

## 1 Identification

### GHS Product Identifier

**ZIRCAL-95, ZIRCAL-60, ZIRCAL-45, ZIRCAL-18, ZIRCAL-A**

### Other means of identification

Calcium Silicate Insulating Boards.

### Recommended use of the chemical and restriction on use

Primary Use: Used primarily in industrial high temperature insulating applications. Examples include heat shields, heat containment, industrial furnaces, ovens, kilns, boilers stoves, soaking pits, regenerators, backup insulation for any refractory construction, many fireproofing and heat processing equipment applications, fire safety applications such as fire stops, fire walls, cable trays and fire doors and other process equipment and applications.

### Supplier's details

**ZIRCAR Refractory Composites, Inc.**

**P.O. Box 489**

**Florida, NY 10921**

**1-845-651-2200 (Monday - Friday 8:00 a.m. - 4:30 p.m. EST)**

For additional SDSs, visit our web page, <http://www.zrci.com> or email at [sales@zrci.com](mailto:sales@zrci.com)

### Emergency phone number

CHEMTREC will provide assistance for chemical emergencies. Call **1-800-424-9300**

## 2 Hazard(s) identification

### Classification of the substance or mixture

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

CARCINOGENICITY - Category 1A

SPECIFIC TARGET ORGAN TOXICITY (STOT) SINGLE EXPOSURE – Category 3

SPECIFIC TARGET ORGAN TOXICITY (STOT) REPEATED EXPOSURE – Category 1

Percentage of the mixture consisting of ingredient(s) of unknown toxicity: 0%

### GHS label elements



Causes mild skin irritation

May cause cancer

Use personal protective equipment as required.

## Other hazards which do not result in classification

### Precautionary statements

Do not handle until all safety instructions have been read and understood.  
Use respiratory protection as required; see section 8 of the Safety Data Sheet.

If concerned about exposure, get medical advice.  
Store in a manner to minimize airborne dust.  
Dispose of waste in accordance with local, state and federal regulations.

### Supplementary Information

May cause temporary mechanical irritation to exposed eyes, skin or respiratory tract.  
Minimize exposure to airborne dust.

## Describe any hazards not otherwise classified that have been identified during the classification process

Mild mechanical irritation to skin, eyes and upper respiratory system may result from exposure. effects are usually temporary.

## 3 Composition/information on ingredients

Description	CAS Number	EINECS Number	%	Note
calcium metasilicate	1344-95-2	215-710-8	86 - 98	
organic fiber	65996-61-4	265-995-8	4 - 8	
glass filament	65997-17-3	266-046-0	2 - 8	
silicon dioxide	14808-60-7	215-684-8	0.1 - 2	

## 4 First-aid measures

### Description of necessary first-aid measures

#### SKIN

Handling of this material may generate mild mechanical temporary skin irritation. If this occurs, rinse affected areas with water and wash gently. Do not rub or scratch exposed skin.

#### EYE

In case of eye contact flush abundantly with water; have eye bath available. Do not rub eyes.

#### NOSE AND THROAT

If these become irritated move to a dust free area, drink water and blow nose.  
If symptoms persist, seek medical advice.

#### Gastrointestinal

If gastrointestinal tract irritation develops, move the person to a dust free environment.

### Most important symptoms/effects, acute and delayed

Mild mechanical irritation to skin, eyes and upper respiratory system may result from exposure.  
These effects are usually temporary.

### Indication of immediate medical attention and special treatment needed, if necessary

**NOTES TO PHYSICIANS** Skin and respiratory effects are the result of temporary, mild mechanical irritation; exposure does not result in allergic manifestations.

## 5 Fire-fighting measures

### **Suitable extinguishing media**

Non-combustible products, class of reaction to fire is zero.  
Packaging and surrounding materials may be combustible.  
Use extinguishing agent suitable for surrounding combustible materials.  
Organic Fibers may smoke when heated.

