Raw Materials
Glass Raw Materials
For Soda Lime Silicate Containers

- **Sand**: Primary raw material used in glass. Source of silicic dioxide, the glass forming oxide. Sand is actually shaped to form a bottle.
- **Soda Ash**: Reacts with sand, making it possible to produce glass below 2300°F and non-soda melting process efficiently.
- **Limestone**: Modifies viscosity.
- **Feldspar**: Enhances chemical resistance.
- **Slate**: Adds melting, adds color to the glass.
- **Dolomite**: Crushed recycled glass. Improves melting efficiency. Results in fuel reduction and less emissions.
Glass Forming
Automatic Bottle Processes
With Temperature Relationship

**Gob:** Surface temperature: 200°F

**Blow & Blow**

1. Gob delivery through funnels into closed blank molds.

2. Settle blow with funnel and baffle on, pushes glass down on plunger and into finish.

3. Counter blow baffle down. Air from plunger to blow parison.

4. (Common step for both processes) Blowheads down and blow air on.

**Parison Preform Blank Mold:** Surface temperature of gob reduced to 1350°F.

**Press & Blow**

1. Gob delivery through funnels into closed blank molds.

2. Baffles on and plunger up, starting to press glass.

3. Pressing of glass into blank cavity and finish to form parison.

**Final Mold:** Bottle given final shape. Temperature now 100°F.

**Conveyor Belt:** Temperature 800°F.

The Forming Process
Most narrow-neck bottles are formed by a "blow and blow" process. Of researchers are currently experimenting with a narrow-neck "press and blow" forming technique, where the plunger is pressed into a gob to give it an initial bottle-like shape.
TV Faceplate Process
Spun and Blown Fiber Glass Insulation
E-glass fibers drawn from a platinum bushing [circa 2000 fibers]
Products and Applications
Large Borosilicate Pipe
Centrifugal Cast
Borosilicate Glass Chemical Process Equipment for HCl Production
THE PRIMARY MIRRORS

Material: Zerodur
Shape: Meniscus
Diameter: 8.2 m
Thickness: 176.5 mm
Mass: 23.5 tonnes
Approx. Surface Accuracy: 20 nm r.m.s.
Pressed Optical Blanks
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BK-7 Optical Glass Blank
TV Faceplates and Tubes
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