

Product Stewardship Summary Potassium Carbonate

Summary

Potassium carbonate serves a wide range of end use markets. The potassium carbonate market is quite diverse since it is utilized in numerous applications. The functionality characteristics of this chemical allow it to be used in major area such as specialty glass, ceramics, potassium silicate, pharmaceuticals, food, detergents and cleaners, photographic chemicals, agricultural, gas purification, rubber additives, polymer catalysts, potassium bicarbonate, cement, and textiles.

Armand Products produces potassium carbonate in granular and liquid form. Armand Products' anhydrous potassium carbonate is white, dustless, dense, free-flowing granular product. Several grades of dry potassium carbonate that differ in their typical granulation ranges are available. In addition, a water solution in the form of a 47% solution is typically provided.

1. Chemical Identity

Name: Potassium Carbonate

Synonyms: Potash; PotCarb; Pearlash

Chemical Abstracts Service (CAS) number: 584-08-7

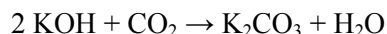
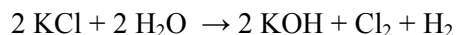
Chemical Formula: K_2CO_3

Molecular Weight: 138.20

2. Production

Armand Products' potassium carbonate is manufactured in a fluidized bed reactor. This results in a product that is anhydrous, making it unnecessary to perform any further processing to eliminate hydrated water (calcining). The process starts with potassium chloride and through an electrolytic conversion of the KCl salt, potassium hydroxide (caustic potash, KOH), chlorine (Cl_2) and hydrogen (H_2) are produced. The hydrogen is a fuel source while the chlorine has numerous important and varied applications. Liquid caustic potash and carbon dioxide are the only raw materials required for producing potassium carbonate. The dry potassium carbonate can easily be dissolved in water to form a liquid solution. Typically, a 47% solution is recommended as this capitalizes on the highest concentration with the lowest freezing point (3°F). This minimizes handling problems during colder weather.

The reactions are:



3. Uses

Some of the principal products or processes in which potassium carbonate is used are:

- Glass and Ceramics
- Inorganic chemicals
- Potassium silicate
- Dehydrating agents
- Corrosion inhibitors
- Fertilizers
- Catalysts
- Cleaners
- Drugs
- Dyes and Pigments
- Dutching of Chocolate
- Electronics
- Cleaners
- Pesticides
- Photography
- Textiles
- Gas Purification

4. Physical and Chemical Properties

Hazardous Decomposition Products:

Contact with acids and involvement in a fire can cause formation of carbon dioxide. Thermal decomposition may also form potassium oxide.

Incompatibilities:

Potassium carbonate is incompatible with acids, magnesium and prolonged contact with aluminum, brass, copper, lead, tin, zinc or other alkali sensitive metals or alloys.

5. Health Effects

- Potassium carbonate can be irritating to the skin and to a severe degree if in contact with the eyes. Tissue destruction may follow if not properly treated.
- Inhalation of airborne concentrations of dust, mist or spray may cause damage to the upper respiratory tract and even to the lung tissue which could result in chemical pneumonia, depending upon the severity of exposure.
- Ingestion may cause irritation to the mucous membranes of the mouth, throat, esophagus and stomach, with severity dependant on the quantity involved.
- There are no known chronic effects associated with potassium carbonate.

Potassium carbonate is not classified as a carcinogen by the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC), or the Occupational Safety and Health Administration (OSHA).

6. Environmental Effects

Potassium carbonate may increase the pH of waterways and adversely affect aquatic life. It does not accumulate up the food chain.

7. Exposure

Potassium carbonate is corrosive to the skin and eyes. The most likely ways exposures could occur are:

- Worker exposure – Exposure could occur in the manufacturing facility or in industrial facilities that use potassium carbonate. When exposures occur, they are typically skin or eye exposures. Good industrial hygiene practices and personal protective equipment minimize the risk of exposure.

- Consumer exposure – Occidental Chemical Corporation does not sell potassium carbonate in retail stores, although it may be an ingredient in some consumer products.
- Releases – If a spill occurs, emergency personnel should wear protective equipment to minimize exposures.

