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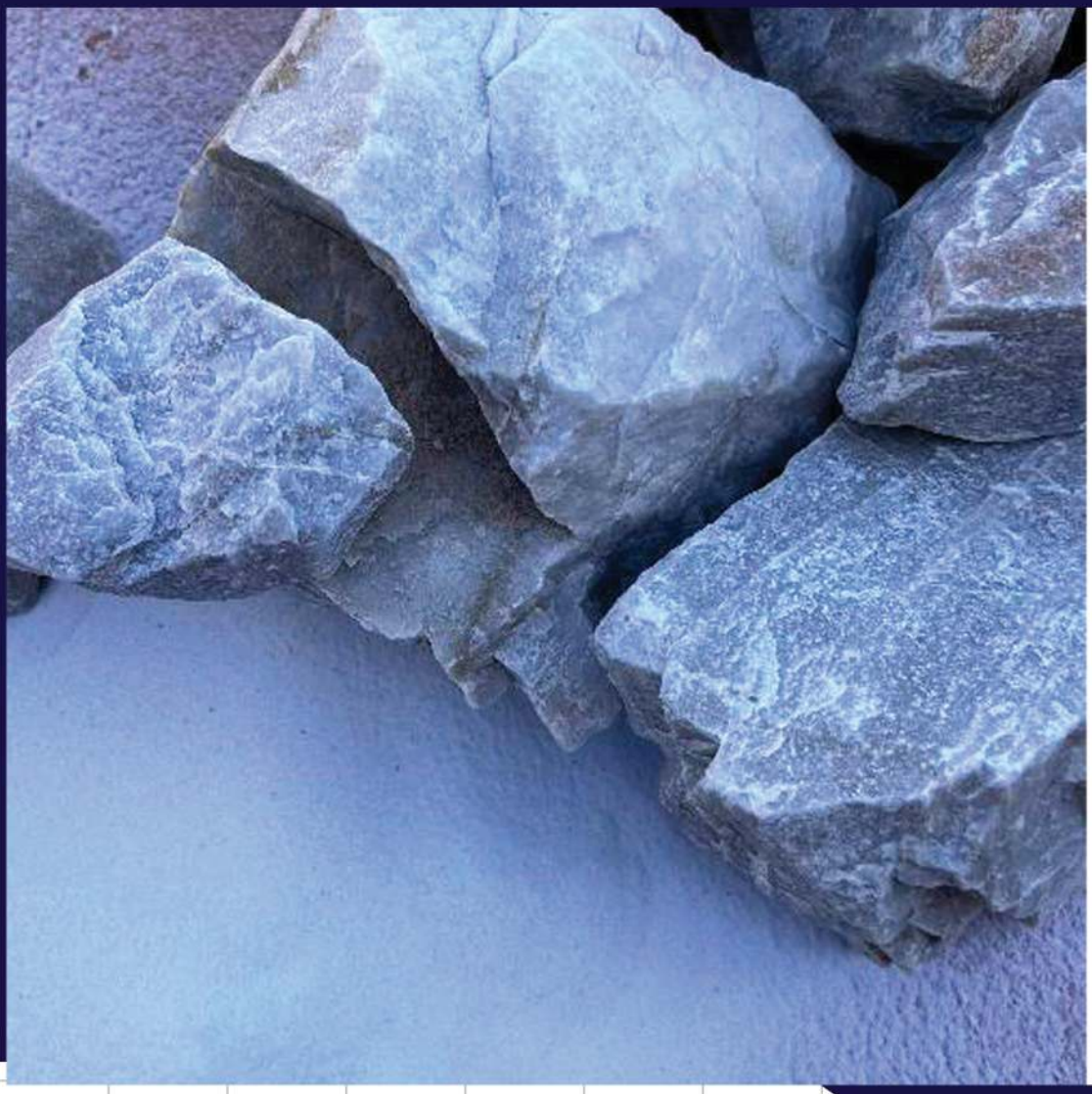

