
Canadian Mining
things
Produced by the Mining Association of Canada
Toothpaste

The Mining Association of Canada | L'association minière du Canada

Find us on

Mining Association of Canada Phone (613) 233-9391 Email communications@mining.ca **mining.ca**

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Canadian Mining

The Importance of Mining Sustainably

As demand for minerals and metals continues to grow, and with Canada a demonstrable leader in sustainable mining practices, there is tremendous potential for the country to position itself as a responsible supplier of the mineral and metal products the world needs. Mining responsibly is becoming increasingly important for the industry, particularly in Canada.

Given the essential nature of mining to our daily lives, it is vital that our industry focus on the future. Playing a leadership role in sustainable practices is an important priority for our sector. We want to ensure the metals and minerals needed for the transition to a low-carbon economy are sourced using the highest environmental and social standards. Now more than ever, people want to know that the raw materials in their products were mined responsibly, and the standards included in our ***Towards Sustainable Mining***® program, are raising the bar for mining.

To learn more about the commitment Canada's mining industry has made to environmentally, economically and socially sustainable practices: **visit www. mining.ca/towards-sustainable-mining.**

Towards Sustainable Mining
Vers le développement minier durable

Everyday things mining makes possible

Canadian Mining

01	Electricity	16	Batteries
02	Food processing	17	Commercial printing
03	Health care	18	Dentistry
04	Smartphones	19	Weddings
05	Appliances	20	Film & television
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07	Peacekeeping	22	Home security
08	Solar panels	23	Environmental solutions
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11	Cleaning products	26	Brewing beer
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13	iPads & Xboxes	28	Roads & rail
14	Personal hygiene	29	Windfarms
15	Currency	30	Space travel

Everything comes from somewhere.

If it didn't grow, it was mined.

Canadian Mining

Canadian Mining

Energy generation

6 C Carbon (Coal)

92 U Uranium

Fluorescent lighting

57 La Lanthanum

39 Y Yttrium

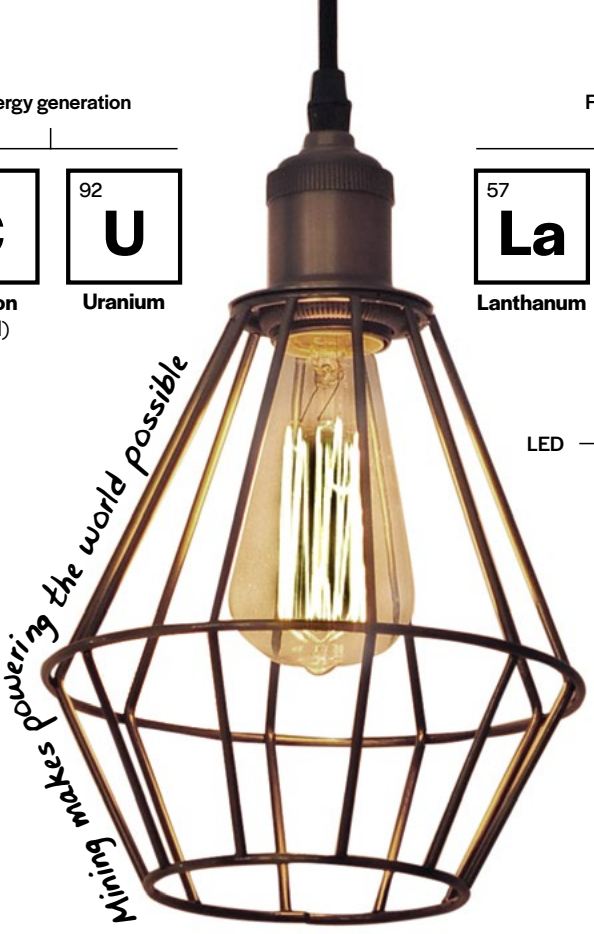
65 Tb Terbium

Production and transmission

26 Fe Iron

29 Cu Copper

13 Al Aluminium



LED

31 Ga Gallium

58 Ce Cerium

63 Eu Europium

65 Tb Terbium

Halogen

26 Fe Iron

74 W Tungsten

24 Cr Chromium

01 Electricity

Electricity travels at around 90 per cent of the speed of light.

Canada is an energy powerhouse

Electricity relies on minerals and metals to be realized. Copper is essential in both conducting electricity, and in the makeup of wind turbines which provide a greener alternative to generate the electricity used by Canadians across the country.

40
Zr

Zirconium


Steel alloys


Flashbulbs


Surgical instruments


Deodorant


Catalytic converters


Abrasives

Canadian Mining

Canada's mining sector supports the development of responsible supply chains for metals and minerals so we can have assurance that the materials we use have been sustainably sourced.

Machinery used to process and manufacture food

26	6	24	42	25	28
Fe	**C**	**Cr**	**Mo**	**Mn**	**Ni**
Iron	Carbon	Chromium	Molybdenum	Manganese	Nickel

Canadian Mining

Mining makes the preservation of food possible

Aluminium 13 **Al**

Foil packets
Drink cans

Tin 50 **Sn** — Canning (tin-coated steel)

Copper 29 **Cu** — Alloys reduce food contamination

Sodium 11 **Na** — Flavour enhancer, Preservative

02 Food processing

Chromium 24 **Cr**

Blender blades
Machinery plating

Sustainable coffee pods

Rio Tinto has partnered with coffee giant Nespresso to supply sustainable aluminium for its coffee capsules after becoming the world's first company to be certified by the Aluminium Stewardship Initiative (ASI). Certification reflects the highest environmental, social and governance practices across the aluminium lifecycle.

