

GLOSSARY OF KEY INDUSTRY TERMS

Acid plant	A facility that recovers sulphur dioxide from discharged gases and manufactures sulphuric acid from it.
Ag	Chemical symbol for silver.
Alloy	Metal containing several components.
Alloying	A technique of combining or mixing two or more metals to make an entirely new metallic compound; for example, mixing copper and tin creates bronze.
Antimony	A metallic element, often a pathfinder element for gold.
Au	Chemical symbol for gold.
Base metal	Non precious metal, usually refers to copper, lead, and zinc.
Blast furnace	A tall shaft furnace used to smelt sinter and produce crude lead bullion and a slag.
Bullion	Crude metal that contains impurities; needs to be refined to make market quality metal.
By-products	By-products are secondary products obtained in the course of producing zinc or lead and include primarily sulphuric acid, silver, gold, indium, copper and cadmium.
Cadmium	A soft bluish-white ductile malleable toxic bivalent metallic element; occurs in association with zinc ores.
C1 cash costs	The costs of mining, milling and concentrating, on-site administration and general expenses, property and production royalties not related to revenues or profits, metal concentrate treatment charges, and freight and marketing costs less the net value of the by-product credits.
Cake	The solid mass remaining after the liquid that contained it has been removed.
Calcine	Product of roasting zinc sulphide concentrates; mainly zinc oxide, also with silica and iron compounds, lead compounds, minor elements and residual combined sulphur.
Cathode	Negatively charged electrode in electrolysis; in zinc and cadmium electrolysis, the cathode is a flat sheet of aluminium.
Cellhouse	The location in the production process where zinc metal is electrolytically plated onto aluminium cathodes.
Cement, cementation	The process of obtaining a metal from a solution of one of its compounds by precipitation with another metal (e.g., obtaining copper from a solution of copper sulphate by adding metallic zinc).
CGG	Continuous Galvanising Grade zinc; contains alloying agents such as aluminium, lead and selenium in specific qualities desired by customers; used in continuous strip galvanising plants.
CIM	Canadian Institute of Mining, Metallurgy and Petroleum.
Cobalt	A hard, lustrous, silver-grey metal.
Coke	Product made by de-volatilisation of coal in the absence of air at high temperature.

Concentrate	Material produced from metalliferous ore by mineral processing or beneficiation; commonly based on sulphides of zinc, lead and copper; in a concentrate, the abundance of a specific mineral is higher than in the ore.
Continuous galvanising	A system for providing a continuous supply of material to be galvanised.
Conversion Price	Operating cost for a smelter to produce market quality metal, not including the cost of raw materials.
Copper cementate	Metallic copper obtained by cementation.
Copper sulphate	A copper salt made by the action of sulphuric acid on copper oxide.
Cu	Chemical symbol for copper.
Dewatering	A process usually used to remove water from wet solids or slurries by draining, pressing, pumping.
Die casting	A process for producing parts in large quantities, by injecting molten metal under pressure into a steel die.
dmt	Dry metric tonne.
doré	Unrefined gold and silver bullion bars, usually consisting of approximately 90% precious metals, which are to be further refined to almost pure metal.
Dross	Solid scum that forms on top of molten metals as a result of oxidation; must be removed for recycle.
EBITDA	<p>Most references to EBITDA in the releases are Underlying EBITDA.</p> <p>‘Underlying EBITDA’ is a non-IFRS measure of earnings, which is used internally by management to assess the underlying performance of Nyrstar’s operations and is reported by Nyrstar to provide greater understanding of the underlying business performance of its operations.</p> <p>Underlying EBITDA excludes items related to restructuring expense, M&A related transaction expense, material income or expense arising from embedded derivatives recognized under IAS 39: ‘Financial Instruments: Recognition and Measurement’ and other items arising from events or transactions that management considers to be clearly distinct from the ordinary activities of Nyrstar.</p>
Electrolysis	The process by which metals (here zinc, cadmium, and copper) are ‘won’ or deposited from solution onto a cathode by the passage of an electric current through the solution between anode and cathode.
Electrolyte	Solution containing metals (here zinc, cadmium, copper and silver) circulating in an electrolysis cell.
Electrowinning	The process of removing metal from a metal bearing solution by passing an electric current through the solution.
EPA	Environment Protection Authority of a state, provincial or federal government.
EZDA	Proprietary zinc die casting alloy made at the Hobart smelter; the alloy contains aluminium and magnesium.

