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Standard Terminology of Glass and Glass Products[1]

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This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This terminology defines terms generally used in the glass industry.

1.2 In some cases in which a usage is specific to a certain industry, that is spelled out within the definition. For completeness and historical purposes, terms that are outdated are listed as being archaic. The reader is cautioned that some companies or industries may define or use terms differently than the way these terms are defined within this terminology.

1.3 Other sources of glass glossaries are *Glass Association of North America's Glazing Manual,*[2] *Engineering Standards Manual for Tempered Glass,*[2] *Laminated Glass Design Guide,*[2] and ASTM Committee C-14 standards.

2. Referenced Documents

2.1 *ASTM Standards:* [3]

C 148 Test Methods for Polariscopic Examination of Glass Containers

C 336 Test Method for Annealing Point and Strain Point of Glass by Fiber Elongation

C 338 Test Method for Softening Point of Glass

C 598 Test Method for Annealing Point and Strain Point of Glass by Beam Bending

C 1048 Specification for Heat-Treated Glass—Kind HS, Kind FT Coated and Uncoated Glass

C 1172 Specification for Laminated Architectural Flat Glass

3. Terminology

Abbé value—the reciprocal dispersive power, a value used in optical design, expressed mathematically as:

$$\textit{Abbé value} = (n_d - 1)/(n_F - n_C)$$

where n_d is the refractive index for the helium line at 587.6 nm and n_F and n_C are the refractive indices for the hydrogen lines at 486.1 and 656.3 nm, respectively. See synonymous term **nu-value** and related term **dispersion**.

acid polishing—the polishing of a glass surface by acid treatment.

air bells—bubbles of irregular shape formed generally during the pressing or molding operations in the manufacture of optical glass.

alabaster glass—a milky-white glass that diffuses light without fiery color.

alcove—a narrow channel to convey molten glass from refiner to forehearth or to the revolving pot where it is gathered by the Owens machine.

alkali—an industrial term for the oxide of sodium or potassium; less frequently of lithium.

ampoule—a glass container designed to be filled and sealed by fusion of the glass neck.

anneal—to attain acceptably low stresses, or desired structure, or both, in glass by controlled cooling from a suitable temperature.

annealing—a controlled cooling process for glass designed to reduce residual stress to a commercially acceptable level and modify structure.

annealing point (A.P.)—that temperature corresponding either to a specific rate of elongation of a glass fiber when measured by Test Method C 336, or a specific rate of midpoint deflection of a glass beam when measured by Test Method C 598. At the annealing point of glass, internal stresses are substantially relieved in a matter of minutes.

annealing range—the range of glass temperature in which stress in glass can be relieved at a commercially practical rate. For purposes of comparing glasses, the annealing range is assumed to correspond with the temperature between the annealing point (A.P.) and the strain point (St.P.).

antimony—an industrial term for an oxide of antimony.

arch, *n*—a part of a melter; a crown.

arch, *v*—to heat a pot in a pot arch.

arrest mark—See **dwell mark**.

arsenic—an industrial term for an oxide of arsenic.

[1] This terminology is under the jurisdiction of ASTM Committee C14 on Glass and Glass Products and is the direct responsibility of Subcommittee C14.01 on Nomenclature and Definitions.

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[2] Glass Association of North America, 3310 S.W. Harrison, Topeka, KS 66611-2279.

[3] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

aventurine—glass containing colored, opaque spangles of nonglassy material.

back wall—the wall at the charging end of a melter.

baffle—a mold part used to close the delivery or baffle hole in a blank mold.

baffle mark—a mark or seam on a bottle resulting from a mold joint between blank mold and baffle.

baffle wall—a wall used to deflect gases or flames in a melter. See **shadow wall**.

baghouse—a chamber containing bag filters for the removal of particles from a process exhaust stream.

bait—the tool dipped into molten glass to start any drawing operation.

barrel, glass container—{archaic} See **sidewall, glass container**.

base—{archaic} the bottom of a bottle.

basic fiber—unprocessed glass fibers directly from the forming equipment.

batch—(*1*) the recipe of batch ingredients.