30
Zn

Zinc


Rust prevention


Soap


Plastics


Metal alloys


Sunscreen


Rubber


Ink

Canadian Mining

Canadian Mining

Titanium 22 Ti
Artificial joints
Prosthetic limbs
Surgical equipment

Copper 29 Cu
Kills surface microbes and reduces infections
Electronic devices

Silver 47 Ag
Anti-bacterial

Platinum 78 Pt
Pacemakers
Medical apparatus

Lithium 3 Li
Treatment of bipolar disorder
Medical implant batteries

Metal-based compounds are crucial to the diagnosis and treatment of disease.

Uranium 92 U
Cancer treatments
Radiation therapy

Niobium 41 Nb
Medical devices

03 Health care

Gadolinium 64 Gd
MRIs and x-rays
Diagnostic tracer

Gold 79 Au
Diagnosis
Nanotechnology

Gold nanoparticle technology

The nanotechnology boom has opened up a new frontier of early detection, diagnosis and treatment of diseases. Gold nanoparticle technology is being used to target and deliver antibodies directly into cancerous tumors. They are also being engineered to attach to cancer-related proteins to aid earlier detection.

92
U

Uranium


Submarines


Medical research


Clean energy


Industrial x-rays


Cancer treatments


Aerospace

Canadian Mining

Canadian Mining

04 Smartphones

Electronics

79	29	47	73	74
Au	Cu	Ag	Ta	W
Gold	Copper	Silver	Tantalum	Tungsten

Battery

13	3	27
Al	Li	Co
Aluminium	Lithium	Cobalt

Earbuds*
Phone Cases*

6	1
C	H
Carbon	Hydrogen

Touch screen

14	50	19
Si	Sn	K
Silicon	Tin	Potassium

49	13	31
In	Al	Ga
Indium	Aluminium	Gallium

Sound

60	5	28	59
Nd	B	Ni	Pr
Neodymium	Boron	Nickel	Praseodymium

Mining makes holding the world in your hand possible

More than 40 mined metals and rare earths are used to produce a single smartphone.

Mining is essential for Innovative tech

Canada's mining industry is providing the responsibly-sourced minerals and metals that power the technologies of today and of the future. In turn, we're helping businesses and their customers be confident in how they're made.

**Oil for these products can also be from non-mined sources.*

74
W

Tungsten


Light bulbs


Microwaves


Fishing hooks


Televisions


Heating elements


Darts

Canadian Mining

Canadian Mining

Steel used to build appliances

26 Fe Iron

6 C Carbon

30 Zn Zinc

Aluminium 13 Al

Condenser
Fan blades

Titanium 22 Ti

Paint and some finishes

Copper 29 Cu

Electrical wiring
Compressors

Mining makes the products that make every day possible

Stainless steel

26 Fe Iron

24 Cr Chromium

14 Si Silicon

6 C Carbon

28 Ni Nickel

25 Mn Manganese

05 Appliances

Mining keeps your electronics working

The appliances we use everyday, everything from the refrigerator to the washer and dryer, require metals to function. Copper, as just one example, is used in plumbing, industrial machinery and construction materials for its durability, corrosion resistance and ability to be cast with high precision.

https://www.nrcan.gc.ca/our-natural-resources/minerals-mining/minerals-metals-facts/copper-facts/20506

50
Sn
Tin


Magnets


Pewter


Tin cans


Solder


Touchscreens


Dye


Metal bearings

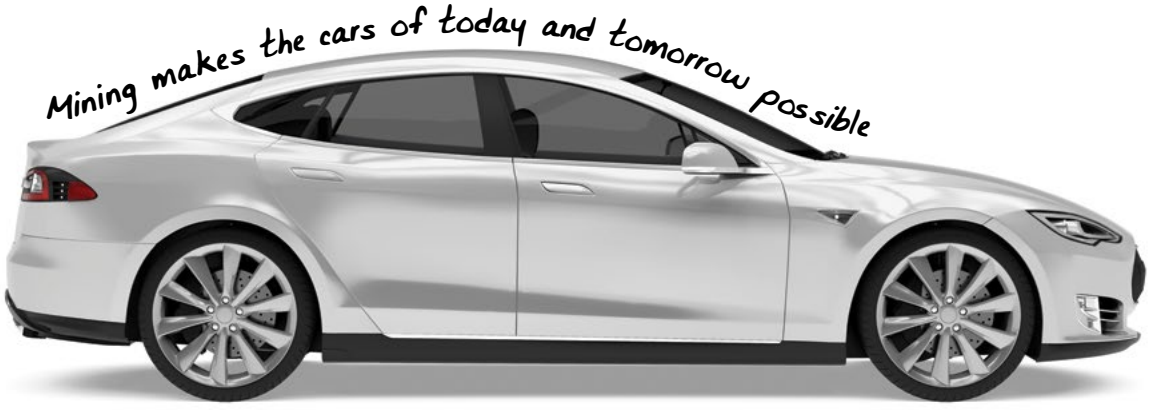
Canadian Mining

Canadian Mining

06 Electric cars

Car body and frame made from strengthened steel and aluminium alloys

26	25	23	42	13	12
Fe	Mn	V	Mo	Al	Mg
Iron	Manganese	Vanadium	Molybdenum	Aluminium	Magnesium



Cerium 58 Ce

LCD screens
Windscreens

Magnets in EV motors

66	60
Dy	Nd
Dysprosium	Neodymium

EV batteries

3	27	28	6
Li	Co	Ni	C
Lithium	Cobalt	Nickel	Carbon

Copper 29 Cu

Connectors
Brakes
Bearings

The world gets more mileage from Canadian mining

The mining industry plays an essential role in the transition to a low-carbon future by providing the building blocks of clean and low energy technologies, like electric car batteries. In fact, the growing adoption of these technologies is increasing the demand for minerals and metals.

