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IS 2781 (2004): Glossary of terms relating to ceramicware
[CHD 9: Ceramicware]
Indian Standard

GLOSSARY OF TERMS RELATING TO CERAMICWARE

(Second Revision)

UDC 666.3 : 001.4
FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards after the draft finalized by the Ceramicware Sectional Committee had been approved by the Chemical Division Council.

This standard was first published in 1964 and was subsequently revised in 1975 with a view to providing a commonly agreed terminology and definitions relating to ceramicware industry. Keeping in view the development of a variety of new methods and products in the field of ceramics, the committee responsible for the preparation of this standard decided to revise it and incorporate new terms and definitions which have come into use in this industry and trade.

In the formulation of this standard due weightage has been given to bring about coordination among standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country. This has been met by deriving assistance from publication C 242-99 'Standard terminology of ceramic whitewares and related products', issued by the American Society for Testing and Materials, USA.

The composition of the Committee responsible for the formulation of this standard is given in Annex A.
Indian Standard
GLOSSARY OF TERMS RELATING TO
CERAMICWARE
(Second Revision)

1 SCOPE
This standard covers the terms and definitions relating to ceramicware and related products.

2 TERMS AND DEFINITIONS
2.1 Absorption — The relationship of the mass of water absorbed by a ceramic specimen, subjected to prescribed immersion procedure, to the mass of the dry specimen, expressed in percent.

2.2 Alumina Porcelain — A vitreous ceramic whiteware for technical application in which alumina ($A_2O_3$) is the essential crystalline phase.

2.3 Alumina Whiteware — Any ceramic whiteware in which alumina ($A_2O_3$) is the essential crystalline phase.

2.4 Artware — Ceramicware made principally for decorative purposes.

2.5 Ball Clay — A secondary clay, commonly characterized by the presence of organic matter, high plasticity, high dry strength, long vitrification range, and a light colour when fired.

2.6 Ball Milling — A method of grinding and mixing materials, with or without liquid, in a rotating cylinder or conical mill partially filled with grinding media.

2.7 Basalt Ware — A black unglazed vitreous ceramicware having the appearance of basalt rock.

2.8 Belleek China — A highly translucent whiteware composed of a body containing a significant amount of frit and normally having a lustre glaze (produced commercially at Belleek, Ireland).

2.9 Bentonite — A highly plastic clay containing extremely fine particles of volcanic origin, consisting mainly of montmorillonite; capable of taking up water rapidly and swelling to four to five times its dry volume. It has low fusion point and burns into a coloured product.

2.10 Binders — Substances used for the purpose of cementing particles and for increasing the unfired mechanical strength of ceramic coatings or body and which may be expelled during firing.

2.11 Bisque — An unglazed ceramicware fired to achieve sufficient mechanical strength at lower temperature (650° to 950°C).

2.12 Bisque Fire — The process of firing ceramicware prior to glazing.

2.13 Blister — A raised portion of the surface protruding not more than 1 mm above the surface and not greater than 3 mm in its maximum dimension developed during firing.

2.14 Blistering — The development of a defect of enclosed or broken macroscopic vesicles or bubbles in a body, or in a glaze or other coating during firing.

2.15 Blunging — The wet process of dispersion of agglomerates to fines, blending, or suspending ceramic materials in liquid medium by agitation.

2.16 Body — The structural portion of a ceramic article, or the material or mixture from which it is made.

2.17 Bone Ash — Calcined bone consisting essentially of calcium phosphate.

2.18 Bone China — A white translucent porcelain made from a ceramic body containing a minimum of 25 percent bone ash as the chief fluxing material.

2.19 Bright Glaze — A colourless or coloured ceramic glaze having high gloss.

2.20 Bubble — A raised portion of the surface or a sand speck not more than 1 mm in its maximum dimension.

2.21 Calcine — A ceramic material or mixture fired to less than fusion for use as a constituent in a ceramic composition.

2.22 Casting — Forming ceramicware by introducing a body slip into a porous mould which absorbs sufficient water from the slip to produce a semirigid (leather hard) article.

2.23 Casting, Drain (Hollow Casting) — See 'Drain Casting'.

2.24 Casting, Solid — Forming ceramicware by introducing a body slip into a porous mould which usually consists of two major sections, one section
forming the contour of the outside and the other forming the contour of the inside of the ware and allowing a solid cast to form between the two mould faces.

2.25 Ceramic Colour — Inorganic oxides or prepared mixtures used for obtaining colour decoration on fired ceramicware, or making coloured glazes.

2.26 Ceramic Frit — Frit having ceramic composition to produce protective coating, bonding or fluxing of ceramic product.

2.27 Ceramic Mosaic Tile — An unglazed tile formed by either the dust pressed or plastic method, usually 6 to 9 mm thick and having a facial area of less than 39 cm² and usually mounted on sheets approximately 60 × 30 cm² to facilitate setting. Ceramic mosaic tile may be of either porcelain or natural clay composition and may be either plain or with an abrasive mixture throughout.

