Plastic Glossary

A

Aesthetics - The sum total of the visual response to the beauty of an object. Elements of aesthetics may include: color, shape or particular features of the object.

Aging - The physical and/or chemical changes of a material with respect to time, under defined environmental conditions, leading to improvement or deterioration of properties.

Amber - A chromatic (brown) color of glass or plastic containers. It is used principally to protect the contents of the container from exposure to light. For an example of amber plastic check out our PET Bottles or Plastic Jars pages.

Antioxidants – A chemical substance added to a plastic resin to minimize or prevent the effects of oxygen attack on the plastic, e.g., yellowing or degradation. Chemical attacks by oxygen can render a plastic brittle or cause it to lose desired mechanical properties.

Antistatic Agent – A chemical substance applied to the surface of a plastic article or incorporated in the plastic from which the article is made. The antistatic agent renders the surface of the plastic article less susceptible to the accumulation of electrostatic charges, which attract and hold fine dirt or dust on the surface of the plastic article.

B

Barrier Resins- A group of resins specially formulated to resist the transmission of oxygen, water, solvents essential oils, etc.
**Blow Mold** - Cavity that receives the Preform, which will be blown into the desired shape.

**Blow Pin** - Used in Extrusion Blow Molding. Hollow tube that pierces Preform and introduces air to blow Preform into shape of Blow Mold.

**Buttress Thread** - A design of thread profile (cross section), which take the form of a truncated triangle or slight modification of that for. It is usually positioned so the right angle is at the bottle of the thread cross section and adjacent to the neck of the bottle finish. The horizontal leg of the right triangle is the bearing surface for a matching cap thread. It is designed to withstand maximum force in one direction only.

**Capacity** – (1) The amount of space provide inside a container for a given amount of product. (2) The total amount of volume inside the container. The latter is more correctly called the overflow capacity.

**Cavity** - That part of the mold, which contains the reverse image of the product being formed.

**Clarity** – Freedom of haze or cloudiness in a plastic material. PET bottles offer great clarity for examples check out our [PET section](http://www.sks-bottle.com/Plastic_Glossary.html).

**Closure** – A devise used to seal off the opening of the bottle to prevent the loss of its contents. SKS offers a wide selection of closure options. Check out our [cap/closure index](http://www.sks-bottle.com/Plastic_Glossary.html).

**Cobalt** - A blue colored plastic. Examples of [cobalt plastic](http://www.sks-bottle.com/Plastic_Glossary.html).

**Color Concentrate** - A measured amount of dye or pigment incorporated into a predetermined about of plastic. This pigmented or colored plastic is then mixed into larger quantities or plastic material used for molding. The concentrate is added to the bulk of plastic in
measured quantity in order to produce a precise, predetermined color of the molded bottles

**Cold Runner** - Flow channel for heat-softened polymer, which goes from the Plastifier to the mold cavities. Polymer in the flow channel is cooled with shaped parts in cavities and is later removed, reground, and reused.

**Continuous Thread** - an uninterrupted protruding helix on the neck of a container used to hold screw-type closures.

**Copolymer** – A material whose chemical structure is made of long chains of two differently structured chemical units (Monomers) which repeat a more or less regular pattern in the chain.

**Core** - That part of a mold that allows the internal shaping of a product such as the internal threads of a cap.

**Core Rod** - Used in Injection Blow and Injection Stretch Blow Molding. Used in conjunction with a Preform Mold to manufacture a Preform. The Preform is formed around the Core Rod creating a hollow tube, which will then be transferred to a Blow Mold where air will be introduced forcing the Preform to take the shape of the Blow Mold cavity.

**Deflashing** – Any technique or method removing excess unwanted material from a molded article. Specifically, the excess material is removed from places on the article where parting lines of the mold that formed the article may have caused the excess material to be formed.

**Density** – Weight per unit volume of a substance. Density is expressed in grams per cubic centimeter, pounds per cubic foot, etc.