Flotation	A method of mineral concentration, usually of sulphide ores, by which valuable mineral particles adhere to froth bubbles for collection as a concentrate; waste particles remain in the slurry for eventual disposal as a tailing.
Fluxes	Additives to a feed mix made to produce a fluid slag in the furnace; typical fluxes are lime, silica and iron oxide.
Free metal contribution	Metals Processing's free metal contribution is the value of the difference received between the amount of metal that is paid for in a concentrate and the total zinc and lead recovered from the sale by a smelter
Fuming, fume	A process for recovering of zinc and lead from molten lead blast furnace slag by injecting coal; the metals are removed as vapours in the gas stream, and are deoxidised to form a fume that is collected.
Galvanising	Process of coating steel sheet or fabricated products with a thin layer of zinc for corrosion protection.
Gangue	The non-valuable minerals in an ore or concentrate.
Germanium	A brittle grey crystalline element that is a semiconducting metalloid (resembling silicon).
Grade	Quantity of metal per unit weight of host rock.
Greenhouse gases	Gaseous components of the atmosphere that contribute to the greenhouse effect.
Grinding	Size reduction to relatively fine particles.
g/t	Grammes per tonne.
Gypsum	Calcium sulphate, hydrated.
Hydrometallurgical	The treatment of ores and concentrates using a wet process that usually involves the dissolution of some component and its subsequent recovery from solution.
Indicated Mineral Resource	That part of a mineral resource for which quantity, grade or quality, densities, shape and physical characteristics can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough for geological and grade continuity to be reasonably assumed.
Indium	A rare, soft silvery metallic element.
Induction furnace	Furnace that heats metals without fuel combustion; the metal is heated by an electromagnetic field created by electrical windings or inductors.
Inferred Mineral Resource	That part of a mineral resource for which quantity and grade or quality can be estimated on the basis of geological evidence and limited sampling and reasonably assumed, but not verified, geological and grade continuity. The estimate is based on limited information and sampling gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes.

Intermediate copper cementate	See: Cementation.
JORC Code	The 2004 Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves as published by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia.
kt	Thousand tonnes.
Leachate	The liquid produced when water percolates through any permeable material.
Leaching	A process using a chemical solution to dissolve solid matters.
Lead sulphate	A white crystal or powder compound of lead, sulphur and oxygen. It often forms at and is most readily seen at the terminals of lead acid car batteries. In Nyrstar it generally describes a residue produced in the leach stage of zinc smelters.
Life-of-mine	Number of years that an operation is planning to mine and treat ore, taken from the current mine plan.
LME	London Metal Exchange.
Lost time injury rate	Twelve-month rolling averages of the number of lost time injuries per million hours worked, and include all employees and contractors across all operations.
Matte	Mixed sulphide compound produced in a furnace; at the Port Pirie smelter matte is a lead-copper-sulphur material.
Measured Mineral Resource	That part of a mineral resource for which quantity, grade or quality, densities, shape, and physical characteristics are so well established that they can be estimated with confidence sufficient to allow the appropriate application of technical and economic parameters, to support production planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough to confirm both geological and grade continuity.
Mineral Reserve	The economically mineable part of a measured or indicated mineral resource demonstrated by at least a preliminary feasibility study. This study must include adequate information on mining, processing, metallurgical, economic and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified. A mineral reserve includes diluting materials and allowances for losses that may occur when the material is mined.
Mineral Resource	A concentration or occurrence of diamonds, natural solid inorganic material, or natural solid fossilised organic material including base and precious metals, coal, and industrial minerals in or on the Earth's crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics and continuity of a mineral resource are known, estimated or interpreted from specific geological evidence and knowledge.
Mt	Million (metric) tonnes.

