BUILDING MINERAL LITERACY THROUGH STEM EDUCATION EST. 94 mining MATTERS

A BREAKDOWN OF THE CRITICAL

METALS IN A SMARTPHONE

Some vital metals used to build these devices are considered at risk due to geological scarcity, geopolitical issues or trade policy.

This infographic details the critical metals that you carry in your pocket.

ALKALI METAL
ALKALINE EARTH
TRANSITION METAL
POST-TRANSITION METAL
LANTHANOID

The Earth's natural resources power our everyday lives.

DISPLAY

The display contains several **rare earth elements**. Small quantities are used to produce the colors on the liquid crystal display. Some give the screen its glow.

- 57 La Lanthanum
- 59 Pr Praseodymium
- 63 Eu Europium
- 64 Gd Gadolinium
- 65 Tb Terbium
- 66 Dy Dysprosium

ELECTRONICS

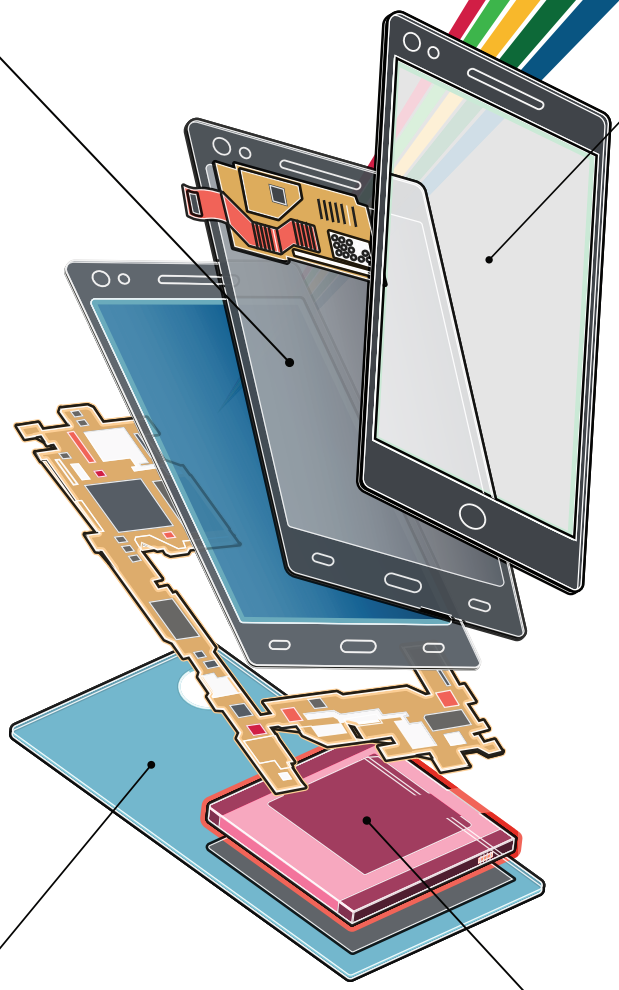
Copper is used for wiring and for micro-electrical components along with **gold** and **silver**. **Nickel** is used in electrical connections. **Gallium** is used in semiconductors. **Tantalum** is the major component of micro capacitors, used for filtering and frequency tuning.

- 31 Ga Gallium
- 28 Ni Nickel
- 73 Ta Tantalum
- 29 Cu Copper
- 79 Au Gold
- 47 Ag Silver

CASING

Nickel reduces electromagnetic interference. **Magnesium** alloys are superior at electromagnetic interference (EMI) shielding.

- 12 Mg Magnesium
- 28 Ni Nickel



TOUCH SCREEN

It contains a thin layer of **indium** tin oxide, highly conductive and transparent, allowing the screen to function as a touch screen.

- 49 In Indium

MICROPHONE, SPEAKERS, VIBRATION UNIT

Nickel is used in the microphone diaphragm (that vibrates in response to sound waves). Alloys containing **neodymium**, **praseodymium** and **gadolinium** are used in the magnets contained in the speaker and microphone. **Neodymium**, **terbium** and **dysprosium** are used in the vibration unit.

- 28 Ni Nickel
- 59 Pr Praseodymium
- 60 Nd Neodymium
- 64 Gd Gadolinium
- 65 Tb Terbium
- 66 Dy Dysprosium

BATTERY

The majority of smartphones use **lithium**-ion batteries. The battery casing is made of **aluminum**.

- 3 Li Lithium
- 27 Co Cobalt
- 13 Al Aluminum
- 28 Ni Nickel

In partnership with:

PDAC PROSPECTORS & DEVELOPERS ASSOCIATION OF CANADA

Source: University of Birmingham