8. Recommended Risk Management Measures

Potassium carbonate is non-flammable, non-explosive, and non-toxic. It is, however, an alkaline material and poses hazards to the skin and eyes. Potassium carbonate can react with certain materials of construction. Prior to using potassium carbonate, carefully read and comprehend the Material Safety Data Sheet. The following items represent some risk management measures that are effective against these hazards:

- Provide eyewash fountains and safety showers in areas where potassium carbonate is used or handled. Any potassium carbonate burn may be serious. Flush areas that have come in contact with potassium carbonate with large amounts of water, and then seek medical attention. DO NOT use any kind of neutralizing solution, particularly in the eyes, without direction by a physician.
- To prevent eye contact, protective eye wear (such as splash goggles, a full face shield, or safety glasses with side shields) must be worn.
- Work areas where potassium carbonate is used should be well ventilated. If workers experience respiratory discomfort, use a NIOSH approved air-purifying respirator with high efficiency dust and mist filters.
- Wear chemical resistant clothing to prevent contact with the body. Impregnated vinyl or rubber suits are recommended.
- Wear rubber gloves to protect the hands while using potassium carbonate. Gloves should be long enough to come well above the wrist, and sleeves should be positioned over the glove wrists.
- Wear rubber boots. Wear the bottoms of trouser legs outside the boots. DO NOT tuck in.
- Residues that dry on equipment can cause irritation. Keep equipment clean by washing off any accumulation.
- Proper labeling, handling and storage of potassium carbonate will reduce the likelihood of accidental ingestion.
- Equipment used for potassium carbonate storage or processing should be constructed of the proper materials. For example, iron, steel, stainless steel, rubber lined steel or phenolic lined steel is recommended. If heated to 120°F, the potential for iron contamination exists. Polyethylene drums can be used for liquid storage and handling at ambient temperatures. Aluminum, zinc, brass, bronze, and copper are **NOT** recommended due to the potential for a reaction. For more detailed information regarding materials of construction, refer to the Armand Potassium Carbonate Handbook.
- The packing glands of pumps used in potassium carbonate service should be shielded to prevent spraying in the event of a leak.
- A safety shield of wrap-around polypropylene is recommended for all flanged joints. This will protect personnel against spraying in case a gasket leaks.

- Personnel involved with potassium carbonate handling operations should be properly trained. For detailed recommendations regarding personnel involved in unloading potassium carbonate, refer to the Armand Product Handbook for potassium carbonate.

9. Product Stewardship Programs

A product handbook is available for potassium carbonate. The handbook includes extensive physical property and technical data regarding the product as well as more detailed information about the manufacturing process and product uses. In addition, specific information for storing, unloading, preparing and using potassium carbonate safely is provided, including data on materials of construction and equipment recommendations.

10. Regulatory Compliance Information

The following is a summary of regulations and guidelines that may pertain to potassium carbonate (additional regulations and guidelines may apply):

- Possible Resource Conservation and Recovery Act (hazardous waste) Codes: D002
- Potassium carbonate used as a general-purpose food additive in animal drugs, feeds, and related products is generally recognized as safe when used in accordance with good manufacturing or feeding practice by the Food and Drug Administration.
- Potassium carbonate is not regulated by the U.S. Department of Transportation.
- There are no established exposure levels for potassium carbonate; however, Armand Products has established an Internal Occupational Exposure Level of 2 mg/m³ (total dust).

11. Sources for Additional Information

- Hazardous Substances Data Bank (HSDB), HSDB Number 1262, Last revision date: August 09, 2001.
- Armand Product Handbook web site: <http://www.armandproducts.com/Potassiumcarb.asp>
- Armand Product Material Safety Data Sheet web site: : <http://www.armandproducts.com>, under 'Quick links' section.
- Registry of Toxic Effects of Chemical Substances, RTECS Number TS7750000, Review Date: February 2006.

12. Contact Information: For additional information, call 1-800-752-5151 or 1-972-404-3700.

13. Preparation Date: 12/12/2008

This Product Stewardship Summary is intended to give general information about the product discussed above. It is not intended to provide an in-depth discussion of all health and safety information about the product or to replace any required regulatory communications.

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