Net smelter return (“NSR”)	“ <i>Net smelter return</i> ” (or “ <i>NSR</i> ”) is the gross revenue (total revenue minus production costs) that the owner of a mining property receives from the sale of the mine’s metal/non metal products less transportation and refining costs.
NI 43-101	The Canadian Securities Administrators National Instrument 43-101 Standards of Disclosure for Mineral Projects.
Ore	Mineral bearing rock.
Oxidation	The process by which minerals are altered by the addition of oxygen in the crystal structures.
Oxide washing	Process to remove halides from zinc secondaries.
Paragoethite	Form of goethite made as a by-product of zinc production, so named since the process differs from the normal “ <i>goethite process</i> ”.
Payable metal	Mining’s Payable metal contribution is the metal price received for the payable component of the primary metal contained in concentrate before it is further processed by a smelter.
Pb	Chemical symbol for Lead.
Premiums	Smelters’ premiums is the premium charged on top of the base LME price for the sales of refined zinc and lead metals.
Probable Mineral Reserve	The economically mineable part of an indicated and, in some circumstances, a measured mineral resource demonstrated by at least a preliminary feasibility study. This study must include adequate information on mining, processing, metallurgical, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction can be justified.
Proven Mineral Reserve	The economically mineable part of a measured mineral resource demonstrated by at least a preliminary feasibility study. This study must include adequate information on mining, processing, metallurgical, economic, and other relevant factors that demonstrate, at the time of reporting, that economic extraction is justified.
Recordable injuries	Any injury requiring medical treatment beyond first aid.
Recordable injury rate	Twelve-month rolling averages of the number of recordable injuries per million hours worked, and include all employees and contractors across all operations.
Reductant	The element in a reduction-oxidation (redox) reaction that reduces the other element involved in the reaction to a lower oxidation state. For example converting the lead in lead oxide to lead metal in a blast furnace uses the carbon contained in coke as a reductant.
Refining Charge or RC	A negotiated fee that may be linked to metal prices, paid by the miner or seller of precious metals to a smelter as a concession on the cost of the metal concentrate or secondary feed materials that the smelter purchases.
RLE process	Roast-Leach-Electrowin; technology used for the production of zinc and which combines the roasting, leaching and electrowinning processes. See also definition of each individual process.
Roaster	In zinc production, a fluid-bed furnace used to oxidise zinc sulphide concentrates; operates typically at 930-970°C; air injected through the furnace bottom ‘fluidises’ the bed of fine combusting solids.

Roasting	The process of burning concentrates in a furnace to convert the contained metals into a more readily recovered form.
Secondaries	See: Secondary feed materials.
Secondary feed materials	By-products of industrial processes such as smelting and refining that are then available for further treatment/recycling. It also includes scrap from metal machining processes and from end-of-life materials.
SHG	Special High Grade Zinc; minimum 99.995% zinc; premium quality, used by die casters; traded on the LME; attracts a price margin over lower grades.
Silica	The chemical compound silicon dioxide, also known as silica, is the oxide of silicon.
Sinter	A hard, porous, agglomerated intermediate material made by oxidation at moderately high temperature of sulphide concentrates, fluxes and returns on a grate conveyor termed a sinter machine.
Slag	Mixture of oxides produced in molten form in a furnace at high temperature.
Smelting	Chemical reduction of a metal from its ore by fusion.
Softening	Oxidation process that removed arsenic and antimony from lead bullion; so named as arsenic and antimony make lead into a hard alloy.
Solvent extraction	Method used in hydrometallurgy for metal recovery and/or purification; metal(s) are transferred to and from a selective organic liquid that is dissolved in a type of kerosene.
Spent electrolyte	Electrolyte discharged from the electrolysis cells; compared with the feed electrolyte, the solution has a lower level of the metal being electrowon (i.e., zinc, copper) and correspondingly elevated acid level.
Stripping	Removal of metal from material on which it has precipitated or been adsorbed, e.g., gold from carbon or zinc from cathodes.
Sulphate	A salt or ester of sulphuric acid.
Sulphide concentrate	The product, usually of the flotation process, in which sulphide particles are removed from the crushed rock, containing predominantly sulphide minerals.
Sulphides	Minerals consisting of a chemical combination of sulphur with metals.
t	Metric tonne.
Tailings	Material rejected from a treatment plant after the recoverable valuable minerals have been extracted.
Treatment Charge or TC	A negotiated fee that may be linked to metal prices, paid by the miner or seller to a smelter as a concession on the cost of the metal concentrate or secondary materials that the smelter purchases. TC is a positive gross profit element for the smelters and a deduction in the gross profit for mines.
UG	Underground.
Underlying EBITDA	See EBITDA
Zn	Chemical symbol for zinc.