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Conceptual Paper

Application of Mineral and Allumino Silicates in Te Electronic and Telephone Industries in India

Arun K Shandilya*

Department of Applied Geology, DR. H. S. G. University, India

***Corresponding Author:** Arun K Shandilya, Department of Applied Geology, DR. H. S. G. University, India.

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The studies on the varieties of glasses have been carried out to under stand the strength of various type of the glasses are available in our country.

The naturally occurring glass do not have a high hardness and good quality, generally it breaks, when the variety of compression force/tensile force, or couple shear forces are active on these glasses. The verities of glasses are available as per the utility of glasses, the manufacturer have as per their own requirement with different composition.

The varieties of glasses can be manufactured with a variety of combination in the mineralogical composition, give good the quality glass. There are two type of the glasses are- (1) Natural glass (@) Synthesized/ Artificial glass.

The silicate is the only source for the manufacturing of glass, which is commonly used by the manufacturers, but some the other minerals composed of silicates can of the Calcium, sodium, potassium, lithium and aluminium silicate can be utilized for the manufacturing of the new variety of glass.

The glasses are produces when molten silica bearing mineral matter is quenched. Natural glasses have been formed from the melts that have originated as a consequence of the fusion of the country rocks adjacent to Magma (These glasses are called Brushites, the collision of the meteorites and the earth (impact melt and Tektites, and the fusion of the rocks by frictional heat in response to faulting (Hyalomylonites) : the striking of the sand or rock by lightning(Fulgurites and the heat produced by naturally initiated combustion of plant matter (Ash Glass)' as well as by the chilling of the intrusive or extrusive magma (Glassy igneous rocks).

The composition of the glass is determined by the geochemical analyses. The general composition of the glasses- frequently expressed as the basis of SiO_2 content, can be estimated from the glass index of refraction.

Dispersion or specific gravity, particularly if its mode of occurrence on mineral and rocks are known.

The chemical composition of some important silicate minerals are as follows:

1. Anorthite- Ca $AlSi_3O_8$
2. Andesine - Ca $AlSi_3O_8$
3. Labradorite- Ca $NaAlSi_3O_8$
4. Bytownite - Ca $NaAlSi_3O_8$
5. Oligoclase- NaCa $AlSi_3O_8$
6. Albite- Na $AlSi_3O_8$
7. Kyanite Al2Sio_5
8. Sillimanite $Al2O_3SiO_2$
9. Andalusite
10. Bauxite- hydrated Aluminium oxide.
11. Chrysoberyl –$BeAl_2O_4$
12. Corundum Al_2O_3, Quartz- SiO_2
13. Obsidian- Volcanic glass
14. Pitchstone igneous glass.

Since, the glass are used in the all domestic purposed along with the industrial purposes including mobile phones, TV, LED TV, automobile industry. For these types of industries, we need a special type of glass which must be very hard, and have good strength, scratch free and crack proof.

In the standard laboratories various types of glass can be manufactured/separated they are – sapphire, HIE, dragon trail, Gorilla, shot genition, soda lime float glass etc.

The details of these glasses are as follows:

- **Saphhire Glass:** It is a very high-quality glass and manufactures a very high temperature (about 4000 F) by melting the alumina silicate\-Kyanite, sillimanite, Andalusite) at 4000 F Temp and rapidly cooling of the melt.
- This sapphire glass is used in the Aero plane window, LED TV, Electronic products, Scratch proof watches cover. etc. This glass in bit costly, so the common man / cannot use it.
- **HIE glass:** This glass is composed of Al2o3.Sio2 at high temperature. The melt of alumina silicate is cooled rapidly to form HIE glass. It is used in the Back-plate glass, display, touch screen cover and optical component in the various industries. The HIE glass is very thin, hard, shock proof, scratch proof variety.
- **Dragon Trail Glass:** The composition of this glass is made up of the Soda Lime glass, which is manufactured at the high Temperature by the melting of Albite (Na L SI308 and Anorthite (Ca AlSiO8). This glass is very sophisticated glass used in the portable devises, smart phones, Tablet/ personal computer, cover glasses of various display instruments/ equipment's etc. The glass is also scratch and crack proof.
- **Gorilla Glass:** This is very thin glass composed of Allumino silicate and a chemical layer on the glass. It is very much eco-friendly and use full in the i phones, smart phones and tablet used in the various industries. This gorilla glass is a scratch proof, high pressure resistance and with pristine surface.
- **Shot gene tion glass:** It is one of the very good high-quality glass of Allumino silicate comprises of Kyanite, Sillimanite, and Andalusite (Al2SiO5) This glass I is flexible, hard, scratch proff, unbreakable. It is used in high level touch equipment's optical industries, communication and medical equipment industries.
- **Soda lime glass:** It is very common type of the glass, composed of Soda Lime, silica and alumina rich. The mineral Albite and Anorthite are used for the manufacturing of this glass. These minerals are heat up to 1600-1700 C and melt is then cooled rapidly to form this glass. This glass in very thin, transparent, compact, hard and cheaper.
- **Silica glass:** This type of glass is manufactured with the ordinary silica or glassy sand particles, it can be used for the houses, windows, other transport and in housing industries.
- **Natural glass:** The natural glass is formed under the high temperature conditions in the Volcanic rocks, the melts are erupted through the volcanic pipe and by the rapid cooling, melt convert in to glass.
- **Buchites:** This type of glass has been found in the contact zone between Basalt masses and their adjacent country rocks (shale) and also in xenoliths. They are apparently rather rare.
- **Hyalomylonites:** It's a glassy rock formed when the heat caused by friction associated with faulting in the great enough to cause fusion of the rocks involved/ These glasses were recorded from the few fault zones that transect rocks such as granite and arkose. Deep seated zones where the rocks were already rather hot prior to faulting appear to be prerequisite to the formation of these glasses.
- **Fulgarite:** This name is given to glass formation produced where lightning has caused melting and fusion of rocks material and the melt has then been quenched.
    - There are two type of Fu; lgurite

      1.Sand Fulgurite and

      2. Rock crust Fulgurite.
    - Sand fulgurite resulting from lightning striking unconsolidated sand is typically long, hollowlynders, the glass of which is bubble bearing and glass attached sand grains.
    - The rock fulgurite is similarly constituted that coats rocks exposures that have been hit by lightning. Most sand and rock fulgurite are silica glass called-Lechatelierite.
- **Asha glass:** The name ash glass is applied to the scoriaceous and stag like glasses, typically greenish to dark grey in color, that have been produced by the heat accompanying combustion of vegetal materials. Several glass stones, nearly 15 kg in weight up have been recorded as having been formed as a result of haystack and straw (grain) fires. Although some gramineous species secrete free silica (e.g. epidermal cells of oats may yield opal), much of the silica of at least some of these glasses is apparently derived from subjacent mineral matter. Most of the ash glass that has been reported has been characterized by a relatively high alkali content and carbonaceous matter.

The present studies on the various glasses will be very much helpful to all the glass manufacturer whose products are generally used in the Telecom industries and computer industries and watch industries etc.

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