

Australian Standard™

Refractories and refractory materials— Glossary of terms

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The following are represented on Committee MN-007:

Australasian Ceramic Society
Australasian Institute of Mining and Metallurgy
Australian Aluminium Council
Bureau of Steel Manufacturers of Australia
CSIRO, Manufacturing and Infrastructure Technology
Institute of Refractories Engineers
Refractories Manufacturers Association of Australia

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STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 2780—2003

Refractories and refractory materials—Glossary of terms

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Australasian Institute of Mining and Metallurgy
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Bureau of Steel Manufacturers of Australia
Cement Industry Federation
CSIRO Manufacturing & Materials Technology
Institute of Refractories Engineers
Refractories Manufacturers Association of Australia
The University of New South Wales

NOTES

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PREFACE

This Standard was prepared by the Standards Australia Committee MN-007, Refractories and Refractory Materials at the request of the refractories industry as a revision of AS 2780—1999.

The definitions given in this Standard are of a general nature and should not be interpreted as fully technical definitions. Where a more complete technical definition is sought, reference may need to be made to other Australian Standards such as the AS 1774 series of Standards relating to relevant specifications or sampling procedures. However, the definitions in this Standard are not in conflict with the technical definitions contained within, and specific to, those other Standards.

The source documents for this Standard include ISO 836:2001, *Terminology for refractories*, BS 3446:1990, *Glossary of terms associated with refractory materials*, Parts 1 to 3 and many industrial reference documents supplied by the industries, councils and associations of the ferrous, non-ferrous and refractories manufacturers and users within Australia.

This Standard differs from the 1999 edition in the inclusion of a number of international definitions, modification of some existing definitions and the referenced documents have been updated.

A list of referenced documents is presented in Appendix A.

Non-preferred terms are given in light type-face.

The particular discipline in which the term is used is presented in the column headed 'Used in'. The following legend applies to this column:

BRS	= Boilers
BSS	= Brick shapes
COV	= Coke ovens
FDN	= Furnace design
FMB	= Ferrous metallurgy, blast furnace
FMC	= Ferrous metallurgy, converters
FME	= Ferrous metallurgy, electric steel furnace
FMF	= Ferrous metallurgy, foundry and smelting of ores
FMH	= Ferrous metallurgy, heat-treatment and reheating furnaces
FML	= Ferrous metallurgy, hot-blast stoves
FMM	= Ferrous metallurgy, mixers and hot metal ladles
FMO	= Ferrous metallurgy, open-hearth furnace
FMS	= Ferrous metallurgy, steel casting
GIN	= Glass industry
GTR	= General term
MFD	= Manufacture, drying and firing
MFK	= Manufacture, kilns and kiln furniture
MFP	= Manufacture, preparation and shaping
NFA	= Non-ferrous metallurgy, aluminium industry

NFC = Non-ferrous metallurgy, copper/nickel industry

NFG = Non-ferrous metallurgy, general terms

NFL = Non-ferrous metallurgy, lead industry

NFT = Non-ferrous metallurgy, tin industry

NFZ = Non-ferrous metallurgy, zinc industry

PMT = Properties and methods of test

RMM = Raw materials and minerals

RMP = Raw materials processing—Rotary and shaft kilns (Cement, lime, magnesite, dolomite and alumina industries)

RTM = Type of refractory material

Other abbreviations used in the descriptions of minerals have the following meanings:

H = Hardness (Mohs scale)

MP = Melting Point

RD = Relative Density

SG = Specific Gravity

The objective of this Standard is to provide users with an indication of what is generally understood, in an Australian context, by the terms that are commonly encountered in the refractories industry.

The term ‘normative’ has been used in this Standard to define the application of the Appendix to which it applies. A normative appendix is an integral part of the Standard.

STANDARDS AUSTRALIA

Australian Standard

Refractories and refractory materials—Glossary of terms

Term	Used in	Definition
abradability index	PMT	A numerical measure of the surface wear of a material by a specified abrasive grit under prescribed conditions. Refer to AS 1774.23.1 and AS 1774.23.2 for further details.
abrasion	GTR	The wearing of a surface by mechanical action between solids (<i>see</i> corrosion , erosion , abradability index , abrasion resistance).
abrasion resistance	PMT	The resistance of a material to surface wear as caused by mechanical contact with solid matter.
abutment	FDN	The structural member that withstands the thrust of an arch.
absorption	PMT	The percentage ratio of the mass of liquid that can be absorbed by a known mass of a material to the dry mass of that material (<i>see also</i> water absorption).
acid refractory	RTM	A refractory material that behaves chemically as an acid, e.g. at high temperatures, it reacts with bases or alkalis such as lime.
acid-resistant brick	RTM	Brick having high resistance to attack or penetration by most commercial acids and corrosive materials.
ageing	MFP	A process in which the plasticity of a refractory is improved by allowing the moist body to lie for a period, e.g. by storing in a heap or in a pit (<i>see also</i> tempering). Also known as souring.
aggregate	GTR	Particles of various sizes (usually coarse grains) which constitute part of a refractory composition.
air ports	GTR	Openings built into the refractory to distribute preheated air. <i>See</i> Figure 1.
air-ramming	MFP	A method of forming refractories by means of pneumatic hammer(s).
air separation	PMT	A means of separating a bulk mixture of particles of different sizes into groups of similar particle sizes or specific densities by a stream of air or other gas.
air separator	MFP	Equipment for classifying fine powders by means of an air current.
air-setting refractory	RTM	A refractory composition containing chemical agents that promote hardening at room temperature.

Term	Used in	Definition
alloy bucket	NFZ	A cone-shaped ladle used to mix and feed alloys to a holding furnace.
alloy ladle	NFT	A refractory-lined ladle having a pouring lip for decanting liquid slag from the liquid alloy.
alumina	RMM	Aluminium oxide (Al_2O_3). It exists in several forms, the principal being (alpha-)alumina (corundum) and (gamma-) alumina that have a MP=2050°C. The so-called (beta-) alumina is a compound consisting of $\text{Na}_2\text{O} \cdot 11\text{Al}_2\text{O}_3$ (<i>see bubble alumina, fused alumina, sintered alumina, tabular alumina</i>).
alumina refractory	RTM	A refractory consisting substantially of corundum (<i>see high-alumina refractory</i>).
alumino-silicate refractory	RTM	A general term that includes all refractories of the fireclay, sillimanite, mullite, diaspore and bauxite types.
amorphous	GTR	Having no crystalline structure.
anatase	RMM	One of the crystalline forms of titania, TiO_2 . RD = 3.82 to 3.95; H = 5.5 to 6 (<i>see brookite, rutile</i>).
anchor	FDN	A metal or ceramic device for holding a refractory lining in place. Anchors are not intended as refractory reinforcement.
anchor tile	BRS	<i>See Figure 2(b).</i>
anchoring systems	FDN	A regular series of anchors inserted between the outer supports and refractory wall, arch or roof for the purpose of supporting the refractory lining.
andalusite	RMM	A mineral of the theoretical formula $\text{Al}_2\text{O}_3 \cdot \text{SiO}_2$ and of the same composition as kyanite and sillimanite (Al_2O_3 62.9%, SiO_2 37.1%) but of different crystal structure. RD = 3.16 to 3.20; H = 7.5. On heating, it begins to undergo conversion at about 1300°C to mullite and free silica.
anisotropic	GTR	Refers to crystalline materials for which the physical properties depend upon the direction of the crystal axes.
annealing	GTR	The release of internal stress by controlled heating and cooling.
annealing furnace	FMH	A furnace for the annealing and heat-treatment of metals.
anode furnace	NFC	A reverberatory or rotary furnace in which copper is fire-refined for the casting of anodes.
anti-oxidant	GTR	A metallic element or other substance added to a carbon-containing refractory in order to improve its resistance to oxidation. (<i>See AS 1774.32.</i>)
antigorite	RMM	A bladed form of the mineral serpentine; a hydrous magnesium silicate. <i>See also serpentine.</i>
apparent porosity	PMT	<i>See porosity—apparent.</i>
apparent solid density	PMT	<i>See density—apparent solid.</i>

