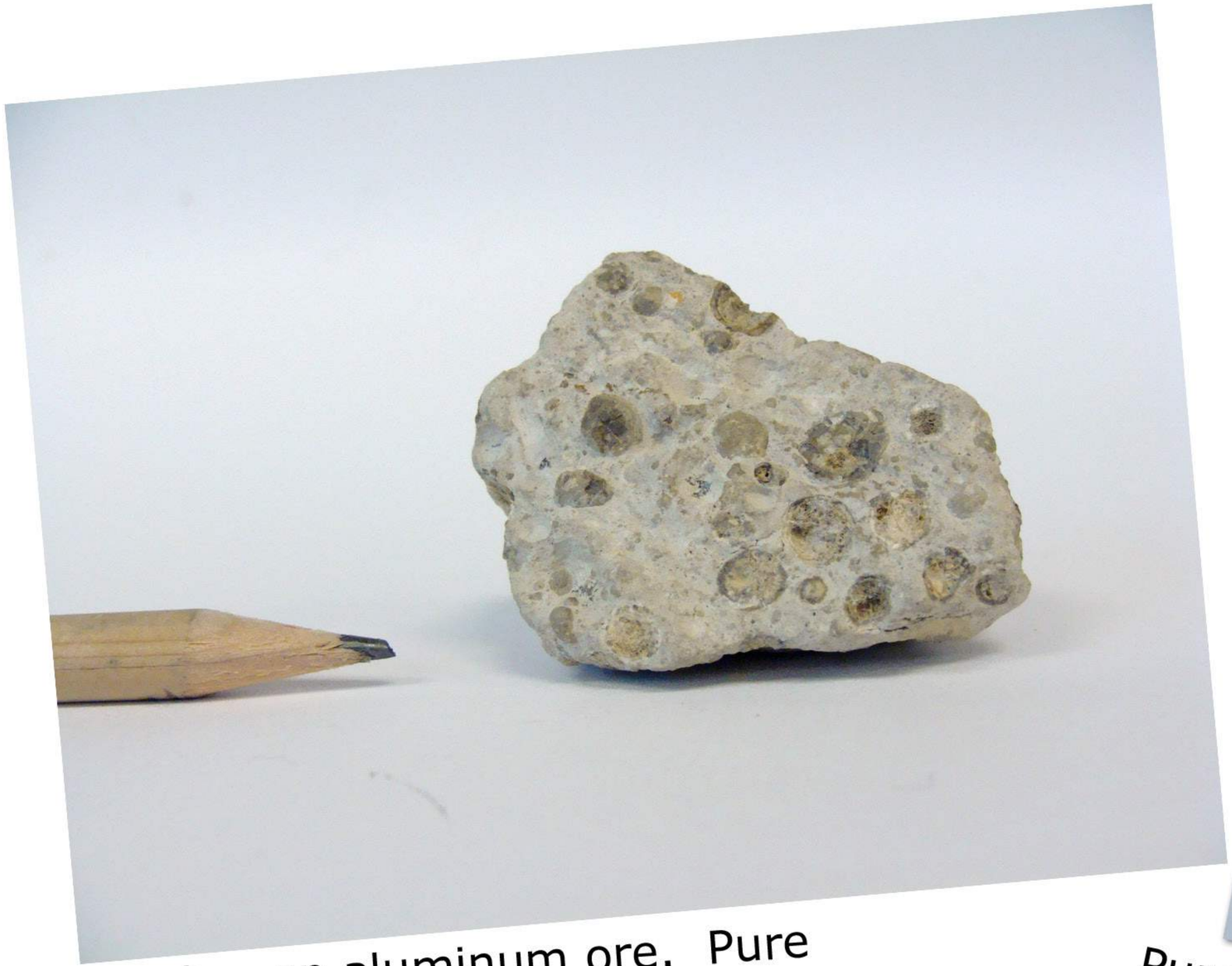
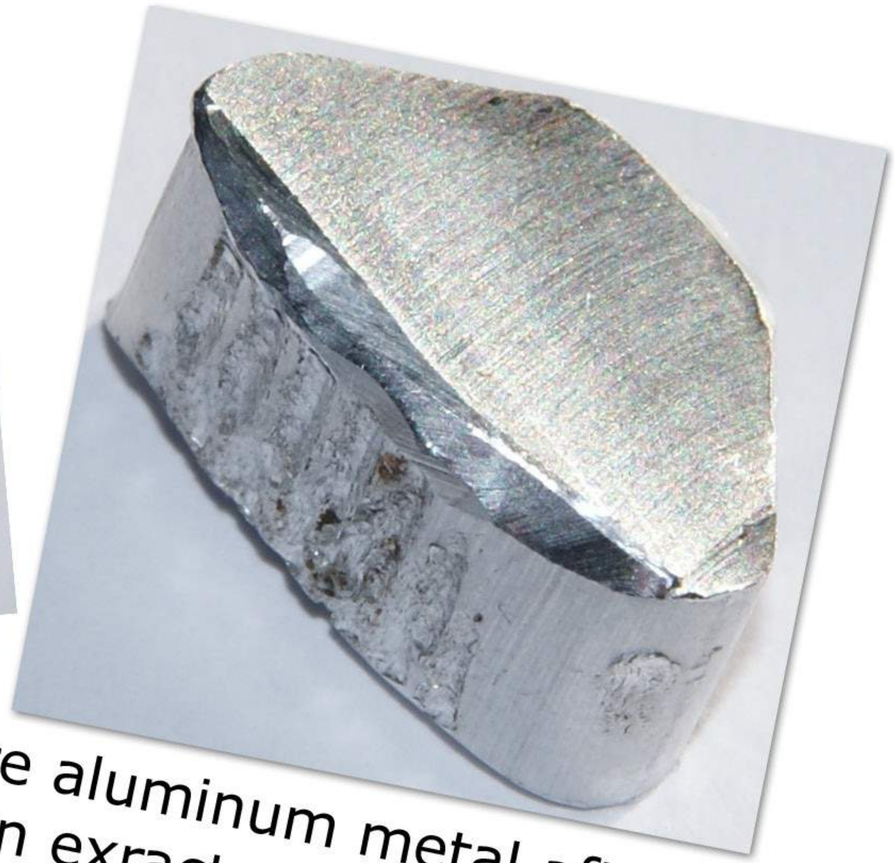
Bauxite

Aluminum Ore

Properties of aluminum	
Hardness	Soft
Specific Gravity	Lightweight
Tenacity	Strong, malleable (can be flattened without crumbling) and ductile (can be drawn into a wire)



Bauxite, an aluminum ore. Pure aluminum does not occure naturally.



Pure aluminum metal after it has been exracted from bauxite.

