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WORKSHEET NO: 19

Subject: Basic Technology	Year/Level: 9
	Date: 05/10/21
Topic: METALS AND NON METALS	

LESSON NOTES:

Materials:

All the materials in this book are classified under the following groups:

- metals –ferrous and non-ferrous.
- non-metals –wood, ceramics, polymers and leather.
- composites – concrete, fibreglass and manufactured boards.

These classes can be further broken into sub-groups, each with different applications. Every material we come across belongs to one or combinations of these classes.

Metals:

Metals have been extensively used by humans since the early Bronze Age. Metals are normally used to make solid products from cabinets to bridges. Due to the good electric conductivity of metals, all electronic materials rely on metals or its alloys to transmit electricity. Metals generally have good electrical and thermal conductivity with high strength, hardness and have good ductility. Some metals, such as iron are magnetic.

Ferrous metal:

Ferrous metals are metals whose main element is iron. Wrought iron can be grouped as pure metal because it contains pure iron or very little carbon up to 0.2%.

Steel

There is some indication that man-made iron was available as early as 2500 B.C. Today Iron is used in most of our machinery and homes. Iron has greatly developed our manufacturing and building industries.

Steel:

These are a few of the many types of steel:

Name	Carbon content	Used	Properties
Dead mild steel	0.1% to 0.15%	Car bodies, wires	High ductility and soft malleability
Mild steel	0.15% to 0.3%	Bars, rods, tubing, wire sets	Ductile and malleable
Medium carbon steel	0.31% to 0.8%	crankshaft, springs and cutting tools	increased toughness and hardness
High carbon steel	0.81% to 1.4%	chisels ,files, taps and dies, knifes etc	high hardness, tempered to reduce the hardness and increase the toughness.
Carbon steel	Above 3.2% carbon	Cast irons	high compression strength, high fluidity, low tensile strength and are best used for machine base.

STUDENTS ACTIVITY

1. Define the term metal.

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2. State the uses and properties of high carbon steel.

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Reference:

Year 9 Basic Technology Textbook, Year 9 External exam paper, MEHA.