

# Definitions and Valuation: Mineral Production, Shipments and Trade

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## MINERAL STATISTICS

The publication of statistics on the mineral production of Canada was instituted by the Geological and Natural History Survey of Canada as early as 1886. The Department of Mines carried out this compilation through the early part of the twentieth century. Subsequent to the transfer of this work, Statistics Canada published the data for the period 1921 to 1978. In January 1979, the responsibility for Canadian non-fuel mineral statistics was transferred from Statistics Canada to the Department of Energy, Mines and Resources (now Natural Resources Canada). Statistics Canada retains responsibility for fuels and mineral manufacturing statistics (i.e., cement, lime, clay, and smelting and refining).

The construction of new metallurgical plants and the development of new types of ore have resulted in changes in methods of compilation over the period but, in general, the following principles have been followed.

For nonmetallic minerals such as asbestos, talc, barite, etc., and for structural materials such as stone, cement, etc., the mine or quarry shipments are taken to represent production. Usually there is little difference between actual output and mine shipments, and it is more convenient and practical to measure the product at the latter point. Values are computed on the f.o.b. shipping point basis and they represent, therefore, the amounts actually received by the producers. Values are adjusted to exclude the costs of containers, taxes, duties, sales discounts and outward-bound transportation.

Production data for certain simple metallic ores such as iron ore, uranium, etc., are compiled in a similar manner, that is, products shipped from a specific shipping point at f.o.b. values. For some metals this is not practical and an attempt is made to measure output in terms of recoverable metals in concentrates shipped, which are then valued at current market prices.

The value of metallic mineral production calculated in this manner does not coincide with the amounts actually received by the producers.

## DETAILS OF THE METHODS USED IN COMPUTING THE MINERAL PRODUCTION OF CANADA

### Metallic Mineral Production

#### *Antimony*

Production includes recoverable antimony in concentrates shipped. Values are calculated using the yearly average New York dealer price.

#### *Bismuth*

Production includes recoverable bismuth in concentrates shipped. The value is calculated using the yearly average New York dealer price.

#### *Cadmium*

Cadmium is associated with zinc. Production includes the recoverable content of cadmium in the zinc-lead concentrates shipped, valued at the yearly average New York dealer price.

#### *Calcium*

Output figures represent calcium metal plus the calcium content of alloys valued at the average yearly price of metal crowns.

#### *Cesium*

Production figures represent the cesium oxide content of pollucite ore shipped. The value is as reported by the producer.

#### *Cobalt*

Production includes recoverable cobalt in concentrates shipped. The value is calculated using the average yearly cathode dealer spot prices.

#### *Copper*

Production includes recoverable copper in concentrates shipped. The value is calculated using a combination of the COMEX first position price and the average London Metal Exchange Grade A Settlement price.

#### *Gold*

Production includes gold in crude bullion obtained directly from placer workings and lode gold mines, and recoverable gold in all types of ores and concentrates shipped. The value is calculated using the average final price as established by bullion dealers in London.

**Ilmenite**

Production includes shipments of direct shipping grade ore at Canada's sole shipper's reported value.

**Indium**

Production includes quantities recovered in the smelting of silver-lead-zinc ores. The output is valued by the shipper.

**Iron Ore**

Production figures represent product shipments (pellets, concentrates, ores) at the values shown by the shippers. Production from steel plant waste oxides is excluded.

**Iron (Remelt)**

This is sometimes called pig iron or Sorel iron. It is a co-product in the smelting of ilmenite ores. Quantity and value figures are those reported by the producer.

**Lead**

Production includes recoverable lead in concentrates shipped. The value is computed at the average producer price for the year.

**Lithium**

Production figures represent the lithium oxide content of spodumene and amblygonite ore shipped. The value is as reported by the producer.

**Magnesium**

Output figures represent magnesium metal, plus the magnesium content of alloys. Values are compiled using the average yearly price of primary ingots.

**Molybdenum**

Production figures are the molybdenum content of the oxides, ferromolybdenum and sulphides shipped; the value is that shown by the shipper.

**Nickel**

Production includes recoverable nickel in ores and concentrates shipped. The value is calculated using an assessment price based on London Metal Exchange prices.

**Niobium (Columbium)**

Production includes niobium (columbium) contained in concentrates shipped with values as reported by the shipper.

**Platinum Group Metals (PGM)**

Production figures for iridium, palladium, platinum, ruthenium and rhodium include the PGM content in nickel-copper matte shipped by Canadian smelters, and the PGM content in concentrates exported. Quantities are valued using average New York dealer prices or London Metal Exchange prices depending on the metal.

