Material Safety Data Sheet
May be used to comply with
OSHA's Hazard Communication Standard,
29 CFR §1910.1200. Standard must be
consulted for specific requirements.

U. S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY *(As Used on Label and List)*	*Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.*
Keystone Portland Cements	

Section 1

Manufacturer's Name Keystone Cement Company	Emergency Telephone Number (610) 837-2240
Address (*Number, Street, City, State, and ZIP Code)* Route 329, P.O. Box A	Telephone Number for Information (610) 837-1881
Bath, Pennsylvania 18014	Date Prepared July 1, 2019
	Signature of Preparer (*optional*) Reviewed by S. Holt on behalf of Keystone Cement Company

Section 2 - Hazardous Ingredients/Identity Information

Other means of identification:
Hydraulic cement, Portland Cement (Types I/II & III), Masonry Cement (including pigmented, types N,S). This SDS covers many cement products, individual constituents will vary.

Recommended use and restrictions on use:
Used in the production of concrete. For restrictions on use, see Section 10 for information on incompatibility with other compounds.

Classification
Skin Corrosion/Irritation; Eye Irritant; Carcinogenicity/Inhalation Category 1A; Respiratory tract Irritation

Signal Word

DANGER

Hazard statement
May cause severe burns and eye damage. Harmful if swallowed. May cause respiratory irritation. May cause cancer.

Symbols(s)

Precautionary Statement(s)
Prevention:

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust. Use outdoors in a well ventilated area. Wash any exposed body parts thoroughly after handling. Use proper engineering controls, work practices and personal protective equipment to prevent exposure to this product

Response

If on skin, remove all contaimated clothing. Rinse skin with water, shower. If swallowed rinse mouth, do not induce vomiting. Seek medical attention. If in eyes, rinse continuously with water for several minutes. Remove contact lenses, if present and easy to do. If eye irritation persists, seek medical attention. If inhaled, remove person to fresh air.

Storage

Store in cool, dry, well ventilated area away from sources of heat, moisture and incapatible materials.

Disposal

Dispose of waste material in accordance with local, state and federal regulations.

Section 3 - Physical/Chemical Characteristics

Components (%)	CAS No.	% by Weight
Portland & Masonry Cement	65997-15-1	100 (components listed below)
Tricalcium Silicate 3 CaO – SiO_2	12168-85-3	45 – 60
Dicalcium Silicate 2 CaO - SiO_2	10034-77-2	10 – 30
Tricalcium Aluminate 3 CaO - Al_2O_3	12042-78-3	4 – 13
Tetra-calcium aluminoferrite4 CaO - Al_2O_3 Fe_2O_3	12068-35-8	8 – 16
Gypsum $CaSO_4$ – 2 H_2O	13397-24-5	4 – 7
Crystalline silica	14808-60-7	<1

Trace constituents
Portland Cement has a variable composition depending upon the cementitious products produced in the cement kiln. Small amounts of

naturally occurring, but potentially harmful, chemical compounds may be detected during chemical analysis. These trace compounds may include free crystalline silica, potassium and sodium compounds; heavy metals including cadmium, chromium, magnesium nickel and lead; and organic compounds. Other trace constituents may include calcium oxide (also known as free lime or quick lime).

Formula

This product largely consists of finely ground Portland Cement clinker mixed with a small amount of calcium sulfate (gypsum). In addition, cement may contain minor amounts of various additives, e.g. grinding aids and air entrainers.

Chemical Family

Chemical compounds. Calcium silicate components and other calcium compounds containing iron and aluminum make up the majority of this product.

Section 4 – First Aid Measures

Eyes

Contact physician immediately. Irrigate eyes with plenty of water for at least 15 minutes, including under the lid, to remove all particles. Remove contact lenses, if present and easy to do. Chemical burns must be promptly treated by a physician.

Skin

Contact physician immediately. Remove all contaminated clothing, including footwear. Blot or brush away dry material from skin. Flush the exposed skin with cool water and a pH neutral soap or mild detergent for at least 15 minutes depending on the amount and duration of exposure. Seek medical attention for rashes, burns, irritation, dermatitis, and prolonged unprotected exposure to wet cement, cement mixtures, or liquid from wet cement. Chemical burns must be promptly treated by a physician.

Inhalation

Remove to fresh air away from dusts and keep comfortable for breathing. Seek medical attention for discomfort or if coughing or other symptoms persist.