11
Na

Sodium


Fertilisers


Table salt


Food preservation


Streetlights


Baking soda


Road salt

Canadian Mining

Canadian Mining

Silver 47 **Ag**
Navigation
Radio equipment

Bismuth 83 **Bi**
Optics (lenses)
Ammunition

Rhenium 75 **Re**
Exhausts
Turbine fans

Manganese 25 **Mn**
Batteries
Ship building
Jet engines

Chromium 24 **Cr**
Aircraft
Missiles
Engines

Germanium 32 **Ge**
Fibre optics
Infrared optics
Electronics

Scandium 21 **Sc**
Jet aircraft
Missiles

Antimony 51 **Sb**
Ammunition

Fuel

6 **C** Carbon

1 **H** Hydrogen

Vanadium 23 **V**
Armor plating

07 Peacekeeping

Aviation technology

Efficient, lightweight vehicles and aircraft need aluminum as well as lighter composites and alloys involving nickel and other metals to reduce weight and improve efficiency.

47
Ag

Silver


Mirrors


Jewellery


Medicine


Water purification


Solar panels


3D printing

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Solar panels

48	52	42	4	32	31
Cd	Te	Mo	Be	Ge	Ga
Cadmium	Tellurium	Molybdenum	Beryllium	Germanium	Gallium

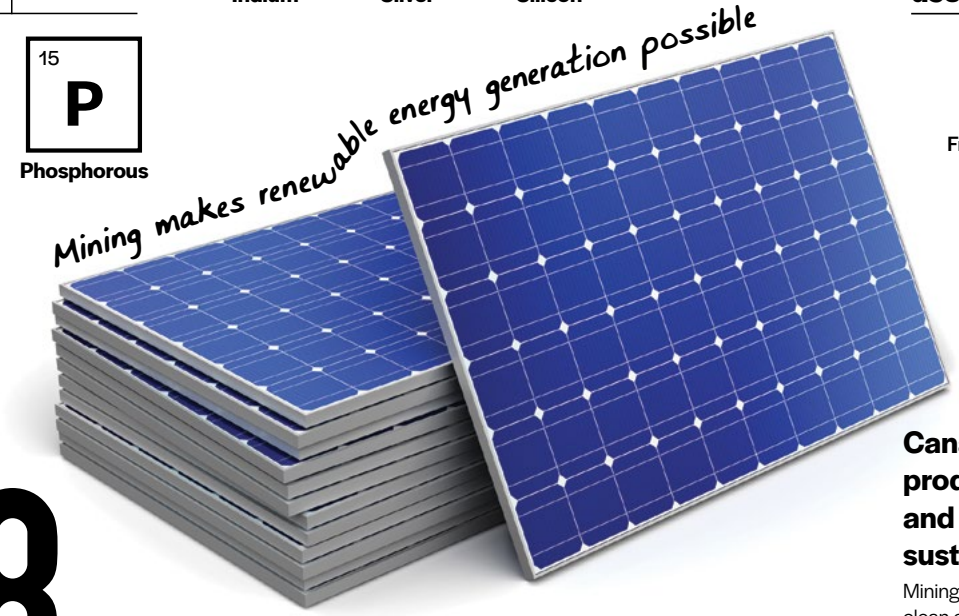
49	47	14
In	Ag	Si
Indium	Silver	Silicon

Semi-conductor

5	15
B	P
Boron	Phosphorous

Copper

29
Cu
Wiring



14 of the 19 minerals and metals used in solar PV panels come from Canadian mines.

Frame

13	22	30	12
Al	Ti	Zn	Mg
Aluminium	Titanium	Zinc	Magnesium

08 Solar panels

Canada's mining industry produces the minerals and metals used to build sustainable technologies

Mining is essential to a low-carbon future with clean energy and "green" products requiring metals and minerals as building blocks. In fact, 14 of the 19 metals and minerals used in solar PV panels come from Canadian mines.

14
Si

Silicon


Pottery


Computers


Sealants


Glass


Solar panels


Cooking utensils

Canadian Mining

Canadian Mining

Steel

26	24	42	25	28
Fe	Cr	Mo	Mn	Ni
Iron	Chromium	Molybdenum	Manganese	Nickel

House paint

Titanium 22 Ti

Magnesium 12 Mg

Zinc 30 Zn

Copper 29 Cu
Plumbing
Electrical wiring
Airconditioning

Aluminium 13 Al
Cladding
Window frames
Fixtures

Calcium 20 Ca
Masonry
Mortar

Solder

82	50
Pb	Sn
Lead	Tin

09 Your house

The role of metals in housing

Sustainable, green construction is now a necessity. Building homes and offices with materials that use less electricity and water are becoming more of a requirement than an option. Copper contributes to sustainable construction through architectural designs, building wire systems, renewable energies conversion and better use of energy-efficient systems.