(*2*) the raw materials weighed but unmixed.

(*3*) the raw materials, properly proportioned and mixed, for delivery to the furnace.

batch charger—a mechanical device for introducing batch to the melter.

batch feeder—See **batch charger**.

batch house—the place where batch materials are received, handled, weighed, and mixed.

bath—synonymous with **float bath**.

bead—(*1*) an enlarged, rounded raised section on a glass article.

(*2*) a small piece of glass tubing bonded around a wire lead.

(*3*) in fiber glass, a tear drop-shaped glass mass which forms as a result of the interruption of the fiber forming process below an orifice.

bearer arch—See **rider arch**.

bearing surface—the outside surface of an item of glassware on which it rests when in its normal upright position.

beltmarks—See **chain marks**.

bench—See **siege**.

bending stress—a stress system that simultaneously imposes a compressive component at one surface, graduating to an imposed tensile component at the opposite surface of a glass section.

bent glass—flat glass that has been shaped while hot into a body having curved surfaces.

beveling—the process of edge finishing flat glass to a bevel angle.

bicheroux process—{archaic} an intermittent process for making plate glass, in which the glass is cast between rolls, onto driven conveyer rolls, or a flat moving table.

binder—(*1*) for a continuous filament process, a constituent of a fiber glass sizing that couples the fiber to the composite matrix.

(*2*) for insulation, material applied to glass fibers to hold them in a desired arrangement.

blank—(*1*) a preliminary shape from which a finished article is further formed, molded, or cut.

(*2*) a semi-finished piece of glass for making an optical element, such as a lens or prism. Also known as a pressing.

blanket feed—a method for charging batch designed to produce an even distribution of batch across the width of the melter.

blank mold—the metal mold that first shapes the glass in the manufacture of hollow ware.

blending-batch—{archaic} stepwise changes in batch composition to arrive at the final change in finished glass.

blister—a relatively large gaseous inclusion in glass.

bloach—{archaic} an imperfection resulting from incompletely grinding plate glass, caused by a low place in the plate which retains part of the original rough surface.

blocking—(*1*) shaping a gather of glass in a cavity of wood or metal.

(*2*) *archaic,* promoting mixing and fining of glass by immersion of a wooden block or other object to create bubbles.

(*3*) reprocessing to remove surface imperfections.

(*4*) *archaic,* mounting of glass for grinding and polishing.

(*5*) *archaic,* idling a furnace at reduced temperatures.

See **hot hold**.

block mold—a one-piece mold.

block reek, rake—{archaic} a scratch imperfection caused by cullet lodged in the felt in the polishing operation.

bloom—(*1*) a visible surface film resulting from attack by the atmosphere or from the deposition of particulate or vapor condensates. (See also **smoked**.)

(*2*) a blemish in float glass appearing on the bottom (tin contact) surface after reheating as a result of the presence of tin diffused into the surface.

blow-and-blow process—the process of forming hollow ware in which both the preliminary and final shapes are formed by air pressure.

blower—one who forms glass by blowing. (See also **gaffer**.)

blow head—part of a forming machine serving to introduce air under pressure to blow any hollow glass article.

blow-over—the thin-walled bubble formed above a blow mold in hand-shop operation to facilitate bursting-off.

blowpipe—the pipe used by a glassmaker for gathering and blowing by mouth.

blowing iron—See **blowpipe**.

blown glass—glassware shaped by air pressure, as by compressed air or by mouth blowing.

blow mold—the metal mold in which a blown glass article is finally shaped.

body—the attribute of molten glass, associated with viscosity and homogeneity, which is conducive to workability.

boil—(*1*) {archaic} an imperfection; a gaseous inclusion larger in size than a seed.