Ingestion

Do not induce vomiting. If swallowed rinse mouth with water to remove any material and drink plenty of water to dilute any swallowed material. Never give anything by mouth to an unconscious person. Seek medical attention or contact poison control center immediately.

Section 5 – Fire-Fighting Measures

Suitable (and unsuitable) extinguishing media

The presence of this material in a fire does not hinder the use of any standard extinguishing medium. Use extinguishing medium suitable for surrounding fire.

Specific Hazards

Flash Point (Method Used): Not applicable Flammable Limits: LEL and UEL – Not applicable. Not specific fire or explosion hazard.

Special protective equipment and precautions

Although Portland Cement poses no fire-related hazards, a self-contained breathing apparatus and other protective gear is recommended to limit exposure to combustion products when fighting any fire.

Section 6 – Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures

Avoid creating dusts. Provide adequate ventilation and wear appropriate personal protective equipment to avoid skin/eye contact and inhalation exposures as described in Section 8. Remove unnecessary person from area.

Methods and materials for containment and clean up

Avoid creating dusts. Do not dry sweep. Use vacuum equipped with a HEPA filter. Avoid breathing the dust. Place wet material in a container and allow wet material to dry prior to disposal. Product can be disposed of as non-hazardous waste in accordance with local, state and federal regulations.

Section 7 – Handling and Storage

Precautions for safe handling

Prevent dust from being emitted. Avoid contact with skin or eyes. Do not breathe dust. Do not ingest material. Use only in well ventilated areas. Wear appropriate personal protective equipment to prevent eye or skin contact and wear respiratory protection equipment if dusty or in poorly ventilated areas.

Stack bagged material in a secure manner to prevent falling. Bagged Portland Cement is heavy and poses risks such as sprains and strains to the back, arms, shoulders, and legs during lifting and mixing. Handle with care and use appropriate control measures. Wear hard hats and steel-toes shoes to reduce potential injury because bags could be dropped during handling.

Properly ground all pneumatic conveyance systems. The potential exists for static build-up and static discharge when moving powders through a plastic, non-conductive, or non-grounded pneumatic conveyance system. The static discharge may result in damage to equipment and injury to workers.

Avoid actions that cause the Portland Cement to become airborne during clean-up. Dry sweeping or the use of compressed air should be prohibited. Use personal protective equipment as described in Section 8. Promptly remove and launder clothing that is dusty or wet with Portland Cement. Thoroughly wash skin after exposure to dust or wet kiln dust.

Engulfment hazard: To prevent burial or suffocation, do not enter a confined space, such as a silo, bin, bulk truck or other storage container or vessel that stores or contains Portland Cement. Portland Cement can build-up or adhere to the walls of a confined space. The Portland Cement can release, collapse, or fall unexpectedly.

Conditions for safe storage, including any incompatibilities

Keep bulk and bagged Portland Cement dry until used. Store in cool, dry, well ventilated area away from sources of heat, moisture and incompatible materials.

Water/moisture exposure will cause material to generate heat. Keep away from fluoride compounds, strong acids, alkalines, and oxidizers.

Section 8 – Exposure Controls/Personal Protection

Respiratory Protection *(Specify Type)*

Use a NIOSH approved particulate filter respirators in the context of a respiratory protection program meeting the requirements of the OSHA respiratory protection standard (29 CFR 1910.134) to control exposures when ventilation or other controls are inadequate or discomfort or irritation is experienced. Respirator and/or filter cartridge selection should be based on ANSI Standard Z88.2 Practices for Respiratory Protection.

Component	**OSHA/MSHA PEL**	**ACGIH TLV**
Portland Cement	15 mg/m^3 (Total) / 5 mg/m^3 (Resp)	1 mg/m^3 (Resp)
Tricalcium Silicate	15 mg/m^3 (Total) / 5 mg/m^3 (Resp)	10 mg/m^3 (Inhalable) / 3 mg/m^3 (Resp)
Dicalcium Silicate	15 mg/m^3 (Total) / 5 mg/m^3 (Resp)	10 mg/m^3 (Inhalable) / 3 mg/m^3 (Resp)
Tricalcium Aluminate	15 mg/m^3 (Total) / 5 mg/m^3 (Resp)	10 mg/m^3 (Inhalable) / 3 mg/m^3 (Resp)
Tetra-calcium aluminoferrite	15 mg/m^3 (Total) / 5 mg/m^3 (Resp)	10 mg/m^3 (Inhalable) / 3 mg/m^3 (Resp)
Gypsum	15 mg/m^3 (Total) / 5 mg/m^3 (Resp)	1 mg/m^3 (Resp)
Crystalline Silica	0.3 mg/m^3 (Total)/0.05 mg/m^3 (Resp)	0.025 mg/m^3 (Resp)
Nuisance Dusts	15 mg/m^3 (Total) / 5 mg/m^3 (Resp)	10 mg/m^3 (Inhalable) / 3 mg/m^3 (Resp)

Ventilation	Local Exhaust	Special
Yes	Yes	Use outdoors in well-ventilated areas. Otherwise, employ natural or mechanical ventilation to maintain exposures below applicable limits.