Term	Used in	Definition
apparent solid volume	PMT	<i>See</i> volume—apparent solid .
arc furnace	FMF; NFA	A furnace in which the charge is melted by heating by an electric arc or arcs (a.c. or d.c.). <i>See</i> Figure 3.
arch	FDN	That part of a structure bridging over a gap in a wall (e.g. a door arch) or the space between two walls (e.g. a furnace roof).
— bearer	FDN	One of several arches supporting the checker packing in a regenerator.
— catenary	FDN	A sprung arch that is part of a hollow cylinder having the shape of an inverted catenary (the curve outlined by a chain suspended by its ends between two points of equal height).
— flat	FDN	An arch in which both the outer and inner surfaces are horizontal.
— jack	FDN	A sprung arch in which the outer surface is horizontal and the inner surface is either horizontal or arched with a large radius.
— relieving	FDN	An arch built into a wall to relieve that part of the wall below the arch from the weight of brickwork above the arch.
— rider	FDN	<i>See</i> bearer .
— segmental	FDN	A sprung arch that is part of a hollow cylinder, the centre-line of which is below the level of the skewbacks.
— semi-circular	FDN	A sprung arch that is part of a hollow cylinder, the centre-line of which is level with the skewbacks.
— sprung	FDN	An arch supported by abutments (i.e. skewbacks) only.
— suspended	FDN	An arch in which some or all of the bricks are suspended from a framework.
arch brick	BSS	A brick in which the two large faces are inclined towards each other in such a way that an arch can be constructed with a certain number of these bricks (<i>see</i> end wedge , side arch).
argillaceous	GTR	Refers to fine-grade sedimentary materials with plate type structures containing, consisting of, or like clay.
armouring	FMB	The internal metal protection for brickwork at the top of the stack. Movable armour is also used to deflect the burden materials to specific areas at the stock line. <i>See</i> Figure 4.
arrested kerosene absorption technique	PMT	The method used to determine the volume of a given mass of a granular material by measuring its displacement of kerosene. <i>See</i> AS 1774.2 for further details.
arrested water absorption technique	PMT	The method used to determine the volume of a given mass of a granular material by measuring its displacement of water. <i>See</i> AS 1774.2 for further details.

Term	Used in	Definition
arris	GTR	The sharp edge formed by the angular contact of two planes or curved surfaces.
asbestos	RMM	A class of silicate minerals that can be separated into spinnable fibres. The most common form is actinolite, a hydrous calcium magnesium iron silicate $H = 5$ to 6 ; $SG = 2.9$ to 3.2 (<i>see</i> antigorite , chrysotile , crocidolite , serpentine).
ascension pipe	COV	A refractory-lined steel pipe of a coke oven through which the gases distilled from the coal pass to the collecting main.
ash pit	BRS	That part of the boiler structure into which the ash falls.
auger	MFP	A revolving-screw which causes a propelling action in an extrusion machine.
back block	GIN	refractory block at the junction of the cooling and conditioning zones to separate their combustion areas (<i>see</i> Figure 5).
backing brick	FDN	A secondary lining of refractory or insulating brick behind the working face of a refractory installation.
back-up brick	FDN	<i>See</i> backing brick .
back wall	GIN	(a) The vertical wall below the fluxline at the charging end of a tank furnace (<i>see</i> Figures 6 and 7). (b) In furnaces used for flat glass production, this is called the front wall (<i>see</i> Figure 6).
	BRS	(c) The bridge wall, i.e. the back wall of the furnace. (d) The outer wall of the boiler, opposite the front wall. (e) The rear wall of the economizer.
baddeleyite	RMM	The naturally occurring mineral of zirconia ZrO_2 . $RD = 5.5$ to 6.0 ; $H = 6.5$; $MP = 2700^\circ C$.
baffle	BRS	A refractory or metal partition designed to direct the gases through banks of tubes.
baffle wall	GIN	A wall incorporated in a part of a furnace for deflecting flames or gases.
bag wall	MFK	One of the protective walls built within a kiln around individual fireboxes.
ball clay	RMM	A highly-plastic, kaolinitic clay; a hydrous aluminium silicate.
ball mill	MFP	<i>See</i> ' mill—ball '.
barrel	FMC	The cylindrical part of a converter (<i>see</i> Figure 10).
barytes	RMM	Barium sulfate, $MP = 1350^\circ C$; $SG = 4.5$; $H = 3$ to 3.5

Term	Used in	Definition
basic oxygen steel-making (BOS)	FMC	A process for the production of steel by the oxygen-blowing, from above, of molten iron held in a static vertical vessel called a converter . The lining consists of dolomite, dolomite-magnesite or magnesite refractories, which may be tar-bonded, fired and tar-impregnated, or resin-bonded.
basic refractory	RTM	A refractory material containing a high proportion of magnesium and/or calcium oxides and which, at high temperatures, behaves chemically as a base.
bat (batt)	GTR	(a) A fired slab of refractory material, generally of thin section, used to support ware in the firing of ceramic products. (b) Reject or broken brick, sometimes used as grog .
batch	GTR	(a) The whole of the various constituents making up the mixture for one operation (<i>see</i> batch composition). (b) A quantity of material for sampling purposes (refer to AS 2497.1).
batch composition	GTR	The blend of raw materials proportioned in accordance with the basic formula of the product (<i>see</i> batch).
batch furnace	GTR	A furnace which is cyclic operated rather than on a continuous through put.
batter	FDN	(a) The incline of a furnace wall. (b) The angle made by a wall surface with the vertical.
battery	COV	A term applied to the large refractory structure in which coke is produced in a series of adjacent ovens.
battery top	COV	Brickwork situated above the oven roofs which serves to support the gas offtakes and machinery necessary for the operation of the battery.
bauxite	RMM	A naturally occurring mixture of aluminium monohydrate (boehmite or diaspore, $\text{Al}_2\text{O}_3 \cdot \text{H}_2\text{O}$) and trihydrate (gibbsite, $\text{Al}(\text{OH})_3$), including impurities which are typically clay minerals, free silica, iron hydroxides and titania.
bay (skimming bay)	NFC	The sill of the poling doorway in an anode furnace.
bearing faces	PMT	The plain and parallel faces of a test specimen through which the compressive stress is to be applied.
bell	FMB	A metal cone at the top of the furnace that is lowered to admit the burden.
bell furnace	FMH	A heat-treatment furnace in which the roof and side walls are raised as a unit to facilitate charging and discharging.
belly	FDN	The part of a furnace in which molten metal collects before it is tapped.