https://copperalliance.org/benefits-of-copper/green-building/

Rare earths


Speakers


Wind turbines


Telescopes


MRI screening


Hybrid cars


Magnets

Canadian Mining

Trains, streetcars, buses and taxis

26	25	13	42	82	12	73
Fe	Mn	Al	Mo	Pb	Mg	Ta
Iron	Manganese	Aluminium	Molybdenum	Lead	Magnesium	Tantalum

Canadian Mining

Aircraft

Aluminium	13 Al	Scandium	21 Sc
Niobium	41 Nb	Neodymium	60 Nd
Titanium	22 Ti	Zinc	30 Zn

Air conditioning

26	14	29	13
Fe	Si	Cu	Al
Iron	Silicon	Copper	Aluminium

GPS and electronics

29	79	50
Cu	Au	Sn
Copper	Gold	Tin

Fuel

6	1
C	H
Carbon	Hydrogen

10 Public transportation

Public transportation in Canada

Canada's public transportation sector plays a role in reducing GHG emissions. Canadians depend on public transit and in 2017, the TTC carried its 31 billionth customer – or four times the world's population – since its inception in 1921.

19
K

Potassium


Fertiliser


Detergents


Salt substitute


Glass


Match heads


Saline drip

Canadian Mining

Canadian Mining

Sodium 11 Na
Detergents
Oven cleaner

Boron 5 B
Cleansers
Water softener
Detergents

Zinc 30 Zn
Plastic bottles
Soaps

Mining makes cleanliness possible

Phosphorus 15 P
Laundry powders
Dish detergents

Chlorine 17 Cl
Bleach
Pool cleaner

Carbon 6 C
Plastic bottles
Stain remover

Iodine 53 I
Disinfectants
Sanitizers

11 Cleaning products

Silicon 14 Si
Steam cleaning
Furniture polish

Tomato sauce and elbow grease

Tomato sauce and elbow grease can make blackened pots and pans and tarnished brass objects shine like new. The acetic acid in tomato sauce breaks down the copper oxide that builds over time. Apply a layer of tomato sauce to the discoloured surface, leave for half an hour and then scrub it to a shine.

78
Pt

Platinum


Surgical tools


Jewellery

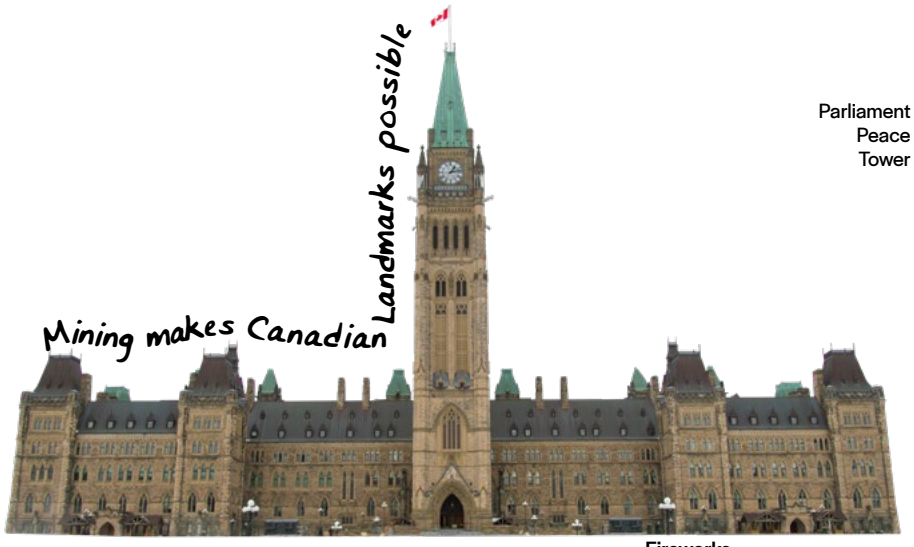

Catalytic converters


Polish


Solar panels


Dentistry

Canadian Mining



Parliament Peace Tower

29 **Cu** Copper

26 **Fe** Iron

Canadian Mining

Fireworks

Antimony — 51 **Sb** — Glitter

Zinc — 30 **Zn** — Smoke

Titanium — 22 **Ti** — Whites

Barium — 56 **Ba** — Greens

Strontium — 38 **Sr** — Reds

Copper — 29 **Cu** — Blues

Flag pole

13 **Al** Aluminium

30 **Zn** Zinc

12 Parliament Hill

A symbol of Canadian democracy since 1867

Canada's democracy is about the will of the people, the skills of leaders, and the work of many committed Canadians. Canada's mining industry, and its minerals and metals, is pleased to help in the background.

28
Ni

Nickel


Food processing


Guitar strings


Coins


Marine engineering


Electronics


Kitchen sink

Canadian Mining

Canadian Mining

LCD screens

- Silicon — 14 Si
- Tin — 50 Sn
- Europium — 63 Eu
- Yttrium — 39 Y
- Indium — 49 In

Computer processors

- 14 Si — Silicon
- 15 P — Phosphorous
- 51 Sb — Antimony
- 5 B — Boron
- 73 Ta — Tantalum

Circuit boards

- 79 Au — Gold
- 29 Cu — Copper
- 4 Be — Beryllium
- 32 Ge — Germanium
- 47 Ag — Silver
- 74 W — Tungsten

Batteries

- 3 Li — Lithium
- 28 Ni — Nickel

Game Controller*

- 6 C — Carbon
- 1 H — Hydrogen

13 iPads & Xboxes

There will be 6 times more devices connected to the internet than people in the world by 2020.

Canada is leading the way in responsible sourcing

The responsible sourcing movement is growing and extending to minerals and metals. Customers increasingly want to know that the raw materials for their products, including the technology we use every day, are mined responsibly.