2.28 Ceramic Paste — A French term synonymous with 'ceramic body'.

2.29 Ceramic Process — The production of articles or coatings from essentially inorganic, non-metallic materials, the article or coating being made permanent and suitable for utilitarian and decorative purposes by the action of heat at temperatures sufficient to cause sintering, solid-state reactions, bonding or conversion partially or wholly to the glassy state.

2.30 Ceramics — A class of brittle, inorganic, non-metallic materials produced by high-temperature processing. The term covers glass, refractories, enamels, whiteware, etc. Also a generic term applied to the art or technique of producing articles by a ceramic process.

2.31 Ceramicware — A glazed or unglazed fired ware made of ceramic materials characterized by its brittle nature.

2.32 Cermets — A fired composite containing ceramic and metallic ingredients, and having the desired properties of both.

2.33 Chamot — Refractory clay which has been specially fired and crushed for use as a non-plastic component of a refractory batch. It is usually made by calcining a refractory clay.

2.34 Chemical Porcelain — Vitreous ceramicware used for storing, transporting, heating or reaction of chemicals.

2.35 China — A glazed or unglazed vitreous ceramic ware used for non-technical purposes. This term designates such products as dinnerware, sanitaryware, and artware when they are vitreous.

2.36 China, Belleek — See 'Belleek China'.

2.37 China, Bone — See 'Bone China'.

2.38 China Clay — See 'Kaolin'.

2.39 China, Hotel — See 'Hotel China'.

2.40 China Process — The method of producing glazed ware by which the ceramic body is fired to maturity, following which the glaze is applied and matured by firing at a lower temperature.

2.41 China Sanitaryware (Sanitary Plumbing Fixtures) — Glazed, vitrified whiteware fixtures having a sanitary service function (see also Vitreous Sanitaryware).

2.42 China, Semivitreous — See 'Semivitreous China'.

2.43 China, Vitreous — See 'Vitreous China'.

2.44 Chipping — Breaking off of chips from the edge of a glazed ceramicware.

2.45 Clay — A natural mineral aggregate, consisting essentially of hydrous aluminium silicates. It is plastic when sufficiently wetted, rigid when dried en masse, and vitrified when fired to a sufficiently high temperature.

2.46 Clay, Ball — See 'Ball Clay'.

2.47 Clay, China — See 'Kaolin'.

2.48 Clay, Fire — See 'Fire Clay'.

2.49 Clay, Primary (Residual) — See 'Primary Clay'.

2.50 Clay Secondary (Sedimentary) — See 'Secondary Clay'.

2.51 Clayware — Any article made of clay with or without glaze and with or without the addition of other ingredients like feldspar and quartz.

2.52 Clear Glaze — A colourless or coloured transparent ceramic glaze.

2.53 Communition — The process of reduction of particle size with attendant increase in surface area and population of particles usually by grinding, milling or pulverizing.

2.54 Cordierite Porcelain — A vitreous ceramic whiteware for technical application in which cordierite (2 MgO, 2 Al₂O₃, 5SiO₂) is the essential crystalline phase.

2.55 Cordierite Whiteware — Any ceramic whiteware in which cordierite (2 MgO, 2 Al₂O₃, 5SiO₂) is the essential crystalline phase.

2.56 Covering Power — The ability of a glaze to uniformly and completely cover the surface of the fired ware.
2.57 **Crawling** — A parting and contraction of the glaze on the surface of ceramicware during drying or firing, resulting in unglazed areas bordered by coalesced glaze.

2.58 **Crazing (or Craze)** — The hair like cracking which occurs in fired glazes or other ceramic coatings due to critical tensile stresses.

2.59 **Crystalline Glaze** — A glaze containing macroscopic crystals.

2.60 **Deairing** — The process of removing entrapped air, or absorbed air from a mass or slurry, usually by application of a vacuum.

2.61 **Decorated** — Adorned, embellished, or made more attractive by means of colour or surface detail.

2.62 **Decoration Firing** — The process of firing ceramic or metallic decoration on the surface of glazed ceramicware.

2.63 **Decoration** — See 'Decoration, Inglaze'; 'Decoration, Overglaze'; and 'Decoration, Underglaze'.

2.64 **Decoration, Inglaze** — A ceramic decoration applied on the surface of an unfired glaze and matured with the glaze.

2.65 **Decoration, Monochrome** — See 'Monochrome Decoration'.

2.66 **Decoration, Overglaze** — A ceramic or metallic decoration applied and fired on the previously glazed surface of ceramicware.

2.67 **Decoration, Polychrome** — See 'Polychrome Decoration'.

2.68 **Decoration, Underglaze** — A ceramic decoration applied directly on the surface of ceramicware and subsequently covered with a transparent glaze.

2.69 **Deflocculate** — To separate agglomerates in a slurry by chemical and physical means to achieve and maintain particle-to-particle separation.

2.70 **Deformation Eutectic** — The composition within a system of two or more components which on heating under specified conditions develop sufficient liquid to cause deformation at the minimum temperature.

