2
Technical Grade Flow Agent	MgO less than 0.99%

Solubility in Water	
32°F (0°C)	17% by weight
68°F (20°C)	23% by weight
104°F (40°C)	30% by weight
140°F (60°C)	37% by weight
Thermal Decomposition	Decomposes without melting into K_2CO_3, H_2O, and CO_2

USP Grade - potassium bicarbonate meets both the U.S. Pharmacopoeia and FDA chemical standards for use in drug products.

50 lb. bag
300 lb. drum

ACS Grade - potassium bicarbonate meets the chemical requirements set by the American Chemical Society for reagent quality chemicals.

100 lb. drum
300 lb. drum

Technical Grade - potassium bicarbonate is designed to meet the requirements of technical grade applications with a flow aid. The flow aid, magnesium oxide, absorbs moisture leaving the potassium bicarbonate free-flowing. If a food grade flow aid is required contact Technical Service.

50 lb. bag-in-a-box
300 lb. drum
2000 lb. bulk bag

Packaging requirements visit our website
(http://www.armandproducts.com)
or contact Technical Service.

V. Functionality...

Discover the Versatility of Potassium Bicarbonate

- Classified by the FDA as a food ingredient “generally recognized as safe” (GRAS)
- A strong buffer with mild alkalinity
- Less caustic than carbonates and hydroxides
- Gentle reactivity for controlled neutralization
- Thermal stability up to 350º F
- Water soluble
- Dissolves quickly
- A convenient source of carbon dioxide in baking applications
- A corrosion inhibitor
- A convenient source of potassium

VI. End Uses

Fire Extinguisher Ingredient

- Dry powder fire extinguishers
- Efficient fire extinguishing agent for Class B (flammable liquids and gases) and Class C (electrical) type fires
- Automatic release systems for fire prevention
- Airfield, petrochemical, naval and other commercial applications
- Scavenger of acidic fire by-products

Agriculture – Soils

- The absorption of potassium by soils is enhanced by the bicarbonate
- Reduces the loss of cations in acidic or neutral soils and increases the action of phosphate fertilizers
- Corrects soil pH, reduces acidity

Agriculture Fertilizer – Crops

- For crops where the use of KCl is detrimental
- Potatoes – larger protein and starch yield
- Tobacco – reduces leaf size but improves color and burn properties
- Alfalfa – Speed drying process of cut crop or decrease drying time of cut crop

Feed

- When used as a nutritional supplement, potassium bicarbonate is reported to give increased feed consumption and weight gain in livestock

Catalyst

- Polymerization of synthetic fibers
- Dehydrogenation of olefins

Pharmaceuticals and Foods

- Used as an antacid, electrolyte replenisher and potassium supplement
- An excipient
- Used in foods as a leavening agent, pH control agent, and a nutrient supplement (e.g., infant formulations)
- A processing aid in extruded foods
- Foaming and fizzing agent in instant beverages
- Serves as a color preservative in foods

Other Possible Uses

- Impregnated paper or cellulose can be used as a filter to remove HCN and other acidic gases from tobacco smoke
- Household odor remover
- An accelerator in fast setting cements
- Used in aqueous resin-based coatings and adhesives
- High-temperature polymer blowing agent
- Detergent builder
- Deicer
- Hair and skin products

Q&A

How can I get a product sample or place an order?

Simply call Customer Service and we will be happy to send you a sample for evaluation or take your order. Please specify ACS, USP or Technical Grade.

Are there experienced people with whom I can dicuss specifications, packaging, end uses, safety and other technical requirements over the phone?

Yes, contact a Technical Service representative.

Armand Products Company
469 North Harrison Street
Princeton, NJ 08543-5297

Customer Service	1-800-522-0540
Technical Service	1-716-278-7071
Marketing	1-609-683-7090

Legal caveat:

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