**Oil for these products can also be from non-mined sources.*

42
Mo

Molybdenum


Armour


Heaters


Saw blades


High-rises


Nuclear reactors

Canadian Mining

Canadian Mining

Toothpaste

9	20	13	11
F	Ca	Al	Na
Flourine	Calcium	Aluminium	Sodium

Deodorant

13	40
Al	Zr
Aluminium	Zirconium

Titanium — 22 Ti

Whitening agent in powders and cosmetics

Iron — 26 Fe

Cosmetic pigment

Zinc — 30 Zn

Suncreens
Soaps

Copper — 29 Cu

Electric shavers and toothbrushes

Magnesium — 12 Mg

Anti-caking (talc)
Used in foundations powders and creams

14 Personal hygiene

Minerals are key to oral health

According to the Canadian Dental Association, fluoride has a positive effect on oral health by making teeth more resistant to decay. Fluoride can also prevent or even reverse tooth decay that has started.

https://www.cda-adc.ca/en/oral_health/faqs/fluoride_faqs.asp

Mineral sands

Fibre optics

Aircraft engines

Pharmaceuticals

Car paint

Sporting goods

Canadian Mining

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Investment metals

79	78	47
Au	Pt	Ag
Gold	Platinum	Silver

Coin press robotics

26	6
Fe	C
Iron	Carbon

29	30
Cu	Zn
Copper	Zinc

Canada's 5, 10, and 25 cent coins

28
Ni
Nickel

Collector coins

79	78	47
Au	Pt	Ag
Gold	Platinum	Silver

Mining makes the exchange of goods and services possible

15 Currency

Making money

The Winnipeg Mint is Canada's high-volume coin production powerhouse. Here, the industry's most technologically advanced processes and equipment produce up to 15 million plated coins each day for Canadian and foreign circulation.

https://www.mint.ca/store/mint/learn/coin-production-1200012#.XO6LIhZKipo

25
Mn

Manganese


Magnet


Deoxidiser


Fertilizer


Animal feed


Steel


Colorant

Canadian Mining

Canadian Mining

Silver-oxide batteries e.g. watches, calculators

47 Ag Silver
30 Zn Zinc
19 K Potassium

Alkaline batteries e.g. toys and electronics

30 Zn Zinc
25 Mn Manganese
19 K Potassium

Electric vehicle batteries

3 Li Lithium
27 Co Cobalt
28 Ni Nickel

Lithium-ion batteries i.e. mobile phones

3 Li Lithium
27 Co Cobalt
6 C Carbon

95% of cobalt, lithium and graphite in batteries can be reused.

Lead
82 Pb
Lead acid car batteries

16 Batteries

Driving towards a low-carbon future

Canada's mining industry is providing the responsibly-sourced minerals and metals that power electric vehicles, including metallurgical coal, nickel, copper, iron ore, zinc, cobalt and many more.

12
Mg

Magnesium


Aircraft


Fireworks


Cameras


Power tools


Racecars

Canadian Mining

17 Commercial printing

Ink pigment

Carbon	6 C	Black
Chromium	24 Cr	Green
Iron	26 Fe	Blue
Titanium	22 Ti	White
Cadmium	48 Cd	Yellow
Bromine	35 Br	Red

Paper and cardboard

11 Na	12 Mg	20 Ca
Sodium	Magnesium	Calcium

3D printing

24 Cr	14 Si	28 Ni	47 Ag
Chromium	Silicon	Nickel	Silver
6 C	7 N	25 Mn	22 Ti
Carbon	Nitrogen	Manganese	Titanium

Osmium 76 Os — Pen tips

Canadian Mining

Canada's first printing press

John Bushell was Canada's first printer. In 1751, Bushell moved from Boston, Massachusetts, to Halifax, Nova Scotia. There, he published the country's first newspaper, The Halifax Gazette, on March 23, 1752.

https://thediscoverblog.com/2018/08/28/canadas-earliest-printers/

3
Li

Lithium


Armour plate


Lubricant


Batteries


Mental health


Industrial drying


Pacemaker

Canadian Mining

18 Dentistry

Canadian Mining

Mining makes good dental health possible

92 U Uranium – X-rays

Crowns and bridges

- 79 Au Gold
- 46 Pd Palladium
- 47 Ag Silver
- 78 Pt Platinum

Dental implants

- 22 Ti Titanium
- 40 Zr Zirconium

Dental amalgam (fillings)

- 47 Ag Silver
- 29 Cu Copper
- 50 Sn Tin
- 80 Hg Mercury

13 Al Aluminium – Porcelain veneers; Synthetic resin filling

Dental drills and instruments (also stainless steel)

- 74 W Tungsten
- 6 C Carbon
- 27 Co Cobalt
- 28 Ni Nickel
- 45 Rh Rhodium
- 22 Ti Titanium

Almost 17 tonnes of gold were used by dentists globally in 2017.

Metals are essential to dentistry

From braces to gold fillings to the dental instruments needed for our check-ups, the mining industry provides the tools for our oral health.

82
Pb

Lead


Bullets


Car batteries


Roofing


Radiation shield


Ceramics


Solder

Canadian Mining

19 Weddings

Canadian Mining

Musical entertainment

29	28	30
Cu	Ni	Zn
Copper	Nickel	Zinc

Wedding rings

6	47	79
C	Ag	Au
Carbon	Silver	Gold

Cufflinks

47	78
Ag	Pt
Silver	Platinum

The brilliance of Canadian diamonds

Canadian diamonds are highly sought after across the world due to their exceptional quality and the high mining standards by which they are sourced.