2.71 **Delft Ware** — A calcareous earthenware having an opaque white glaze and monochrome overglaze decoration (originated in Delft, Holland).

2.72 **Dinnerware** — Ceramic whiteware made in a given pattern and in a full line of articles comprising a dinner service.

2.73 **Discolouration** — A defect due to the appearance of an undesirable colour in a finished product or due to fading of desired colour.

2.74 **Dolomite** — The double carbonate of lime and magnesia having the general formula CaMg (CO$_3$)$_2$.

2.75 **Drain Casting** — Forming ceramicware by introducing a body slip into an open porous mould, and draining off the remaining slip when the cast has reached the desired thickness.

2.76 **Dry Edging** — Rough edges and corners of glazed ceramicware due to insufficient glaze coating.

2.77 **Drying** — Removal by evaporation, of uncombined water or other volatile substance from a ceramic raw material or product, usually expedited by low-temperature heating and flow of air.

2.78 **Dry Mix** — The method of preparation of a ceramic body wherein the constituents are blended dry, following which liquid may be added as required for subsequent processing.

2.79 **Dry Pressing** — Forming ceramicware in dies from powdered or granular material by direct pressure.

2.80 **Dry Process** — See 'Dry Mix'.

2.81 **Dunt** — A hair-line fracture extending through or into the body of the ware.

2.82 **Dunting** — A hair-line crack that occurs both in the body and glaze in fired ceramicware during cooling and storage.

2.83 **Earthenware** — A glazed or unglazed non-vitreous ceramicware.

2.84 **Earthenware, Sanitaryware** — Sanitaryware having earthenware body structure showing water absorption not exceeding 15 percent.

2.85 **Egg-Shell Finish** — Dead or flat finish appeared to be undeveloped glaze slightly matt in appearance or a semi-glazed finish exhibiting numerous very fine pinholes and non-glossy appearance.

2.86 **Egg Shelling** — The texture of a fired glaze similar in appearance to the surface of an egg shell.

2.87 **Electrical Porcelain** — Vitrified whiteware having electrical insulating function.

2.88 **Embossed** — A decoration in relief or excised on the ware surface.

2.89 **Engobe** — A decoration white or coloured slip coating applied to ceramicware for imparting colour, opacity or other characteristics, and subsequently covered with a glaze and fired.
2.90 Equilibrium Eutectic — The composition within any system of two or more crystalline phases which melts completely at the minimum temperature, or the temperature at which such a composition melts.

2.91 Eutectic — See 'Eutectic, Deformation' and 'Eutectic, Equilibrium'.

2.92 Eutectic, Deformation — See 'Deformation Eutectic'.

2.93 Eutectic, Equilibrium — See 'Equilibrium Eutectic'.

2.94 Exposed Body — Portions of glazed ceramic-ware, more than 1.5 mm in diameter, from where glaze has been removed due to defective workmanship.

2.95 Faience — A decorated glazed earthenware.

2.96 Faience Mosaics — Faience tiles, that are less than 39 cm² in facial area, usually 8 to 9 mm thick, and usually mounted to facilitate installation.

2.97 Faience Tile — Glazed or unglazed tile, generally made by the plastic process, showing characteristic variations in the face, edges, and glaze that give a hand-crafted, non-mechanical, decorative effect.

2.98 Faience Ware — Formerly a decorated earthenware with an opaque glaze, but currently designating a decorated earthenware having a transparent glaze.

2.99 Feathering — Superficial crystallization of the glaze surface.

2.100 Felspar, Feldspar — A mineral aggregate consisting chiefly of microcline, albite and/or anorthite.

2.101 Fire — See 'Fire, Bisque'; 'Fire, Decorating'; 'Fire, Glost' and 'Fire, Single'.

2.102 Fire, Bisque — See 'Bisque Fire'.

2.103 Firecheck — A fine shallow crack in the body not covered with glaze.

2.104 Fire Clay — A secondary clay which does not show any incipient fusion below 1 580°C.

2.105 Fire, Glost — The process of kiln-firing bisque ware to which glaze has been applied.

2.106 Fire, Single — The process of maturing an unfired ceramic body and its glaze in one firing operation.

2.107 Firing — The controlled heat treatment of ceramicware in a kiln or furnace, during the process of manufacture, to develop the desired properties.

2.108 Firing Curve — A diagram or table showing the time and temperature planned or experienced by ware going through a firing operation.

2.109 Firing Cycle — The time required for one complete firing operation (cold-to-cold).

2.110 Firing, Decoration — See 'Decoration Firing'.

2.111 Firing Range — The range of firing temperature within which a ceramic composition develops properties which render it commercially useful.

2.112 Flatware — Articles having an internal depth not exceeding 25 mm as measured from the lowest internal point to the horizontal plane passing through the point of overflow.

2.113 Flowing — Excessive movement of the molten glaze due to its being less viscous at the temperature of firing, resulting in collection of glaze at the foot of the article or spreading of colour decoration.