Uses

- Aluminum foil and trays
- Lightweight airplane, car, and motorcycle parts
- Packaging (drink cans, candy wrappers)
- Baseball bats and other sports equipment
- License plates
- Window Frames
- Cookware and kitchen utensils

Bentonite

Properties of bentonite	
Hardness	Soft
Reactivity	Absorbs water
Special properties	Expands as it absorbs water, shrinks as it dries

Uses

- Kitty litter
- Stall and barn absorbents
- Drilling mud (lubricates tools that drill holes into the earth)
- Sealing agent (swells on contact with water and can create a seal for waterproofing walls, plugging old water wells, etc)

Limestone

Properties of limestone	
Tenacity	Durable (doesn't break easily), easily cut into blocks or carved
Useful compounds	Contains calcite, a mineral with many uses and a source of calcium
Reactivity	Dissolves in weak acid, but also neutralizes the acid
Special properties	Abundant and easily accessible

Limestone

Limestone is made up of the mineral calcite

Uses

- Cement, concrete and stucco
- Digestive system medications (TUMS and other antacids)
- Acid mine drainage treatments
- Lime for soil
- Dimension stone for countertops, tiles, statues, monuments and gravestones

Claystone

Properties of clay	
Hardness	Soft
Reactivity	Exhibits plasticity (can be molded into different shapes) when mixed with water; becomes hard and rigid when dry
Special properties	Fine-grained

Mined in BC

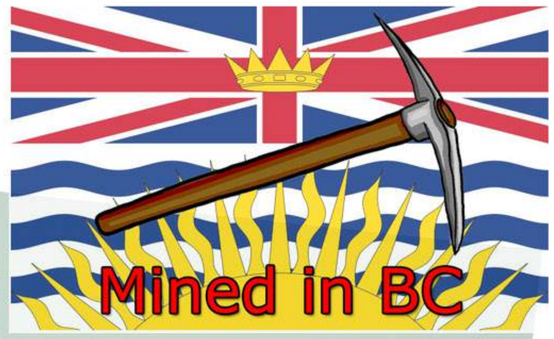
Uses

- Ceramics, pottery, china, dinnerware
- Bricks
- Floor and wall tiles
- Glossy paper
- Cosmetics
- Race track surfaces, tennis courts, and baseball infield areas

Copper

Properties of copper	
Appearance	Attractive pinkish-brown (coppery) colour; one of only two metals that is not silver/grey
Tenacity	Malleable (can be flattened without crumbling) and ductile (can be drawn into a wire)
Special properties	Very good at conducting electricity, has antimicrobial properties (kills germs)

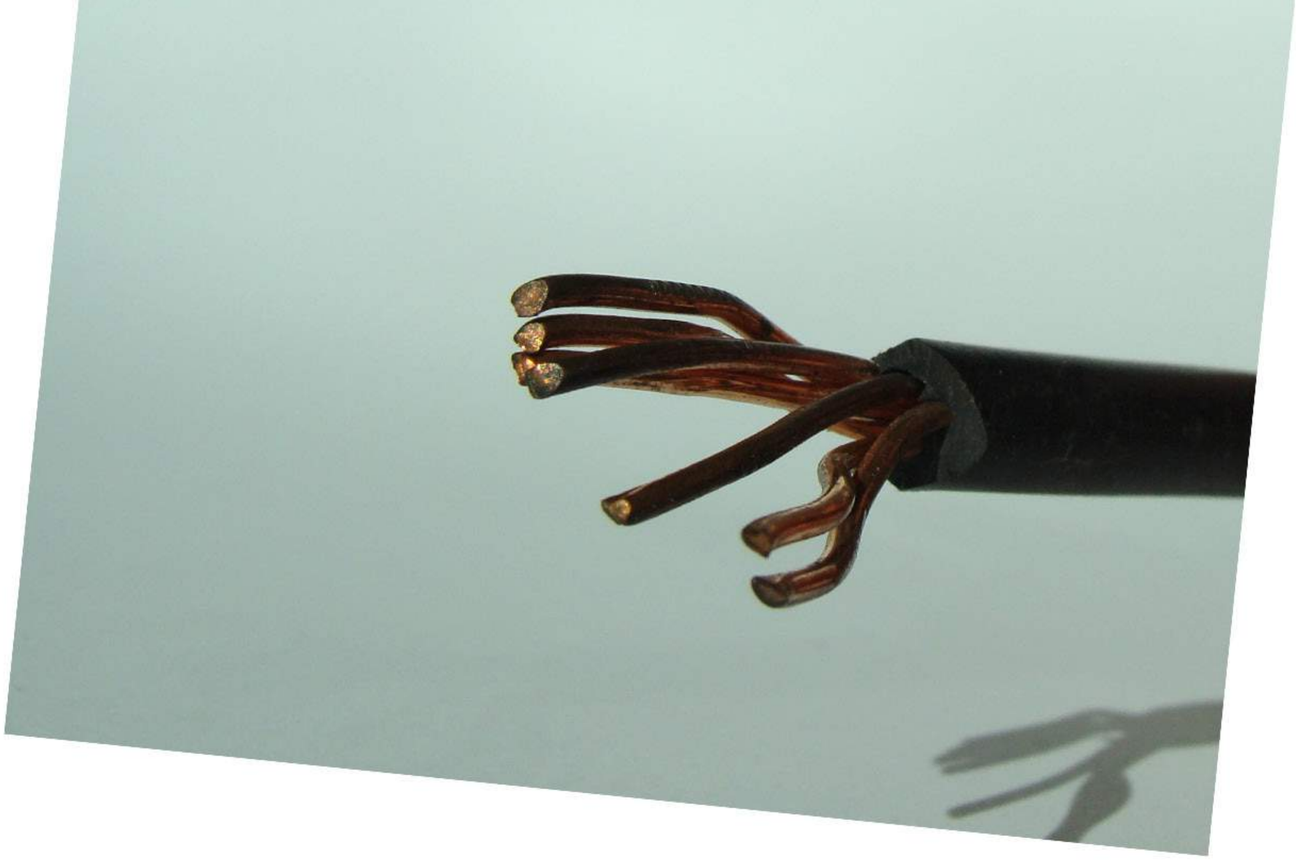
Copper is commonly mined as chalcopyrite, a copper ore



Copper can also occur naturally in native (pure) form.

Uses

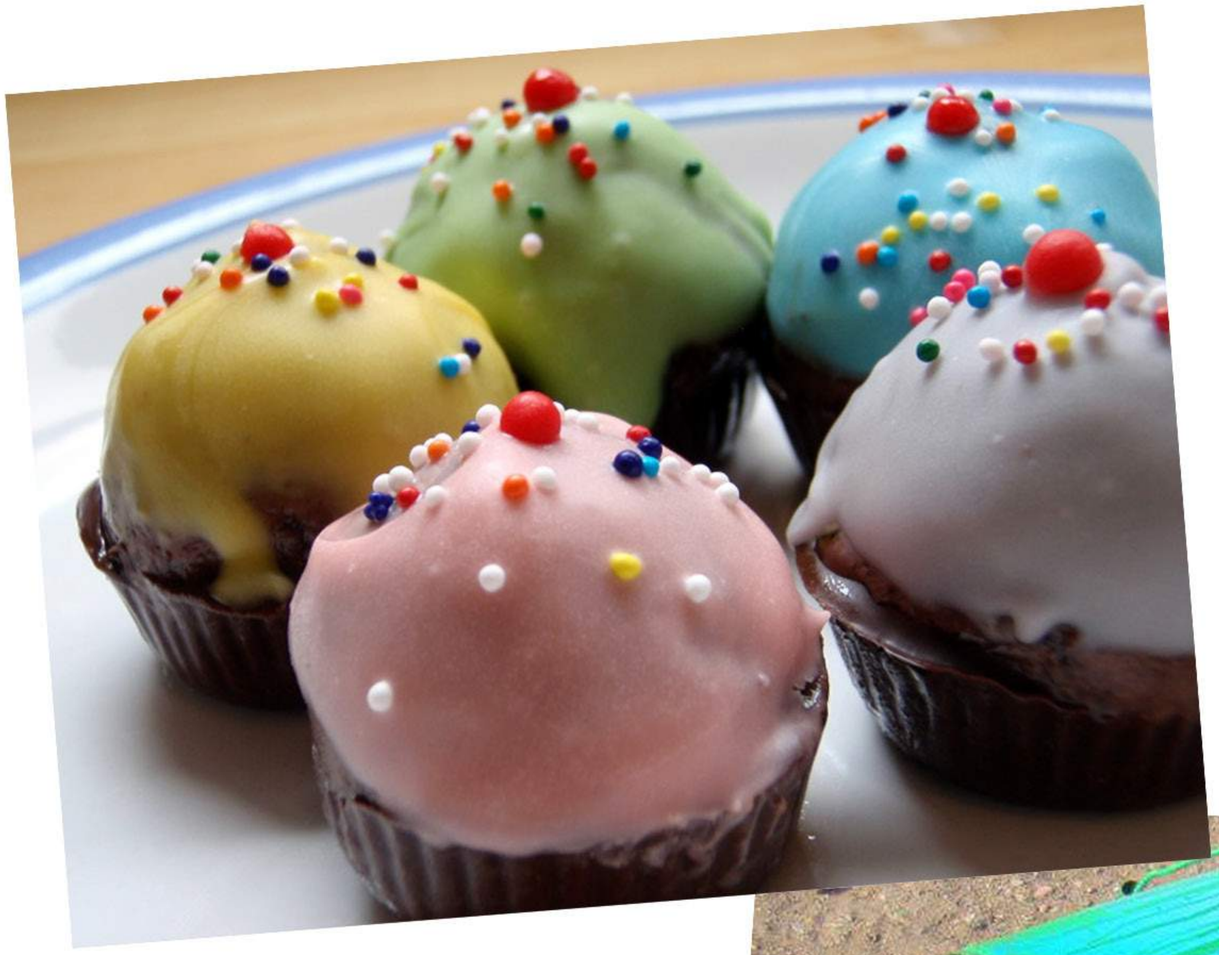
- Electrical wiring in housing, businesses, vehicles, electrical appliances, handheld devices, etc
- Coins and jewelry
- Alloyed (mixed) with tin to make bronze or with zinc to make brass
- Plumbing pipes
- Telecommunication cables
- Hospital doorknobs
- Roofing