(*2*) turbulence caused by gases escaping from the melting batch.

boost melting—See **electric boosting**.

boot—a suspended enclosure in the nose of a melter protecting a portion of the surface and serving as a gathering opening.

borax glass—vitreous anhydrous sodium tetraborate ($Na_2B_4O_7$).

borosilicate glass—a silicate glass with B_2O_3 content above 4 weight percent, characterized by a moderate to low thermal expansion, long in viscosity versus temperature, and low in density.

bowl—See **spout**.

breast wall—(*1*) the entire side wall of a melter between the flux block and the crown, but not including the ends.

(*2*) refractory wall between pillars of a pot furnace and in front of or surrounding the front of a pot.

breezing—{archaic} buckwheat anthracite coal or coarse sand spread on the siege before setting of pots.

bridge—the structure formed by the end walls of the adjacent melter and refiner compartments of a melting furnace and the covers spanning the gap between the end walls.

bridge cover—See **bridge wall cover**.

bridge wall cover—refractory blocks spanning the space between the bridge walls.

bridgewall—that part of a melting furnace forming a bridge or separation between melter and refiner.

bruise—synonymous with **percussion cone**.

bulb edge—the heavy rounded edge or bead of flat glass.

bull's eye—(*1*) a tempered solid cylindrical sight glass.

(*2*) the glass left by the punty in the center of a flat disk of glass made by the hand blown crown process.

(*3*) in flat glass, an optical distortion that arises from a polishing depression or a solid inclusion trapped between layers of laminated glass.

bump check—See **percussion cone**.

burner block—a refractory block with one or more orifices through which fuel is admitted to a furnace.

burn-off—the process of severing an unwanted portion of a glass article by fusing the glass.

burnt lime—calcined limestone (CaO · MgO, dolomitic), or CaO (calcitic), or a mixture of these.

bursting-off—the breaking of the blowover.

bushing—(*1*) a liner in the feeder orifice for molten glass.

(*2*) a precious metal or refractory/metal structure with single or multiple hole(s) through which glass flows and is attenuated into fiber(s).

butterfly bruise—See **percussion cone**.

cabal glass—a glass consisting primarily of the oxides of *ca*lcium, *b*oron, and *al*uminum.

campaign—the working life of a melting furnace between major cold repairs.

canal—that part of a melting furnace leading from the fining area to the forming area. See **channel** and **forehearth**.

cane—solid glass rods.

cap, *n*—(*1*) another name for crown.

(*2*) a type of bottle closure.

cap, *v*—{archaic} to cut off the ends of a glass cylinder.

carnival glass—glass having an iridescent coloration obtained by firing metallic salts applied onto a colored glass body. See **lusters**.

carry-in—manual lehr loading.

cased glass—glassware whose surface layer has a different composition from that of the main glass body.

casehardened—a term sometimes used for tempered glass. (See **tempered glass**.)

casting—a process of shaping glass by pouring molten glass into molds, onto tables, or between rollers.

cat eye—an imperfection; an elongated bubble containing a piece of foreign matter.

cat scratch—an imperfection; surface irregularities on glassware resembling the marks of a cat's claws.

centering—an operation on lens elements wherein the element is optically aligned with the axis of rotation and the edges ground concentric with the optical axis.

ceramic glass enamel (also ceramic enamel or glass enamel)—a decorative, usually colored, vitreous inorganic coating for bonding to glass at temperatures above 425°C (800°F).

chain marks—marks made on the bottoms of glass articles as they ride through a lehr on a chain belt slightly overheated.

channel—(*1*) in container glass, that part of a forehearth which carries the glass from the melter to the flow spout and in which temperature adjustments are made.

(*2*) in fiber glass, the structure to deliver glass from the melter to the refiner or forehearth.

charge, *n*—See batch (*3*).

charge, *v*—to add batch to a melter.

chatter sleek—{archaic} See **frictive track**.

check—an imperfection; a surface crack in a glass article.

checkers—(*1*) an open structure of firebrick serving as a heat exchanger.

