

Glass Fiber Manufacturing

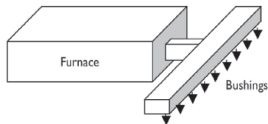
The manufacturing process for glass fiber reinforcements begins with raw materials, which are basically minerals. We mix those minerals based on the recipe of the glass formulation.

The three main ingredients used to make glass are silicon dioxide (SiO_2), lime (calcium oxide or CaO) and aluminum oxide (Al_2O_3). Changing the mix of those components and other minerals will result in significantly different glasses. E-glass (with good electrical insulation properties, hence the name) is a commonly used glass on the market.

Advantex[®] glass, which is recognized as the standard within the OCV[™] businesses, has no boron in the batch and as a result has better corrosion resistance and a smaller environmental footprint than standard E-glass. Other glasses (alkali-resistant glass [AR] for cement or high-performance glasses) are also available in the OCV[™] product line.

A furnace converts the mineral batch into molten glass and then distributes the glass through a channel into an area called the forehearth where the glass fibers are formed. A typical furnace is about the size of a three-car garage. It runs at a little more than 2,300°F (1250°C) for 24 hours a day and seven days a week.

Once completely molten, the liquid and homogeneous glass composition flows into heated refractory channels to feed the bushings. The bushings are made of a platinum and rhodium alloy that has small holes through which liquid glass flows.



The glass then solidifies into filament shape by rapid cooling. Once solidified, the glass filaments are coated with a sizing made of chemical components which give the glass strands a good process-ability and adhesion with resins.

Several fabrication processes exist to produce different product formats: multi-end roving, chopped strands, veil or continuous filament mat.