### **Special protective actions for fire-fighters**

Firefighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## **6 Accidental release measures**

### **Personal precautions, protective equipment and emergency procedures**

Minimize airborne dust. Compressed air or dry sweeping should not be used for cleaning. See Section 8 "Exposure Controls / Personal Protection" for exposure guidelines.

### **Environmental precautions**

None.

### **Methods and materials for containment and cleaning up**

Frequently clean the work area with HEPA filtered vacuum or wet sweeping to minimize the accumulation of debris.  
Do not use compressed air for clean-up.

## **7 Handling and storage**

### **Precautions for safe handling**

Handle fiber carefully to minimize airborne dust. Limit use of power tools unless in conjunction with local exhaust ventilation. Use hand tools whenever possible. (See section 8)

Service significantly above the product design temperature may increase friability and the possibility of generating airborne fibers or particulates. not considered problematic during use, airborne fibers may complicate removal activities. is recommended that product use be carefully matched to design parameters.

**After Service:** AS MANUFACTURED THIS PRODUCT IS COMPRISED OF CALCIUM SILICATE AND SILICA WHICH MAY TRANSFORM UPON HEATING (TEMPERATURES GREATER THAN 1100°C FOR EXTENDED PERIODS OF TIME) TO CRISTOBALITE (CAS # 14464-46-1), A FORM OF CRYSTALLINE SILICA. OF THIS PRODUCT AFTER USE MAY GENERATE DUSTS. OR REPEATED INHALATION OF RESPIRABLE FREE CRYSTALLINE SILICA DUST MAY CAUSE DELAYED LUNG INJURY (SILICOSIS). THE IARC WORKING GROUP CONCLUDED THAT CRYSTALLINE SILICA, IN THE FORM OF QUARTZ OR CRISTOBALITE, FROM OCCUPATIONAL SOURCES POSED A CARCINOGENIC RISK TO HUMANS (CATEGORY 1). IS SUFFICIENT EVIDENCE OF CARCINOGENICITY IN ANIMALS, BUT LIMITED EVIDENCE IN HUMANS. 'S FINAL RULE LIMIT AND ACGIH'S TLV FOR RESPIRABLE CRISTOBALITE IS 0.05 MG/M<sup>3</sup>. VENTILATION AND RESPIRATORY PROTECTION SHOULD BE PROVIDED IN COMPLIANCE WITH OSHA STANDARDS. ADHERENCE TO RECOMMENDED SAFE WORK PRACTICES IS ADVISED. PRODUCT REMOVAL MUST CONSIDER THE POSSIBILITY OF USAGE ABOVE DESIGN TEMPERATURES.

Product removal must consider the possibility of usage above design temperatures. See section 8 for appropriate respiratory protection during removal.

### **Conditions for safe storage, including any incompatibilities**

**Store in a manner to minimize airborne dust.**

## **EMPTY CONTAINERS**

Product packaging may contain residue. Do not reuse.

### **8 Exposure controls/personal protection**

#### **Control parameters**

**OSHA permissible exposure limit (PEL), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available**  
**Component**

**COMPONENT** Silica Dioxide (Crystalline silica)

US Occupational Safety and Health Administration Permissible Exposure Limit (OSHA PEL):

Irritant (Nuisance) Dust (all components except crystalline silica)	5 mg/m <sup>3</sup>
Crystalline Silica (Respirable)	10 mg/m <sup>3</sup> %SiO <sub>2</sub> + 2
Crystalline Silica (Total Dust)	30 mg/m <sup>3</sup> %SiO <sub>2</sub> + 2

**COMPONENT** Calcium Silica

American Conference of Governmental and Industrial Hygienists Threshold Limit Value (ACGIH TLV):

Calcium Silica	3 mg/m <sup>3</sup>
Crystalline Silica	0.025 mg/m <sup>3</sup>

As with most industrial materials, it is prudent to minimize unnecessary exposure to respirable dusts. Note that Industrial hygiene standards and occupational exposure limits differ between countries and local jurisdictions. Check with your employer to identify any "respirable dust", "total dust" or "fiber" exposure standards to follow in your area. If no regulatory dust or fiber control standard apply, a qualified industrial hygiene professional can assist with a specific evaluation of workplace conditions and the identification of appropriate respiratory protection practices. In the absence of other guidance, the supplier has found that it is generally feasible to control occupational fiber exposure to 0.5 f/cc or less.

