

A
key
ingredient
for the glass
makers by PCPL



GlassoMite™

ADD VALUE to your GLASS

* Vision & Mission

Our vision at Glassomite, is to be the best global material solutions company; market driven, operationally excellent, with a compelling culture. Our ambition goes beyond financial status and size; starting with safety and extending to all disciplines.

The purpose of Glassomite is to identify the needs and requirements for improved and innovative production technologies for the whole glass industry in the broadest sense and to define and coordinate research and development activities which fulfil these requirements

We take a global view, looking beyond geographic and regional boundaries. We continue to explore opportunities beyond our current minerals and markets to meet the needs of our customers.

At Glassomite, people are essential to our success and our culture is integral to our strategy – we continue to build upon a compelling culture that attracts, engages and retains the best people..

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1. A key ingredient for the glass makers:

Glassomite is an eco-friendly alumina rich source used in all types of soda lime silica glass production.

Its usage offers following benefits to glassmakers to:

- Lower total energy per tonne of glass
- Higher furnace pull
- Better quality of finished product
- Lower harmful emissions CO₂,SO₂,NO_x
- Extends furnace life with lower refractory attack & lower furnace temperature

Glassomite is produced from granulated blast furnace slag which is a byproduct from the steel making industry, being of homogenous & glassy nature.

The glassy phase helps in reducing energy, lowers NO_x, CO₂ and SO₂ emissions offering sustainable benefits to the glassmakers as it is enriched with all major glass making oxides and the grain size is maintained such to be compatible with other glass raw

Typical COA:

Chemical Analysis :

%SiO ₂	31.92
%Fe ₂ O ₃	0.28
%Al ₂ O ₃	19.44
%TiO ₂	0.56
%CaO	33.35
%MgO	10.84
%Na ₂ O	0.41
%K ₂ O	0.74
total S	0.76
%MnO	0.48
%SO ₃	0.18
%S=	0.69
%Carbon	0.25
Total	99.09
%O ₂ equiv.	99.72
Redox	-0.0767

Physical Analysis :

Micron	% Passing
1400	100
500	70
120	20

Figure 1

GLASS CONTENT:97-99%

2. Glassomite production process:

The production process starts from creating stock piles to attain maximum consistency & quality. Processing is done in complete fully automated plant i.e drying, magnetic separation, crushing, screening, magnetic separation, packing and testing, etc.

Samples are drawn at regular intervals in process to test for ensuring quality is maintained.

The typical COA (Figure1) illustrates the particle size distribution which is compatible with other glass making raw material in the batch.



3. How Glassomite is used

Implementing Glassomite

PCPL works with glassmakers to help them reap maximum benefits by stepwise implementation under the guidance of expert independent glass technologist, by way of batch simplification.

The % usage is generally determined by glass composition, glass color and local raw material used in all types of soda lime silica glass production.

The general pattern of % usage is estimated to silica sand weight, expressed as below:

Clear container	06-07 %
Amber container	18-22 %
Green container	10-13 %
Float glass	03-08 %



Figure 1

Deriving benefits of glassomite is depended on specific priorities of glass makers being : energy reduction, higher pull, better quality etc.