(*2*) slang for regenerators of this type.

(*3*) slang for refractory brick used in such a construction.

chemical durability—the lasting quality (both physical and chemical) of a glass surface. It is frequently evaluated, after prolonged weathering or storing, in terms of chemical and physical changes in the glass surface, or in terms of changes in the contents of a vessel.

chemically strengthened—glass that has been ion-exchanged to produce a compressive stress layer at the treated surface.

chill mark—a wrinkled surface condition on glassware resulting from uneven cooling in the forming process.

chip—an imperfection due to breakage of a small fragment out of an otherwise regular surface.

chipped glass—a glass article with chipped surface produced intentionally.

chipping—the process of removing thin extra glass prior to grinding.

choke—an imperfection consisting of an insufficient opening in the finish and neck of a container.

chopped fiber—fiber glass strand which has been chopped to specified lengths.

chunk glass—{archaic} optical glass obtained in breaking open a pot of transfer glass.

cleavage crack—damage produced by the translation of a hard, sharp object across a glass surface. This fracture system typically includes a plastically deformed groove on the damaged surface, together with median and lateral cracks emanating from this groove.

Colburn sheet process—{archaic} manufacture of sheet glass by bending the vertically drawn sheet over a roll which establishes the definition of draw.

cold top melter—an all electric melting furnace in which a thermally insulating layer of batch is maintained on top of the molten glass.

compact—to treat glass in a manner, such as by heat treatment, to approach maximum density.

contact stress—the tensile stress component imposed at a glass surface immediately surrounding the contact area between the glass surface and an object generating a locally applied force.

continuous filament—a single glass fiber of sufficiently small diameter to be flexible enough for textile uses and of great or indefinite length.

continuous furnace—synonymous with **melter**.

cooling-down period—{archaic} (*1*) the time elapsing after a covered pot is opened before the glass is cool enough to work.

(*2*) period between fining stage and the removal of the glass from the furnace.

cooling rate—See **setting rate**.

cord—a generally attenuated glassy inclusion with properties differing from those of the surrounding glass.

corrugated glass—glass rolled to produce a corrugated contour.

crackled—glassware, the surface of which has been intentionally cracked by water immersion and partially healed by reheating before final shaping.

crack-off—the process of severing a glass article by breaking, as by scratching and then heating.

crescent crack—damage having the appearance of a crescent, produced in a glass surface by the frictive translation of a hard, blunt object across the glass surface. The crescent shape is concave toward the direction of translation on the damaged surface.

crizzle—an imperfection in the form of a multitude of fine surface fractures.

Crookes glass—a glass having low transmission for ultraviolet light, and containing cerium and other rare earths.

cross-fired furnace—See **side-fired furnace**.

crown—the top or roof of a melter.

crown optical glass—See **optical crown glass**.

crown process—{archaic} a method of making flat glass by blowing a large bulb, opening it, and then spinning it flat.

crush—*on flat glass sheets,* a lightly pitted condition with a dull gray appearance.

crystal glass—(*1*) colorless, highly transparent glass which is frequently used for art or tableware.

(*2*) colorless, highly transparent glass historically containing lead oxide.

cullet—glass product or portions of product usually suitable for addition to raw batch.

(a)—foreign cullet—cullet from an outside source.

(b)—domestic cullet (factory cullet)—cullet from within the plant.

(c)—a portion of a glass article that will later be cut off and discarded or remelted.

cullet cut—synonymous with **block reek**.

cut glass—glassware decorated by grinding figures or patterns on its surface by abrasive means, followed by polishing.

cut-off scar—a mark on the base of a glass bottle caused by the cutting of the gob in the Owens process.

cut sizes—flat glass sheets cut to specific dimensions.

cutter—(*1*) a workman engaged in grinding designs on glass.

