Insulation Material

- Insulation Bricks
- Calcium Silicate Blocks
- Ceramic Fiber
  - Ceramic Fiber Bulk
  - Ceramic Fiber Blanket
  - Ceramic Fiber Board
  - Ceramic Fiber Module
  - Ceramic Fiber Rope
- Light Resins Bonded Mattresses (LRB)
- HFK Insulation Bricks
- HF/CF Insulation Bricks
- Porosint Insulation Bricks
**Insulation Bricks:**

Insulating bricks materials are highly specialized bricks that are used to line kilns and furnaces as temperatures in these applications can be as high as 1000 degrees Celsius. Thermal conductivity of these bricks is quite low but their structural integrity is such that they can easily withstand these high temperatures and also bear thermal shocks and abrasion. Insulating bricks are soft and very lightweight. They can be easily cut by a handheld saw to fit inside the lining of a furnace. Air is considered to be a very good insulation material. These insulating bricks contain tiny air spaces in the shape of honeycombs to have great insulating properties.

As far as insulation bricks materials is concerned, they are mostly made using silica and alumina. Both these substances are considered great for making refractories. The chemical compositions of insulating bricks are as follow:

- Silica - 61%
- Alumina - 37%
- Ferric Oxide - 1.6%

**Calcium Silicate Blocks:**

Calcium silicate is a compound that is made by reaction of calcium oxide and silica. Many types of calcium silicates can be obtained by reactions of these two compounds and varying ratios. Calcium silicates have high water absorption capability and it has a low bulk density. This compound is used in construction of roads, manufacture of bricks, for insulation, and for making of tiles and table salt. Calcium silicate is also used as an anti caking agent in many food preparations.

**Features of Calcium Silicate Blocks:**

- Lightweight and rigid
- Resistant to fire
- High mechanical strength
- Low specific heat
- High durability
- Can be reused

Indian Calcium silicate blocks find many applications in various industries. These include cement industry, aluminum industry, glass industry, iron and steel industry, power plants, fertilizer industry, petrochemical industry, ship building industry, chemical industry, sugar industry, foundries, rolling mills and other industries where temperatures can go high up to 1000 degrees Centigrade.
Ceramic Fiber:

a) Ceramic Fiber Bulk:

Impetus Turnomatics are Manufacturer, Supplier and Exporter of Simwool Bulk Fibers. This product made from high purity alumina, Silica (and Zircon). It is resistant to chemical attack. Simwool Bulk Fibers are long and flexible with high refractory properties.

**Characteristics**

- Excellent thermal and chemical stability
- Excellent thermal shock resistance
- Resilient up to high temperatures
- Light weight, low heat storage capacity
- Low thermal conductivity
- Excellent sound absorber
- Asbestos free

**Applications**

- Raw material of secondary ceramic fiber products e.g. blanket, paper, board
- Expansion joint seal
- Temporary repair of insulation
- Loose insulating fill for complex spaces and areas where access is difficult

**Technical Data**

<table>
<thead>
<tr>
<th>Classification temperature (°C)</th>
<th>1260</th>
<th>1425</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting Point (°C)</td>
<td></td>
<td>1760</td>
</tr>
<tr>
<td>Colour</td>
<td></td>
<td>White</td>
</tr>
<tr>
<td>Fiber Diameter (µm)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Non Fiberous content by wt. (%)</td>
<td></td>
<td>15 Max.</td>
</tr>
</tbody>
</table>

**Chemical Composition (%)**

<table>
<thead>
<tr>
<th></th>
<th>Al₂O₃</th>
<th>SiO₂</th>
<th>ZrO₂</th>
<th>Fe₂O₃</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>43-47</td>
<td>53-57</td>
<td>------</td>
<td>0.1 Max.</td>
<td>Traces</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>14-18</td>
<td>0.1 Max.</td>
<td>Traces</td>
</tr>
</tbody>
</table>

| Packing (Kg/bag) | 15 |
b) Ceramic Fiber Blanket:

Ceramic Fiber Blanket is made from high purity Simwool Bulk Fibers. Double needling enhances the physical properties of the blanket, conferring good strength, handling ability, durability and resistance to delaminating.