The evaluation of occupational exposure limits and determining their relative applicability to the workplace is best performed, on a case-by-case basis, by a qualified Industrial Hygienist.

#### **Appropriate engineering controls**

Use engineering controls such as local exhaust ventilation, point of generation dust collection, down draft work stations, emission controlling tool designs, and materials handling equipment designed to minimize airborne fiber emissions.

#### **Individual protection measures**

##### **Skin Protection**

Wear gloves, head coverings and full body clothing as necessary to prevent skin irritation. Washable or disposable clothing may be used. If possible, do not take unwashed clothing home. If soiled work clothing must be taken home, employers should ensure employees are thoroughly trained on the best practices to minimize non-work dust exposure (e.g., vacuum clothes before leaving the work area, wash work clothing separately, rinse washer before washing other household clothes, etc.).

## Eye Protection

As necessary, wear goggles or safety glasses with side shields.

## Respiratory Protection

When engineering and/or administrative controls are insufficient to maintain workplace concentrations below the applicable level, the use of appropriate respiratory protection, pursuant to the requirements of OSHA Standards 29 CFR 1910.134 and 29 CFR 1926.103, is recommended. A NIOSH certified respirator with a filter efficiency of at least 95% should be used. The 95% filter efficiency recommendation is based on NIOSH respirator selection logic sequence for exposure to particulates. Selection of filter efficiency (i.e. 95%, 99% or 99.97%) depends on how much filter leakage can be accepted and the concentration of airborne contaminants. Other factors to consider are the NIOSH filter series N, R or P. (N)Not resistant to oil, (R)Resistant to oil and (P) oilProof. These recommendations are not designed to limit informed choices, provided that respiratory protection decisions comply with 29 CFR 1910.134.

The evaluation of workplace hazards and the identification of appropriate respiratory protection is best performed, on a case by case basis, by a qualified Industrial Hygienist.

## 9 Physical and chemical properties

### Physical and chemical properties

(a) Appearance	Off white to grey, solid board
(b) Odor	Odorless
(c) Odor threshold	Not applicable
(d) pH	Not applicable
(e) Melting point	>1260° C (2300° F)
(f) Initial boiling point and boiling range	Not applicable
(g) Flash point	Not applicable
(h) Evaporation rate	Not applicable
(i) Flammability	Not applicable
(j) Upper/lower flammability or explosive limits	Not applicable
(k) Vapor pressure	Not applicable
(l) Vapor density	Not applicable
(m) Relative density	Not applicable
(n) Solubility	Slightly soluble
(o) Partition coefficient: n-octanol/water	Not applicable
(p) Auto-ignition temperature	Not applicable
(q) Decomposition temperature	Not applicable
(r) Viscosity	Not applicable

## 10 Stability and reactivity

### Reactivity

Non-reactive.

### Chemical stability

Stable and Inert.

### Possibility of hazardous reactions

None.

### Conditions to avoid

Please refer to handling and storage advice in Section 7.

### Incompatible materials

Powerful oxidizers; fluorine, chlorine trifluoride, manganese trioxide; oxygen difluoride, etc.

### Hazardous decomposition products

Crystalline silica will dissolve in hydrofluoric acid and produce silicon tetrafluoride, a corrosive gas.

## 11 Toxicological information

### Toxicological (health) effects

Not Applicable.

### Information on the likely routes of exposure

Not Applicable.

### Symptoms related to the physical, chemical and toxicological characteristics

Not Applicable.

### Delayed and immediate effects and also chronic effects from short and long term exposure

Not Applicable.

### Numerical measures of toxicity (such as acute toxicity estimates)

Not Applicable.

### Interactive effects

Not Applicable.

### Where specific chemical data are not available

Not Applicable.

### Mixtures

Not Applicable.

