Occidental Chemical Corporation
A subsidiary of Occidental Petroleum Corporation

Product Stewardship Summary
Sodium Metasilicate

Summary

Sodium metasilicates are primarily used in cleaning compounds.

1. Chemical Identity

Name: Sodium Metasilicate
Chemical Abstracts Service (CAS) number: 6834-92-0

2. Production

Sodium metasilicate is made by adding caustic soda to liquid sodium silicate to obtain an equal molar ratio of sodium oxide (Na_2O) to silicon dioxide (SiO_2). The resulting metasilicate liquor is then cooled to crystallize the pentahydrate product or passed through a dryer to remove water and yield the anhydrous product. OxyChem is a leading manufacturer of sodium metasilicates.

3. Uses

Sodium metasilicates are used directly in a wide variety of cleaning applications and as builders in many soap formulations. When added to soap, metasilicates considerably enhance detergent action over soap alone.

4. Physical and Chemical Properties

Sodium metasilicates are white, free-flowing, granular products that feel slippery to the touch when wet. These products do not have a distinguishing odor. Sodium metasilicates are stable at normal temperatures and pressures and are not combustible. Spills of sodium metasilicate can be very slippery when wet.

5. Health Effects

Sodium metasilicates are alkaline, meaning they have high pH. The pH typically ranges from 12.4 to 12.7. This property makes sodium metasilicate irritating to the skin, mucous membranes and eyes.

Contact with the eyes can cause severe irritation, pain, and corneal burns possibly leading to blindness. Direct contact with the skin may cause irritation. Inhaling dusts of sodium metasilicates may result in irritation of the respiratory tract with symptoms such as coughing, choking and pain. Ingesting sodium metasilicate is unlikely; however, if ingested, it may cause pain and burns of the esophagus and gastrointestinal tract with vomiting, nausea, and diarrhea.

There are no known chronic hazards associated with sodium metasilicates. They are not classified as carcinogens 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

If released to water, sodium metasilicate will initially sink, then mix with water. Because sodium metasilicates have a high pH, they can be acutely toxic. Sodium metasilicates have exhibited moderate toxicity to aquatic organisms and slight toxicity to terrestrials organisms. The diluted material will decompose to become silica that is no different that natural dissolved silica. Silica does not bioconcentrate up the food chain.

7. Exposure

Sodium metasilicate 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 sodium metasilicates. When exposures occur, they are typically skin or eye exposures. Good industrial hygiene practices and personal protective equipment will minimize the risk of exposure.
- Consumer exposure – OxyChem does not sell sodium metasilicate 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

Sodium metasilicates are non-flammable, non-explosive, and non-toxic. They are, however, alkaline materials and pose hazards to the skin and eyes. The physiological effects of contact range from causing irritation to causing chemical burns.

Sodium metasilicate should be handled with care. If there is any risk of eye contact, goggles should be worn. It is also recommended that appropriate protective clothing and gloves be worn to prevent metasilicate solutions from coming into contact with the skin.

Prior to using any sodium metasilicate product, carefully read and comprehend the Material Safety Data Sheet for the product being used.

9. Product Stewardship Programs

A product handbook prepared by OxyChem is available for sodium silicate products including sodium metasilicate. The handbook includes technical data regarding the products as well as more detailed information about the manufacturing process and product uses. In addition, specific information for unloading tank cars, tank trucks, and handling drums of material is provided. Other topics include recommendations on storage and equipment.

10. Regulatory Compliance Information

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

- Sodium metasilicates are regulated as hazardous materials by the DOT.
- OSHA has not established an occupational exposure limit for sodium metasilicates.
- EPA has not established Acute Exposure Guideline Limits (AEGLs) for these compounds.

11. Sources for Additional Information

- OxyChem Product Handbook web site: http://www.oxy.com/OurBusinesses/Chemicals/Products/Pages/AlkaliProducts.aspx#alk_silicates
- Material Safety Data Sheet web site: http://www.oxy.com/OurBusinesses/Chemicals/Products/Pages/MSDSSearch.aspx
- Hazardous Substances Data Bank (HSDB), Toxicology Data Network, United States National Library of Medicine, HSDB Number: 753, last revision: 20030305.

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

13. Preparation Date: 12/12/2008 **Revised**: 02/13/2013

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.