**Primary Iron**

Primary iron is defined to include blast furnace iron, direct reduced iron (DRI) and, in Canada, electric smelted iron.

**Rhenium**

Production figures reflect the content of concentrates shipped. Values are those reported by the shipper.

**Rubidium**

Production figures include the content of concentrates shipped. Values are as reported by the company.

**Selenium**

Production includes selenium produced as a refinery by-product and recoverable selenium contained in concentrates exported. The quantities are valued at the average New York dealer price for the year.

**Silver**

Production includes silver in crude bullion obtained directly from placer workings and lode gold mines, and recoverable silver in all types of ores and concentrates shipped. The value is calculated using the average of Toronto quotations for the year.

**Tantalum**

Production comprises the tantalum pentoxide content of concentrates shipped as valued by the shipper.

**Tellurium**

Tellurium is produced as a refinery by-product. The quantities, as reported by the refining companies, are valued by the shipper.

**Tin**

Production figures comprise recoverable tin in tin concentrates shipped. Value is based on the average New York dealer price for the year.

**Uranium**

Producers of uranium precipitates or concentrates report the metal content (U) of the shipments and the value received by the shipper. Refinery conversion facility by-products are not included.

**Zinc**

Production comprises recoverable zinc in concentrates shipped. The value is calculated using the average London Metal Exchange price for the year.

**Nonmetallic Mineral Production**

Owing to the fact that it is difficult to obtain figures of the actual production of nonmetallic minerals in Canada, and since the first actual measurement is when the product is sold, plant shipments have been taken to represent production in all cases.

**Barite**

Production is the shipments of the various grades at the selling value, f.o.b. shipping points.

**Chrysotile (Asbestos)**

Production figures represent shipments of the various grades at the total selling value, f.o.b. shipping points, less the value of containers.

**Gemstones**

Production is the tonnage of crude and rough cut amethyst, jade and labradorite shipped at its selling value, f.o.b. shipping points.

**Graphite**

Production is the shipments of various grades from the mill at its selling value, f.o.b. the mill, less container costs.

**Gypsum**

Production is taken as the tonnage of crude gypsum and anhydrite shipped from quarries or mines in lump, crushed or fine-ground forms. The value is that reported by the operators. (Note: Gypsum used in the manufacture of cement in Canadian cement plants is excluded.)

**Magnesitic Dolomite (Magnesite)**

Production is the tonnage of crude material sold by primary producers, plus the tonnage of calcined or dead-burned material sold or consumed by primary producers. The value is that reported by the producers.

**Mica**

Production is recorded as shipments from plants dressing new mica, and exported shipments directly from the mines. The value of shipments is taken as reported by operators.

**Nepheline Syenite**

Production of crude and ground nepheline syenite is the amount of the various grades shipped at the total selling value, f.o.b. works, less container costs.

**Peat**

Production comprises crude peat shipped to Canadian non-producers as fuel or for export, baled peat shipped, and the peat content of mixed products shipped. Value is sales value, f.o.b. works, less the cost of containers.

**Potash**

Production represents producers' shipments of various grades from the plant and is measured as the K<sub>2</sub>O equivalent. The value of shipments, f.o.b. plant, is reported by the producers.

**Potassium Sulphate**

Production is producers' shipments from the plant. Values, f.o.b. plant, are reported by the producer.

**Quartz (Silica)**

Production represents the tonnage of crude or pulverized quartz, quartzite, pure silica sand, or other natural silica material shipped for sale, plus the tonnage of any of these materials consumed by producers. The value is taken as reported by producers.

**Salt**

Production is taken as the tonnage of various grades of dry salt shipped by primary producers, plus the

salt content of brine used by producers for industrial (chemical) purposes. The value is that reported by producers.

**Serpentine**

Production represents producer shipments of various grades valued f.o.b. plant as reported by the producer.

**Soapstone, Talc, Pyrophyllite**

Production comprises crude, ground or sawn soapstone shipments; crude, milled or refined talc shipments; and crude or ground pyrophyllite shipments. All shipments are f.o.b. the mill or plant and are valued by the shipper.

**Sodium Sulphate**

Production is the tonnage of crude or refined natural sodium sulphate shipped at its selling value, f.o.b. shipping points. The figures exclude the sodium sulphate produced as a by-product of paper or rayon manufacturing.