2.114 Flux — A substance that promotes fusion in a given ceramic mixture.

2.115 Foodware — A flatware and hollowware used in the preparation, serving or storage of food and beverages.

2.116 Forming — The shaping or moulding of ceramicware.

2.117 Forsterite Porcelain — A vitreous ceramic whiteware for technical application in which forsterite (2MgO·SiO₂) is the essential crystalline phase.

2.118 Forsterite Whiteware — Any ceramic whiteware in which forsterite (2MgO·SiO₂) is the essential crystalline phase.

2.119 Frit — It is an intermediate product formed by quenching in water or between water-cooled rolls, a mixture of inorganic materials from the molten state. It may be partially crystalline. It is used for providing a protective coating in admixture with various additives on different ceramics, glassware and metal.

2.120 Fritted Glaze — A glaze in which a part or all the constituents are pre-fused.

2.121 Fusion — The process of melting; usually the result of interaction of two or more materials.

2.122 Glaze — A ceramic coating matured to glassy state on a formed ceramic article, or the material or mixture from which the coating is made.

2.123 Glaze, Bright — See 'Bright Glaze'.

2.124 Glaze, Clear — See 'Clear Glaze'.

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2.125 Glazed Ceramic Mosaic Tile — Ceramic mosaic tile with glazed faces.

2.126 Glazed Interior Tile — A glazed tile with a body that is suitable for interior use and which is usually non-vitreous, and is not required or expected to withstand excessive impact or be subject to freezing and thawing conditions.

2.127 Glazed Tile — Tile with a fused impervious facial finish composed of ceramic materials, fused into the body of the tile which may be a nonvitreous, semivitreous, vitreous, or impervious body. The glazed surface may be clean, white or coloured.

2.128 Glazed Tile, Extra Duty Glaze — Tile with a durable glaze that is suitable for light duty floors and all other surfaces on interiors where there is no excessive abrasion or impact.

2.129 Glaze Fit — The stress relationship between the glaze and body of a fired ceramic product.

2.130 Glaze, Fritted — See 'Fritted Glaze'.

2.131 Glaze, Matt — See 'Matt Glaze'.

2.132 Glaze, Opaque — See 'Opaque Glaze'.

2.133 Glaze, Raw — See 'Raw Glaze'.

2.134 Glaze, Semi-Matt — See 'Semi-Matt Glaze'.

2.136 Glaze, Slip — See 'Slip Glaze'.

2.137 Glaze, Vellum — See 'Vellum Glaze'.

2.138 Glost Fire — See 'Fire, Glost'.

2.139 Hard Porcelain — A completely vitrified translucent, generally white, hard body which does not vitrify below 1 350°C.

2.140 Healing Power — The ability of a glaze to heal surface blemishes during firing.

2.141 Hollowware—Articles having an internal depth greater than 25 mm as measured from the lowest internal point to the horizontal plane passing through the point of overflow.

2.142 Hollowware, Large — Hollowware with a capacity of 1.1 litres to 5 litres.

2.143 Hollowware, Small — Hollowware with a capacity less than 1.1 litres.

2.144 Hotel China — A non-translucent ware made of dense, strong, white body of vitreous china type, biscuited at a high temperature and later glost fired at a relatively lower temperature.

2.145 Hot Pressing — A jigger process wherein a heated profile, tool or plunger forms the plastic body by direct pressure.

2.146 Impervious — The degree of vitrification evidenced visually by complete resistance to dye penetration.

2.147 Incised — Decorated by cutting or indenting the ware surface.

2.148 Inglaze Decoration — See 'Decoration, Inglaze'.

2.149 Ironstone Ware ( Stone China, White Granite Ware ) — Historic terms for a durable English earthenware.

2.150 Jasper Ware — A vitreous, opaque, coloured unglazed ceramicware having white or contrasting relief decorations and containing a substantial amount of barites, originally developed by Josiah Wedgwood.

2.151 Jiggering — Forming ceramicware from a plastic body by differential rotation of a profile tool and mould, the mould having the contour of one surface of the ware and the profile tool that of the other surface.

2.152 Kaolin ( China Clay ) — A refractory clay consisting essentially of minerals of the kaolin group and which fires to a white or nearly white colour.

2.153 Kiln Support Marks — Unglazed patches left on the ware purposely as also pin or line marks from where the glaze is removed on account of support given to the ware during firing.

2.154 Knockings — The oversize residue obtained in screening a ceramic slip.

2.155 Limestone — A sedimentary carbonate rock, composed chiefly of calcite (CaCO₃), but sometimes containing appreciable dolomite.

2.156 Loss on Ignition — The percent loss in weight of a material on being calcined at a temperature sufficiently high, and for a time long enough, to achieve constant weight without melting, expressed as a percent of the initial weight of the dry material (without free moisture).

2.157 Magnesia — Magnesium oxide (MgO), calcined or hard burnt as periclase loosely applied also to the hydrate Mg ( OH )₂, and made synthetically from seawater or brine, or (impure) from magnesite.