Feldspar

Feldspar mineral group

Properties of feldspar	
Hardness	Relatively hard
Tenacity	Easily weathered and broken down into clay
Useful compounds	Contains silica (makes it glassy)
Special properties	Most abundant mineral group



Uses

- Anti-caking agent in cake mixes
- Filler in paint and textiles
- Glass (improves durability), pottery, and ceramics
- Used in soaps, cement, glue, fertilizer, tarred roofing materials

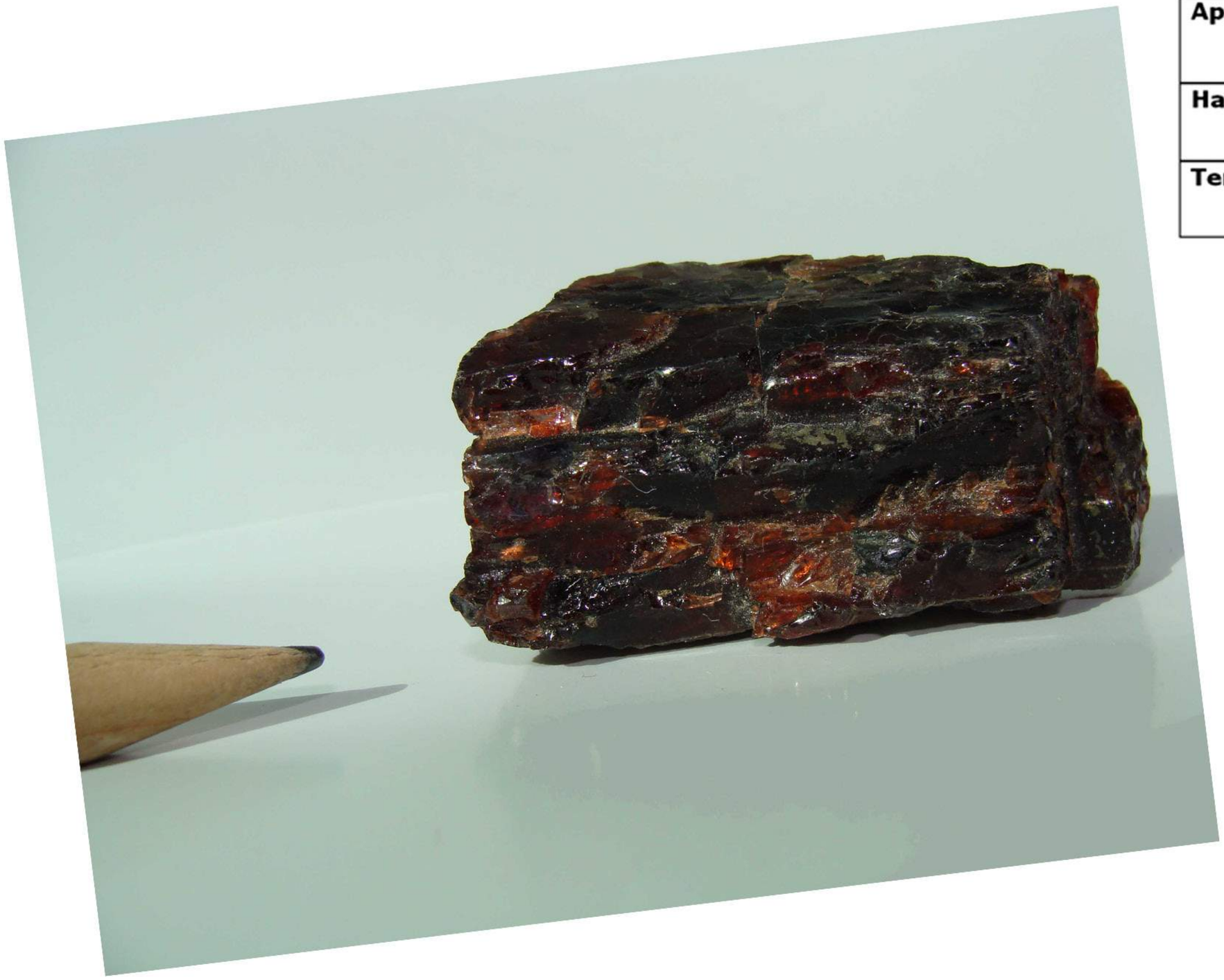
Fluorite

Properties of fluorite	
Useful compounds	Source mineral for fluoride, which aids in the formation of bones and teeth. Also used to make Teflon ® , a non-stick, water resistant substance