26
Fe
Iron


Appliances


Public transportation


Cities


Roads & bridges


Manufacturing


Cars & trucks

Canadian Mining

Canadian Mining

Digital film cameras

14 Si Silicon

50 Sn Tin

73 Ta Tantalum

74 W Tungsten

13 Al Aluminium

30 Zn Zinc

Sound bars and speakers

22 Ti Titanium

13 Al Aluminium

Television electronics

Copper 29 Cu

Chromium 24 Cr

Silicon 14 Si

Gold 79 Au

Tin 50 Sn

Zinc 30 Zn

Oscar statuette

Gold 79 Au

Tin 50 Sn

Antimony 51 Sb

Copper 29 Cu

20 Film & television

Canada's national public broadcaster

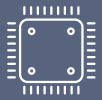
CBC has been serving Canadians for over 80 years and in 1977 the channel provided the first live television coverage of the debates in the House of Commons.

https://cbc.radio-canada.ca/en/your-public-broadcaster/history

49
In

Indium


Touchscreens


Microchips


Protective eyewear


LCD televisions


Solar panels


Fire sprinklers

Canadian Mining

Fuel for tractors and distribution vehicles

6 C Carbon

1 H Hydrogen

Farm fertilizers

15 P Phosphorous

7 N Nitrogen

19 K Potassium

16 S Sulfur

26 Fe Iron

Canadian Mining

Vegetable storage and distribution

26 Fe Iron

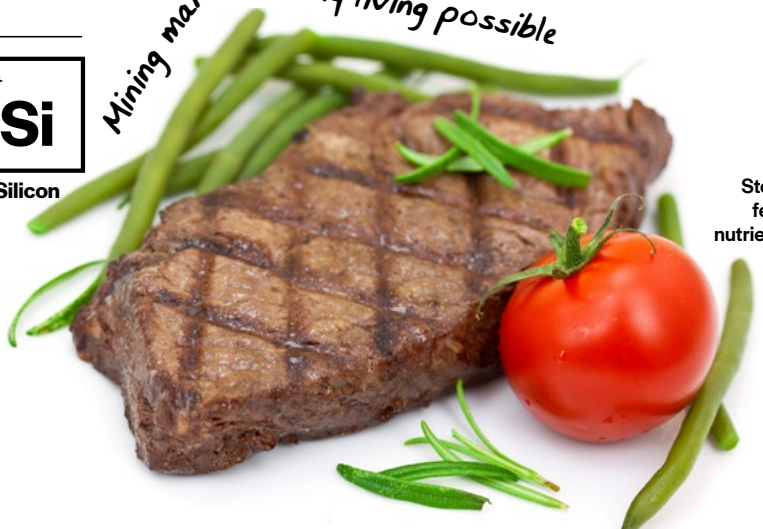
24 Cr Chromium

14 Si Silicon

6 C Carbon

28 Ni Nickel

25 Mn Manganese



Stock feed nutrients

Copper 29 Cu

Cobalt 27 Co

Selenium 34 Se

Magnesium 12 Mg

Manganese 25 Mn

Zinc 30 Zn

Tractors and harvesters

26 Fe Iron

13 Al Aluminium

21 Meat & vegetables

Made fresh in Canada

Agriculture and agri-food contribute over $100 billion annually to Canada's economy and the industry is responsible for the employment of 2.3 million Canadians.

http://www.agr.gc.ca/eng/about-us/publications/discover-agriculture/infographics-agricultural-products-and-their-impacts/?id=1530198199592

79
Au

Gold


Awards


Investment


Electronics


Jewellery


Hi-tech health


Aerospace

Canadian Mining

Canadian Mining

Smoke detectors

- Americium — 95 Am
- Silver — 47 Ag
- Gold — 79 Au
- Lithium — 3 Li

Thermal imaging home security cameras

- 14 Si — Silicon
- 49 In — Indium
- 32 Ge — Germanium
- 51 Sb — Antimony

Fire sprinklers

- 83 Bi — Bismuth
- 82 Pb — Lead
- 50 Sn — Tin
- 48 Cd — Cadmium

Fire extinguisher

- 13 Al — Aluminium
- 15 P — Phosphorus

22 Home security

Smoke detectors

Smoke detectors are the most common consumer products that use nuclear technology, which relies on mined uranium, to function. They are critical components of every household and workplace because of their ability to detect smoke in the air and identify potential fire hazards.

https://nuclearsafety.gc.ca/eng/resources/news-room/feature-articles/your-household-smoke-detector.cfm

Diamond

Jewellery

Mining exploration

Drill bits

Polishing powder

Cement cutting

Knife sharpener

Canadian Mining

Calcium
20
Ca
Soil quality
Fertilizers

Water desalination
Nanofibre membrane technology

6
C
Carbon

13
Al
Aluminium

Carbon capture and storage

26
Fe
Iron

6
C
Carbon

13
Al
Aluminium

30
Zn
Zinc

Mining makes science to save the planet possible

Carbon
6
C
Air filtration
Humidifiers

Canadian Mining

Catalytic converters Reduce vehicle and other emissions

Platinum
78
Pt

Rhodium
45
Rh

Palladium
46
Pd

Gold
79
Au

Carbon
6
C

Cerium
58
Ce

Iron
26
Fe

Manganese
25
Mn

Nickel
28
Ni

Nanoscale metal blends are used to break down contaminants in groundwater.

