

FLASH ON ENGINEERING MATERIALS-KEY TO TASKS

Unit 1, pp. 4-7

- 1
 1 wood
 2 steel
 3 ceramic
 4 gold
 5 glass
 6 plastic

- 2
 1 b 2 c 3 a 4 f 5 d 6 e 7 h 8 g

- 3
 1 ferrous and non-ferrous metals
 2 Iron is soft and pasty and for this reason it is not suitable to be used as a structural material.
 3 They are used to improve some properties of the metals.
 4 plastic and ceramic
 5 Yes, it is an alloy made of iron and carbon.

4 1

Iron: Its Latin name is *ferrum*. It is magnetic and has a silvery colour. In prehistoric times it was used to make ornaments and weapons. If exposed to the air, it oxidises.

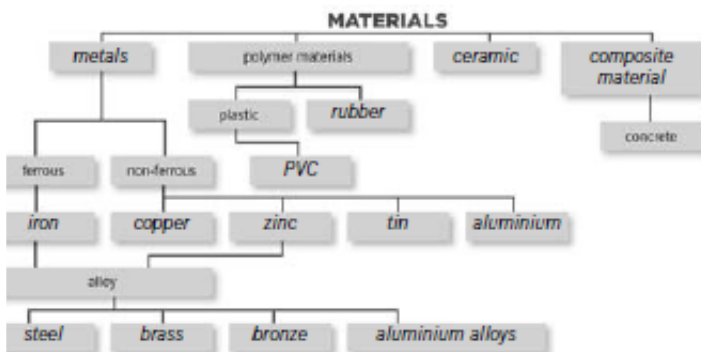
Copper: It is one of the most widely used metals by humans. In prehistoric times it was used to make cooking utensils, coins and ornamental objects. It is used in wires and cables.

Gold: It is the most expensive metal and is used to create precious jewellery. It is the most ductile metal.

Steel: It is an alloy formed from iron and carbon. It can contain between 2.1% and 4% carbon. It is also used for cooking utensils and pans.

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|----------|-------------|
| 1 ferrum | 7 expensive |
| 2 air | 8 ductile |
| 3 copper | 9 steel |
| 4 coins | 10 alloy |
| 5 wires | 11 carbon |
| 6 gold | 12 cooking |

5



- | | | |
|------------|-----------|---------------|
| 1 casting | 6 machine | 11 advantages |
| 2 metals | 7 soft | 12 ceramics |
| 3 concrete | 8 presses | 13 food |
| 4 tubes | 9 process | 14 brass |
| 5 bar | 10 type | 15 buildings |

7.

- 8
 1 Fluid substances solidify into moulds taking their forms.
 2 Drawing is done at room temperature.
 3 Heat is not essential in the drawing process.
 4 In the past forging was done using a hammer.
 5 Extrusion can be done with brittle materials.
 6 Sheet forming is used to make many everyday objects.

- 9
 1 wires: drawing
 2 pasta: extrusion
 3 sheet: sheet metal forming
 4 bricks: extrusion
 5 tubes: drawing
 6 rods and bars: drawing
 7 golden leaves: sheet metal forming
 8 machine parts: forging
 9 concrete: extrusion

- 10
 1 moulding, melting and casting
 2 The mould is filled with liquid metal which is left to solidify into complex shapes.
 3 a series of dies
 4 sheet metal drawing, and wire, bar, and tube drawing
 5 Metal is heated and shaped by a compressive force.
 6 It was done by a blacksmith using a hammer.
 7 The material is passed through a pair of rollers.
 8 metal, plastic, paper or glass
 9 The two main advantages of this process are its ability to create very complex cross-sections and work materials that are brittle.
 10 metals, polymers, ceramics, concrete and foodstuffs
 11 Metal is formed into thin and flat pieces.
 12 shape and thickness