**Characteristics**
- Double needled blanket
- Low density
- Low thermal conductivity
- Short heating & cooling time
- Resistant to thermal shock
- Flexible and easy to cut and install
- Contains no organic binder
- Asbestos free

**Applications**
- Lining for furnace, kiln and oven
- Expansion joint and seals for furnace, kiln and oven
- Back-up insulation
- Lagging of high temperature pipe work
- High temperature filtration
- Steam turbine and nuclear insulation
- Fire protection

**Technical Index**

<table>
<thead>
<tr>
<th>Classification temperature (°C)</th>
<th>1260</th>
<th>1425</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td></td>
<td>White</td>
</tr>
<tr>
<td>Fiber Diameter (µm)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Linear Shrinkage (%)</td>
<td>At 1200°C x 24 hrs -3.00</td>
<td>At 1400°C x 24 hrs -3.25</td>
</tr>
<tr>
<td>Thermal Conductivity (W/mk)(128 kg/m³) Mean Temperature 500°C</td>
<td>0.115</td>
<td>0.113</td>
</tr>
<tr>
<td>Tensile Strength (KPa)(25 mm thick, 128 kg/m³)</td>
<td>60 Min.</td>
<td></td>
</tr>
<tr>
<td>Non Fiberous content by wt. (%)</td>
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<td></td>
</tr>
<tr>
<td>Density (kg/m³)</td>
<td>64/96/128/160</td>
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</tr>
<tr>
<td>Chemical Composition (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Al$_2$O$_3$</td>
<td>43-47</td>
<td>32-34</td>
</tr>
<tr>
<td>SiO$_2$</td>
<td>53-57</td>
<td>49-52</td>
</tr>
<tr>
<td>ZrO$_2$</td>
<td>------</td>
<td>14-18</td>
</tr>
<tr>
<td>Fe$_2$O$_3$</td>
<td>0.1 Max.</td>
<td>0.1 Max.</td>
</tr>
<tr>
<td>Other</td>
<td>Traces</td>
<td>Traces</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Available size mm/roll</th>
<th>13 x 610 x 7620</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25 x 610 x 7620</td>
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<tr>
<td></td>
<td>50 x 610 x 3810</td>
</tr>
</tbody>
</table>

- All data represents typical results of standard tests conducted under controlled conditions. As such, the information is intended only as a general guide for specifications and design estimates.
C) Ceramic Fiber Board

Product Description
Ceramic Fiber Board is made from refractory fibers and binders which have low organic content, the mixture is vacuum processed into boards that imparts good mechanical strength even after heating.

Characteristics
- Low thermal conductivity
- Resistant to thermal shock
- Great Mechanical Strength
- Even density and thickness
- Able to withstand gas flow velocity of 30m/sec
- Easy to cut and install
- Good erosion resistance
- Short heat up and cool down time
- Asbestos free

Application
- Hot face lining of ceramic fiber kiln
- Insulation for kiln car
- Furnace door insulation
- Duct insulation
- General thermal barrier
- High temperature insulation

Technical Index

<table>
<thead>
<tr>
<th>Temperature° C</th>
<th>Compressive Strength 10% deform Kg/Cm2</th>
<th>Compressive Strength 25% deform Kg/Cm2</th>
<th>Bursting Strength Kg/Cm2</th>
<th>Linear Shrinkage % 24 hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1050°C</td>
<td>2.8 Min.</td>
<td>4.5 Min.</td>
<td>10 Min.</td>
<td>2.5 Max.</td>
</tr>
<tr>
<td></td>
<td>1260°C</td>
<td>1425°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>--------</td>
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<tr>
<td>Colour</td>
<td>White</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fiber Diameter (µm)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Ceramic Fiber Rope

**Product Description**

Ceramic Fiber Rope is a round braided rope. It is made from high quality Simwool Fiber reinforced with fiberglass or stainless steel wire for high temperature use.