Term	Used in	Definition
belly (waist)	FMB	The part of a blast-furnace that is of maximum cross-section, and located between the stack and the bosh (<i>see</i> Figure 4).
bentonite	RMM	A highly-plastic, hydrous aluminium silicate, smectite-type clay. RD = 2.4 to 2.8; MP = 1300°C to 1430°C (<i>see</i> montmorillonite , smectite).
beryl	RMM	The mineral form of beryllium aluminosilicate, $3\text{BeO} \cdot \text{Al}_2\text{O}_3 \cdot 6\text{SiO}_2$. The composition is BeO 14.0%, SiO_2 67.0%, Al_2O_3 19.0%. RD = 2.63 to 2.80; H = 7.5 to 8.0; MP = 1410°C.
beryllia	RMM	Beryllium oxide, BeO. RD = 3.02; MP = 2585°C.
bevel brick	BSS	A brick shape in which one edge between two adjacent faces is replaced by a bevel (<i>see</i> Figure 2(a)7). It can be used as a skewback.
bigelow liptak	FDN	A specialized suspended wall and arch construction system.
binder	GTR	(a) A substance added to a granular material to give it green and/or dry strength. (b) A term sometimes used synonymously with the term ' bond ' (<i>see also</i> binder brick).
binder brick	BSS	A rectangular-faced brick that is one and a half times longer than a standard (<i>see</i> Figure 2(a)4).
biotite	RMM	A hydrous phyllosilicate mica of potassium, magnesium, iron and aluminium. Theoretical formula is $\text{K}_2\text{O} \cdot 6(\text{MgFe})\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 6\text{SiO}_2 \cdot 2\text{H}_2\text{O}$. RD = 2.7 to 3.1; H = 2.5 to 3.
blackheart	MFD	The dark central part of a fired product. It is a result of inadequate oxidation.
blast-furnace	GTR	A shaft furnace in which molten metal or matte is produced from ore.
blending	GTR	Mixing together of different-sized grains or materials to obtain a desired texture or composition (<i>see</i> grading).
blending	RMP	Homogenizing of a mineral or raw material.
bloating	GTR	A permanent expansion resulting from the formation of a gaseous phase (which in turn creates a vesicular texture) that occurs when some types of clay are fired (<i>see</i> exfoliation , intumescence).
blow off protection tile	BRS	<i>See</i> Figure 2(b).
blowpipe	FMB	Part of the tuyere stock that seats into the tuyere and carries the hot blast of air into the furnace.
body	GTR	(a) A blend of mixed and moistened raw materials, ready for making into refractory products (<i>see</i> mix).
	MFP	(b) An unfinished ceramic product.
body	FMC	<i>See</i> barrel .

Term	Used in	Definition
boehmite	RMM	(a) One of the natural monohydrate minerals of alumina, of formula $\text{Al}_2\text{O}_3 \cdot \text{H}_2\text{O}$ and composition Al_2O_3 85%, H_2O 15%. RD = 3.01 to 3.06; H = 3; decomposes at 280°C. (b) Bauxite deposits that may contain a major proportion of this mineral (cf. diaspore, gibbsite).
boilers	FDN	Furnaces designed primarily to produce steam. They usually burn coal, oil or natural gas, but are also designed to burn waste products.
boiler furnace	BRS	The combustion chamber of a boiler.
bogie furnace	FMH	A heat-treatment or reheating furnace in which the charge to be treated is placed on a bogie.
bond	GTR	(a) A material that binds together the discrete grains of a mix, and is contained in the matrix; sometimes used synonymously with the term 'binder'. (b) The link or force responsible for adhesion between the atoms and/or molecules making up a substance. The nature of the bond possessed by the substance determines its physical properties (<i>see</i> ceramic bond, chemical bond).
	FDN	The arrangement of headers and stretcher brick used in the construction of a furnace wall to offset the vertical joints (<i>see</i> tie).
bond clay	RMM	A clay of sufficient natural plasticity to bond non-plastic materials.
bonded roof	FDN	A furnace roof in which the joints are offset in one or both directions.
boot (feeder nose) (feeder spout)	GIN	Part of the feeder containing an opening in which orifice rings of appropriate sizes can be fitted. It forms the end of the forehearth (<i>see</i> Figure 5).
bosh	GTR	The part of a blast furnace where the chemical reaction occurs (<i>see</i> Figure 4).
bottom	GIN	An assembly of blocks forming the floor of a tank furnace, including the surface that comes into contact with the molten glass (<i>see</i> Figures 6 and 7).
bottom	GTR	<i>See</i> floor .
bottom —spiked	FMC	A converter bottom made of monolithic refractory material, with air passages being formed by piercing with spikes.
—tube	FMC	A converter bottom made of monolithic refractory material in which the air passages are lined with copper tubes.

Term	Used in	Definition
—tuyere-block	FMC	A converter bottom in which air passage is provided by separate preformed tuyeres having several holes; the tuyeres are interspersed with solid blocks and the remaining space is filled with a ramming mixture.
bottom block	GTR	A refractory block used to form the furnace floor.
bottom-bubbling	FMC	The admission of gases through tuyeres or permeable elements in the vessel floor. The gases may be inert (e.g. nitrogen, argon) or active (e.g. oxygen, carbon dioxide).
bottom-guide brick	FMS	In bottom-pouring of molten metal, the bottom unit of the trumpet assembly connecting the assembly to the distributor brick (<i>see</i> Figure 11).
bottom-pouring	FMS	(a) Teeming, in which the stream of molten metal passes through refractory hollow-ware and enters the mould or moulds at the bottom. (b) In foundry usage, the term refers to casting from a bottom-pour ladle.
break-out	GTR	An unplanned escape of metal or slag through the vessel lining.
breast	NFC	The brickwork forming the bottom face of the charging door openings in a reverberatory-type furnace.
breast wall	GIN	A section of side wall between the crown and tuckstones or tank blocks in a tank furnace (<i>see</i> Figures 6, 7 and 8).
brick	BSS; GTR	A construction block having essentially non-metallic composition irrespective of method of manufacture which has a shape, excluding any tapers or curves, derived from a rectangular prism. The most common brick shapes in the refractories industry are shown in Figure 2(a). NOTE: This definition includes 'tiles' as a specific class of brick.
brick retaining ring	RMP	Metal rings placed strategically along a kiln's length to hold bricks in place.
bridge	NFC	(a) The sloping floor of the combustion space between the burner wall and the bath in a reverberatory-type furnace.
	GIN	(b) The structure formed by the end walls of adjacent compartments of a tank furnace and the covers spanning the gap between the walls.
bridge cover	GIN	Blocks spanning the top of the space between the bridge walls (<i>see</i> Figures 6 and 7).
bridge wall	GIN	(a) An internal double wall separating the melting end from the working end of a tank furnace and through which they are linked by the throat (<i>see</i> Figures 6 and 7).
	FDN	(b) Brickwork in a furnace separating the combustible material or fuel from the working chamber.

