

Product Stewardship Summary

Talc

General Statement

Talc is an odorless white to greyish crystalline powder used in cosmetics, ceramics, paints, paper, plastics and insecticides. Talc is obtained from naturally occurring rock ore. Crude talc ore is crushed and ground to a fineness suitable for specific end uses. Chemically, talc is hydrous magnesium silicate ($Mg_3H_2(SiO_3)_4$).

With proper engineering controls and protective equipment, workers can safely use talc to produce a variety of consumer products. Consumers, in turn, are not expected to be at risk of exposure to talc, as it is inherently non-hazardous. Ashland produces, purchases and sells talc. Ashland uses talc to manufacture multiple products, such as those in the Maxguard™, Enguard™ gelcoat and other product lines.

Chemical Identity

Name: Talc

Brand Names: Multiple products, including but not limited to Maxguard™ and Enguard™ gelcoats

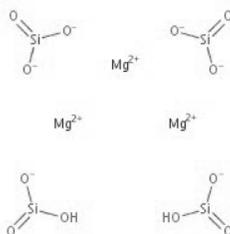
Chemical name (IUPAC): trimagnesium;dioxido(oxo)silane;hydroxy-oxido-oxosilane

CAS number: 14807-96-6

EC number: 238-877-9

Molecular formula: $H_2Mg_3O_{12}Si_4$

Structure:



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Uses and Applications

Talc is used as a dusting powder, excipient and filler for pills and tablets, and for clarifying liquids by filtration. Talc is also used as a pigment in paints, varnishes, rubber; as filler for paper, rubber and soap; in fireproof and cold-water paints for wood, metal and stone; for lubricating molds and machinery; as glove and shoe powder; and as an electric and heat insulator. Talc is used as a carrier for insecticides and herbicides. Talc is used as a sclerosing agent. Talc is used as an abrasive, absorbent, anticaking agent, bulking agent, opacifying agent, skin protectant, and slip modifier in cosmetic industry.

Ashland's gelcoats prepared using talc are used in fiber-reinforced plastics, cast polymers, fire retardant materials and have multiple other industrial and consumer applications.

Physical/Chemical Properties

Phys/Chem Safety Assessment

Property	Value
Form	Crystalline
Physical state	Solid
Color	White
Odor	Odourless
Density	2.500 g/cm ³ @ 20°C
Melting / boiling point	900-1000°C
Flammability	Not a combustible dust
Explosive properties	Not explosive
Self-ignition temperature	No data available
Vapor pressure	2 hPa
Mol weight	379.27 g/mol
Water solubility	Insoluble
Flash point	Not applicable
Octanol-water partition coefficient (Log _{k_{ow}})	No data available

Exposure, Hazard and Safety Assessment

The following section describes possible exposure scenarios and hazards associated with talc. The exposure assessment describes both the amount of and the frequency with which a chemical substance reaches a person, a population of people, or the environment. Hazard refers to the inherent properties of a substance that make it capable of causing harm to human health or the environment. The safety assessment reports the possibility of a harmful event arising from exposure to a chemical or physical agent under specific conditions. Just because a substance may possess potentially harmful properties does not mean that it automatically poses a risk. It is not possible to make that determination without understanding the exposure.

Human Health Effects

Human Exposure Assessment

Consumer: Consumer exposure to talc may occur mainly via use or handling of certain ceramic and/or cosmetic products, or when using various consumer products containing talc as filler.

Worker: The principal route of talc exposure for the workers is via air. Air contamination levels in the workplace can be due to chemical production in closed continuous process with occasional controlled releases, manufacture or formulation in the chemical industry in closed batch processes with occasional controlled

exposure, transfer of substances or mixtures (charging and discharging) at non-dedicated facilities, transfer of substances or mixtures into small containers (dedicated filling line, including weighing) or use as a laboratory reagent. The highest potential for worker exposure to talc occurs in the ceramics and cosmetic industries and when talc is used as filler during the manufacture of rubber, plastic, pulp, paper and paper products. Workers may come in skin contact with talc during handling, storing and processing of talc and talc-containing polymers.

Human Hazard Assessment

Talc does not have inherent toxicity to humans. There are no indications in experiments that animals absorb orally or inhalation administered talc. Exposure to talc does not lead to any relevant dermal absorption. Talc administered into the pleural space of rats is distributed systemically throughout the body and was determined in the urine and faeces; therefore, talc has no bioaccumulation potential. Further, talc does not present acute toxicity via oral, dermal and inhalation routes and does not cause dermal or eye irritation upon contact. On inhalation, talc does not cause respiratory irritation. Talc does not cause allergies on contact with skin. Talc is neither toxic to genetic systems nor causes cancer. Talc does not affect reproductive performance or unborn children. Talc is not dangerous if accidentally swallowed or inhaled into airways.

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	No toxicity if ingested, applied on skin or inhaled for short period of time.
Irritation / corrosion Skin / eye / respiratory test	Skin or eye contact does not cause irritation or corrosive damage. Inhalation does not cause respiratory irritation.
Sensitization	Does not cause allergic reactions upon contact with skin.
Toxicity after repeated exposure Oral / inhalation / dermal	Does not cause toxicity on prolonged or repeated exposure.
Genotoxicity / Mutagenicity	Does not affect genetic system
Carcinogenicity	Not considered as carcinogen according to CLP/GHS/IARC. According to National List of Carcinogenic Agents for Humans - (LINACH - Brazil), talc is Group 2B: Possibly carcinogenic to humans.
Reproductive/Developmental Toxicity	Not toxic to reproduction or unborn children.
Aspiration hazard	Not dangerous if swallowed and enters airways.