**Drop Test** – Any test method in which the article being tested is dropped in a specified manner for a specified number of times or until the article
fails from impact.

**Discoloration** - any change from the original color. Discoloration is often caused by overheating, light exposure, irritation, or chemical attack.

**E**

**“E” Dimension** - The outside diameter of neck on a threaded bottle neck (finish) is measured across the root of the threads. For a visual example check out our neck finish page.

**Environmental Stress Cracking (ESC)** – The susceptibility of a thermoplastic article to cracking under the influence of certain chemicals and stress.

**Extrusion Blow Molding** - A molding process whereby heat-softened polymer is forced into the shape of a hollow tube. While still soft, a mold closes around the tube, pinching the top and bottom of the tube closed. A Blow Pin is introduced, and air is forced through the pin forcing the tube to take the shape of the Blow Mold cavity.

**F**

**Fill Point** - The level to which a container must be filled to furnish a designated quantity of the contents.

**Finish** – The plastic forming the opening of a container and shaped to accommodate a specific closure. For more information on neck finishes check out the neck finish page.

**Fitment** – A device used as part of a closure assembly to accomplish a certain purpose such as, dropper, sprinkler, powder shakers, etc.

**Flame Treating** - A method of rendering inert thermoplastic objects receptive to inks, lacquers, paints, adhesives, etc. in which the object is bathed in an open flame to promote oxidation of
the surface of the article.

**Flash**- Extra plastic attached to molded ware along the parting line, which must be removed before the part can be considered finished.

**Fluorination** – Is an extra process in which a thermoplastic article (container or closures) is exposed to fluorine gas. The fluorine substitutes with some hydrogen atoms in the polymer chain creating a barrier and surface enhancement. Benefits include improved barrier properties and reduced solvent absorption and permeation.

**G**

**Gate** - Used in Injection. Injection Blow, and Injection Stretch Blow Molding. The orifice through which the heat-softened polymer enters the cavity.

**H**

**“H” Dimension** – The height of the bottle finish measured from the sealing surface, in a line parallel to the axis of the finish and tangent to the threads on the finish, down to a point where the line intersects the body (shoulder) of the container. The inside height of the closure measured from the bottom of the closure, in a line tangent to the threads of the closure and terminating at the inside, top of closure. For more information check out the neck finish page.

**HDPE** – An abbreviation for High Density Polyethylene

**Head Space** - The space between the fill level of a container and the sealing surface.

**Heel** – The part of a bottle between the bottle bearing surface and the side wall.

**Hot Runner**- Flow channel for heat-softened polymer, which goes from the Plastifier to the mold cavities. Polymer in the flow channel is kept softened so there is no runner material to grind.
up and reuse.

**Hopper** - Conical feed reservoir into which polymer pellets are loaded. These pellets then fall into a heated barrel (Plastifier), sometimes through a metering device.

**Hygroscopic** - Tending to absorb moisture.

**“I” Dimension** - A specified minimum diameter inside the bottleneck. A minimum diameter is specified to allow sufficient clearance for filling tubes to enter the bottle neck easily. For more information check out the neck finish page.

**“I.D.”** - An abbreviation for inside diameter

**Impact resistance**— Relative susceptibility of plastic to fracture by shock. Impact resistance is indicated by the energy expended by a standard pendulum type impact machine in breaking a standard specimen in one blow.

**Injection Blow Molding** - A molding process in which heat-softened polymer is injected from a Plastifier into a mold cavity creating a Preform, which is then transferred to a Blow Mold where air is blown into the Preform, forcing it to take the shape of the Blow Mold cavity.

**Injection Molding** - A molding process whereby a heat-softened polymer is injected from a Plastifier into a relatively cool cavity, which gives the article the desired shape.