### Mixture versus ingredient information

Not Applicable.

### Other information

**Carcinogenicity:** Crystalline silica – long term overexposure may cause permanent and irreversible lung damage, including silicosis, and increase the risk of lung cancer, kidney, and liver damage. Silicosis is a rapidly progressive, non-cancerous lung disease that is often fatal.

**IARC (International Agency for Research on Cancer)** 014808-60-7 Silica dust, crystalline, in the form of quartz or cristobalite - Group 1 (Sup 7, 68,100C, 2012)

**National Toxicology Program (NTP) Report on Carcinogens** Silica, Crystalline (Respirable Size) - Known To Be Human Carcinogen

**OSHA:** Crystalline Silica classified as a Category 1A Carcinogen.

## 12 Ecological information

### Toxicity

No known aquatic toxicity.

**Persistence and degradability**

These products are insoluble materials that remain stable over time and are chemically identical to inorganic compounds found in the soil and sediment; they remain inert in the natural environment.

**Bioaccumulative potential**

No bioaccumulative potential.

**Mobility in soil**

No mobility in soil.

**Other adverse effects**

No adverse effects of this material on the environment are anticipated.

**13 Disposal considerations****Disposal methods****WASTE MANAGEMENT**

To prevent waste materials from becoming airborne during waste storage, transportation and disposal, a covered container or plastic bagging is recommended.

**DISPOSAL**

This product, as manufactured, is not classified as a hazardous waste according to Federal regulations (40 CFR 261). Any processing, use, alteration or chemical additions to the product, as purchased, may alter the disposal requirements. Under Federal regulations, it is the waste generator's responsibility to properly characterize a waste material, to determine if it is a "hazardous" waste. Check local, regional, state or provincial regulations to identify all applicable disposal requirements.

**14 Transport information****UN Number**

Not Applicable.

**UN Proper Shipping Name**

Not Applicable.

**Transport hazard class(es)**

Not Applicable.

**Packing group, if applicable**

Not Applicable.

**Environmental hazards**

Not a marine pollutant.

**Special precautions for user**

Not Applicable.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Canadian TDG Hazard Class & PIN: Not regulated

Not classified as dangerous goods under ADR (road), RID (train) or IMDG (ship).

## 15 Regulatory information

Safety, health and environmental regulations specific for the product in question

### US Federal Regulations:

**A) General Product Information:** *No additional information available*

**B) Component Analysis:** *None of the components of this product are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).*

### State Regulations:

**A) General Product Information:** *No Additional Information available.*

**B) Component Analysis – State:** *The Following Components appear on one or more of the state hazardous substance list:*

Component	CAS#	RI	NY	MA	MN	NJ	PA
Silica Crystalline	14808-60-7	Yes	Yes	Yes	Yes	Yes	Yes

**California Prop. 65:** This product contains the following substances known to the State of California to cause cancer: Crystalline silica

### Other Regulations:

**A) General Product Information:** *No additional Information available.*

**B) TSCA Status:** *This Product and its components are listed on the TSCA 8(b) inventory. None of the components listed on the TSCA Export Notification 12(b) list.*

### C) Component Analysis - Inventory

Component	CAS#	TSCA	DSL	ELNCS
Calcium Silicate	1344-28-1	No	No	No

### D) Canada Workplace Hazardous Materials Information System (WHMIS)

*This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations.*

**DSL (Canada)** All ingredients are listed, or exempt from inclusion, on the Canadian Domestic Substances List (DSL).

**Canada inventory (WHMIS):** Listed. Class D-2A: Material causing other toxic effects. Very Toxic - Chronic. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

**Australia inventory (AICS):** Not determined.

**China inventory (IECSC):** Not determined.

**Japan inventory:** Not determined.

**Korea inventory:** Not determined.

**Malaysia Inventory (EHS Register):** Not determined.

**New Zealand Inventory of Chemicals (NZIoC):** Not determined.

**Philippines inventory (PICCS):** Not determined.

**Taiwan inventory (CSNN):** Not determined.

**Chemical Weapons Convention List Schedule I Chemicals:** Not listed

**Chemical Weapons Convention List Schedule II Chemicals:** Not listed

**Chemical Weapons Convention List Schedule III Chemicals:** Not listed

**DSCL (Europe):** R48/20: Harmful - Danger of serious damage to health by prolonged exposure through inhalation.

R36: Irritating to the eyes

R39: Danger of serious irreversible side effects.