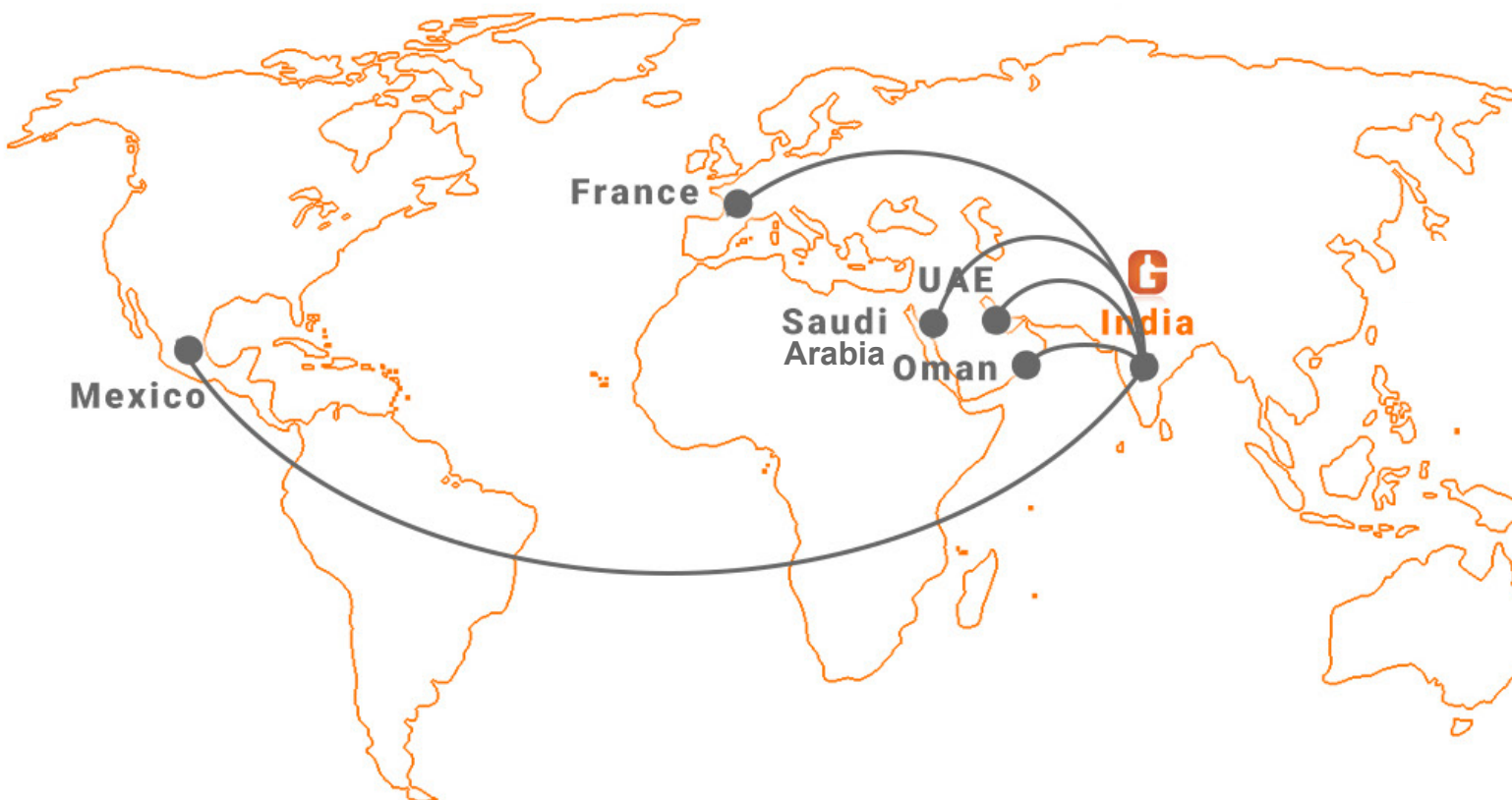
4. Availability & Packing

Glassomite availability

PCPL is strategically located in Pune (India) which is close to Nhavasheva port (Mumbai) making easy access to road and port facilities for global market. Within India it is distributed via roads or rail wagon.

Available packing is jumbo bags(1.3-1.5 mt) or 50 kg pp bags.

Glassomite is currently being exported to MENA region, Latin America, and other potential enquiries from Far East, South Africa and more.



5. Advantages of Glassomite implementation can be mainly divided into: Ecofriendly, economical & quality benefits

1) Eco friendly benefits :

- Lower CO₂, NO_x and SO_x emissions
- Elongated furnace campaign life
- Landfill of granulated slag has stopped

2) Economical benefits :

- Lower total energy per tonne of glass
- Higher glass yield
- Reduced emissions of harmful environmental gases
- Increased furnace pull
- Batch simplification
- Better glass quality

3) Quality improvement :

- Decreased batch stones
- Reduced seeds & blisters
- Color stabilization using redox concept
- Reduced refractory attack



6. Glassomite melting process:

The lower melting temperature is mainly due to glassy phase allowing energy consumption & furnace temperature to be reduced not affecting the final glass quality.

Availability of CaO originally in Glassomite allows reduced endothermic effect associated with the decomposition of carbonates in the glass batch i.e lime & dolomite

The sulphide S_2 from Glassomite lowers temperatures for decomposition of sodium-sulphate to 900°C from 1255°C (without using Glassomite in the glass batch), allowing excess sodium sulphate to be decomposed by reaction of sulphate sulphide releasing Sulphur in the batch as SO_2 . Thus reducing the foaming or reboil resulting in improved refining and better quality of glass.

The silica sand melting is the final stage of the melting process, Glassomite encourages dissolution of silica sand having lower % of SiO_2 .