Term	Used in	Definition
brookite	RMM	One of the crystalline forms of titania, TiO_2 . RD = 3.87 to 4.08; H = 5.5 to 6 (<i>see</i> anatase , rutile).
brucite	RMM	A hydrous magnesia mineral of formula $\text{MgO} \cdot \text{H}_2\text{O}$. Its composition is MgO 69.1%, H_2O 30.9%. RD = 2.38 to 2.4; H = 2.5; decomposes to magnesium oxide at about 390°C.
bubble alumina	RMM	A re-crystallized fused alumina formed as light weight hollow spheres (<i>see</i> fused alumina , sintered alumina , tabular alumina).
bubbler block	GTR	A refractory block through which a metal tube passes, allowing gas or materials to be injected into the vessel as an aid to homogenizing the mix.
buckstave	FDN	<i>See</i> buckstay .
buckstay	FDN	A steel member used in furnace construction to take the thrust of the brickwork. (<i>See</i> Figure 12).
bulk density	PMT	<i>See</i> density—bulk .
bulk density of a granular material	PMT	The ratio of the mass of a quantity of the material to the bulk volume of its grains. <i>See</i> AS 1774.2 for further details.
bulk volume	PMT	<i>See</i> volume—bulk .
bullnose	BSS	A brick in which one end-face is completely rounded off to join one side face (<i>see</i> Figure 2(a)13).
burden (charge)	GTR	The raw materials loaded into a vessel.
burner block	GTR	A refractory block having one or more orifices through which burners fire.
burner port	GTR	A furnace opening through which fuel and/or air is introduced for combustion.
burners—high, —low	COV	Burners placed at different levels in alternative flues to give even distribution of heat vertically and transversely across the oven wall.
burning	GTR	(a) Heat treatment of calcined raw materials at elevated temperatures. (b) An alternative term for firing (<i>see</i> calcination , firing , sintering).
burning-off oven	NFG	An oven used to burn off the steel wool prior to unrefined gold being smelted.

Term	Used in	Definition
burning zone (sintering zone)	RMP	(a) The zone in rotating kilns where fuel combustion takes place. (b) The zone in kilns where calcined materials are treated and/or dead-burned at elevated temperatures (<i>see</i> burning, dead-burned). (c) The zone in kilns where the constituents of the charge react to form clinker and where sintering takes place.
bursting	PMT	Disintegration following a permanent increase in volume.
bus flue	COV	A refractory-lined duct built transversely under the regenerator brickwork which alternately conducts— (a) incoming air and ‘lean’ gas to the regenerator chambers; and (b) waste gases to the waste-gas flue on the reverse cycle.
bustle main (bustle pipe)	FMB	The common main surrounding the vessel by means of which air is distributed through the tuyere stock to the tuyere or burner.
buttress wall	COV	A concrete wall at the extreme end of the battery structure to act as a restraint against expansion of the battery.
C tile	BRS	<i>See</i> Figure 2(b).
calcination (calcining)	GTR	Heat treatment producing physical and/or chemical changes in minerals, particularly heating to decompose hydroxides and carbonates (<i>see</i> burning, dead-burned, firing, sintering).
calcine	GTR	The product of calcination.
calciner	RMP	A furnace wherein the degree of calcination increased.
calciner—flash	NFG	A stationary calcining plant, usually for non-ferrous production, consisting of a preheat furnace, furnace, holding vessel and series of cyclones for product cooling and air preheating.
calcining zone	NFG	The zone in a calcination kiln where the major reaction occurs.
calcite	RMM	A mineral form of calcium carbonate, CaCO_3 , of composition CaO 56.0%, CO_2 44.0%. RD = 2.71; H = 3; decomposes to the oxide at about 900°C.
callow	MFP	Under-fired.
cam lining	RMP	A lining consisting of alternative longitudinal rows of ridge and trough bricks, each row being three or four bricks wide.
canal (canal assembly)	GIN	The part of a tank furnace leading from the refining zone to the drawing chamber (<i>see</i> Figure 8).

Term	Used in	Definition
carbide refractory	RTM	A refractory consisting essentially of carbide(s). The carbides that form this group of special ceramic materials are of the elements of Al, Be, Ce, Cr, Hf, La, Nb, Si, Ta, Th, Ti, U, V, W, Zr or combinations thereof.
carbonation	GTM	Reaction with carbon dioxide (usually absorbed from the atmosphere) to produce a carbonate. Carbonation may cause ‘dusting’. (See efflorescence).
carbonization	MFP; PMT	A process to remove volatile components from a refractory by heating in a non-oxidizing atmosphere. The refractory may have been either bonded or impregnated with carbonaceous material such as pitch, tar or resin. (See AS 1774.32.)
carbon-baking furnace (carbon-baking pits)	NFA	A series of rectangular pits separated by flue walls, in which carbon anodes are baked in a reducing atmosphere.
carbon monoxide disintegration	PMT	The breakdown of a refractory material caused by the deposition of amorphous carbon around ‘iron spots’ in a refractory. Refer to AS 1774.9, which determines resistance to the disintegrating effect of carbon monoxide.
carbon-reactivating kiln	NFG	A kiln used to reactivate or regenerate carbon.
carbon refractory	RTM	A refractory consisting essentially of carbon. The bulk sources of carbon are carbonized coal (i.e. metallurgical coke), petroleum coke (made from oil residues), calcined anthracite and graphite (see also graphite refractory , plumbago refractory).
carborundum	RMM	A synthetic silicon carbide of approximate formula SiC. The industrial product may be impure (see silicon carbide).
car deck	MFP	The refractory top of a car for the support of the ware in a tunnel kiln or bogie kiln (see Figure 12).
cascade	NFT	An arrangement of refractory-lined steel boxes designed to receive molten tin from the separator boxes.
castable	RTM	See castable refractory .
—dense	RTM	A castable having a cast coverage greater than 1600 kg/m ³ .
—extra lightweight	RTM	A castable having a cast coverage less than 800 kg/m ³ .
—free-flowing	RTM	A castable of any density and cement content, having a consistency after mixing that allows it to flow and de-aerate without the application of external energy.
—lightweight	RTM	A castable having a cast coverage less than 1200 kg/m ³ but greater than 800 kg/m ³ .
—low-cement	RTM	A castable containing ultra fine (<1 µm) powder(s), dispersant and sufficient cement to yield between 1.0% and 2.5% calcium oxide on a calcined basis.
—mediumweight	RTM	A castable having a cast coverage no greater than 1600 kg/m ³ and no less than 1200 kg/m ³ .