**Characteristics**

- Stable at high temperatures
- High tensile strength
- Strong resistance to thermal shock and corrosion attack
- Low thermal conductivity
- Asbestos free

**Applications**

- Furnace door insulation and seal
- Coke oven door seal
- Foundries, refineries and power plants
- Gasket for vacuum degassing of steel
- Expansion joint packing in boilers and furnaces
- Glass furnace sealing

**Available in Diameter of 10mm, 13mm, 19mm, 25mm, 38mm & 50mm**

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<table>
<thead>
<tr>
<th>Non Fiberous content by wt. (%)</th>
<th>15 Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theoretical Density (kg/m³)</td>
<td>128,160,192/240</td>
</tr>
<tr>
<td>Chemical Composition (%)</td>
<td></td>
</tr>
<tr>
<td>Al₂O₃</td>
<td>43-47</td>
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<tr>
<td>SiO₂</td>
<td>53-57</td>
</tr>
<tr>
<td>ZrO₂</td>
<td>-----</td>
</tr>
<tr>
<td>Fe₂O₃</td>
<td>0.1 Max.</td>
</tr>
<tr>
<td>Other</td>
<td>Traces</td>
</tr>
<tr>
<td>Module size (mm)</td>
<td>[125 to 300] x 305 x 305</td>
</tr>
</tbody>
</table>

- Other sizes available on special order.
- All data represents typical results of standard tests conducted under controlled conditions. As such, the information is intended only as a general guide for specifications and design estimates.
Light Resins Bonded Mattresses (LRB):

Light resins bonded mattresses, simply called LRB are mattresses made from fibers of molten rocks. These fibers of select rocks are bonded together using a thermosetting resin. These mattresses provide high thermal resistance in applications involving high temperatures such as furnaces, chimneys, duct insulation in air conditioning, and many other processes.

Features of Light Resins Bonded Mattresses
- High thermal insulation
- Resistant to thermal shocks
- Lightweight
- Available in different thicknesses and densities
- Conserve energy in both hot and cold insulation

Applications Area
- Tanks
- Ducts of air conditioning systems
- Buildings
- Ceilings
- Boilers
- Furnaces
- Ovens
- Pipelines
- Chimney walls

HFK Insulation Bricks:

HFK bricks are special bricks possessing insulating properties. They are rigid bricks that are used in many industries involving high temperature applications. Our HFK bricks possess very low thermal conductivity and also extremely low heat storage ability to be of great use for insulation in high temperature applications. Despite being lightweight, the HFK insulation bricks are very rigid and last for a very long time.

Features of HFK Insulation Bricks
- Rigid construction
- Extremely low thermal conductivity
- Very low heat storage
- Low iron and alkali flux content

HFK Insulation Bricks are very low on heat storage, these HFK bricks result in great energy savings for our clients that use them in cyclically operated kilns. These bricks have high tensile strength and resist heat and moisture to last for a very long time. HFK bricks possess high porosity and superior cold crushing strength. They suffer from very little linear change after firing. We can supply these bricks in quantities and specifications as per the requirements of our clients.
HF & CF Insulation Bricks:

Insulation bricks are essential in many industries involving high temperatures. These bricks have low thermal conductivity and low heat storage to provide effective heat insulation. HF/CF bricks are resistant to heat and pressure and they do not get affected even when placed in applications involving temperatures exceeding 1000 degrees Celsius. These bricks are made using alumina and other Enterprise and undergo quality checks at various stages of manufacturing to make sure that they do not crack or get influenced under conditions of high heat and even flames.

Features of CF insulation bricks

- High voltage resistance
- High temperature resistance

These CF insulation bricks are made using raw materials such as china clay, ball clay, rice husk, saw dust, insulation grock, and kyanite powder. They are used mainly in oil refineries, steel plants, glass plants, and aluminum plants.

Porosint Insulation Bricks:

Porosint insulation bricks are made from refractory materials and they are known for their excellent thermal insulation and resistance to shocks. Porosint bricks are known for their precise dimensions and durability. Porosint bricks are special bricks that can withstand high temperatures, adverse weather conditions and heavy loads. This is the reason why these bricks are used in construction of strong structures.

Features of Porosint Insulation Bricks

- Have extremely low thermal conductivity
- Can be easily installed using concealed anchor
- Great tensile strength
- Very low heat storage capability
- Provide resistance to erosion because of gas flow
- Help in maintaining accurate control over temperature
- Can be given any shape by cutting