**Injection Molds** - A mold into which a plasticated material is introduced from an exterior heating cylinder.

**Injection Stretch Blow Molding** - A molding process whereby Preforms are introduced into a cavity, stretched axially by a Stretch Rod, and then blown circumferentially to the shape of the Blow Mold cavity.
“L” Dimension – The vertical distance from the sealing surface to the top part of neck bead, i.e. where the uppermost part of the bead intersects the container neck. For a visual example of this check out the neck finish page.

“L” Style Thread- A type of thread contour (cross section) roughly trapezoidal in outline. The outermost part is radius a “general purpose” thread contour designed for use with metal or plastic closures.

Light Resistance – The ability of a plastic material to withstand exposure to light, usually sunlight or the ultraviolet part of the light spectrum, without change of color or loss of physical and/or chemical properties.

Lug - (1) A type of thread configuration designed so the thread segments are disposed equidistantly around a bottle neck (finish). The closure has matching proportions that engage each of the thread segments. (2) A small indentation or raised portion on the surface of a container. The lug provides a means of indexing the container for operation such as multi-color decoration or labeling.

M

Melt Index - The amount, in grams, of a thermoplastic resin, which can be forced through a 0.0825-inch orifice when subjected to 2160 gms. force in 10 minutes at 190° C.

Mil – A unit of measurement equal to .001 inch.

Minimum Wall – A term designating the minimum thickness of the wall of a bottle.

Moisture Vapor Transmission Rate (MVTR)- The rate at which water vapor permeates through a plastic film or bottle wall at a specified temperature and at relative humidity.
**Mold** - Contains the cavity or cavities of a desired part in which a heat-softened polymer is shaped.

**Mold Seam** - A line formed at the point of contact of the Mold halves.

**Multi-layer Bottle** - A bottle that is co-extruded with two or more layers to container oxygen sensitive foods or industrial chemicals.

**N**

**Narrow Mouth** - A finish of a plastic container in which the diameter is small relative to the diameter of the body.

**Neck** - The part of a container where the shoulder cross section area decreases to form the finish.

**Neck Ring** - Part of the mold assembly, which forms the neck and finish of a container.

**Nozzle** - Hollow cored orifice that is screwed into the extrusion end of the Plastifier. The nozzle is designed to form a seal under pressure between the Plastifier and the Mold or Runner System. The front end of a nozzle may be either flat or spherical in shape.

**O**

**Offset Printing** - A printing technique in which ink is transferred from a reservoir to printing plate. For the ink printing plate, the image is printed on a cylindrical rubber roll (blanket) and then to the object to be printed.

**Opaque** – A term describing a material of substance, which will not transmit light.

**Orientation** – The alignment of the crystalline structure in polymeric materials so as to produce a highly uniform structure. Orientation can be accomplished by cold drawing or stretching during fabrication.
**Overflow Capacity** – The capacity of a container to the top of the finish or to the point of overflow.

**Paneling** - Distortion, sidewall collapse of a container occurring during aging or storage. Paneling is cause by the development of a reduced pressure inside the bottle.

**Parting Line** – A mark on a molding or casting where the halves of mold meet in closing.

**Permeability** – (1) The passage or diffusion of a gas, vapor, liquid or solid through a barrier without physically or chemically affecting it. (2) The rate of such passage.

**PET** – (Polyethylene Terephthalate ) known as thermoplastic polyester. PET has the unusual ability to exist in either an amorphous or highly crystalline state. The crystalline state is necessary for extruding the material. The amorphous state permits it to be oriented. Examples of PET can be found on the PET plastic page.

**Plasticize** – To soften a material and make it plastic or moldable by means of a plasticizer or the application of heat.

**Plastifier** - Assembly whereby polymer pellets are fed from a Hopper into a barrel where they drop onto a turning screw which forces the pellets forward. Heater bands wrapped around the barrel melt the pellets as they are forced forward along the inside of the barrel. The molten polymer is then forced out the end of the barrel through the Nozzle.

**Polyolefins** (HDPE, LDPE, PP, etc.) are primarily those polymers that are flame treated.

**Polyethylene** – A thermoplastic material composed of polymer of ethylene. It is normally a
translucent, tough, waxy solid unaffected by water and a large range of chemicals.