Uses
▪ Toothpaste ▪ Teflon (non-stick cookware) ▪ Pottery ▪ Optics

Garnet

Garnet mineral group



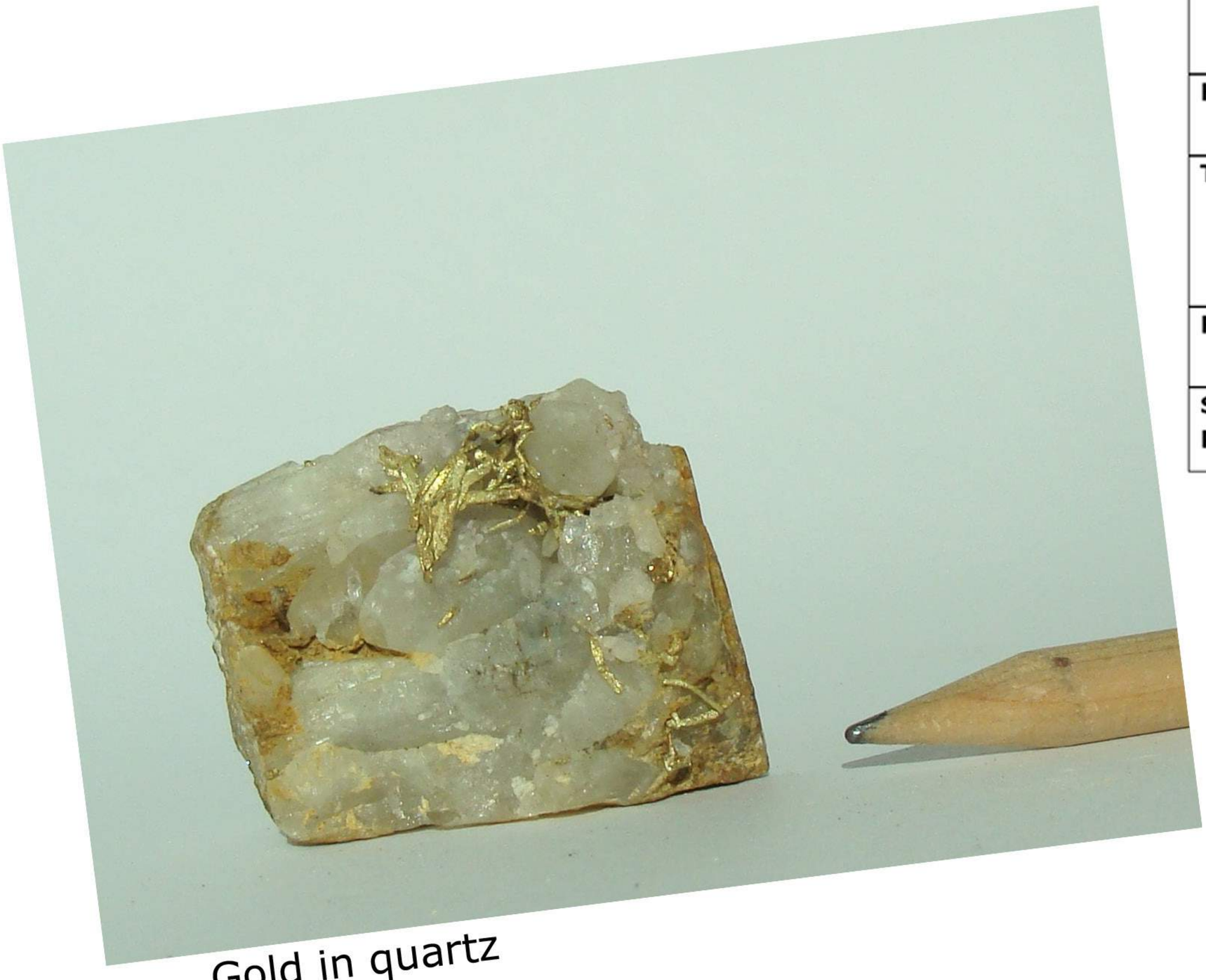
Properties of garnet	
Appearance	Attractive colours such as red, green, and yellow. Can be transparent
Hardness	Hard
Tenacity	Easily crushed into an abrasive sand

Uses

- Sandpaper
- Nail files
- Jewelry (January's birthstone)
- Industrial abrasives

Gold

Properties of gold	
Appearance	Attractive golden-yellow colour (one of only two metals that are not silver/grey)
Hardness	Soft
Tenacity	Malleable (can be flattened without crumbling, easy to work with and bend into shapes)
Reactivity	Does not tarnish
Special properties	Conducts electricity



Gold in quartz

Uses

- Jewellery
- Currency
- Decoration
- Electrical contacts
- Olympic gold medals

Graphite

Properties of graphite	
Appearance	Dark grey or black
Hardness	Soft
Special properties	Leaves a dark-colored, greasy residue (also known as streak)

Uses

- Pencil "lead"
- Lithium-ion batteries (very important in electric vehicles)
- Brake linings and industrial lubricants
- Flame retardant in paint and carpet

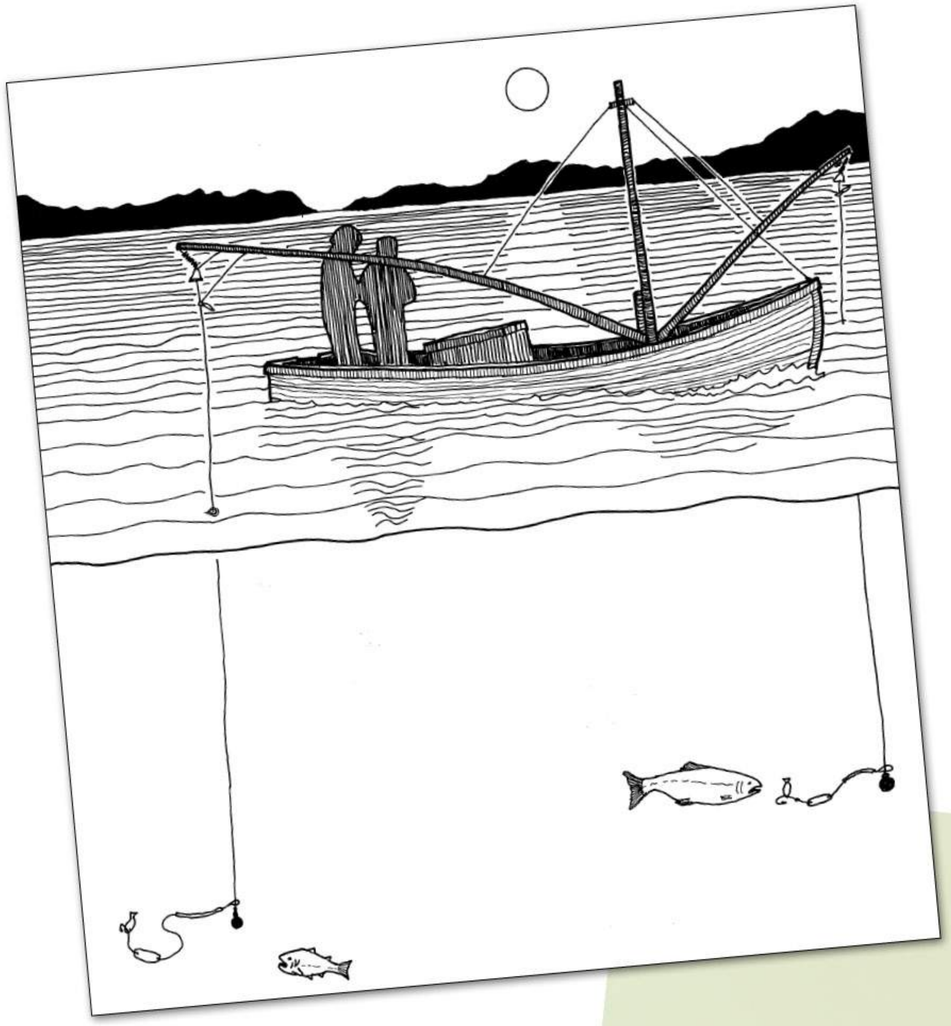
Galena

Lead Ore

Galena, a lead ore. Pure lead does not occur naturally.

Properties of lead	
Hardness	Hard
Specific Gravity	Extremely heavy

Pure lead after it has been extracted from galena.