2.158 Majolica — Formerly an earthenware with an opaque lustre glaze and overglaze coloured decorations, but currently designating any decorated earthenware having an opaque glaze.

2.159 Masking Power — The ability of a fired glaze
to mask visually the body on which it is applied.

2.160 Matt Glaze — A colourless or coloured ceramic glaze having low gloss.

2.161 Maturing Range — The time-temperature range within which a ceramic body, glaze or other composition may be fired to yield specified properties.

2.162 Melt — To change a solid into a liquid by the application of heat; or the liquid resulting from such action.

2.163 Mineralizer — A processing additive that promotes either the recrystallization or the partial fusion or sintering of certain mineral or ceramic materials, often facilitating the desired conversion at a lower temperature.

2.164 Moisture Expansion — An increase in dimension or bulk volume of a ceramic article caused by reaction with water or water vapour.

NOTE — This reaction may occur in time at atmospheric temperature and pressure, but is expedited by exposure of the article to water or water vapour at elevated temperatures and pressures.

2.165 Monochrome Decoration — A single colour decoration.

2.166 Mullite Porcelain — A vitreous ceramic whiteware for technical application in which mullite \((3\text{Al}_2\text{O}_3\cdot2\text{SiO}_2)\) is the essential crystalline phase.

2.167 Mullite Whiteware — Any ceramic whiteware in which mullite \((3\text{Al}_2\text{O}_3\cdot2\text{SiO}_2)\) is the essential crystalline phase.

2.168 Natural Clay Tile — A tile made by either the dust-pressed method or the plastic method, from clays that produce a dense body having a distinctive, slightly textured appearance.

2.169 Nepheline Syenite — A mineral aggregate consisting chiefly of albite, microcline and nephelite, each in significant amount.

2.170 Nonvitreous (Nonvitrified) — That degree of vitrification evidenced by relatively high water absorption.

NOTE — The term 'nonvitreous' generally signifies more than 10 percent water absorption.

2.171 Opaque Glaze — A nontransparent coloured or white glaze.

2.172 Orange Peel — A pitted texture of a fired glaze resembling the rough surface of orange peel.

2.173 Oven Ware — Ceramic whiteware for use over culinary oven.

2.174 Overglaze Decoration — See 'Decoration, Overglaze'.

2.175 Particle — A minute quantity or fragment of matter whose size and shape depend on the forces of cohesion. It is usually only a single crystal or a unit of matter with a specific gravity approximating that of a single crystal.

2.176 Particle Size Distribution — A profile of the sizes of particles contained in a material in which the quantities must be expressed on some basis which may be total number, total surface, or total weight or volume of the particles in the material.

2.177 Paste Ceramic — See 'Ceramic Paste'.

2.178 Pate Dure (Hard Paste) — A French term designating ceramic whitewares fired at relatively high temperatures.

2.179 Pate Tendre (Soft Paste) — A French term designating ceramic whitewares fired at relatively low temperatures.

2.180 Pavers — Unglazed porcelain or natural clay tile formed by the dustpressed method and similar to ceramic mosaics in composition and physical properties but relatively thicker with 15 cm or more of facial area.

2.181 Peeling — See 'Shivering'.

2.182 Pinholes — Imperfections in the surface of a ceramic body or glaze resembling pin pricks less than 15 mm in diameter.

2.183 Placing Sand — Silica sand, ground kyanite or saggar grog used as placing sand for placing unglazed article in the saggar before loading in the kiln to save the article from sticking to the saggar as also to avoid distortion of shape during firing.

2.184 Plastic Pressing — See 'Pressing, Wet'.

2.185 Polishing Mark — A spot where some minor blemish has been ground off and the surface polished, the area of the spot not exceeding the area of a 10-mm diameter circle.

2.186 Polychrome Decoration — A multicolour decoration.

2.187 Porcelain — A glazed or unglazed vitreous whiteware. This term designates such products as electrical, chemical, mechanical, structural, thermal and tablewares when they are vitreous.

2.188 Porcelain, Alumina — See 'Alumina Porcelain'.

2.189 Porcelain, Chemical — See 'Chemical Porcelain'.

2.190 Porcelain, Cordierite — See 'Cordierite Porcelain'.

2.170 Nonvitreous (Nonvitrified) — That degree of vitrification evidenced by relatively high water absorption.
2.191 Porcelain, Electrical — See 'Electrical Porcelain'.

2.192 Porcelain, Forsterite — See 'Forsterite Porcelain'.

2.193 Porcelain, Hard — See 'Hard Porcelain'.

2.194 Porcelain, Mullite — See 'Mullite Porcelain'.

2.195 Porcelain Process — The method of producing glazed ware by which a ceramic body and glaze are matured together in the same firing operation.

2.196 Porcelain, Semi — See 'Semiporcelain'.

2.197 Porcelain, Soft — See 'Soft Porcelain'.

2.198 Porcelain, Steatite — See 'Steatite Porcelain'.

2.199 Porcelain Tile — A ceramic mosaic tile or paver that is generally made by the dust-pressed method, of a composition resulting in a tile that is dense, fine-grained, and smooth with sharply formed face, usually impervious. Colours of the porcelain tile are usually of a clear, luminous type or granular blend thereof.