**Sulphur in Smelter Gas**

Prior to final metal recovery, sulphide concentrates are smelted or roasted and the resultant gases may be used to produce marketable sulphur, sulphur dioxide or sulphuric acid. Production is considered as the sulphur content of sulphuric acid made, sulphur dioxide marketed and sulphur shipped. This sulphur is valued at the average price for sulphur sold in acid. Production is shown by province of origin of concentrates.

**Sulphur, Elemental**

In the western provinces, sour natural gas is processed to remove hydrogen sulphide, which is further reduced to yellow elemental sulphur. Sulphur recovered from the refining of Canadian crude petroleum is also included. Production is shown by province of origin of material and values are as reported by the shippers.

**Titanium Dioxide**

Ilmenite ore is smelted at Sorel, Quebec, to produce a slag containing titanium dioxide. Production is the titanium dioxide content of slag valued by the producer.

**Tremolite**

Production is shipments of various grades at the selling values, f.o.b. shipping point, less the value of containers.

**Zeolite**

Production is shipments from the plant. Values are f.o.b. plant, as reported by the producer.

**Fuels****Coal**

Production figures are equal to shipments from the mine/plant plus "own" consumption as valued by shippers, f.o.b. mine/plant.

**Natural Gas**

Production figures represent sales of natural gas from dry gas fields after field uses, losses and reinjection, but before inventory changes. Values are as reported by the producers.

**Natural Gas By-Products**

Production figures for propanes, butanes, etc., represent the quantity that is available for market. It is the quantity produced by gas processing plants after processing and reprocessing plant uses, losses and shrinkage. Values are selling value, f.o.b. shipping points.

**Oil, Crude and Equivalent**

Production figures represent the production of crude oil from both conventional and non-conventional sources after field use, losses and reinjection. Values are those reported by shippers, f.o.b. well head or plant.

**Structural Materials****Cement**

Production comprises shipments of Portland and masonry cements, exported clinker, and transfers to other corporate divisions for use in other manufacturing processes. Values are f.o.b. plant, as reported by the shipper.

**Clay Products**

Production represents shipments of brick and other clay products made from domestic clays, and shipments of unmanufactured clays (bentonite, diatomite) at the total selling value, f.o.b. works, as reported by the operators. Data relating to clay products manufactured from imported clays are not included.

**Lime**

Production represents the tonnage of hydrated and quicklime shipped (sold by the producer) together with the tonnage of these limes produced and consumed by the producers of chemicals and allied products. The values are as reported by the producer.

**Sand and Gravel**

Production represents shipments of natural gravel, sand and crushed gravel at the values reported by operators of sand and gravel pits or dredges.

**Stone**

Production represents quarry shipments of crude or undressed stone, crushed stone and dressed stone, if the latter is prepared by the quarry operators at values as reported by the operators. The figures include data for both private and public or municipally owned properties. Production figures do not include dressed stone prepared from imported stone or prepared from domestic stone in works not at the quarries.

To avoid duplication in computing a total value for Canadian mineral production, the quantity and value of stone consumed in the manufacture of lime, cement and clay products are not included in the totals for stone production. These particular data are recorded separately and are published in conjunction with data for the lime, cement and clay industries.

**VALUATION**

*(Note: The following has been extracted from Statistics Canada Catalogue no. 65-003.)*

For Customs purposes, imports are recorded at values established according to the provisions of the *Customs Act* which, since January 1, 1985, reflects valuation methods based on the General Agreement on Tariffs and Trade (GATT) Valuation Code System. It generally requires that the value for duty of imported goods be equivalent to the transaction value or the price actually paid.

To determine the transaction value of imported goods, all transportation and associated costs arising in respect of the goods being appraised prior to and at the place of direct shipment to Canada are to be added to the price of the goods. Therefore, Canadian imports are valued f.o.b. (free on board), place of direct shipment to Canada. The value excludes freight and insurance costs in bringing the goods to Canada from the point of direct shipment.

To countries other than the United States, exports are, in principle, valued or recorded at the values declared on export documents which usually reflect the transaction value, i.e., actual selling price, or in the case of a non-arm's-length transaction, the transfer price used for company accounting purposes. Canadian exports to overseas countries are valued at f.o.b. port of exit, including domestic freight charges to that point, but net of discounts and allowances. As of January 1990, Canadian exports to the United States are valued f.o.b. point of exit from Canada. Prior to 1990, they were valued f.o.b. place of lading net of freight charges, discounts and allowances.