R45: May cause cancer.



**Other information**

The HTIW Coalition and the U.S. Occupational Safety and Health Administration (OSHA) are partners in PSP HTW, a comprehensive, multi-faceted risk management program designed to control and reduce workplace exposures to high temperature insulation wools (HTIW). For more information regarding PSP HTW, please visit <http://www.htiwcoalition.org>

**DEFINITIONS**

**ACGIH:** American Conference of Governmental Industrial Hygienists

**ADR:** Carriage of Dangerous Goods by Road (International Regulation)

**CAA:** Clean Air Act

**CAS:** Chemical Abstracts Service

**CERCLA:** Comprehensive Environmental Response, Compensation and Liability Act

**DSL:** Domestic Substances List

**EPA:** Environmental Protection Agency

**EU:** European Union

**f/cc:** Fibers per cubic centimeter

**HEPA:** High Efficiency Particulate Air

**HMIS:** Hazardous Materials Identification System

**IARC:** International Agency for Research on Cancer

**IATA:** International Air Transport Association

**IMDG:** International Maritime Dangerous Goods Code

**mg/m<sup>3</sup>:** Milligrams per cubic meter of air

**mmpcf:** Million particles per cubic meter

**NFPA:** National Fire Protection Association

**NIOSH:** National Institute for Occupational Safety and Health

**OSHA:** Occupational Safety and Health Administration

**29 CFR 1910.134 & 1926.103:** OSHA Respiratory Protection Standards

**29 CFR 1910.1200 & 1926.59:** OSHA Hazard Communication Standards

**PEL:** Permissible Exposure Limit (OSHA)

**PIN:** Product Identification Number

**PNOC:** Particulates Not Otherwise Classified

**PNOR:** Particulates Not Otherwise Regulated

**PSP:** Product Stewardship Program

**RCRA:** Resource Conservation and Recovery Act

**REL:** Recommended Exposure Limit (NIOSH)

**RID:** Carriage of Dangerous Goods by Rail (International Regulations)

**SARA:** Superfund Amendments and Reauthorization Act

**SARA Title III:** Emergency Planning and Community Right to Know Act

**SARA Section 302:** Extremely Hazardous Substances

**SARA Section 304:** Emergency Release

**SARASection 311:** MSDS/List of Chemicals and Hazardous Inventory

**SARASection 312:** Emergency and Hazardous Inventory

**SARA Section 313:** Toxic Chemicals and Release Reporting

**STEL:** Short Term Exposure Limit`

**SVF:** Synthetic Vitreous Fiber

**TDG:** Transportation of Dangerous Goods

**TLV:** Threshold Limit Value (ACGIH)

**TSCA:** Toxic Substances Control Act

**TWA:** Time Weighted Average

**WHMIS:** Workplace Hazardous Materials Information System (Canada)

**Revision Summary:**Updated SDS to align with OSHA HCS 2012. Replaces all previous MSDS.

**Revision Date:** 4-10-17

**SDS Prepared By:** ZIRCAR Refractory Composites, Inc.

## **DISCLAIMER**

The information presented herein is presented in good faith and believed to be accurate as of the effective date

of this Safety Data Sheet. Employers may use this SDS to supplement other information gathered by them in their efforts to assure the health and safety of their employees and the proper use of the product. This summary of the relevant data reflects professional judgment; employers should note that information perceived to be less relevant has not been included in this SDS. Therefore, given the summary nature of this document, ZIRCAR Refractory Composites, Inc. does not extend any warranty (expressed or implied), assume any responsibility, or make any representation regarding the completeness of this information or its suitability for the purposes envisioned by the user.