23 Environmental solutions

Potassium
19
K
Plant health
Soil quality

High-tech reclamation

Canadian mining company New Gold Inc. recently collaborated with researchers from the University of Guelph, in Ontario, to explore the potential of genomic tools for site rehabilitation at their New Afton copper-gold mine in central British Columbia.

https://www.minescanada.ca/en/content/not-your-grandfathers-mine

29
Cu

Copper


Electrical wiring


Circuit board


Plumbing


Homewares


Instruments


Electric cars

Canadian Mining

Canadian Mining

Stanley Cup
18 carat gold

47	28
Ag	Ni
Silver	Nickel

Hockey Skates

24	28	6
Cr	Fe	C
Chromium	Iron	Carbon

Zamboni

28	13
Fe	Al
Iron	Aluminium

24 Hockey

Stanley Cup

Named after the former Governor General of Canada, Lord Stanley of Preston was first awarded to the Montreal Hockey Club in 1893. The original Cup was made of silver, while the current Cup is made of a silver and nickel alloy.

http://mentalfloss.com/article/51140/22-things-you-might-not-know-about-stanley-cup
https://www.thecanadianencyclopedia.ca/en/article/stanley-cup

27
Co

Cobalt


Batteries


Electric cars


Ceramics


Wind turbines


Medical tracer


Jet engines

Canadian Mining

Canadian Mining

Monitor

Copper	Gold	Aluminium
29 Cu	79 Au	22 Al

Surgical instruments

Iron	Chromium	Silicon	Carbon	Nickel	Manganese
26 Fe	24 Cr	14 Si	6 C	28 Ni	25 Mn

Ultrasound machine

Zirconium	Titanium	Copper	Lead
40 Zr	22 Ti	29 Cu	82 Pb

Hospital bed

Carbon	Iron
6 C	26 Fe

25 Hospitals

Mining's role in preventing infectious disease

Hospitals have a potent, new tool in their mission to improve patient health and safety. It also happens to be one of the oldest metals known to man—copper. Increasingly, health facilities are using Antimicrobial Copper to prevent Hospital Acquired Infections, as not only does it continuously kill 99.9 per cent of infectious bacteria, but it also has the potential to save them a fortune in infection control.

https://www.reminetwork.com/articles/antimicrobial-copper-hospital-safety/

6
C
Coal


Electricity


Cement


Carbon fibre


Wind turbines


Water filtration


Steel

Canadian Mining

Canadian Mining

26 Brewing beer

Brewing kettle: 29 Cu Copper; 13 Al Aluminium

Stainless steel equipment, pipes, storage: 26 Fe Iron; 24 Cr Chromium; 14 Si Silicon; 6 C Carbon; 28 Ni Nickel; 25 Mn Manganese

Brass fittings and valves: 29 Cu Copper; 30 Zn Zinc

Mining makes brewing and bottling possible

Amber glass bottles: 16 S Sulfur; 6 C Carbon; 26 Fe Iron

Green glass bottles: 26 Fe Iron; 24 Cr Chromium; 14 Si Silicon

Beer cans: 13 Al Aluminium; 50 Sn Tin

Mining and beer

According to Beer Canada, over 2.2 billion litres of beer were sold in 2017 of which 60% was in aluminum cans, 30% in glass bottles and 10% in kegs or casks. This equates to over 500,000 tonnes of glass and nearly 94,000 tonnes of aluminum. Canada is a major producer of the raw materials needed to make both.

https://www.minescanada.ca/en/content/mining-and-beer

24
Cr

Chromium


Utensils


Leather tanning


Chrome plating


Wood preservation


Fireworks


Dyes & inks

Canadian Mining

Canadian Mining

Optical glass in telescopes, microscopes, binoculars and camera lenses

14	5	11	19	73
Si	B	Na	K	Ta
Silicon	Boron	Sodium	Potassium	Tantalum

Mirrors

14	5	13
Si	B	Al
Silicon	Boron	Aluminium

Hardware components

26	6	30
Fe	C	Zn
Iron	Carbon	Zinc

The Canadarm2, a robotic arm supplied by Canada, is responsible for assembling components of the International Space Station (ISS) in space.

Digital camera batteries

28	3
Ni	Li
Nickel	Lithium

27 Lenses & telescopes

Hubble space telescope

The Hubble Space Telescope orbits around 547 kilometres above Earth, travelling more than 6 billion kilometres since it launched in 1990. It has recorded more than 1.3 million observations for astronomers and moves at a speed of 27,300 kph.