7. Other important glass raw materials that PCPL can provide:

Poona Cement Pvt Ltd is a global material solution company. We utilise nature's raw materials to provide solutions for society and support the cradle to cradle loop. From glass, ceramics and refractory we have expertise in a large number of markets. Our clients can be confident that our products will be perfectly suited to their job and perform to high standards.

1. Aluminium Hydroxide or alumina trihydrate:



Is the hydrated oxide of aluminium. Alumina trihydrate is separated from ore bauxite with average particle size ranging from 80-100 micron. The blocky crystals of alumina trihydrate impart good reactivity. Alumina trihydrate can react with a base as well as an acid and finds many applications as raw material. Aluminium hydroxide or alumina hydrate is used in the manufacture of many inorganic chemicals like: **Glass, Ceramics**, non ferric alumina, water treatment and many more. Alumina hydrate is available in wet as well as dry form.

2. Calcined Alumina:

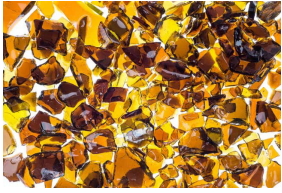


Is made by firing a source alumina at various temperatures, depending upon desired level of calcination (burn), into alpha alumina varying from 5-100% moving it to its densest and most stable form. The calcined alumina particles appear as crystalline agglomerates which are larger when the degree of calcination is higher. Calcined alumina is generally used in the manufacture of refractories, **glass, ceramics** and enamel etc.

3. Cobalt Oxide Powder :



Is most commonly utilized as a pigment in ceramic and glass industry for delivering black or blue color to the end product. It has chemical formula Co_3O_4 with molecular weight of 240.80 g/cm³ and density of 6.11 g/cm³. This powder is black in color and shows water insoluble nature. It is also employed in chemical industry for producing cobalt salts. Cobalt Oxide Powder is an odorless compound with high purity level and assures superior effectiveness. It distributes uniformly while giving an attractive finish & color to pottery, ceramic, & enamel items.



4. Glass Cullet :

Every year we transform glass waste into premium quality cullet products. We supply sorted cullet with low level of impurities.



5. Iron Chromite:

Is an iron chromium oxide commonly associated with olivine, magnetite, serpentine, and corundum. As a major source of metal chromium, the extracted chromium from chromite is used in chrome plating and alloying for production of corrosion resistant superalloys, nichrome and stainless steel.

Chromium is used as a pigment for **glass**, glazes and paint, and as an oxidizing agent for tanning leather



6. Iron Oxide:

Oxide-hydroxides are widespread in nature and play an important role in many geological and biological processes. Iron oxides are widely used as durable pigments in paints, coatings and colored concretes and mainly in **glass** industry



7. Iron Pyrite:

Is an iron Sulphide which is very popular form of Ferrous Sulphide due to its metallic luster and pale brass-yellow hue.

It is used in amber **glass** to provide iron and sulfur for the amber chromophore.



8. Soda ash :

Is an odorless, white powder. It is stable, not toxic or explosive or flammable. There are basically three grades of soda ash that are produced, namely:

Dense soda ash, which is an anhydrous substance. It forms an important industrial chemical, and is widely used in the manufacture of different products like Glass and more

9. Sodium Sulfate:



In the manufacture of **glass**, it has a definite place as a raw material (salt cake). For a long time it was being a chief source of Alkali. It is a byproduct in the manufacture of various chemicals like HCl acid, nitric acid, dichromate industry etc, also the level of impurities in salt cake depend upon its source.

10. Silica Sand:



Is the primary component of all types of standard and specialty **glass**. It provides the essential SiO₂ component of **glass** formulation and its chemical purity is the primary determinant of color, clarity and strength. Industrial sand is used to produce flat glass for building and automotive use, container **glass** for foods and beverages, and tableware. Specialty glass applications include test tubes and other scientific tools, incandescent and fluorescent lamps, television and computer CRT monitors.

11. Zinc Oxide :



Is an inorganic compound with the formula ZnO. ZnO is a white powder that is insoluble in water, and it is widely used as an additive in numerous materials and products including rubbers, plastics, **ceramics, glass**, cement, lubricants, paints, ointments, adhesives, sealants, pigments, foods, batteries, ferrites, fire retardants, and first-aid tapes. Although it occurs naturally as the mineral zincite, most zinc oxide is produced synthetically.



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