



# REVOLUTIONIZING HIGH TEMPERATURE INSULATION THROUGH INNOVATION

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Sharda insulation & Refractories is a renowned name in the industrial thermal insulation market. We provide state of the art thermal insulation solutions for diverse industries, customized to their specific needs. Our team of dedicated experts work tirelessly to invent technologies and processes, setting standards that others try to match.

Sharda Insulation, a pioneer in green industrial building products, develops, manufactures and markets thermal insulating material under the brand name SHARDA for heat intensive industries and passive fire protection systems.

SI1100, a revolutionary brand in green industrial insulation, is a pre-formed, high temperature, abuse-resistant block insulation with exceptional structural strength. Composed of Hydrus Calcium Silicate (Calsil), it is designed for use on systems operating up to 1100°C. It is inorganic, non-combustible, eco-friendly and meets the physical and thermal property requirements of ASTM - C - 533 , BS3958 PART II & IS Standards. Sharda Insulation has a manufacturing facility/plant in Champa, Chattisgarh, India.

Integral to SI1100 is a distinctive formula and process that inhibits corrosion on the outside surfaces of pipe and equipment.

#### The SI1100 Edge

- Assured substantial energy saving through reduction in thermal losses. Superior thermal performance observed between 800 °C to 1100 °C
- No binders to burn out; no loss of insulation integrity
- Low drying shrinkage and good thermal stability
- Long life - need not be replaced for up to 20 years
- No harmful gas emissions or smoke during the first combustion
- Excellent resistance to mechanical vibrations
- Completely load-bearing
- Free from asbestos fibers, amiantus or other harmful materials
- Excellent workability



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## Major Applications

Power Plants	Boilers, Steam Pipelines, Turbines and Chimneys
Fertilizer, Refinery and Petrochemical Industry	Reformer, Gas Crackers, Heaters, Boilers, Steam and Process Pipelines and Fuel Oil Lines
Iron and Steel Industry	Blast Furnace Stoves, Bustle Pipes, Reheat & Annealing Furnaces, Waste Heat Boiler, Roof Tops, Regenerators, Flue Gas Ducts, Doors of Coke Oven Batteries, Lime Kilns, After Burning and Dust Settling Chambers of Sponge Iron Plants
Aluminium Industry	Reduction Cells (Pots), Homogenizing and Holding Furnaces, Alumina Calcinators
Cement Industry	Preheater Cyclones, Precalcinators, Kiln Riser Ducts, Firing Hood, Grate Coolers, Tertiary Air Ducts and Flue Gas Ducts
Furnaces	Heat Treatment, Reheating and Annealing
Ceramic and Glassware	Tunnel Kilns, Glass Melting Furnaces, Regenerators and Annealing Lehrs
Sugar Industry	Boiler and Steam Pipelines
Passive Fire Protection	Core Material for Fire Doors, Heat Protection, Shielding around Fire Places and Stoves



## Sharda Insulation Technical Specifications (Blocks):

### SI1100 Blocks

Grades	Max. Recommended Operating Temperature (oC)
H-800	800
H-1000	1000
H-1100	1100

### Sizes

Standard Size (in mm)	Thickness (in mm)
600 x 150	25, 40, 50, 65, 75 & 100
450 x 150	Special sizes and thickness are available on request.
300 x 150	

S.No.	Property	Units	SI-800 Grade	SI-1000 Grade	SI-1100 Grade
			Typical Values	Typical Values	Typical Values
1	Temperature, max service	Deg C	800	1000	1100
2	Average Bulk Density, dry	Kg/m <sup>3</sup>	220 - 280	240 - 280	260 - 300
3	Flexural strength, (min.)	KN/m <sup>2</sup>	300	350	600
4	Compressive Strength, reduction in thickness not to exceed under a load of: I) 415 KN/m <sup>2</sup> , dry II) 170 KN/m <sup>2</sup> , after 18 hrs immersion in water	%	5.0	5.0	5.0
			5.0	5.0	5.0
5	Heat Resistance, under soaking I) Linear Reheating Shrinkage (max.)- 12 Hours II) Loss In Mass (max.) III) Compressive Strength, reduction in thickness not to exceed under a load of 345 KN/m <sup>2</sup> (max.)	%	2 at 800 OC	2 at 950 OC	1.5 at 1050 OC
			14.0	12.0	10.0
			5.0	5.0	5.0
6*	Thermal Conductivity at mean temperature (max.) 300 OC 400 OC 500 OC 550 OC	W/m-K	0.078	0.078	0.076
			0.097	0.097	0.090
			-	0.118	0.110
			-	-	0.114
7	Moisture contents, by weight, (max.)	%	5.0	5.0	5.0
8	Alkalinity	pH	8 -11	8 -11	8 -11

\* Tested in accordance with BS-874 Cold Face 40 deg. C. Also as per IS 9490, water calorimeter apparatus.

SI1100 products exceed the performance requirements of IS 9428 / 8154, as well as BS-3958 Part II & ASTM C-533. The values quoted are from laboratory tests on typical samples and represent averages. They should not be used as maxima or minima in specifications.





## Fire Safety

Sharda Insulation is non combustible when tested in accordance with BS-476 Part 4. When tested for surface spread of flame test (Large Scale) as per BS-476 part 7 SI1100 is classified as Class One.