Protective Gloves	Eye Protection
Use impervious, waterproof, and alkali-resistant gloves. Do not rely on barrier creams in place of impervious gloves. Do not get Portland Cement inside gloves.	Tight fitting vented or unvented goggles. Contact lenses should not be worn when working with Portland Cement.

Other Protective Clothing or Equipment

Wear impervious, waterproof, and alkali resistant, boots and clothing. Do not rely on barrier creams.

Work/Hygienic Practices

Clean water should always be available for skin and (emergency) eye washing. Shower with water and pH neutral soap immediately after working with cement. If clothing becomes saturated with Portland Cement, garments should be removed and replaced with clean, dry clothing.

Section 9 – Physical and Chemical Properties

Physical State	Solid	**Color**	Gray	**Odor**	Odorless
Odor Threshold	Not available	**pH**	12 – 13 in water; Not available as solid	**Melting Point**	Not Applicable
Boiling Point	Not Applicable	**Flash Point**	Not Applicable	**Burning Time**	Not Available
Burning Rate	Not Applicable	**Evaporation Rate**	Not Applicable	**Flammability**	Not Applicable
Lower and Upper	Explosive	**Vapor Pressure**	Not Applicable	**Vapor Density**	Not Applicable
Relative Density	(H_2O=1): 2.8-	**Solubility**	Slight (0.0 – 1.0%)	**Partition Coefficient (n-octanol/water)**	Not Applicable
Auto-ignition temperature	Not	**Decomposition temperature**	Not Applicable	**Viscosity**	Not Applicable

Section 10 – Stability and Reactivity

Reactivity

Portland Cement reacts with water, resulting in a slight release of heat, depending on the amount of lime (calcium oxide) present.

Chemical Stability

This product is stable. Keep dry. Avoid contact with incompatible materials. Portland Cement should be kept dry until utilized.

Possibility of Hazardous Reactions

Under normal circumstances of storage and use, hazardous reactions will not occur.

Incompatible Materials

Wet Portland Cement is alkaline (pH 12 -13). As such it is incompatible with acids, ammonium salts, and aluminum metal. Portland Cement dissolves in hydrofluoric acid, producing corrosive silicon tetra fluoride gas. Silicates react with powerful oxidizers such as fluorine, boron trifluoride, chlorine, trifluoride, magnesium trifluoride and oxygen difluoride.

Hazardous Decomposition or Products

Under normal circumstances of storage and use, hazardous decomposition products should not be produced.

Section 11 – Toxicological Information

Health Affects

Health Hazards (Acute and Chronic): Acute: Wet cement, especially as an ingredient in plastic (unhardened) concrete, can dry the skin and cause alkali burns. Cement dust will irritate the eyes and upper respiratory system and can cause alkali burns.

Chronic: Hypersensitive people may develop allergic dermatitis.

Carcinogenicity: N/A

Signs and Symptoms of Exposure: Reddened eyes, drying of skin, irritation of upper respiratory tract and throat, alkali burns to skin.

Medical Conditions Generally Aggravated by Exposure: Dermatitis, pre-existing upper respiratory and lung diseases.

Emergency and First Aid Procedures: Irrigate eyes with water. Wash affected areas of the skin with pH neutral soap and water.

Effects of Over Exposure: Relevant Routes of Exposure: Eye contact, skin contact, inhalation, and ingestion.

Effects resulting from eye contact: Exposure to airborne dust may cause immediate or delayed irritation or inflammation. Eye contact with larger amounts of dry powder or splashes of wet Portland Cement may cause effects ranging from moderate eye irritation to chemical burns and blindness. Such exposures require immediate first aid (see emergency and first aid procedures) and medical attention to prevent significant damage to the eye.