5
B
Boron


Tile glazes


Rocket propellant


Fireworks


Washing powder


Pool cleaner


Eye drops

Canadian Mining

Canadian Mining

Railway tracks

26 Fe Iron

6 C Carbon

25 Mn Manganese

Traffic lights

14 Si Silicon

29 Cu Copper

13 Al Aluminium

Titanium

22 Ti White

Chromium

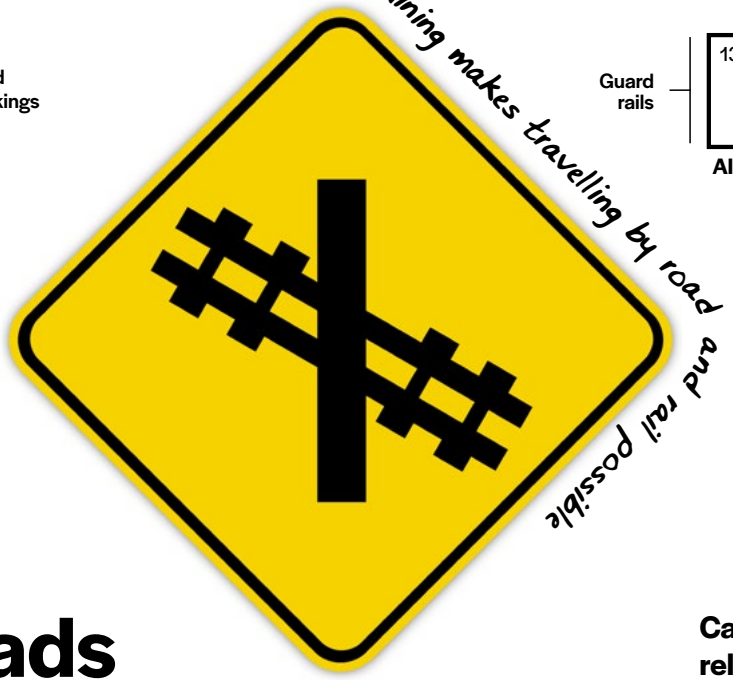
24 Cr Yellow

Road markings

Road signs

13 Al Aluminium

30 Zn Zinc



Guard rails

13 Al Aluminium

12 Mg Magnesium

30 Zn Zinc

Bridges

26 Fe Iron

42 Mo Molybdenum

Fuel

6 C Carbon

1 H Hydrogen

28 Roads & rail

Canadian mining's relationship to rail

As the largest shipper by both freight revenue and volume shipped, the mining industry is the Canadian rail system's most significant customer.

51
Sb

Antimony


Batteries


Fire retardant


Ammunition


Cable sheathing


Paint


Fireworks

Canadian Mining

Canadian Mining

Mining makes wind power generation possible

Magnet generation

26	60	5	66
Fe	Nd	B	Dy
Iron	Neodymium	Boron	Dysprosium

Steel used to build turbines

26	6
Fe	C
Iron	Carbon

Battery energy storage

3	28	25
Li	Ni	Mg
Lithium	Nickel	Manganese

27	6	23
Co	C	V
Cobalt	Carbon	Vanadium

Corrosion protection

42	30
Mo	Zn
Molybdenum	Zinc

Controls

29	14
Cu	Si
Copper	Silicon

Aluminium

13
Al
Blades

29 Windfarms

More than 220 tonnes of coal is required to build a wind turbine.

When we explore for minerals and metals we are finding renewable sources of energy too:

Way up in northern Quebec, Glencore's Raglan Mine is replacing diesel fuel with wind power. The wind turbine and energy storage facility – the first in Canada – has helped reduce the mine's greenhouse gas emissions and has the potential to transform the Arctic's energy landscape.

13
Al

Aluminium


Aircraft


Canned food


Transport


Housing


Cookware


Bicycles

Canadian Mining

Canadian Mining

30 Space travel

Spacecraft

Shuttle body

13 Al Aluminium

22 Ti Titanium

Thermal protection

14 Si Silicon

6 C Carbon

74 W Tungsten

73 Ta Tantalum

Rocket engines

29 Cu Copper

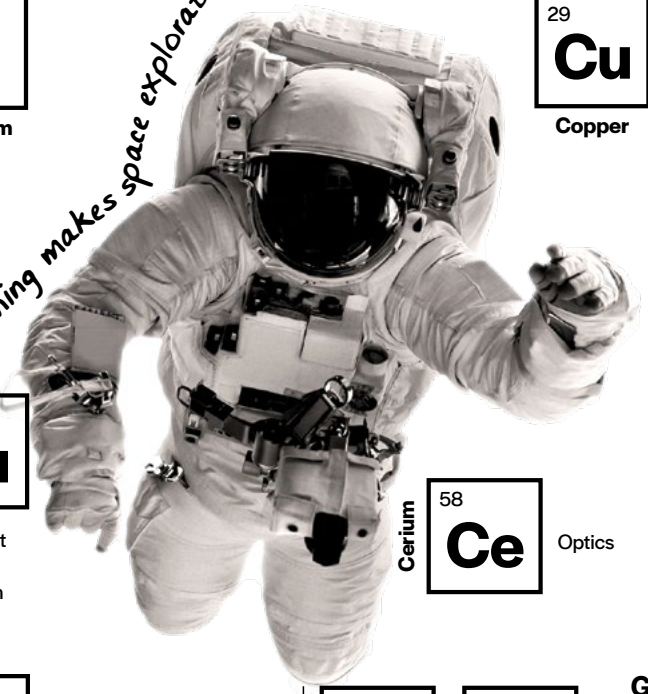
41 Nb Niobium

Control system

14 Si Silicon

32 Ge Germanium

Mining makes space exploration possible



Gold

79 Au

Astronaut visors

Radiation reflector

Cerium

58 Ce

Optics

Uranium

92 U

Energy source e.g. Mars Rover

Fuel

6 C Carbon

1 H Hydrogen

The International Space Station orbits Earth every 92 minutes. That's 15-16 sunrises and sunsets a day.

Golden Records of life on earth

NASA launched the Voyager Golden Records – two gold-plated copper phonograph records containing sounds and images from Earth – into space in 1977. Intended for future spacefarers or intelligent lifeforms, the records contain greetings in 55 languages and sounds ranging from rain and thunder to birds, frogs, laughter and children.

The Mining Association of Canada | L'association minière du Canada