2.200 Porcelain, Titania — See 'Titania Porcelain'.

2.201 Porcelain, Zircon — See 'Zircon Porcelain'.

2.202 Porosity, Apparent — The volume fraction of all pores, voids, and channels within a solid mass that are interconnected with each other and communicate with the external surface, and thus are measurable by gas or liquid penetration.

2.203 Porosity, Closed — The volume fraction of all pores within a solid mass that are closed off by surrounding solid and, hence, are inaccessible to each other and to the external surface. They, thus, are not detectable by gas or liquid penetration.

2.204 Porosity, Connected — The volume fraction of all pores, voids and channels within a solid mass that are interconnected with each other.

2.205 Porosity, Open — See 'Porosity, Apparent'.

2.206 Pottery — All fired ceramic wares that contain clay when formed, except technical, structural, and refractory products.

2.207 Pottery Square — A square area of dimensions 50 × 50 mm$^2$ selected on the ware for examining visual defects.

2.208 Pressing, Dry — See 'Dry Pressing'.

2.209 Pressing, Hot — See 'Hot Pressing'.

2.210 Pressing, Wet (Plastic Pressing) — Forming ceramicware in dies from a plastic body by direct pressure.

2.211 Primary Clay (Residual Clay) — A clay which remains geologically at its place of formation.

2.212 Process, Ceramic — See 'Ceramic Process'.

2.213 Process, China — See 'China Process'.

2.214 Process, Dry — See 'Dry Mix'.

2.215 Process, Wet (Slip Process) — The method of preparation of a ceramic body wherein the constituents are blended in sufficient liquid to produce a fluid suspension for use as such or for subsequent processing.

2.216 Pyrophyllite — A hydrated aluminium silicate mineral of the theoretical composition Al$_2$O$_3$.4SiO$_2$.H$_2$O, having physical properties in the raw state resembling mineral talc.

2.217 Quarry Tile — Unglazed tile, usually 39 cm$^2$ or more in surface area and 10 to 20 mm in thickness, made by the extrusion process from natural clay or shales.

2.218 Raw Glaze — A glaze compounded primarily from raw constituents, that is, containing no prefused materials.

2.219 Rockingham Ware — A semivitreous ware or earthenware having a brown or mottled brown bright glaze (originated in England on the estate of the Marquis of Rockingham).

2.220 Saggar — A fire clay container for keeping glazed ware for firing to protect it from smoke, dust and dirt of the kiln atmosphere.

2.221 Salt Glaze — A glaze produced by the reaction, at elevated temperature, between the ceramic body surface and salt fumes produced in the kiln atmosphere.

2.222 Secondary Clay (Sedimentary Clay) — A clay which has been geologically transported from its place of formation.

2.223 Semi-matt Glaze — A colourless or coloured glaze having moderate gloss.

2.224 Semiporcelain — A trade term designating semivitreous dinnerware.

2.225 Semivitreous China — A development of earthenware biscuited at a high temperature and glost fired at a relatively lower temperature and having water absorption between 3 and 7 percent by mass.

2.226 Semivitreous (Semivitrified) — That degree of vitrification evidenced by a moderate or intermediate water absorption.
NOTE — The term 'semivitreous' generally signifies 0.5 to 10.0 percent water absorption.

2.227 Ship and Galley Tile — A special quarry tile having an indented pattern on the face to produce an antislip effect.

2.228 Shivering (Peeling) — The splintering which occurs in fired glazes or other ceramic coatings due to critical compressive stresses.

2.229 Sieve — A standard wire mesh or screen, especially when used in graded sets to determine the mesh size or particulate size distribution of particulate or granular solids.

2.230 Sieve Analysis — The particle size distribution of a particulate of granular solid or sample thereof, when determined by weight percent passage through, or retention on, a graded set of sieves.

2.231 Silica (SiO\(_2\)) — The common oxide of silicon usually found naturally as quartz or in complex combination with other elements as silicates.

2.232 Single Fire — See 'Fire, Single'.

2.233 Sinter — A ceramic material or mixture fired to less than complete fusion, resulting in a coherent mass, or the process involved.

2.234 Slip Coating — A ceramic material or mixture other than a glaze, applied to a ceramic body and fired to maturity required to develop specified characteristics.

2.235 Slip Glaze — A glaze consisting primarily of a readily fusible clay or silt.

2.236 Slip Process — See 'Process, Wet'.

2.237 Slip (Slurry) — A suspension of ceramic materials in a liquid with or without addition of deflocculants.

2.238 Slip, Vitreous — See 'Vitreous Slip'.

2.239 Slurry — See 'Slip (Slurry)'.

2.240 Smelt (n) — A specific batch or lot of frit.

2.241 Smelt (v) — The act of melting a batch of frit.

2.242 Soft Porcelain — A completely vitrified, more or less translucent, white or ivory body fired below 1250°C.

2.243 Solid Casting — See 'Casting, Solid'.

2.244 Special Purpose Tile — A tile, either glazed or unglazed, made to meet or to have specific physical design or appearance characteristics, such as size, thickness, shape, colour, or decoration; keys or lugs on back or sides; special resistance to staining, frost, alkalis, acids; thermal shock; physical impact; high coefficient of friction; or electrical properties.

