Magnetic Materials and Non-Magnetic Materials

Magnetic and Non-Magnetic Materials

Materials are classified into magnetic and non-magnetic based on their attraction to magnets.

- Magnetic materials: Iron, nickel, cobalt (attracted to magnets).
- Non-magnetic materials: Wood, plastic, aluminum (not attracted).

Magnetic materials are used in applications like electric motors and storage devices.

Discovery of Magnets

Legend of "Magnes," a shepherd from Magnesia, Greece, who discovered a natural magnet.

Magnetite (Fe₃O₄) is a naturally occurring magnetic mineral.

Lodestone is a naturally magnetized magnetite, used historically for navigation.

Types of Magnets

i. Natural Magnets:

Found in nature (e.g., lodestone).

Have weaker magnetic strength.

Formed naturally without human intervention.

ii. Artificial Magnets:

Made by humans using iron, cobalt, and nickel.

Stronger than natural magnets.

Customizable in shape and strength for various applications.

Shapes of Artificial Magnets

Bar Magnet: Rectangular, used in physics experiments.

Cylindrical Magnet: Used in medical devices and motors.

U-Shaped Magnet (Horseshoe Magnet): Concentrated force at poles, used for lifting heavy objects.

Dumbbell-Shaped Magnet: Used in scientific demonstrations.

Key Differences Between Natural & Artificial Magnets

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Feature	Natural Magnets	Artificial Magnets
Source	Found in nature (e.g., lodestone)	Made by humans
Magnetic Strength	Weaker	Stronger & customizable
Durability	Less durable	More durable & modifiable
Applications	Limited	Widely used in industries & electronics