Term	Used in	Definition
—no cement	RTM	A castable containing ultra-fine (<1 µm) powder(s), dispersant. It must have no lime-containing cement in the bond.
—non-wetting	NFG	Any castable which contains additives designed to render it non-wettable by molten metals.
—pumpable	RTM	A castable of any density and cement content which has a consistency after mixing that enables it to be conveyed from the mixer to the point of installation by pumping using a piston pump or high pressure conveyor.
—regular (conventional)	RTM	A castable containing sufficient cement to yield greater than 2.5% calcium oxide on a calcined basis. Regular castables usually do not contain a deflocculant.
—self-flowing	RMM	<i>See</i> castable—free-flowing .
—self-levelling	RTM	<i>See</i> castable—free-flowing .
—ultra-low cement	RTM	A castable containing ultra fine (<1 µm) powder(s), dispersant and sufficient cement to yield between 0.2% and 1.0% calcium oxide on a calcined basis.
castable refractory	RTM	A refractory material that can be installed by casting (<i>see also</i> concrete—refractory).
cast coverage (cast cover)	PMT	The mass of dry castable required to yield a given volume of a refractory concrete. Refer to AS 1774.29 for further details.
casting	GTR	(a) Shaping a fluid material (which subsequently solidifies) by transferring it to a mould.
	FMS; NFG	(b) The term is often used as an alternative for teeming but its more specific meaning denotes the pouring of liquid metal for the production of castings.
casting-pit refractory materials	FMS	Refractory materials used in casting (teeming). The individual units are ladle bricks, stopper-rod sleeves, stopper heads, nozzles, well bricks, sliding-gate refractories, hot-top bricks and bottom-pour refractories (<i>see</i> Figures 11 and 16).
cavette	GIN	A refractory shape introduced into a furnace and partly immersed in the molten glass for the purpose of protecting the gathering point from the furnace gases and surface scum.
cement—high-alumina (HAC)	RMM	A refractory cement in which the principal binder is calcium aluminate.
—refractory	RTM	(a) <i>See</i> cement—high-alumina . (b) Used as a general term to denote jointing mortars (<i>see</i> mortar).
ceramic	GTR	A term applicable to products made thermochemically from heat-resistant, non-metallic, inorganic materials (<i>see</i> ceramic bond).

Term	Used in	Definition
ceramic anchor	GTR	A ceramic device for holding a refractory lining in place (<i>see</i> Figure 2(a)14 and anchor).
ceramic bond	GTR	The vitreous or crystalline bond that develops as a result of thermochemical reactions that occur when refractory materials are subjected to elevated temperatures (<i>see</i> bond , chemical bond).
ceramic fibre	RTM	A manufactured ceramic material, in fibre form. Also known as man-made mineral fibre (mmmf).
—blanket	RTM	A flexible, normally needled, ceramic fibrous insulating material, free of binder, with nominally determined dimensions (<i>see</i> needled).
—board	RTM	A substantially rigid flat sheet normally containing inorganic and/or organic binder, produced by a wet process.
—felt	RTM	A flexible, fibrous insulating material of nominally determined dimensions, containing some proportion of inorganic and/or organic binder.
—mat	RTM	A flexible, non-needled, ceramic fibrous insulating material (<i>see</i> needled).
—module	RTM	A ceramic fibre product formed into a unit used in furnace construction.
—paper	RTM	A flexible, fibrous insulating material, formed on a paper making machine.
—rope	RTM	A ceramic fibre which has been formed, with or without the addition of other filaments, wires or yarns, into one or several types of rope, i.e. twisted, cabled or lagging.
—tape	RTM	A ceramic fibre which has been woven with or without the addition of other filaments, wires or yarns.
—yarn	RTM	A ceramic fibre which has been twisted into a continuous thread with or without the addition of reinforcing filaments.
ceramic welding	GTR	A method for hot refractory repair and maintenance, where materials are projected to the repair area in oxygen. An exothermic reaction, initiated by the hot refractory and fuelled by the oxygen, fuses the projected particles to the substrate, producing a repair mass.
chain zone	RMP	The zone in long, wet- or dry-process rotary kilns where chains are used to promote heat transfer for drying and preheating.
chair jacket	NFL	A water-cooled jacket having two right-angle bends in its cross-section and set within the refractory wall of a furnace.
chalcedony	RMM	A cryptocrystalline variety of quartz.
chalk	RMM	A soft, white to light-grey, fine-grained limestone formed from the skeletal remains of microorganisms.

Term	Used in	Definition
chamber dryer	MFD	A dryer in which products are placed in chambers and remain stationary during drying.
chamotte	RMM	Calcined kaolinitic clay used as a non-plastic constituent in refractories.
charging hole	COV	The opening in the oven-top brickwork through which coal is charged.
checker(s) (checker brick(s))	FDN	The refractory brickwork filling used in regenerators, hot-blast stoves, etc, for waste heat recovery and characterized by a high rate of heat transfer (<i>see</i> regenerator and Figure 2(a)15 and 2(a)16).
chemical bond	GTR	A bond achieved by chemical reaction and which imparts mechanical strength to refractories (<i>see</i> bond , ceramic bond , phosphate-bonded refractory).
chemically-bonded refractory	RTM	An unfired refractory in which mechanical strength is imparted by chemical binding agents (<i>see also</i> phosphate-bonded refractory).
chert	RMM	A cryptocrystalline variety of silica which may be organic or inorganic and either primary or secondary in origin.
china clay	RMM	A clay consisting mainly of comparatively coarse, crystalline kaolinite. It is poorly plastic and is white-firing (<i>see also</i> kaolin , kaolinite).
chrome-magnesite refractory	RTM	A basic refractory material that may be either fired or chemically bonded. It is manufactured substantially from a mixture of chrome ore and dead-burned magnesite in which the chrome ore predominates by mass.
chrome ore	RMM	A mineral whose essential constituent is chrome spinel of extremely variable composition. The general formula is $(\text{Fe,Mg})\text{O} \cdot (\text{Cr,Al,Fe})_2\text{O}_3$. Refractory-grade chrome ore has only minor amounts of gangue minerals.
chromite	RMM	An iron(II) chrome spinel, of theoretical formula $\text{FeO} \cdot \text{Cr}_2\text{O}_3$ and composition FeO 32.1%, Cr_2O_3 67.9%. RD = 4.1 to 4.9; H = 5.5; MP = ca. 2000°C.
chrysolite	RMM	<i>See</i> olivine .
chrysotile	RMM	A hydrated magnesium silicate, $3\text{MgO} \cdot 2\text{SiO}_2 \cdot 2\text{H}_2\text{O}$. It is a type of asbestos. H = 2.5 to 4.0; MP = 1520°C. (<i>See also</i> serpentine).
cinder notch	FMB	<i>See</i> slag notch .
circle brick	BSS	A brick, the two side faces of which are parts of concentric cylinders (<i>see</i> Figure 2(a)11) (<i>see</i> radial brick).
clay	RMM	A generally plastic material composed essentially of clay minerals but also likely to contain free silica and other impurities.