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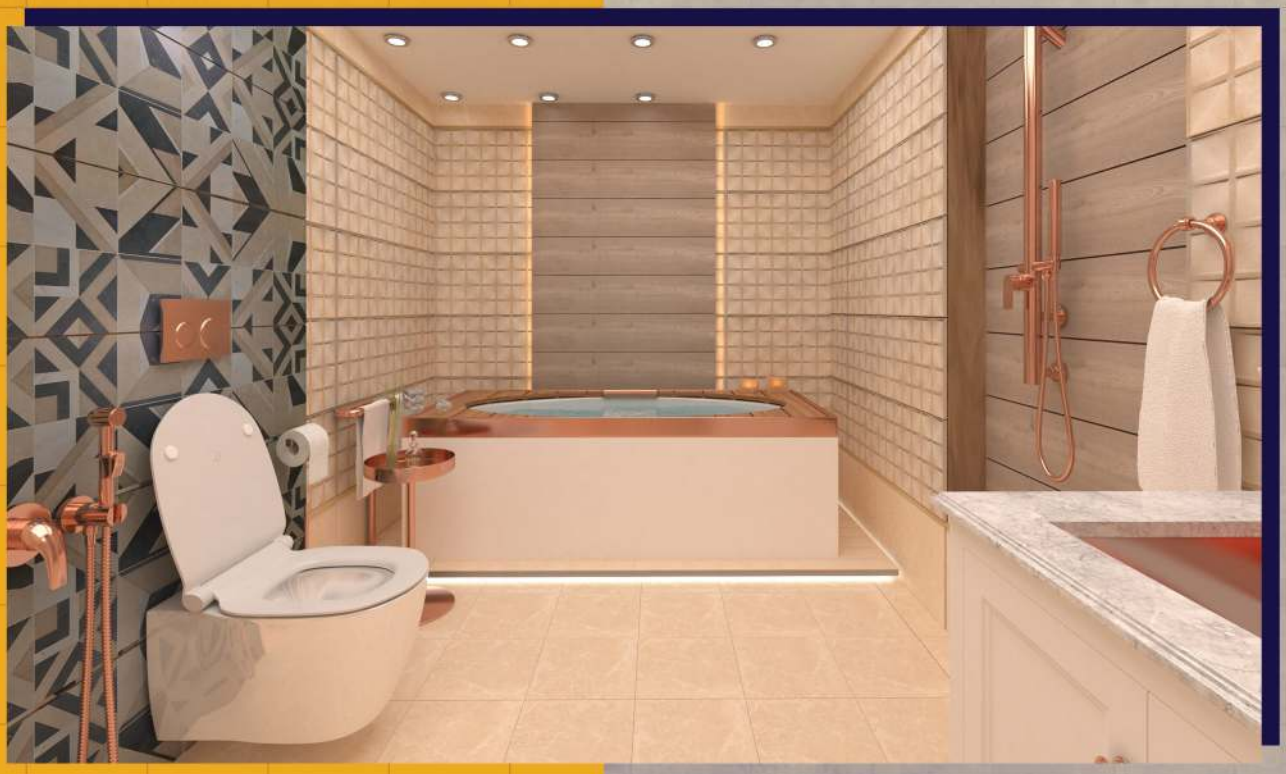
## Silica in the Tile and Ceramic Industry:

**In the tile manufacturing industry, silica prevents cracking in tiles, provides refractory properties, enhances the strength, beauty, and transparency of the tiles. It is a fundamental component of the glaze and body formulation of various ceramic products and refractory materials. In addition to clay and feldspar, silica is also used in the initial mixture for tile and ceramic production. In addition to strengthening the bond in the tile and ceramic paste, the melted silica layer forms a glass-like coating on the surface, ultimately producing high-quality, glossy, and glass-like products.**



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## Silica in the Glass Industry:

**Silica stone is the primary material for producing various standard and special glass types. The chemical purity of this material is a key determinant in the formulation of glass, affecting its color, clarity, and strength. When silica is melted, a specific type of glass known as silica glass is produced, which can withstand temperatures up to 800 degrees without melting.**

