Period 3 elements

14 November 2015 17:39

Elements

- Sodium, magnesium and aluminium are metallic shiny, conduct electricity and give salts
- Silicon semi metal conduct electricity to an extent
- Phosphorus, sulphur chlorine are non-metals do not conduct electricity, low mp and bp
- Argon (noble gas) chemically unreactive and exists as separate atoms.

Sodium reacts vigorously with cold water

- Fizzes forming a molten ball on the surface and produces H₂ gas $2 \operatorname{Na}(s) + 2H_2O(l) \rightarrow 2 \operatorname{NaOH}(aq) + H_2(g)$ pH= 13-14
- Magnesium reacts very slowly with cold water $Mg(s) + 2H_2O(l) \rightarrow Mg(OH)_2(aq) + H_2(g)$

Weak alkali is formed pH=9-10

• Magnesium reacts faster with steam $Mg(s) + H_2O(g) \rightarrow MgO(aq) + H_2(g)$

Most period 3 elements readily react with oxygen			.co.uk	
$4Na(s) + O_2(g) \rightarrow 2Na_2O(s)$	Vigorous Na O- blight yellow flame	sits 330 siO ₂ (s)	Slow	
2Mg(s) ₽Ĵ ₂ g) = MgO(s)	MgO- White fumes White light	$\begin{array}{l} 4P(s)+5O_2(g)\rightarrow \ P_4O_{10}(s)\\ \\ \text{Limited supply of }O_2\\ \hline \textbf{Allotropes}\\ 2P(s)+1.5O_2(g)\rightarrow \ P_2O_3(s) \end{array}$	Spontaneously combusts	
$4AI(s) + 3O_2(g) \rightarrow 2AI_2O_3(s)$	Slow burns brightly	$S(s) + O_2(g) \rightarrow SO_2(g)$	Burns steadily Blue flame Misty	



Phase boundary (between solid and solution)

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Complex ions and shape

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Complex ion

- One or more ligand attached to a central metal ion
- Dative covalent bond/coordinate bond

Ligand

- Donates a lone pair of electron to a transition metal
- Dative covalent bond/coordinate bond

Co-ordination number

- Number of co-ordinate bonds to the Ligand
- Surrounded by a d-block metal ion







square-planar

multidentate ligands

16.1 lewis acids and bases

03 January 2016 14:35

Lewis acid	Electron pair accepter
Lewis base	Electron pair donor

- Some substances are bronsted lowry and lewis acids/ bases
- Othere fit only in to one

Metal ions become hydrated in water

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