Term	Used in	Definition
clay minerals	RMM	These minerals, characteristic constituents of clays, are hydrated aluminosilicates, some types of which also contain elements such as magnesium, potassium and iron. When mixed with water, they become more or less plastic and harden on drying or heating (<i>see also halloysite, illite, kaolinite, montmorillonite, and smectite</i>).
clinker	GTR	(a) Fused or partially-fused fuel ash which may contain some incompletely burned fuel. (b) Hydraulic cement before it has been crushed or ground. (c) A dead-burned product, usually stabilized dolomite or magnesite.
clinker coating	GTR	A layer of clinker that adheres to the walls of a refractory structure.
closer (pup) (soap)	BSS	A brick of the same length as a standard but of less thickness and/or width and having square end-faces (<i>see</i> Figure 2(a)2).
clot (blank)	MFP	The rough shape of— (a) a product ready for final shaping; or (b) a raw material prior to calcination.
coke oven	COV	A large, refractory-lined structure consisting of a series of tall, narrow chambers in which coal is heated out of contact with air to form coke. Silica refractories are used for most of the coke-oven structure.
coke side	COV	A term applied to the discharge side of the coke ovens (<i>see also pusher side</i>).
cold compressive strength (CCS)	PMT	The maximum compressive load per unit area applied under specified conditions that a refractory will withstand at room temperature. Refer to AS 1774.1 for further details.
cold crushing strength	PMT	<i>See cold compressive strength.</i>
collecting main	COV	A fabricated-steel unit that collects the hot, volatile compounds and gases distilled from the coal during the coking process. The main is equipped with sprays for cooling the gases (<i>see also liquor spray</i>).
combustion chamber	FDN	The chamber in which the combustion of the fuel takes place.
composite refractory	RTM	A refractory consisting of two or more discrete layers of different compositions.
compression-testing machine	PMT	A mechanical or hydraulic machine for testing the compressive strength of refractories or materials, having a sensitivity not less than Grade B of AS 2913 and having the seating of one of the platens designed to give axial loading.

Term	Used in	Definition
concrete—refractory	RTM	A mixture of refractory aggregate and binder than can be cast, gunned, pumped or trowelled into place. (<i>See also castable refractory</i>).
condenser	NFG	A refractory-lined, steel container for collecting metal distilled from the alloy or ore, e.g. zinc distilled from lead/silver/gold/zinc alloy.
conditioner furnace	NFL	A furnace in which lead bullion from the softener furnace is reheated with the addition of zinc for the removal of oxides prior to desilverizing.
conditioning zone (equalizing zone)	GIN	The section of the forehearth where glass from the cooling zone is thermally homogenized for delivery to the attached feeder mechanism (<i>see</i> Figure 5).
cone	FMC	The conical section of a converter located above the barrel (<i>see</i> Figure 10).
continuous casting	FMS; NFA; NFC	A casting process in which a bloom, billet or other shape is continuously formed and withdrawn at a lower level while fresh molten metal is being poured continuously at a higher level.
continuous-drossing furnace	NFL	A reverberatory furnace for the extraction of copper from lead on a continuous basis.
continuous tapper	NFL	A device for allowing molten products to leave a blast-furnace on a continuous basis.
conversion	GTR	A generally slow, and not immediately reversible, change in the crystalline structure of a material resulting from heat treatment (<i>see inversion</i>).
converter	FMC	A vessel lined with refractories which is generally supported on trunnions and used in the processing of metals, e.g. for the production of steel by oxidation of impurities in the molten metal charge; this is achieved by a blast of air or oxygen. Typical kinds of converter are as follows:
— BOS/BOF (BOS vessel)	FMC	A converter in which a blast of high-velocity oxygen is directed through a lance onto molten iron from above (<i>see</i> Figure 10).
— Bessemer	FMC	A converter in which a blast of air enters through tuyeres placed in the refractory lining in the converter bottom (<i>see converter—BOS</i>).
— Kaldo	FMC	A converter in which oxygen is introduced into a rotating, inclined, cylindrical furnace without impinging directly onto the molten metal.
— Pierce-Smith	NFC	A horizontal, cylindrical vessel that rotates on its long axis. It is equipped with a mouth for charging and discharging, and tuyeres for blowing air into the molten charge (<i>see also converter (general definition)</i>).

Term	Used in	Definition
—Tropenas	FMC	A converter in which a blast of air or oxygen strikes the surface of the molten metal via tuyeres passing through the refractory wall.
coolers	FMB	Water-cooled, metal devices for cooling the furnace refractory lining. Typical types of coolers are as follows:
—box	FMB	Rectangular-shaped, metal, cooling inserts placed within the refractory lining.
—cigar	FMB	Cigar-shaped, metal, cooling inserts placed within the refractory lining.
—plate	FMB	Coolers in the form of plates, inserted within the refractory lining.
—stave	FMB	Coolers in the form of large plates that are installed between the refractory lining and the shell.
cooling launder	NFG	A launder in which lead bullion from the continuous-drossing furnace is cooled and then returned to the furnace.
cooling zone	RMP	(a) The short length of kiln in which product is allowed to cool before discharge.
	GIN	(b) The section of the forehearth where glass from the working end is allowed to cool to a prescribed temperature before flowing to the conditioning zone (<i>see</i> Figure 5).
corbel	FDN	An arrangement of bricks in which each course projects beyond an adjacent course.
cordierite	RMM	A natural or artificial magnesium aluminosilicate of theoretical formula $2\text{MgO} \cdot 2\text{Al}_2\text{O}_3 \cdot 5\text{SiO}_2$ and composition MgO 13.8%, Al_2O_3 34.9%, SiO_2 51.3%. RD = 2.60 to 2.66; H = 7.0 to 7.5; melts incongruently at 1450°C. A rock containing a major proportion of this mineral.
corner block	GIN	A refractory block used in the doghouse of a tank furnace (<i>see</i> Figure 7).
corrosion	GTR	Wear caused by static chemical attack (<i>see</i> abrasion, erosion).
corundum	RMM	A natural or synthetic mineral consisting of α -alumina, the only form of alumina stable above 1000°C. RD = 3.95 to 4.10; H = 9; MP = 2000°C to 2030°C.
course	GTR	A horizontal layer or row of bricks in a structure.
crazing	GTR	A network of fine surface cracks.
creep	PMT	The deformation of a refractory material subjected to constant compressive load and constant temperature for an extended period of time (<i>see also</i> refractoriness-under-load test).