Uses

- Fishing and scuba diving weights
- Vehicle batteries
- Ballast in boats and ships
- Ammunition
- Leaded glass (adds sparkle)
- X-ray protective aprons and radiation shields

Gypsum

Properties of gypsum	
Hardness	Soft (can be scratched with a fingernail)
Specific Gravity	Lightweight
Reactivity	Can (slowly) dissolve in water
Special properties	Soft and workable when wet, hardens when dry

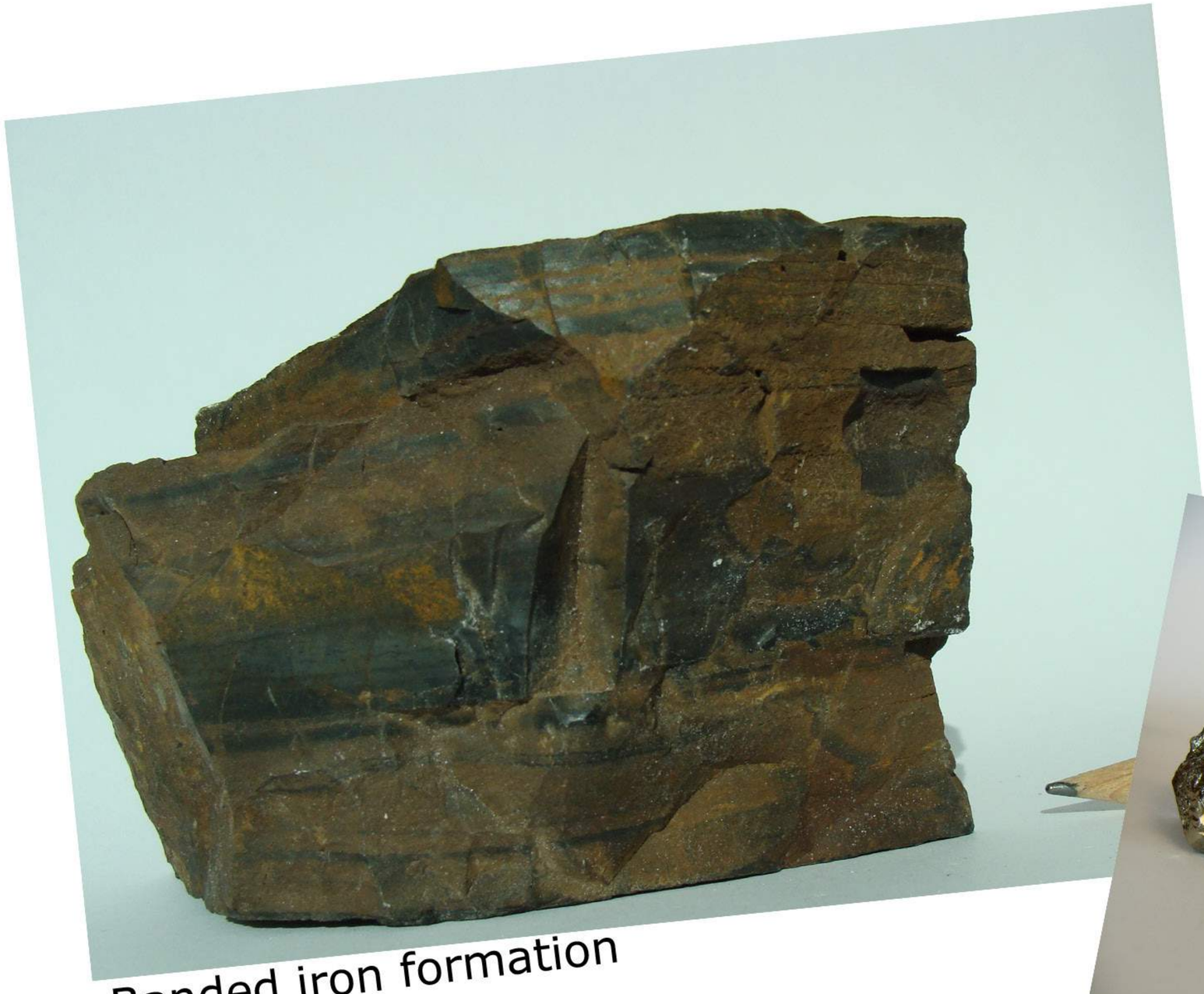
Mined in BC

Uses

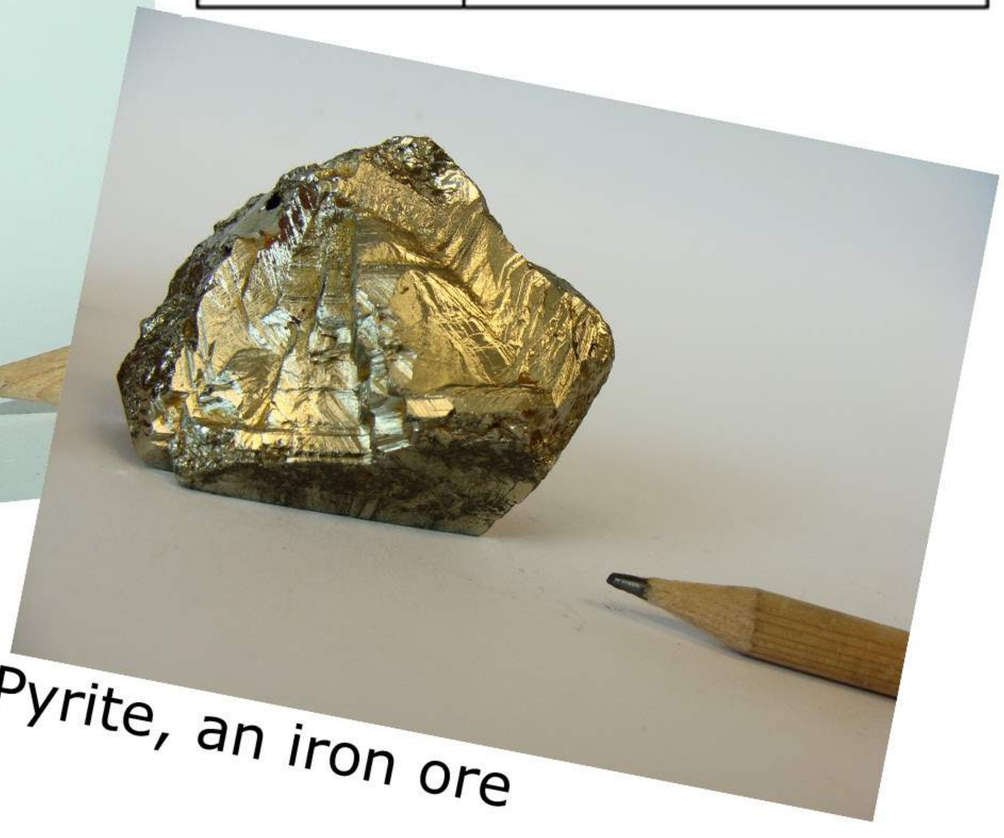
- Drywall (hint: also known as gyprock) and building plaster, plaster of Paris and Portland Cement
- Sidewalk and blackboard chalk
- Paint filler
- Filler in beer, spaghetti candy and vitamins, enriched flour, baking powder, canned vegetables and tofu
- Soil conditioner (ground mixed with soil to allow better air and water penetration)

Iron

Properties of iron	
Specific Gravity	Heavy
Tenacity	Strong (high tensile strength – resistant to breakage)
Useful compounds	Alloyed (mixed) with carbon to produce steel, and with chromium and nickel to produce stainless steel
Reactivity	Rust (when exposed to air) is a problem
Special properties	Very abundant



Banded iron formation



Pyrite, an iron ore

Uses

- Steel in bridges and buildings with steel-reinforced concrete
- Vehicles, tools, furniture
- Pots and pans, fish hooks, nails, screws, and other household items
- Pigment in makeup and ink
- Vitamins