(*2*) one who cuts flat glass.

(*3*) the tool used in cutting glass.

cutting—(*1*) scoring flat glass with a diamond or a steel wheel, and breaking it along the scratch.

(*2*) producing cut glass.

cycle—the firing period in a regenerative furnace.

cylinder process—{archaic} manufacture of window glass wherein molten glass is blown and drawn into the form of a cylinder, which is subsequently split longitudinally, reheated in a flattening kiln, and flattened.

Danner process—a mechanical process for continuously drawing glass cane or tubing from a rotating mandrel.

day tank—a periodic melting unit, which supplies glass for small volume applications.

DISCUSSION—It is usually emptied each day.

dead anneal—jargon for a state of negligible residual stress.

dead plate—*in automatic production of molded glass,* a stationary plate receiving a glass article awaiting transfer.

debiteuse—a slotted, floating clay block through which glass issues in the Fourcault process.

decolorizing—the process of producing a colorless appearance in glass.

deformation point—See **dilatometric softening point**.

delivery—(*1*) the final act of any glass-forming unit on a particular article; consisting of motion to remove the article from the mold.

(*2*) the process or equipment used for directing charges or gobs of glass to a forming machine.

dense—a term used for optical glass having a high index of refraction.

devitrification—crystallization of glass.

dice—the more or less cubical fracture of tempered glass.

digs—deep, short scratches.

dilatometric softening point—the temperature at which the viscous sag of the glass specimen exactly counteracts the expansion as thermal expansion measurements proceed during heating.

DISCUSSION—This phenomenon generally occurs in the viscosity range of 10^{10} to 10^{11} Pa-s.

direct-fired furnace—a melting furnace having neither recuperator nor regenerator.

dirt—a small particle of foreign material imbedded in the surface of flat glass sheets.

dispersion—the variation of refractive index with wavelength of light. See related term **Abbé value**.

distribution—the thicknesses of the walls of a glass article over its entire area.

document glass—{archaic} an ultraviolet absorbing glass used for protecting documents.

doghouse—a protrusion in or near the back wall through which batch is introduced into the melter.

dolomite—a double carbonate of lime and magnesium having the general formula $CaCO_3 \cdot MgCO_3$. See also **limestone**.