Term	Used in	Definition
cristobalite	RMM	One of the polymorphic forms of crystalline silica, formed at temperatures above 1470°C. RD = 2.28 to 2.33; H = 7; MP = 1723°C (<i>see</i> quartz , tridymite).
crocidolite	RMM	A hydrated sodium iron silicate, also known as blue asbestos. RD = 3.2 to 3.3; H = 4. Most crocidolite is a variety of riebeckite which is a member of the amphibole group of minerals.
crown	GIN	The roof, usually arched, of a tank furnace or regenerator housing.
crucible	FMS; NFG	(a) A refractory container for molten metal.
	NFA	(b) A refractory-lined ladle used for transferring molten aluminium from the potline to the holding furnaces.
crucible pad	NFA	A base or platform made from refractory brick or refractory concrete on which hot crucibles are placed.
crusher	MFP	A machine generally used in the early stages of particle-size reduction of coarse ores or minerals.
— cone	MFP	A unit consisting of a cone housed in, and rotating concentrically with, a similarly shaped casing. It is intended for crushing or grinding.
— crushing rolls	MFP	A crusher utilizing rolls that usually turn in opposite directions and often at different speeds.
— gyratory	MFP	A unit consisting of a cone housed in, and rotating eccentrically with, a similarly shaped casing. It is intended for crushing or grinding (<i>see</i> crusher—cone).
— jaw	MFP	A crusher having two jaws, one or both being actuated by a reciprocating motion.
crushing	MFP	Reduction of the particle size of a material usually in the form of large lumps (<i>see</i> grinding , fine grinding).
crushing strength	PMT	The maximum compressive load per unit area, at a given temperature, that a refractory will withstand before it is crushed (<i>see also</i> cold compressive strength).
crushing strength—hot	PMT	The maximum compressive load per unit area, applied under specific conditions, that a refractory will withstand at a nominated temperature.
cryolite	RMM	A mineral, sodium alumina fluoride (Na ₃ AlF ₆), having the following characteristics; SG=3, H=2.5, MP≅600°C. Due to its scarcity it is artificially produced for use in industrial processes. Its chief use is as the solvent in the refining process to convert alumina to aluminium.
cullet	RMM	Milled silica glass containing a high percentage of soda, generally recycled beer bottles. MP = 800°C to 1000°C; SiO ₂ = 67% to 75%; CaO = 8% to 15%; alkalis = 10% to 17%.

Term	Used in	Definition
cupellation furnace	NFL	A reverberatory furnace for the extraction of lead and copper from retort-furnace silver/gold bullion by oxidation.
cupola	FMF	A shaft furnace in which metal is melted. It comprises a cylindrical shell protected by refractory lining and is equipped with wind boxes and tuyeres for the admission of air (<i>see</i> Figure 13).
curing	GTR	(a) The process of covering or coating freshly-placed concrete with plastic sheeting, wet hessian or 'curing membrane' to prevent the premature evaporation of water of hydration and enable the cement bond to develop maximum strength. (b) The process of heating to a specified temperature, in specified environmental conditions where necessary, to develop a chemical bond. (<i>See also</i> burning, calcination, firing, sintering).
curtain wall	GIN	A suspended structure (either fixed or movable) that separates the combustion space of a furnace into separate zones.
cushioning	NFZ	In the special-products furnace, the unsintered refractory layer beneath the crucible, acting as an absorbent layer for volumetric changes.
cutter (cutting-off table)	MFP	Apparatus placed at the outlet of the mouthpiece of a pug or auger for the cutting off of clots or finished shapes.
cyclone	GTR	A device for removing small or powdered solids from a gas stream by centrifugal force; dependent on temperature, may be refractory-lined.
cyclone preheater	RMP	A number of stages of cyclones wherein powdered feed is preheated and partly calcined by hot kiln gases.
dam (dam ring) (weir)	FMB; RMP; NFG	A raised refractory ring or wall intended to hold back the flow of material. It may be constructed to give stepped-height increases.
dam (submerged wall)	GIN	A submerged wall, generally in the melting chamber of a tank furnace.
day tank	GIN	A periodic, one-chamber, tank furnace in which the melting and working processes are usually carried out in a 24-hour cycle.
dead-burned	GTR	Rendered unreactive by appropriate heat treatment.
dead-man	FMB	The inactive mass of burden (almost wholly coke) resting on the centre of the hearth bottom.
de-airing	GTR	The removal of entrapped air from a body during manufacture or installation.
decarbonizing air	COV	Air introduced into the vertical flues to remove, by oxidation, the accretions of carbon that build up on the brickwork.

Term	Used in	Definition
deflocculant	GTR	An electrolyte that, when added (typically in very small amounts) to a powder/liquid system, alters the surface charge on the particles in such a way that electrostatic repulsion occurs. (<i>See also</i> dispersant, surfactant).
deflocculation	GTR	The separation of agglomerated particles into a finely divided form. (<i>See also</i> flocculation).
deformation	PMT	In the RUL test, a change in length of the test specimen after the onset of subsidence (<i>see</i> AS 1774.12).
dehalogenating kiln	NFL	A rotary kiln for the extraction of chlorine and fluorine from zinc fumes by roasting.
delta	FME	The refractory portion of the roof of an electric arc furnace, for metallurgical processing, usually comprised of either high alumina castable or brick construction; dome shaped, with three equally spaced openings through which the electrodes protrudes into the furnace.
dense castable	RTM	<i>See</i> castable—dense .
density	PMT	
—apparent solid	PMT	The ratio of the mass of a material to its apparent solid volume. Refer to AS 1774.5 for further details.
—bulk	PMT	The ratio of the mass of a material to its bulk volume. Refer to AS 1774.5 for further details.
—packing	PMT	The bulk density of a granular material when packed in a receptacle under specified conditions.
—powder	PMT	The ratio of the mass of material in powdered form to its apparent solid volume in powder form. Refer to AS 1774.25 for further details.
—true	PMT	The ratio of the mass of a material to its true volume. Refer to AS 1774.6 for further details.
desilverizing kettle	NFL	A furnace for removing silver and gold from lead on a continuous basis.
detred tile	BSS	A special brick shape having impressed treads on all four sides, providing an interlocked construction.
Detrick arch	GIN	A suspended-arch structure that takes the place of the doghouse arch in the melting end of a furnace.
	FDN	A specialized design allowing construction of large-span flat suspended arches.
devitrification	GTR	Formation of crystals in a vitreous material due to the effects of heat.
diaspore	RMM	(a) One of the natural monohydrate minerals of alumina of formula $\text{Al}_2\text{O}_3 \cdot \text{H}_2\text{O}$ and composition Al_2O_3 85%, H_2O 15%. RD = 3.3 to 3.5; H = 6.5 to 7. (b) Bauxite deposits that may contain a major proportion of this mineral (<i>see</i> boehmite, gibbsite).
diatomaceous brick	RTM	An insulating firebrick made from diatomaceous earth.