Mica

Mica mineral group

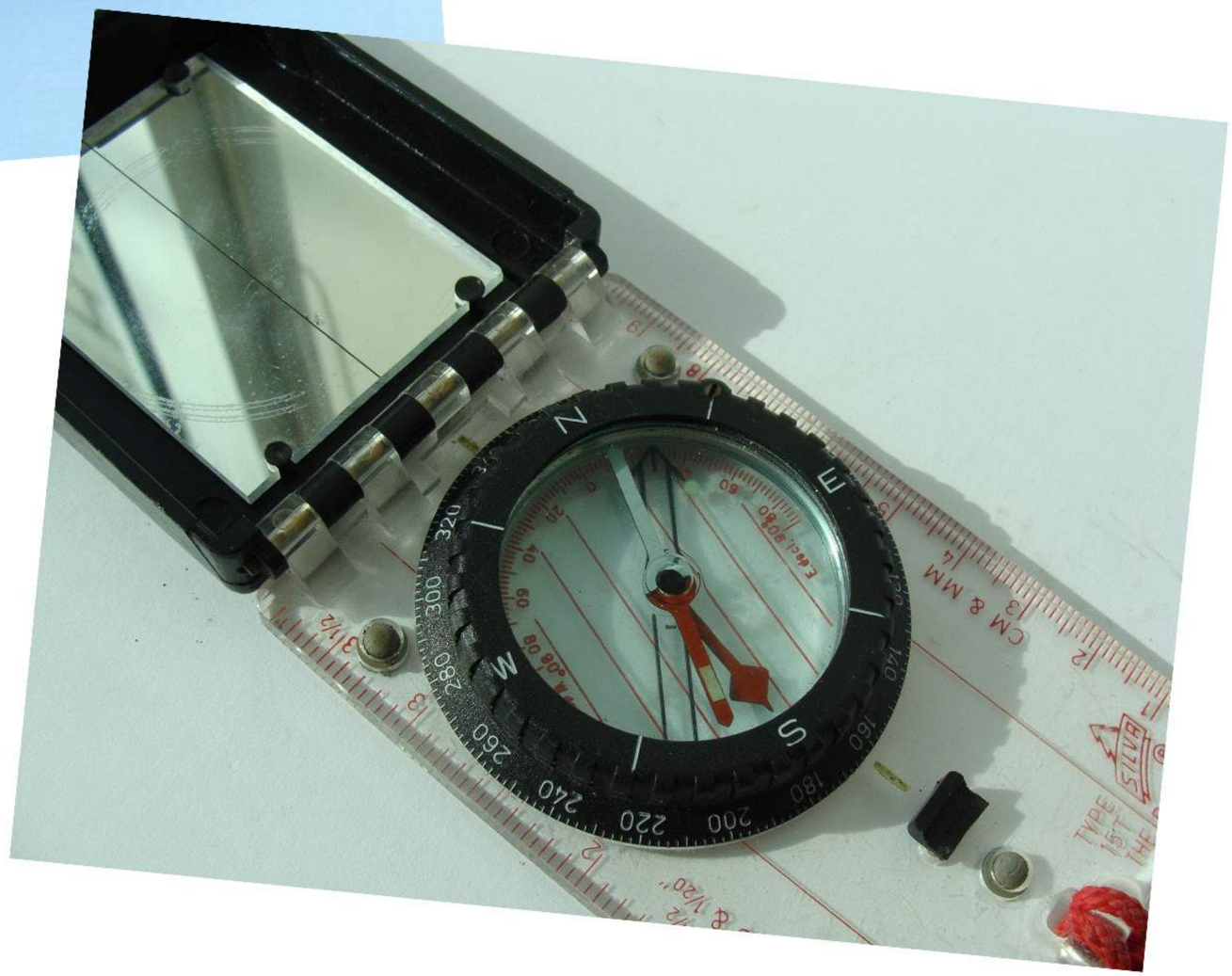
Properties of mica	
Color	Glassy and transparent, shimmery
Tenacity	Easily breaks into thin, flat sheets
Reactivity	Chemically inert – does not react with light, air, water, etc.
Special properties	Electrical insulator (does not allow electricity to pass through it), thermal conductor (transfers heat)

Uses

- "Shimmer" in eye shadow
- Artificial snow and glitter in Christmas ornaments
- Toaster heating elements
- Insulator in industrial applications

Magnetite

Properties of magnetite	
Special properties	Strong magnetic field



Uses
▪ Magnets ▪ Compasses ▪ Emery abrasives (like on nail files) ▪ Pigment in paint

Oil Shale

Properties of oil shale	
Special properties	Source of oil (oil is also extracted from reservoir rocks such as porous limestone and oil sands

Uses
▪ Heating ▪ Fuel ▪ Plastics ▪ Synthetic fibres such as Polar fleece or polyester

Pumice

Properties of pumice	
Specific Gravity	Extremely lightweight – full of pores (tiny air bubbles) that allow it to float on water
Special properties	Abrasive (due to silica content)

Mined in BC

Uses

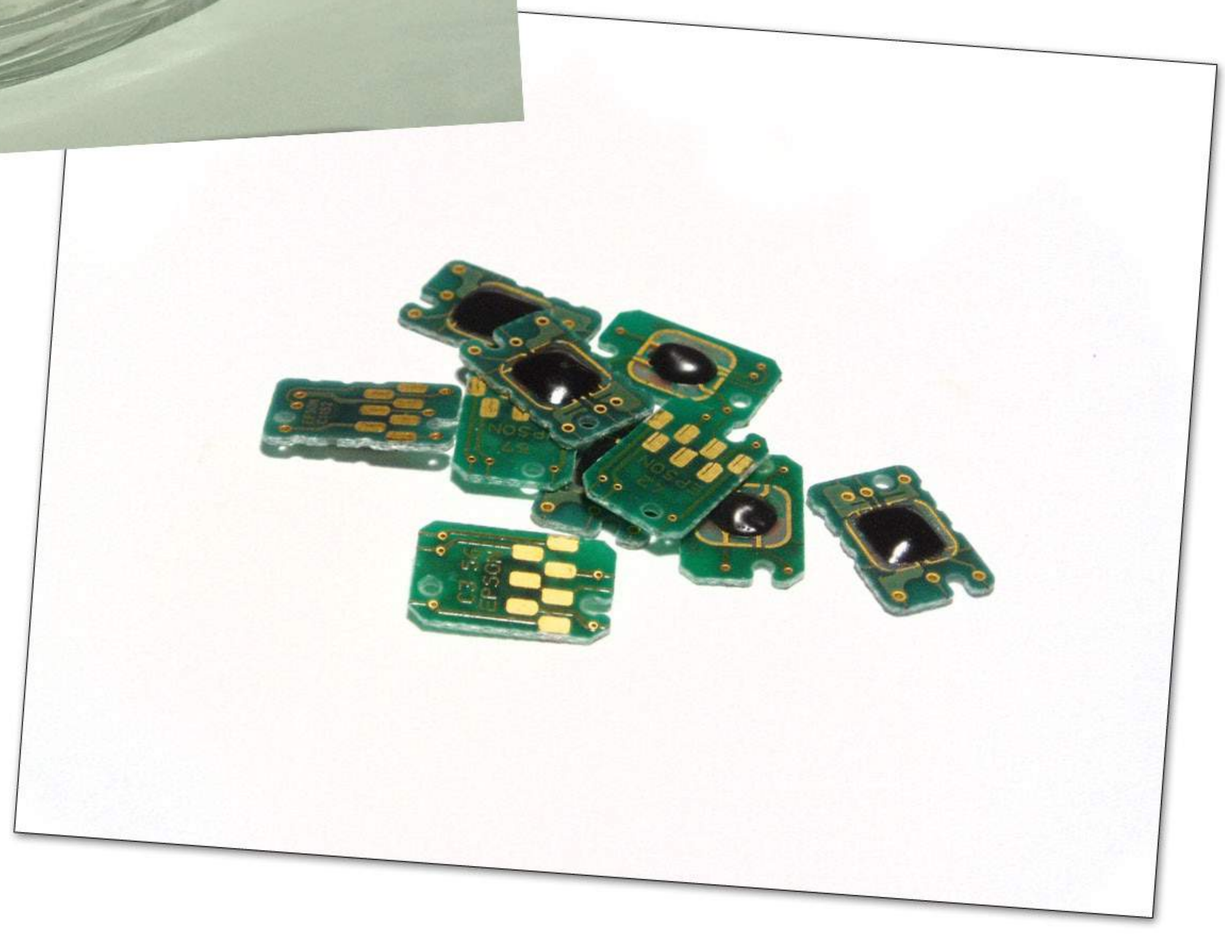
- Cosmetic pumice stones
- Lightweight aggregate for sport tracks
- Abrasive in cleaning products
- Rubbed against stonewashed jeans to create a worn-out, faded appearance