Effects resulting from skin contact: Discomfort or pain cannot be relied upon to alert a person to a hazardous skin exposure. Consequently, the only effective means of avoiding skin injury or illness involves minimizing skin contact, particularly contact with wet cement. Exposed persons may not feel discomfort until hours after the exposure has ended and significant injury has occurred. Exposure to dry Portland Cement may cause drying of the skin with consequent mild irritation or more significant effects attributable to aggravation of other conditions. Dry Portland Cement contacting wet skin or exposure to moist or wet Portland Cement may cause more severe skin effects including thickening, cracking or fissuring of the skin. Prolonged exposure can cause severe skin damage in the form of (caustic) chemical burns. Some individuals may exhibit an allergic response (e.g., allergic contact dermatitis) upon exposure to Portland Cement, possibly due to trace amounts of chromium. The response may appear in a variety of forms ranging from a mild rash to severe skin ulcers. Persons already sensitized may react to the first contact with the product. Other persons may experience this effect after years of contact with Portland Cement products.

Effects resulting from inhalation: Portland Cement contains small amounts of free crystalline silica. Prolonged exposure to respirable free crystalline silica can aggravate other lung conditions and cause silicosis, a disabling and potentially fatal lung disease and/or other diseases. Risk of injury or disease depends on duration and degree of exposure. (Also see Carcinogenic potential below.) Exposure to Portland Cement may cause irritation to the moist mucous membranes of the nose, throat, and upper respiratory system. It may also leave unpleasant deposits in the nose.

Effects resulting from ingestion: Although small quantities of dust are not known to be harmful, ill effects are possible if larger quantities are consumed. Portland Cement should not be eaten.

Carcinogenic potential: NTP, OSHA, or IARC has not listed Portland Cement as a carcinogen. It may, however, contain trace amounts of substances listed as carcinogens by these organizations. Crystalline silica, which is present in Portland Cement in small amounts, has been listed by IARC and NTP as a known human carcinogen (Group I) through inhalation. Hexavalent chromium is listed by IARC, EPA, NTP and OSHA as Group I known carcinogen by inhalation.

Medical conditions which may be aggravated by inhalation or dermal exposure: 1) Pre-existing upper respiratory and lung diseases 2) Unusual (hyper) sensitivity to hexavalent chromium (chromium+6) salts.

Section 12 – Ecological Information (Non-Mandatory)

Ecological

Prevent spilled material from entering streams, drains, or sewers. A large release of elevated pH material may result in toxicity to aquatic organisms and systems. There is no recognized or unusual toxicity to plants or animals.

Ecotoxicity

There is no available data

Persistence and Degradability

There is no available data

Bioaccumulative Potential

There is no available data

Mobility in Soil

There is no available data

Section 13 – Disposal Considerations (Non-Mandatory

Dispose of waste material according to local, state and federal regulations. Since Portland Cement is stable, uncontaminated material may be saved for future use. Dispose of bags in an approved landfill or incinerator.

Avoid creation or breathing dust during disposal. Avoid contact with skin and eyes. Refer to Section 8 for personal protective measures.

Section 14 – Transportation Information

UN Number:	Not applicable
UN Proper Shipping Name:	Not applicable
Packing group, If applicable:	Not applicable
Environmental hazards (e.g., marine Pollutants:	Not applicable
Other – Labeling Requirements:	This product is not classified as a hazardous material under U.S. Department of Transportation (DOT) regulations.

Section 15 – Regulatory Information (Non – Mandatory)

OSHA 29 CFR 1910.1200: Portland Cement is considered a "hazardous chemical" under this regulation and should be part of any hazard communication program.

CERCLA/Superfund: Not listed

Hazard Category Under SARA (Title III) Section 313: Not subject to reporting requirements under Section 313.

Status under TSCA: Some substances in Portland Cement are on the TSCA inventory list.

Status under the Federal Hazardous Substance Act: Portland Cement is a "hazardous substance: subject to statutes promulgated under the subject act. *Status under California Proposition 65:*

WARNING: This product can expose you to chemicals including Crystalline Silica, Cadmium, Chromium, Nickel, and Lead which are known to the State of California to cause cancer and/or birth defects or other reproductive harm. For more information, visit www.P65Warnings.ca.gov.

Status under Canadian Environmental Protection Act:

Not listed

Workplace Hazardous Material Information System (Canada): Portland Cement is considered to be a hazardous material under the Hazardous Product Act as defined by the Controlled Products Regulations (Class E - Corrosive Material) and is therefore subject to the labeling and SDS requirements of the Workplace Hazardous Materials Information System (WHMIS).

Section 16 – Disclaimer of Liability Date of Preparation: July 1, 2019

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