
GLOSSARY OF TECHNICAL TERMS

“agitation leaching”	a leaching method of extracting useful minerals by agitation of finely ground mineral inputs and leaching agent in the agitation tank
“anode furnace”	a furnace in which blister copper is refined into anode copper
“associated ores”	ores, minerals or elements present in the ore body of the main minerals in such a small quantity that they technically and economically have no mining value of their own. However, such ores, after they have been mined and extracted together with the main minerals, may be processed and utilized
“ball mill”	a large rotating cylinder used for grinding ore with steel balls as the grinding medium
“bioleaching”	an aqueous method of treating refractory ore through pre-treatment with bacterial cultures
“blister copper”	copper which has been cast after passing through a converter. Blister copper contains approximately 99% copper
“c/lb”	US cents per pound
“Co”	cobalt
“contained copper in concentrate”	copper metal contained within copper concentrate, which is equal to copper grade multiplied by volume of copper concentrate
“converter”	an equipment in which the principal phase of the smelting process, which involves the blowing of oxygen-enriched air through molten metal, causing oxidation and the removal of sulfur and other impurities, takes place
“copper anode”	blister copper which has undergone further refinement to remove impurities. In an anode furnace, the molten blister copper is blown with air and natural gas to upgrade its purity to approximately 99.5% copper. It is then cast into keystone-shaped slabs that are shipped to an electrolytic refinery
“copper cathode”	copper sheet which is 99.9% and above pure produced by either an electrolytic refining process or by electrowinning
“copper concentrate”	product of applying the flotation process to copper ore, with a copper metal content typically ranging between 20% and 45%
“crusher”	a machine for crushing rock, ore or other material

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“Cu”	copper
“drilling”	a technique or process of making a circular hole in the ground with a drilling machine which typically occurs to obtain a cylindrical core as a sample of ore
“electrode”	an electrical conductor used to make contact with a nonmetallic part of a circuit
“electrolysis”	a process whereby two electrodes are placed in a solution containing ions and an electric current is passed between them, as a result of which the metal can be deposited on the negative electrode
“electrowinning”	recovery of metal from solution by electrolysis
“exploration”	activity to prove the location, volume and quality of an orebody
“exploration right”	the licensed right to explore mineral resources in areas where exploration activities are legal
“flotation process”	the process by which minerals attach themselves to the bubbles on an oily froth and rise to the top where they are skimmed off. This process is used for the concentration of sulfide ores
“grade”	the percentage of metal elements or their component in ore, usually expressed as a percentage or gram per tonne
“heap leaching”	a leaching method of extracting useful minerals involving the dissolution of ores in a leach solution
“indicated resource”	the part of a mineral resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a reasonable level of confidence. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are too widely or inappropriately spaced to confirm geological and/or grade continuity but are spaced closely enough for continuity to be assumed
“inferred resource”	the part of a mineral resource for which tonnage, grade and mineral content can be estimated with a low level of confidence. It is inferred from geological evidence and assumed but not verified geological and/or grade continuity. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes which may be limited or of uncertain quality and reliability

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“kt”	kilo tonnes
“leaching”	metallurgy technique which extracts and separates out the useful elements by chemical reactions with certain leaching agents
“measured resource”	the part of a mineral resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a high level of confidence. It 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. The locations are spaced closely enough to confirm geological and grade continuity
“mining”	the extraction of useful minerals or other geological materials from the crust, from an orebody, vein or (coal) seam
“mining right”	the licensed right to mine mineral resources and obtain mineral products in areas where mining activities are legal
“Mt”	million tonnes
“ore”	a mineral or mineral aggregate containing precious or useful minerals in such quantities, grade and chemical combination as to make extraction economic
“ore processing”	the process through which physical or chemical properties, such as density, surface reactivity, magnetism and color, are utilized to separate the useful components of ores from stones and concentrate or purify them by means of flotation, magnetic selection, electric selection, physical selection, chemical selection, reselection and combined methods
“overburden”	the alluvium and rock that must be removed in order to expose an open pit ore deposit
“overburden stripping”	the removal of waste material, required prior to ore mining
“oxide ore”	orebody which has been oxidized and as a result may become softer or may release metallic minerals thus simplifying metallurgical treatment
“probable reserves”	those measured and/or indicated mineral resources, which are not yet “proved” reserves but of which detailed technical and economic studies have demonstrated that extraction can be justified at the time of the determination and under specified economic conditions

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“proved reserves”	those measured mineral resources of which detailed technical and economic studies have demonstrated that extraction can be justified at the time of the determination and under specified economic conditions
“RC”	refining charges
“refining”	the process of upgrading the metal quality
“reserves”	the economically mineable part of a measured and/or indicated resource, including diluting materials and allowances for losses which may occur when the material is mined
“resources”	concentration or occurrence of material of intrinsic economic interest upon or inside the Earth’s crust in such form, quality and quantity that there are reasonable prospects for eventual economic extraction. Resources, or mineral resources, are subdivided, in order of increasing geological confidence, into “inferred,” “indicated” and “measured” categories
“slag”	a partially vitreous by-product of smelting ore to separate the metal fraction from the unwanted fraction
“smelting”	a process of separating metal by fusion from those impurities with which it is chemically combined or physically mixed
“solvent extraction”	a method of selectively removing one or more substances from a leach solution by treating it with a solvent that extracts certain substances
“stripping ratio”	represents the number of units of waste rock or material that need to be moved per unit of ore extracted from an open pit mine
“sulfide ore”	a type of ore formed normally as a result of geological movement and rich in sulfide. Sulfide ores may contain nickel, copper, zinc or many other metallic minerals, either alone or more often in some combination of two or more. They have not been exposed to weathering or alteration. Their metallic minerals may be easily recovered by crushing, milling and froth flotation
“SxEw” or “solvent extraction/ electrowinning”	the process of copper recovery from leach solutions by solvent extraction and electrowinning
“tailings”	finely ground waste material from which valuable minerals have been extracted by concentration
“TC”	treatment charges
“tonne”	references to tonne herein are to metric tonne. A metric tonne equals approximately 2,204.62 pounds