## Quality Management

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Sharda Insulation is recognized for high and consistent product quality. We aim to maintain a value-adding quality management system. We stay ahead because of our:

- Accurate identification of present and future demands and expectations from customers, as well as our post-sale follow-ups regarding product performance and customer satisfaction
- Value-adding processes management. This includes determination and follow-up on operational targets, based on analysis of data and information received from the processes and the market
- Development of product properties based on demands and specific applications of the customers
- Maintenance of necessary support processes in order to meet product demands
- Continuous improvement of the effectiveness of quality management



# Material Safety Data Sheet

## Chemical Product and Company Identification

Product Name: SI1100 Calcium Silicate Insulation

Generic Name: Insulation (Calcium Silicate)



## Chemical Composition

### Composition / Information on Ingredients:

**General :** Hydrothermal Calcium Silicate with Mineral Silicate fibers and reinforcing fibers. The material is completely asbestos free.

**Typical Composition :**

**Natural Calcium/ Aluminum Silicate :** 5 - 10%

**Cellulose Fibers :** 2 - 5 %

**Hydrothermal Calcium Silicate :** Balance

### Physical and Chemical Properties:

**Boiling Point :** N/A

**Vapour Pressure :** N/A (solid at high temperature)

**Water Solubility :** Insoluble (less than 0.1g/L)

**Ph :** 9.0 - 9.5

**Evaporation rate :** N/A

**Melting Point :** >1400°C



## Hazards Identification

### Emergency Overview

#### Appearance and Odor:

Odorless, Off White block insulation with opaque coloring throughout as a visual marker to indicate this is an asbestos-free product.

This product under normal conditions of use, is not expected to create any unusual emergency hazards. However, cutting, sawing, or abrading may increase the risk of personnel exposure.

Inhalation of excessive amounts of dust created when fabricating, cutting, or other mechanical alterations of the product may cause temporary upper respiratory irritation and/or congestion - remove affected individuals to fresh air. Skin irritation may be treated by gently washing affected area with soap and warm water.

Eye irritation may be treated by flushing eyes with large amounts of water. If irritation persists, contact a physician.

### Potential Health Effects Summary

Breathing dust from this product may cause a scratchy throat, congestion, and slight coughing. Getting dust or fibers on the skin, or in the eyes may cause itching, rash, or redness.

**Inhalation:** Irritation of the upper respiratory tract (scratchy throat), coughing, and congestion may occur in extreme exposure.

**Skin:** Temporary irritation (itching) or redness may occur.

**Absorption:** Not applicable.

**Ingestion:** This product is not intended to be ingested or eaten under normal conditions of use. If ingested, it may cause temporary irritation to the gastrointestinal (GI) tract, especially the stomach.

**Eyes:** Temporary irritation (itching) or redness may occur.

**Primary Routes of Entry (Exposure):** Inhalation (breathing dust), skin, and eye contact.



## First Aid Measures

### First Aid: Inhalation

Remove to fresh air. Drink water to clear throat, and blow nose to remove dust.

### First Aid: Skin

Wash gently with soap and warm water to remove dust. Wash hands before eating or using the rest room.

### First Aid: Ingestion

Product is not intended to be ingested or eaten. If this product is ingested, irritation of the gastrointestinal (GI) tract may occur, and should be treated symptomatically. Rinse mouth with water then drink plenty of water to help reduce the irritation. No chronic effects are expected following ingestion.

### First Aid: Eyes

Do not rub or scratch your eyes. Dust particles may cause the eye to be scratched. Flush eyes with large amounts of water for 5-15 minutes. If irritation persists, contact a medical professional.

### First Aid: Notes to Physician

This product is a mechanical irritant, and is not expected to produce any chronic health effects from acute exposures. Treatment should be directed toward removing the source of irritation with symptomatic treatment as necessary.



### Fire Fighting Measures

Flash Point:	Not applicable
Upper Flammable Limit (UFL):	Not applicable
Auto Ignition:	Not determined
Rate of Burning:	Non combustible
Method Used:	Not applicable
Lower Flammable Limit (LFL):	Not applicable
Flammability Classification:	Non combustible

### General Fire Hazard:

There is no potential for fire or explosion.

### Extinguishing Media:

Use any extinguishing media appropriate for the surrounding fires.

### Fire Fighting Equipment/Instructions:

No special procedures are expected to be necessary for this product. Normal fire fighting procedures should be followed to avoid inhalation of smoke and gases produced by other materials.



### Accidental Release Measures

#### Containment Procedures:

Pick up large pieces. Vacuum dust. If sweeping is necessary, use a dust suppressant such as water. Do not dry sweep dust accumulation or use compressed air for clean-up. These procedures will help to minimize potential exposures.

#### Clean-Up Procedures:

Wastes are not hazards as defined by the RCRA (40 CFR 261). Comply with state and local regulations for disposal of these products



### Storage

#### Storage Procedures:

Warehouse storage should be in accordance with package directions, if any. Material should be kept dry, and protected from the elements.



### Personal Protection

#### Personal Protective Equipment:

General loose-fitting, long sleeved clothing along with hand gloves should be worn to protect the skin from irritation. Exposed skin areas should be washed with soap and warm water after handling.



### Chemical Stability & Reactivity Information

**Chemical Stability:** This is a stable material. This product is not reactive.

**Hazardous Decomposition:** None.

**Hazardous Polymerization:** Will not occur.



### Regulatory Information

No special labelling is required for this material under any current legislation.



### Toxicological Information

#### Acute Toxicity

**General Product Information:** The primary acute health effects of this product include mechanical irritation of the skin and eyes and skin dryness as a result of contact with dust and fiber.

#### Carcinogenicity

**General Product Information:** OSHA, NTP, IARC, and ACGIH have not classified this product in its entirety as a carcinogen.

A large industrial facility, likely a refinery or chemical plant, featuring several tall, cylindrical towers and large pipes. The towers are covered in a light-colored, possibly reflective, material. The pipes are also large and curved, connecting different parts of the plant. The sky is clear and blue. The overall scene is industrial and complex.

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