**Industrial silica stone is used for manufacturing car glass, building glass, crystal ware and Crystal Manufacturing, smoked glass, tempered glass, sheet glass, float glass, pharmaceutical and laboratory glass, and household items.**



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## Silica in the Ferrosilicon Industry:

**Ferrosilicon is a type of alloy. This material is produced and made by heating, reducing, and melting iron ore and silica with carbon, often in electric arc furnaces.**

**The most important applications of ferrosilicon are in the casting of gray iron, steel production, manufacturing various types of metals, and producing graphite electrodes and welding rods.**

**Ferrosilicon imparts non-refractory properties to steel, enhancing its quality for various industries. Therefore, it is claimed that the major consumers of ferrosilicon are steel manufacturing plants.**



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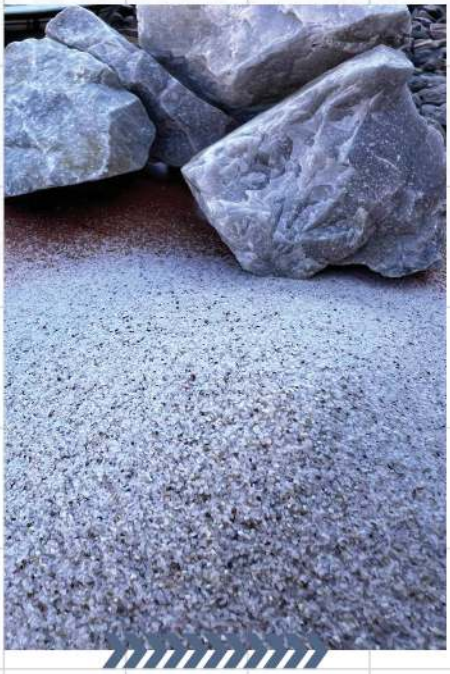

## Silica in the Casting Industry:

**Silica has a high melting point of approximately 1610 degrees Celsius. Metal casting involves pouring molten metal into molds made from silica sand.**

**In the preparation of casting molds for molten steel and iron, as well as copper alloys, the molds are made of highly heat-resistant silica sand. After cooling, the desired shapes are formed. The bodies of foundry furnaces must be completely refractory and resistant due to the extremely high temperatures. Fine silica particles, which can withstand temperatures up to 1470 degrees Celsius, ensure the integrity of the furnace body during casting.**



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## Silica in Water Purification:

**One of the most important applications of silica in the water purification industry is for use in sand filters. Silica is one of the crucial materials used in the structure of sand filters and is employed for the filtration of solid particles, cleansing, and removal of pollutants such as sludge in urban and rural water purification, swimming pool and jacuzzi water purification, and the purification of liquids and industrial oils. In the water purification industry, silica is used in different particle sizes.**



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## Silica in the Sandblasting Industry:

**Silica is used in sandblasting for descaling, paint removal from surfaces, matting parts, descaling and cleaning parts. Another application of silica in sandblasting is to engrave patterns and text on various surfaces such as glass, wood, metal, tiles, and ceramics, as well as roughening surfaces for better and more efficient glazing and Teflon coating processes. Sandblasting is also used to clean stone and concrete, steel molds, and to prepare surfaces for painting and engraving on glass and plastics.**

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## Silica in the Construction Industry:

The use of silica in concrete casting and construction reduces the consumption of cement. The strength of concrete surfaces containing silica sand is significantly increased. The reaction of silica with calcium hydroxide in concrete plays a crucial role in preventing the penetration of water and other materials into the concrete layers. Silica grains and sand are also used in other building components such as facades, block manufacturing, and floor and mortar compositions. Silica is used to increase durability, provide anti-corrosion and weather resistance in sealants, improve mechanical strength, stability, lifespan, and reduce maintenance requirements. The combination of silica powder with feldspar and dolomite is used in the production of fiberglass for sound and thermal insulation.

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## Silica in the Oil and Gas Industry:

**The application of silica in the oil and gas industry, apart from sandblasting of pipes and oil tanks, involves injecting it under high pressure into oil-bearing layers to open fractures and enhance permeability for increased oil and gas production.**



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