Human Health Safety Assessment

Consumer: Talc is not a hazardous material. Although consumers can be exposed to talc at considerable levels, talc's lack of inherent hazardous properties alleviates the health related risks to consumers.

Worker: In industrial settings, talc exposure is mitigated primarily by sufficient ventilation and the implementation of proper handling and storage techniques. Additionally, talc is handled primarily in closed and continuous processes which further limit the potential for worker exposure. Based on the implementation of good manufacturing processes and industrial hygiene measures, the occupational health risk associated with talc is low.

Environmental Effects

Environmental Exposures

Environmental exposure to talc may happen from industries, professional workers, consumers and also via disposing the products containing talc. Of these pathways, industrial manufacturing of talc presents the highest likelihood of exposure to the environment. When talc is used as a reactive or non-reactive processing aid indoors in both industrial and professional settings, environmental release is possible. Minimal environmental exposure may occur when talc containing products are either used or disposed by consumers.

Environmental Hazard Assessment

Talc does not present harm to the environment. A summary of ecotoxicity information and an environmental fate hazard assessment is provided in the table below:

Effect Assessment	Result
Aquatic toxicity	Not toxic to aquatic life.

Fate and Behavior	Result
Biodegradation	Not applicable (inorganic substance).
Bioaccumulation potential	Substance does not bioaccumulate (estimated BCF (aquatic species): 3.16 L/kg ww)
PBT / vPvB conclusion	This substance is not considered to be persistent, bioaccumulating or toxic (PBT) or very persistent and very bioaccumulating (vPvB).

Environmental Safety Assessment

Talc is not toxic to aquatic life. Talc is an inorganic substance and does not persist in the environment. Additionally, talc is not expected to accumulate in aquatic species. Talc is not considered to be persistent, bioaccumulating or toxic in the environment.

Risk Management Recommendations

Exposure to talc can be controlled by employing sufficient ventilation and proper handling and storage techniques. Examples of such handling and storage techniques include: avoiding generation of dust, using in a well ventilated area, using local exhaust ventilation when required, and keeping containers dry and tightly closed and in a well-ventilated place. Process enclosures, local exhaust ventilation, or other engineering controls are to be used to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Workers are suggested to wear safety glasses, a lab coat, a dust respirator (an approved/certified respirator or equivalent) and gloves. In case of large spills, splash goggles, a full suit, a dust respirator, boots and gloves should be used. A self contained breathing apparatus should be used to avoid inhalation of the product during manufacturing.

National and local governments regulate talc emissions from facilities. The regulatory emission limits for each facility are established to protect the health and environment of the community surrounding the facility and are written into the facility's operating permit.

Exposure to talc in the workplace is covered by established occupational exposure limits. A partial list of references follows:

Talc dust is generally classified as a 'nuisance dust' and should be kept within the occupational exposure limits established by applicable federal, state, and/or local laws.

US ACGIH (TLV): 2 mg/m³ (8h TWA)
US OSHA (PEL): 2 mg/m³ (8h TWA)
US NIOSH: 2 mg/m³ (8h TWA)
United Kingdom (UK): 1 mg/m³ (8h TWA)

Regulatory Agency Review

Talc is listed in:

- Taiwan Chemical Substance Inventory (TCSI)
- Australia Inventory of Chemical Substances (AICS)
- Canadian Domestic Substances List (DSL)
- China. Inventory of Existing Chemical Substances in China (IECSC)
- European Inventory of Existing Commercial Chemical Substances (EINECS)
- Korea. Korean Existing Chemicals Inventory (KECI)
- New Zealand. Inventory of Chemical Substances
- Philippines Inventory of Chemicals and Chemical Substances (PICCS)
- Switzerland. New notified substances and declared preparations
- United States TSCA Chemical Substance Inventory
- Japan. ENCS - Existing and New Chemical Substances Inventory
- ECHA List of Publishable Substances Registered
- Japan. ENCS - Existing and New Chemical Substances Inventory
- Japan. ISHL - Inventory of Chemical Substances
- Vietnam. List of declarable chemicals

Regulatory Information / Classification and Labeling

Under the Globally Harmonized System for classification and labeling (GHS), substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the (Extended) SDS. GHS attempts to standardize hazard communication so that the intended audience (workers, consumers, transport workers, and emergency responders) can better understand the hazards of the chemicals in use.

GHS Classification

Not a hazardous substance.

Hazard Statements

Not a hazardous substance.

Signal Word

Not applicable

Precautionary Statements

P101: If medical advice is needed, have product container or label at hand.

P102: Keep out of reach of children.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Hazard Pictograms:

Not applicable

Conclusion

Talc is used in the manufacturing of cosmetics, ceramics, paints, paper, plastics, insecticides and many everyday materials. With proper engineering controls and protective equipment, workers can safely use talc to produce a variety of consumer products. Consumers, in turn, are not expected to be at risk of exposure, as talc is inherently non hazardous.

Contact Information with Company

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Additional Information

For more information on GHS, visit <http://www.osha.gov/dsg/hazcom/ghsguideoct05.pdf> or http://live.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html.
Ashland product stewardship summaries are located at <http://www.ashland.com/sustainability/product/product-stewardship>

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REACH registration is specific to Importers/Manufacturers that place the chemical on the EU market, and is specific to registered uses. Inclusion on the list of REACH Registered Substances does not automatically imply registration by Ashland.

Inclusion on the New Zealand Inventory of Chemicals applies only to the pure substance listed. The importer of record must determine whether or not their substances are in compliance.