2.245 Speck — An area of contrasting colour less than 1 mm maximum dimension. Specks less than 0.25 mm maximum dimension do not constitute a defect unless sufficient in number to form a discolouration.

2.246 Spitout — A glaze defect developed in the decorating kiln, due to evolution of minute gas bubbles from body or glaze.

2.247 Spot — A discoloured portion of the surface not exceeding 3 mm in its maximum dimension.

2.248 Steatite Porcelain — A vitreous ceramic whiteware for technical application in which magnesium metasilicate (MgO.SiO\(_2\)) is the essential crystalline phase.

2.249 Steatite (Talc) — Massive talc or the pulverized product thereof having the general formula 3MgO.4SiO\(_2\).H\(_2\)O.

2.250 Steatite Whiteware — Any ceramic whiteware in which magnesium metasilicate (MgO.SiO\(_2\)) is the essential crystalline phase.

2.251 Stoneware — A semivitreous ceramicware of fine texture, usually off-white in colour and made primarily from non-refractory clays.

2.252 Stoneware Clays — Plastic clays having low shrinkage and burning into dense off-white body at about 1250°C.

2.253 Tableware — All utensils and decorative articles made of ceramics used on the table for meal service.

2.254 Terracota — A porous, red clay ware.

2.255 Terra Sigillata — A porous red clay ware characterized by embossed decorations of the same colour and a satin-like unglazed surface (originated on the island of Samos).

2.256 Thermal Shock — A condition of stress brought about by a large temperature difference across a body or glaze.

2.257 Tile — A ceramicsurfacing unit, usually relatively thin in relation to facial area, made from clay or a mixture of clay and other ceramic materials, called the body of the tile, having either a 'glazed' or 'unglazed' face and fired above red heat in the course of manufacture to a temperature sufficiently high to produce specific physical properties and characteristics.

2.258 Tile, Ceramic Mosaic — See 'Ceramic Mosaic Tile'.
2.259 Tile, Faience — See 'Faience Tile'.

2.260 Tile, Glazed — See 'Glazed Tile'.

2.261 Tile, Glazed, Ceramic Mosaic — See 'Glazed Ceramic Mosaic Tile'.

2.262 Tile, Glazed, Extra Duty Glaze — See 'Glazed Tile, Extra Duty Glaze'.

2.263 Tile, Glazed, Interior — See 'Glazed Interior Tile'.

2.264 Tile, Porcelain — See 'Porcelain Tile'.

2.265 Tile, Ship and Galley — See 'Ship and Galley Tile'.

2.266 Tile, Special Purpose — See 'Special Purpose Tile'.

2.267 Tile, Unglazed — See 'Unglazed Tile'.

2.268 Titania — Titanium dioxide corresponding to molecular formula TiO₂.

2.269 Titania Porcelain — A vitreous ceramic whiteware for technical application in which titania (TiO₂) is the essential crystalline phase.

2.270 Titania Whiteware — Any ceramic whiteware in which titania (TiO₂) is the essential crystalline phase.

2.271 Trimmers — Units of various shapes consisting of such items as bases, caps, corners, mouldings, angles, etc, necessary or desirable to make a complete installation and to achieve sanitary purposes as well as architectural design for all types of tile work.

2.272 Underglazed Decoration — See 'Decoration, Underglazed'.

2.273 Unglazed Tile — A hard, dense tile of homogeneous composition throughout, deriving colour and texture from materials of which the body is made. The colours and characteristics of the tile are determined by the materials used in the body, the method of manufacture and the thermal treatment.


2.275 Vitreous (Vitrified) — That degree of vitrification evidenced by low water absorption (see also 'Impervious' and 'Semivitreous').

NOTE — The term 'vitreous' generally signifies less than 0.5 percent water absorption.

2.276 Vitreous China — A while vitrified body biscuited at a high temperature and glost fired at a relatively lower temperature and having water absorption less than 0.5 percent by mass.

NOTE — Vitreous china sanitaryware is fired only once.

2.277 Vitreous Sanitaryware — A sanitaryware having a vitrified body structure showing water absorption not exceeding 0.5 percent.

2.278 Vitreous Slip — A slip coating matured on a ceramic body, producing a vitrified surface.

2.279 Vitrification — The progressive reduction in porosity of a ceramic composition as a result of heat treatment, or the process involved.