**Polypropylene** – A tough, light –weight rigid plastic made by the polymerization of high-purity propylene gas in the presence of an organometallic catalyst at relatively low pressure and temperatures.

**Polystyrene** – A water-white thermoplastic produced by the polymerization of styrene (vinyl benzene)

**Polyvinyl Chloride (PVC)**- A thermoplastic material composed of polymer of vinyl chloride. PVC is a colorless solid with outstanding resistance to water, alcohols, and concentrated acids and alkalies.

**Pour-Out Finish**- A container finish having uniform undercut lips as a sealing surface. The pour-out finish is designed to facilitate pouring with out dripping.

**Preform** - Used in Blow Molding processes. Heat-softened polymer is formed into a shape similar to a thick test tube with neck threads. This tube is subsequently inflated while inside a Blow Mold to create the shape of the desired article.

**Programming**- The extrusion of parison, which differs in thickness in the length direction in order to equalize wall thickness of the blown container. It can be done with a pneumatic or hydraulic device, which activates the mandrel shaft and adjusts the mandrel position during parison extrusion (parison programmer controller, or variator.) Varying extrusion speed on accumulator type blow molding machines can also do it.

**Push Up** - The recessed area on the bottle of a bottle designed to allow an even bearing surface on the outside edge to prevent the bottle from rocking.
**Regrind** - A thermoplastic from a processor’s own production that has been reground or re-pelletized after having been previously processed by molding.

**Release Agent** - A lubricant that facilitates molding.

**Resin** - Any class of solid or semi-solid organic products of natural or synthetic origin, generally of high molecular weight, with no definite melting point. Most resins are polymers.

**S**

**“S” Dimension** - Locates the position of the bottle thread with respect to the sealing surface. The “S” dimension is the vertical distance from the sealing surface to the intersection of the finish wall and the top part of the first part of bottle thread where full depth contour exists. A visual example of the S finish is located on the neck finish page.

**Screen Printing (ACL)** – A printing technique involving the passage of printing medium, such as ink through a web or fabric, which has been stretched on a frame, to which a refined form of stencil has been applied. The stencil openings determine the form and dimensions of the imprint thus produced.

**Sealing Surface** – The lip portion of the finish that make contact with the sealing gasket or liner to form a seal.

**Shrinkage** - The change in dimension (decrease) a molded article undergoes after being molded. Shrinkage is cause by cooling and subsequent contraction of the plastic material.

**Stretch Rod** - Used in Injection Stretch Blow Molding. A rod that is introduced into the Preform to stretch it in an axial direction prior to the Preform being blown into the shape of the cavity.

**Surface Treating** – Any method of treating a
plastic to alter the surface and render it receptive to inks, paints, lacquers and adhesives. Examples of surface treating are chemical, flames or electronic treating.

T

“T” Dimensions – The outside diameter of the thread helix on a bottle finish. For an illustrated example of the "t:" dimension check out the neck finish page.

Thermoplastic - Material that will repeatedly soften when heated and harden when cooled. Capable of being repeatedly softened by heat and hardened when cooled. Typical of the thermoplastics family are the styrene polymers and copolymer, acrylics, celluloses, polyethylene, vinyl’s, nyons, and the various fluorocarbon materials.

Top Load – The amount of weight bearing on the top of a container. The term is sometimes used to indicate the maximum load the container will bear without becoming distorted.

U

UV Stabilizer - Any chemical compound which, when a thermoplastic resin, selectively absorbs UV rays and minimizes chemical and/or physical changes that may be engendered by UV.

V

Volume – Referred to as “displacement” and also as “capacity.” (1) The amount of water displace by a model of a bottle. Volume is used to estimate its capacity. (2) The about of product a bottle is designed to hold, i.e. up to the fill point of the bottle. (3) The over flow capacity, i.e. the amount of product a bottle will hold when filled to overflowing.