Quartz

Properties of quartz	
Appearance	Glassy and colorless, impurities create attractive colours
Hardness	Hard
Tenacity	Durable (won't break)
Useful compounds	Contains silica, which is a chemically stable electrical insulator (doesn't conduct electricity)
Reactivity	If quartz sand is melted and cooled quickly, it turns into a glass rather than turning back into crystals
Special properties	Electrical and heat resisting properties

Uses

- Glass items such as windows, lenses, some drinking glasses
- Silicon computer chips
- Sand
- Semiprecious stone for carving or jewelry
- Radio transmitters



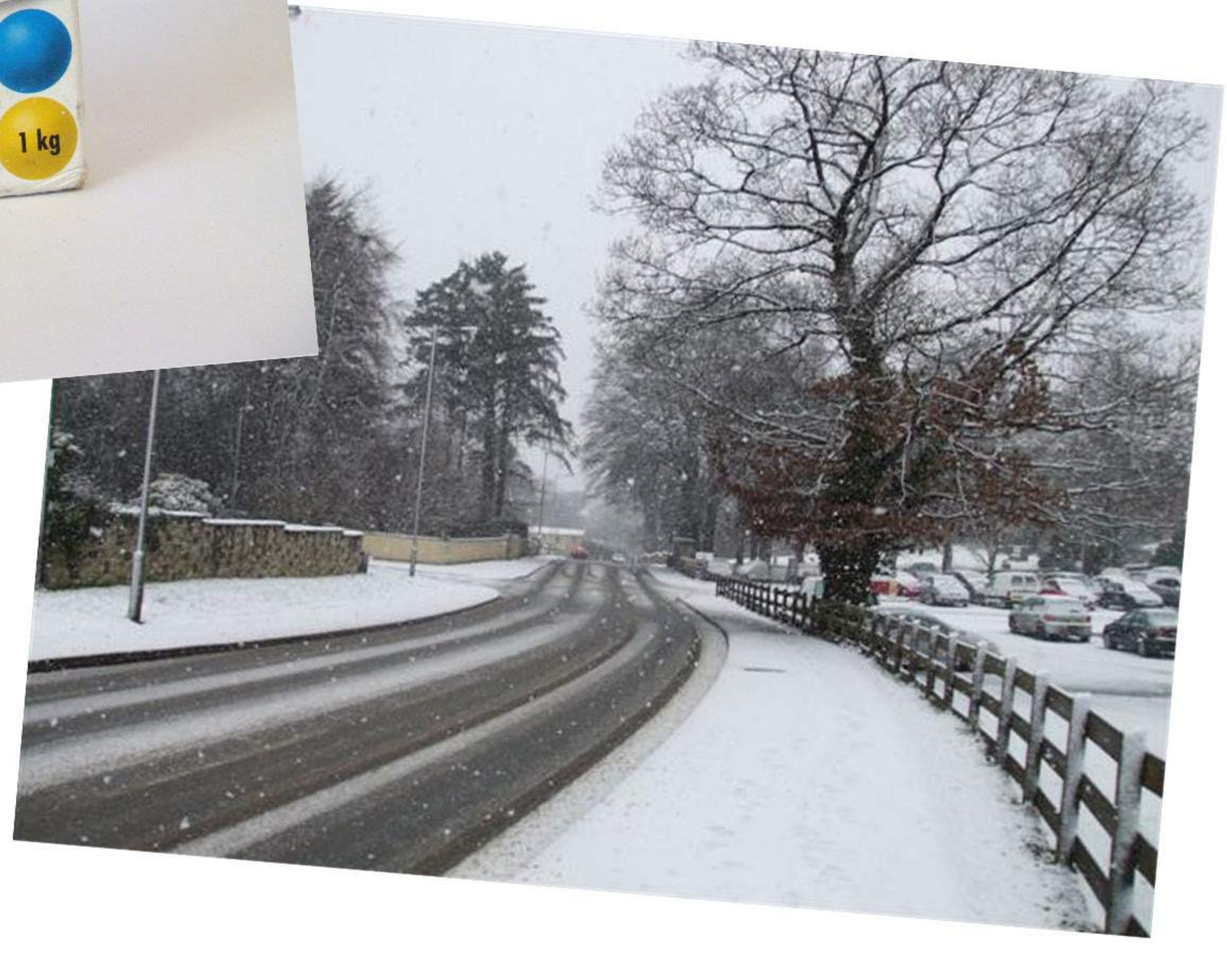
Rock salt

Properties of rock salt	
Reactivity	Dissolves in water, can lower the freezing temperature of water (melts ice)
Special properties	Appealing salty taste

Rock salt

Rock salt is composed of the mineral halite

Uses
▪ Table salt for seasoning and food preservation ▪ De-icing roads ▪ Animal feed additive ▪ Leather curing ▪ Water softeners



Silver

Properties of silver	
Appearance	Metallic silvery-grey
Tenacity	Malleable and ductile (easily pounded into sheets or drawn into a wire – in other words, very easy to work with)
Reactivity	Tarnishes easily
Special properties	Most reflective of the metals, very good electrical conductor

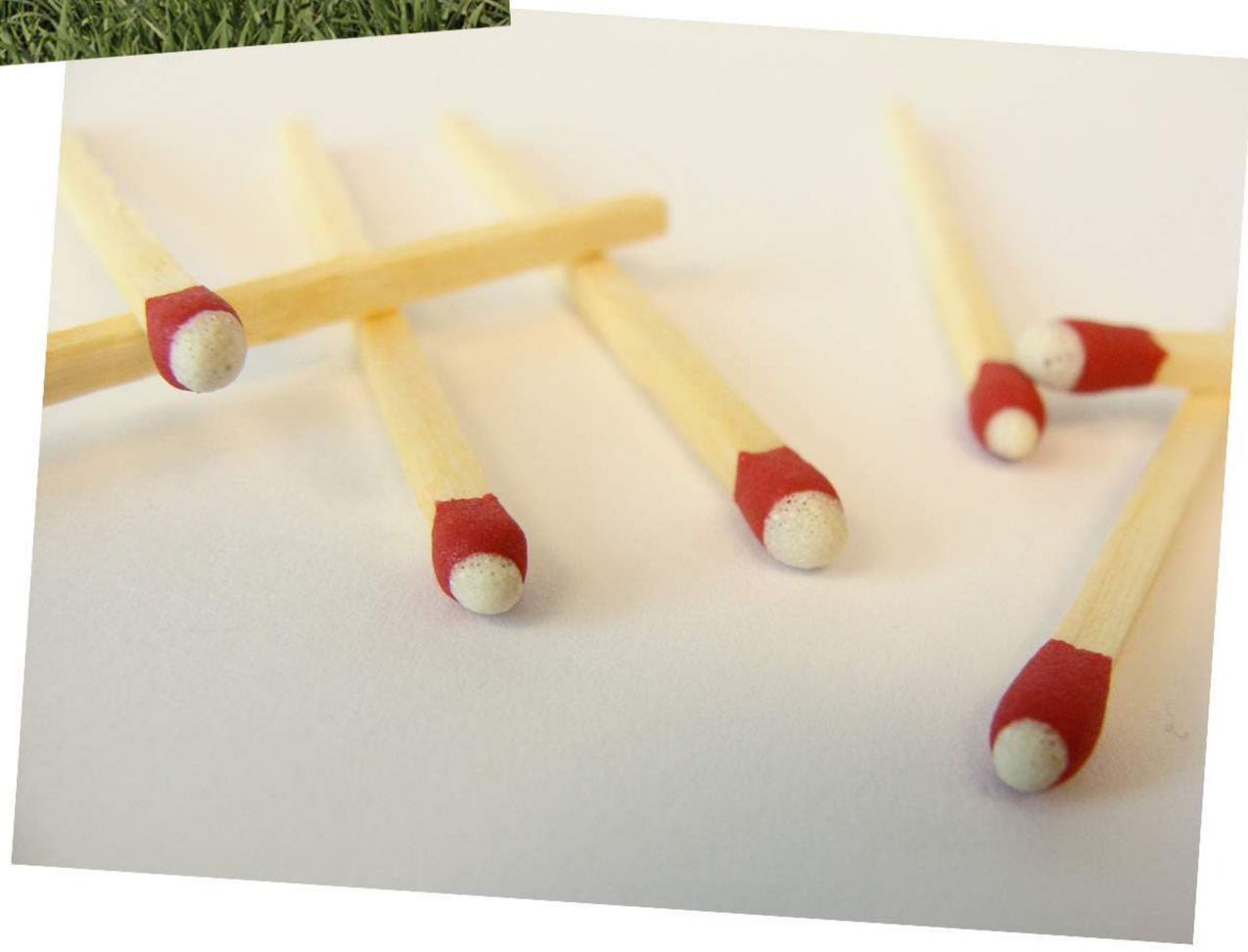
Uses
▪ Mirrors ▪ Jewelry and currency ▪ Electrical industry ▪ Cutlery (silverware) ▪ Dentistry (fillings) ▪ Olympic silver medals