2.280 Vitrification Range — The maturing range of a vitreous body.

2.281 Ware, Art — See 'Artware'.

2.282 Ware, Basalt — See 'Basalt Ware'.

2.283 Ware, Clay — See 'Clayware'.

2.284 Ware, Cordierite — See 'Cordierite Whiteware'.

2.285 Ware, Ironstone — See 'Ironstone Ware'.

2.286 Ware, Jasper — See 'Jasper Ware'.

2.287 Ware, Oven — See 'Oven Ware'.

2.288 Ware, Rockingham — See 'Rockingham Ware'.

2.289 Ware, Sanitary, China — See 'China Sanitaryware'.

2.290 Ware, Stone — See 'Stoneware'.

2.291 Ware, Yellow — See 'Yellow Ware'.

2.292 Warpage — Distortion of original shape during the manufacturing process.

2.293 Wavy Finish — A defect in the glaze finish having the appearance of numerous runs in the glaze, irregular or mottled.

2.294 Wet Pressing — See 'Pressing Wet'.

2.295 Wet Process — See 'Process Wet'.

2.296 White Ware — A fired ware consisting of a glazed or unglazed ceramic body which is commonly white and of fine texture. This term designates such products as china, porcelain, semivitreous ware and earthenware.

2.297 Whiteware, Alumina — See 'Alumina whiteware'.

2.298 Whiteware, Cordierite — See 'Cordierite Whiteware'.

2.299 Whiteware, Forsterite — See 'Forsterite Whiteware'.

2.300 Whiteware, Mullite — See 'Mullite Whiteware'.

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2.301 Whiteware, Steatite — See 'Steatite Whiteware'.
2.302 Whiteware, Titania — See 'Titania Whiteware'.
2.303 Whiteware, Zircon — See 'Zircon Whiteware'.
2.304 Whiting — Calcium carbonate powder of high purity.
2.305 Wollastonite — A calcium metasilicate mineral with the formula CaSiO$_3$ containing theoretically 48.3 percent lime (CaO) and 51.7 percent silica (SiO$_2$), occurring in acicular masses of elongated triclinic crystals, usually white or pale gray.

2.306 Yellow Ware — A yellow semivitreous ware or an earthenware with a colourless, clear glaze.
2.307 Zircon — The mineral zircon (zirconium silicate) corresponding to molecular formula ZrO$_2$.SiO$_2$.
2.308 Zircon Porcelain — A vitreous ceramic whiteware for technical application in which zircon (ZrO$_2$.SiO$_2$) is the essential crystalline phase.
2.309 Zircon Whiteware — Any ceramic whiteware in which zircon (ZrO$_2$.SiO$_2$) is the essential crystalline phase.
ANNEX A

(Foreword)

COMMITTEE COMPOSITION

Ceramicware Sectional Committee, CHD 9

<table>
<thead>
<tr>
<th>Organization</th>
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<td>Central Glass and Ceramic Research Institute, Ahmedabad</td>
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<tr>
<td>All India Pottery Manufacturers Association, Kolkata</td>
<td>SHRI S. K. GHOSH</td>
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<tr>
<td>Amrapali and Company, Ahmedabad</td>
<td>SHRI R. A. THAKKAR</td>
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<td>Central Glass and Ceramic Research Institute, Kolkata</td>
<td>SHRI S. CHAKRABARTI</td>
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<tr>
<td>Cera Sanitaryware Ltd, Kadi</td>
<td>SHRI M. K. BHANDARI</td>
</tr>
<tr>
<td>Chemicals and Allied Products Export Inspection Council, Kolkata</td>
<td>SHRI S. K. GHATAK (Alternate)</td>
</tr>
<tr>
<td>College of Ceramic Technology, Kolkata</td>
<td>REPRESENTATIVE</td>
</tr>
<tr>
<td>Controller of Quality Assurance, Kanpur</td>
<td>SHRI S. K. SRIVASTAVA</td>
</tr>
<tr>
<td>E.I.D. Parry (India) Ltd, Ranipet</td>
<td>SHRI R. KARTIKEYAN</td>
</tr>
<tr>
<td>Export Inspection Council of India, New Delhi</td>
<td>SHRI KARAM CHAND</td>
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<tr>
<td>Hindustan Sanitaryware and Industries Ltd, Bahadurgarh</td>
<td>SHRI R. K. SOMANY</td>
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<tr>
<td>Hotel and Resturants Association of India, New Delhi</td>
<td>SHRIMATI MALINI RAJENDRAN</td>
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<tr>
<td>Indian Bureau of Mines, Nagpur</td>
<td>REPRESENTATIVE</td>
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<tr>
<td>Industries Commissioner, Gandhinagar</td>
<td>SHRI R. J. SHAH</td>
</tr>
<tr>
<td>Jaipur Ceramics and Potteries Ltd, Jaipur</td>
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<tr>
<td>Jyoti Ceramic Industries (P) Ltd, Nasik</td>
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<td>Morbi Dhuba Ceramic, Morbi</td>
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<td>National Test House, Kolkata</td>
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<td>SHRI S. K. TARACHANDRANI (Alternate)</td>
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<td>Poreclain Enemallers Association, Kolkata</td>
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<td>Sahaj Ceramics, Agra</td>
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