Term	Used in	Definition
diatomaceous earth (diatomite) (diatoms) (kieselguhr)	RMM	A rock formed essentially from the siliceous skeletons of vegetable organisms. It consists essentially of amorphous, hydrated or opaline silica with various contaminants such as silica sand, clay minerals, iron, alkalis and alkaline earths.
dilatancy	PMT	The behaviour exhibited by some materials of becoming more fluid on standing, and less fluid on being agitated (<i>see</i> thixotropy).
direct-arc furnace	FME	An arc furnace in which electric current passes from one electrode through the charge to the other electrode (<i>see</i> Figure 3(b)).
direct-bonded brick	RTM	A fired brick in which the bond is essentially formed by solid-state reaction between the grains. The term is usually applied to basic bricks.
direct teeming (direct pouring) (top-pouring)	FMS	Teeming in which the stream of molten metal from a ladle passes directly into a mould or moulds.
dispersant	GTR	A compound (usually an electrolyte) that, when added to a powder/liquid system, assists the powder to disperse through, or mix with, the liquid. Most dispersants act as deflocculants, surfactants or both. (<i>See also</i> deflocculant , surfactant).
distribution channel (distribution chamber)	GIN	A refractory chamber that receives the glass through the throat or from the refining end and to which forehearth may be connected. Similar to a refining zone (refiner) except that it is separated from the furnace.
distributor brick	FMS	In bottom-pouring of molten metal, the hollow refractory block that distributes the molten metal in the trumpet assembly to the runner bricks.
division wall	COV	A refractory dividing wall built into the regenerator brickwork (<i>see also</i> regenerator).
doloma	RMM	<i>See</i> dolomite—dead-burnt .
dolime (dolomitic lime)	RMM	A mix of calcium oxide (lime) and magnesium oxide (caustic magnesite) formed when dolomite is calcined at about 900°C.
dolomite—dead-burnt (doloma)	RMM	Dolime which has been further heated or reheated to over 1600°C (often over 1800°C) to render it resistant to hydration. RD = 3.8 (<i>see</i> magnesite—dead-burnt).
dolomite refractory	RTM	Refractory shapes pressed from dolime and doloma then heated to a sintering point over 1600°C. May contain amounts of alumina (for spinel formation) and zirconia for specialist applications.

Term	Used in	Definition
dolomite	RMM	(a) The double carbonate mineral of calcium and magnesium of theoretical formula $\text{CaCO}_3 \cdot \text{MgCO}_3$ and composition CaO 30.4%, MgO 21.9%, CO_2 47.7%. RD = 2.85 to 2.95; H = 3.5 to 4; decomposes between 700°C and 900°C, to the calcium and magnesium oxides. (b) A rock containing a major proportion of this mineral.
dolomite-magnesite refractory	RTM	A refractory manufactured substantially from a mixture of dead-burned dolomite and dead-burned magnesite, and in which the dolomite predominates by mass.
dome	FDN	A roof in the shape of a segment of a sphere.
dome brick	BSS	A brick in which the large and side faces are inclined towards each other in such a way that with a number of these bricks a dome can be constructed (<i>see</i> Figure 2(a)9).
dome plug	FDN	A detachable brick unit in the upper part of the dome.
door	COV	A refractory-lined steel frame that seals the ends of the oven.
door-jamb brick (jamb brick)	COV	A brick, generally square-shaped, with one side forming part of the oven wall; the side at right angles to it forms the seal with the oven-door frame.
door jambs	FMB; NFC	Water-cooled, copper castings forming the sides of the charging door openings in a reverberatory-type furnace.
Doré furnace	NFL	A reverberatory furnace for fire-refining silver/gold bullion prior to casting into electrolysis anodes.
drawbar	GIN	The submerged block used in the Pittsburgh process to define the position of flat glass during drawing.
drawing chamber	GIN	In a furnace used for flat glass production, the chamber from which the sheet is drawn.
drawing pit	RMP	The chamber below a shaft kiln from which burned material is withdrawn.
dross	NFG	A mixture of metal particles, slag, fluxes, non-metallic and metallic compounds that float on molten metal.
dry	PMT	Generally, the condition of a material that has been dried to constant mass at $110 \pm 5^\circ\text{C}$.
dry pressing	MFP	The high-pressure shaping of a body containing various proportions of non-plastic constituents, and having too low a water content for plastic-making (<i>see also</i> pressing , plastic-making).
dry strength	MFD	The mechanical strength of dried but unfired material.
dry vibration lining	GTR	A monolithic moisture-free lining of dry refractory fitted on site.
drying shrinkage	MFD	A reduction in the dimensions of a material as a result of drying.

Term	Used in	Definition
dusting	GTR	Spontaneous disintegration of a material to powder form following a physico-chemical transformation e.g. the disintegration of dicalcium silicate (<i>see</i> perish , efflorescence).
Dutch oven	MFK	A combustion chamber built outside of and connected to a furnace.
economizer	MFG	A bank of tubes, placed across a boiler flue, through which the feed water is pumped, and which is heated by the otherwise waste heat of the flue gases.
efflorescence	GTR	A powdering on the surface of some refractory materials caused by inorganic salts. (<i>See</i> dusting , perish , carbonation).
electrode	GTR	A conductor by which an electric current enters or leaves a fluid stream.
electrode blocks	GTR	Refractory blocks located in either the floor or side walls of a furnace and through which electrodes protrude into the melt.
electrode economizer	FME	A water-cooled jacket resting on the electrode port. It cools the electrode and thereby minimizes oxidation.
electrode port (electrode ring)	FME	An assembly of bricks in the roof of an arc furnace through which an electrode passes.
electrolyte	GTR	A compound that may be acid, base or salt, and conducts electric current in solution or in the molten state.
end oven wall	COV	The end wall in the series of ovens in the battery structure, the hot face being part of the end oven and the cold face being adjacent to the pinion wall.
end-runner ingate brick	FMS	The end brick in a horizontal-stool assembly with an offtake to the ingate brick. NOTE: In some cases the end-runner ingate brick is integral with the ingate brick.
end-skew-on-edge	BSS	A brick in which one end-face makes an angle of 60 degrees with one of the side faces and 120 degrees with the opposite one which is of reduced length.
end-skew-on-flat	BSS	A brick in which one end-face makes an angle of 60 degrees with one of the large faces and 120 degrees with the other which is of reduced length.
end wall	GIN	<i>See</i> back wall .
end wedge (end arch)	BSS	A brick in which the large faces are inclined towards each other in such a way that one of the end faces is smaller than the other (<i>see</i> Figure 2(a)6).
end drossing door	NFZ	A sprung arch at each end of a melting furnace for the removal of dross.
equivalent standard	BSS	A brick volume equal to that of a standard brick, the basic unit of measurement for brick quantities in the refractory industry.