Sulphur

Properties of sulphur	
Tenacity	Easily powdered
Useful compounds	Source material for sulfates that plants need to grow strong and healthy; used to make sulphuric acid which is important in the chemical industry and has many important industrial uses
Reactivity	Flammable

Uses

- Matches
- Fertilizer and other industrial applications
- Pharmaceuticals
- Gunpowder



Talc

Properties of talc	
Hardness	Extremely soft – can be scratched with a fingernail
Tenacity	Easily powdered
Special properties	Has a pleasant slippery, greasy texture; powdered form acts as an astringent and absorbs moisture on the skin (i.e., protects skin)

Uses
▪ Baby powder (talcum powder) ▪ Cosmetics ▪ First aid: foot powders, etc. ▪ Deodorant ▪ Paper ▪ Ceramics

Ilmenite

Titanium ore

Properties of titanium	
Hardness	Hard
Specific Gravity	Lightweight
Tenacity	Good tensile strength (difficult to break)
Useful compounds	Titanium dioxide is a bright white, nontoxic powder
Reactivity	Does not rust or corrode
Special properties	Hypoallergenic (can be used on or in the human body without causing an allergic reaction)

Ilmenite, a titanium ore. Pure titanium does not occur naturally.

Pure titanium after it has been extracted from ilmenite.

Uses

- Medical prostheses
- Body jewelry
- Razorblades
- Smokescreens
- Lightweight alloys for jet engines, missiles, and spacecraft

Sphalerite

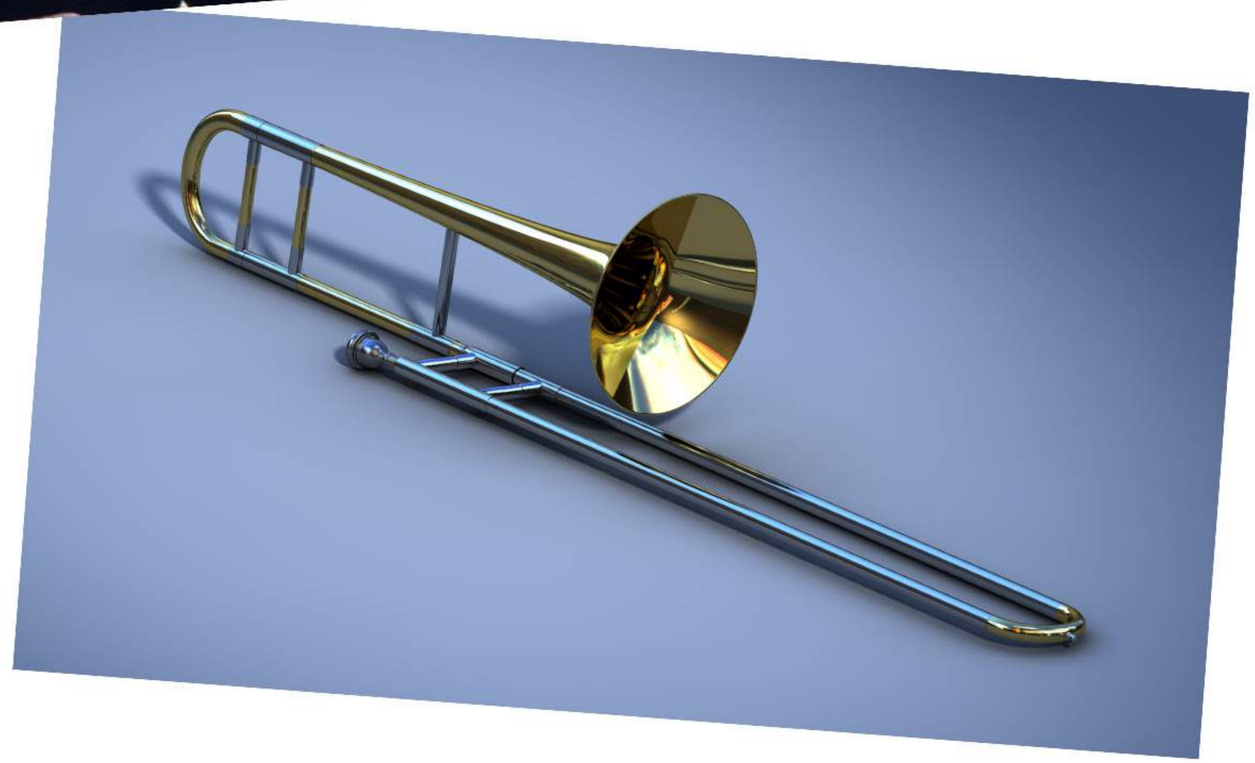
Zinc ore

Properties of zinc	
Useful compounds	Zinc oxide particles have deodorizing and antibacterial properties and reflect UVA and UVB rays (sunlight)
Reactivity	Corrodes more slowly than iron or steel, so it can protect these metals from corrosion (i.e., galvanized steel)
Special properties	Conducts electricity

Sphalerite, a zinc ore. Pure zinc does not occur naturally.

Pure zinc after it has been extracted from sphalerite

Uses
▪ Skin applications such as antiseptic ointment, dandruff shampoo, diaper cream, deodorant, sunscreen ▪ Dry cell batteries (used in toys, hearing aids, etc.) ▪ Galvanized steel (added to steel to prevent the steel from rusting) ▪ Alloyed with copper to create brass ▪ Fluorescent lights ▪ Wood preservatives



Mineral Name

Text underneath name indicates if this is an ore

Mineral photo here

This table lists useful properties of the mineral that might hint at what it is used for

Properties of mineral	
Appearance	What colour is it? What is its lustre (is it shiny or dull)?
Hardness	How easily can it be scratched?
Specific Gravity	How dense is it (is it heavy or light)?
Tenacity	How easily can it be bent, broken, flattened, crushed, etc.?
Useful compounds	Do we mix it with something else to create a useful substance?
Reactivity	Does it rust, tarnish, or have a special reaction with water, air, or something else?
Special properties	Does it conduct electricity, have a magnetic field, or have any other useful traits?

This symbol is on minerals currently mined in BC