dope—slang for mold lubricant.
double-cavity mold—see **multiple cavity mold**.
double-cavity process—see **multiple cavity process**.
double glazing—insulated glazing that incorporates two panes separated by an air gap.
double glazing unit—two panes of glass separated by a permanently sealed cavity.
double-gob process—See **double-cavity process**.
down draw—process of continuously drawing glass downward from an orifice.
down-tank—the direction in a melter from the batch feeding end toward the exit.
dragade—{archaic} see **drag ladle**.
drag ladle—{archaic} to produce cullet by ladling glass from the melt into water.
draw—See **pull**.
draw bar—a refractory member submerged in molten glass that defines the position of the sheet in a drawing process.
draw gang—{archaic} people employed to cut and handle glass as it comes from the lehr.
drawn glass—glass made by a continuous drawing operation.
dropping—{archaic} forming by heating in a mold without the use of pressure.
drop throat—See **submerged throat**.
dross—a mixture of metal oxide and metal on the surface of a float bath.
dry chop—dried fiber glass strand which has been chopped. See **chopped fiber** and **wet chop**.
dry gage (drigage) v.—to form cullet by running a stream of molten glass into a water bath. (See synonomous term **frit, v**.)
dummy—a mechanical device, operated by the blower's feet, for wetting, raising, opening and closing the paste mold in mouth-blowing glassware.
durability—See **chemical durability**.
dwell mark—a fracture surface marking representing the site of a fracture discontinuity caused by a sudden shift in the stress distribution or by a fracture stopping for some length of time; also known as an arrest line.
edging—grinding the edge of flat glass to a desired shape or size. See also **centering**.
electric boosting—an auxiliary method of adding heat to the glass in a gas- or oil-fired melter by passing electric current through the molten glass.
end-fired furnace—a melter with fuel supplied from the back wall.
end-port furnace—synonymous with **end-fired furnace**.
engraving—the process of carving figures, letters, etc., upon glass by abrasive means.
etch—to attack the surface of glass with hydrofluoric acid or other agent, generally for marking or decoration.
etched—(*1*) treated by etching.
(*2*) weathered so that surface is roughened.
eye—the opening in the bottom of a pot furnace through which the flame enters.
fade—{archaic} attack of the surface of glass causing an oily or whitish surface.
feather—See **striation**.
feathers—an imperfection consisting of clusters of fine seed caused by dirt or foreign material entering the glass at the time of casting or shaping.
feeder—a mechanical device for regularly producing and delivering gobs of glass to a forming unit.
feeder process—See **gob process**.
fiber—attenuated glass generally with a diameter of less than a millimetre and a length/diameter ratio of more than 5.
fiber, optical—a fiber with high transmittance, low scattering, and minimal transverse loss of light.
fiberglass, reinforcement—continuously formed fibers added to enhance the overall performance of a matrix. Fiber glasses used for specific chemical or physical properties, or both, include:
A-glass—compositions typically with lower electrical resistivity, strength, and durability than E-glass.
AR-glass—compositions resistant to corrosion by alkali.
C-glass—compositions resistant to corrosion by most acids.
D-glass—compositions with a low dielectric constant.
E-glass—compositions with electrical properties, strength, and durability appropriate for most applications.
E-CR-glass—E-glass compositions modified for improved resistance to corrosion by most acids.
R-glass—compositions with high tensile strength, resistant to corrosion by most acids.
S-glass—compositions with high tensile strength, elastic modulus and service temperature.
figured glass—flat glass having a pattern on one or both surfaces.
filament—a single glass fiber of indefinite length.
fill—the unit charge of batch into a melter or pot.
filling point—the level at which a glass bottle has the nominal capacity.
fin—(*1*) an imperfection caused by entrance of glass into a seam between mold parts during forming.
(*2*) the feather edge obtained when cutting flat glass.
fine annealing—to attain more uniform structure than ordinarily required, maximizing homogeneity of physical properties by minimizing prior thermally induced variations.
fine hackle—See **mist**.
fining, also refining—the process by which molten glass becomes relatively free of undissolved gases.
finish—(*1*) the part of a bottle for holding the cap or closure.
(*2*) stage in melting process after glass appears free of seeds.
(*3*) the quality of a glass surface as influenced by very fine pits and cracks remaining from a grinding and polishing process.
finisher—(*1*) person in charge of a day-tank during the melting and fining of the glass.
(*2*) the workman who does the final work, such as polishing or putting the handle or foot on a piece of ware.
fire check—a check resulting from localized thermal stress during forming.
fire cracks—see synonomous term **fire check**.
fire over—idling a melting unit at operating temperature.

fire-polish—to make glass smooth, rounded, or glossy by heating the glass surface.

first side—{archaic} the surface of plate which is ground and polished first.

fishbone—a striation that does not reach entirely across the fracture surface.

flake-glass—hot glass squeezed thin between two metal rolls or blown into a thin film, followed by fracturing into small particles.

flashing—applying a thin layer of opaque or colored glass to the surface of clear glass or vice versa. See also **striking**.

flat glass—a general term covering sheet glass, plate glass, float glass, and various forms of rolled glass. See related term **bent glass**.

flexure stress—the tensile component of the bending stress produced on the surface of a glass section opposite to that experiencing a locally impinging force.

flint optical glass—See **optical flint glass**.

flint glass—(*1*) a lead-containing glass.

(*2*) term used by container industry for colorless glass.

floater—(*1*) a floating clay shape to skim foreign materials or control their passage in a melter.

