

CARD SET 3

COBALT ($^{58}_{27}\text{Co}$)



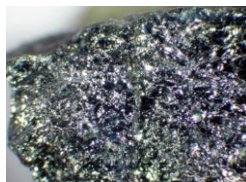
Skutterudite (CoAs_3)

Source: Colecciones del Museo Histórico Minero
D. Felipe de Borbón y Grecia. ETSIME-UPM.

Property:

(CoAl_2O_4) Coloured metal
with chromatic stability

GALLIUM ($^{69}_{31}\text{Ga}$)



Gallite (CuGaS_2)

[By-product of Al extraction
from Bauxite]

Source: Mindat.org

Property:

Improves magnetic properties
and corrosion resistance

BORON (Borates) ($^{10}_5\text{B}$)



Boracite ($\text{Mg}_3\text{B}_7\text{O}_{13}\text{Cl}$)

Source: Colecciones del Museo Histórico
Minero D. Felipe de Borbón y Grecia.
ETSIME-UPM.

Property:

Fire retardant
material

FLUORINE ($^{18}_9\text{F}$)



Fluorspar (CaF_2)

Source: Colecciones del Museo Histórico
Minero D. Felipe de Borbón y Grecia. ETSIME-
UPM.

Property:

Fluorochemicals-High
heat of vaporization



Blue pigment for
ceramics decoration



NdFeB magnets



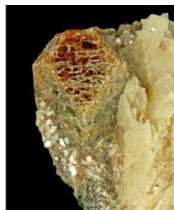
To prevent or delay the
ignition of different
materials



HCFCs refrigeration



HAFNIUM ($^{178}_{72}\text{Hf}$)



Hafnon ($(\text{Hf,Zr})\text{SiO}_4$)
[By-product of Zr extraction from zircon and baddeleyite]
Source: Mindat.org

Property:

High thermal neutron absorption cross section

GERMANIUM ($^{72}_{32}\text{Ge}$)



Germanite ($\text{Cu}_{13}\text{Fe}_2\text{Ge}_2\text{S}_{16}$)
[By-product of Zn extraction from Zn ores and coal ashes]
Source: Mindat.org

Property:

GeO_2 -increases refraction and dispersion index

MAGNESIUM ($^{24}_{12}\text{Mg}$)



Dollomite ($\text{CaMg}(\text{CO}_3)_2$)
Source: Colecciones del Museo Histórico Minero D. Felipe de Borbón y Grecia. ETSIME-UPM.

Property:

Improves aluminium strength without removing its workability

NATURAL RUBBER



Rubber tree
Source: Wikipedia

Property:

Inertness, chemical attacks resistant, elasticity



Nuclear control rods in nuclear reactors



Wide-angle camera



Metal packaging



Latex gloves



IRIDIUM ($^{192}_{77}\text{Ir}$)



Willamette meteorite (largest meteorite found in the US)

Source: Wikipedia

Property:

Iridium-192 radioisotope

PHOSPHATE ROCK (Phosphorus) ($^{30}_{15}\text{P}$)



Apatite ($\text{Ca}_5(\text{PO}_4)_3(\text{F}, \text{Cl}, \text{OH})$)

[More than 300 minerals]

Source: Colecciones del Museo Histórico Minero D. Felipe de Borbón y Grecia. ETSIME-UPM.

Property:

Vital part of plant and animal nourishment

LITHIUM (^6_3Li)



Pegmatite

Source: Wikipedia.org

Property:

The ions are small enough to pass through a separator between the anode and cathode

UPS! You lose your turn.
If you have found two matching cards in this turn you cannot keep them,
Sorry...



Source of gamma radiation for the treatment of cancer (brachytherapy)



Fertilizer



High-energy density rechargeable batteries



UPS! You lose your turn.
If you have found two matching cards in this turn you cannot keep them,
Sorry...

Turn over 1 **secret extra card** but do not show it to the rest of the players. If that card matches the other one, you can keep it, if not put it back face down again, not letting anyone knowing which card it is.

Roll the dice to see how many **extra cards** you can turn over:

nº 1: 1 card from the group of your choice.

nº 2: 2 cards, 1 from the blue group and 1 from the orange.

nº 3: 3 cards, 2 from the blue group and 1 from the orange.

nº 4: 1 card from the group of your choice.

nº 5: 2 cards, 1 from the blue group and 1 from the orange.

nº 6: 3 cards, 1 from the blue group and 2 from the orange.

Roll the dice to see how many **extra cards** you can turn over:

nº 1: 1 card from the group of your choice.

nº 2: 2 cards, 1 from the blue group and 1 from the orange.

nº 3: 3 cards, 2 from the blue group and 1 from the orange.

nº 4: 1 card from the group of your choice.

nº 5: 2 cards, 1 from the blue group and 1 from the orange.

nº 6: 3 cards, 1 from the blue group and 2 from the orange.

Steal a pair of cards from the team of your choice.

You have 1 **extra turn.**

Raise one more card from the same group this turn.

Then you have a new chance.

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Raise one more card from the same group this turn.

Then you have a new chance.