

OCR B GCSE Chemistry

Topic 2: Chemical patterns

What are the properties of transition metals?

Notes





1. (separate science only) Recall the general properties of transition metals (melting point, density, reactivity, formation of coloured ions with different charges and uses as catalysts) and exemplify these by reference to copper, iron, chromium, silver and gold

Compared to group 1, the transition elements:

- Are harder and stronger
- Have higher melting points (except for mercury) and higher densities
- Much less reactive and don't react as vigorously with oxygen or water

21	22	23	24	25	26	27	28	29	30
Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn
39	40	41	42	43	44	45	46	47	48
Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd
72	73	74	75	76	77	78	79	80	
	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg

Typical properties:

- They have ions with many different charges
- Form coloured compounds
- Are useful as catalysts.

examples of transition metals:

- copper: forms +1, +2, +3 ions, Cu^{2+} is a catalyst for reaction of zinc with acids
- iron: forms +2, +3, +4, +5, +6 ions, Fe is the catalyst for the Haber Process
- silver: +1, +2, used as a catalyst to produce ethylene oxide and formaldehyde
- gold: forms -1, +1, +2, +3, +4, +5, used as a catalyst to produce vinyl acetate, which is used to make PVA

(the highlighted colours show the colour of compounds formed with that ion in)