(*2*) an object, generally a porous silica brick, introduced into a melting furnace, which will float on the surface of the molten glass for tens of minutes to several hours, thus revealing the surface flow.

floater hole—{archaic} an opening in a melter through which floaters are placed.

float bath—a pool of molten metal, commonly tin, contained within a refractory receptacle and protected from oxidation by an inert atmosphere, upon which molten glass is drawn into a flat sheet. See **float glass**.

float glass—flat glass that has been formed on molten metal, commonly tin.

flow hole—{archaic} See **throat**.

flow process—See **gob process**.

flux—an ingredient that reduces batch melting temperature.

flux block—a refractory furnace block used in contact with glass in melting.

flux line—See **metal line**.

foam—a layer of bubbles on the surface of molten glass.

foam glass—a thermally insulating material consisting of a high volume fraction of gaseous inclusions distributed throughout a glass matrix.

foam line—a boundary in a melting furnace beyond which foam no longer appears on the glass surface.

fold—See **lap**.

forehearth—a section of a melting furnace in one of several forms from which glass is taken for forming.

forking—a mechanism whereby a propagating fracture branches to form two new fractures separated by an acute angle.

forming—the shaping of hot glass.

forming hood—the partially enclosed volume in which individual glass fibers and groups of fibers are collected into a wool pack.

forming rolls—rolls used in forming flat glass.

Fourcault process—the method of making sheet glass by drawing vertically upward from a slotted debiteuse block.

fracture mirror—a smooth portion of a fracture surface surrounding the fracture origin.

fracture origin—the single, unique location at which a fracture system begins.

fracture surface markings—fracture surface features that may be used to determine the fracture origin location and the nature of the stress that produced the fracture.

fracture system—that family of related fracture surfaces lying within an object, having a common cause and origin.

free-blown—See **offhand glass**.

frictive track—a series of crescent cracks lying along a common axis, paralleling the direction of frictive contact; also known as a chatter sleek.

frit, *n*—glass in particulate form, generally of controlled size distribution.

DISCUSSION—For decorations or sealing, it is commonly applied in combination with an organic vehicle.

frit, *v*—(*1*) the process of pouring molten glass into water or between cooled rollers. See **shrend, dry gage**.

(*2*) to decorate or seal with glass in particulate form.

frosted—surface treated to scatter light or to simulate frost.

frosted area—{archaic} See **hackle**.

fully tempered glass—flat glass that has been tempered to a high surface or edge compression to meet the requirements of Specification C 1048. See **heat-strengthened glass**.

fused silica—vitreous silicon dioxide produced by flame hydrolysis of silicon tetrachloride (or similar compounds) or by thermal consolidation of a silica gel. See related terms **vitreous silica** and **fused quartz**.

fused quartz—vitreous silicon dioxide produced by melting silica, generally in the form of granular quartz. See related terms **fused silica** and **vitreous silica**.

gable wall—{archaic} the charging end wall of a glass-melting furnace.

gaffer—head workman, foreman, or blower of a glass hand shop.

gall—layer of molten sulfates floating upon glass.

gaseous inclusion—a round or elongated bubble in the glass. See **blister** and **seed**.

gate—a shut-off device for flow of glass and combustion gases in a forehearth, more commonly a water-cooled member rather than a refractory body.

gather, *n*—the mass of glass picked up by the hand shop working on the punty or blowing iron.

gather, *v*—to get glass from a pot or day-tank on the pipe or punty.

glass—an inorganic product of fusion that has cooled to a rigid condition without crystallizing.

DISCUSSION—Glass is typically hard and brittle, and has a conchoidal fracture.

A glass may be colorless or colored. It is usually transparent, but may be made translucent or opaque.

When a specific kind of glass is indicated, such descriptive terms as flint glass, barium glass, and window glass should be used following the basic definition, but the qualifying term is to be used as understood by trade custom.