

Classification of Materials : Metals , Ceramics , Polymers , Composites

Metals : Large no. of nonlocalized electrons

Good conductors of electricity & heat

Not transparent , polished surface → lustrous appearance

Strong , deformable , used for structural applications

Ceramics :

Oxides , nitrides & carbides

Clay minerals , cement , glass

Insulative to passage of electricity & heat

Resistant to high temp & harsh environment

Hard but Brittle

Polymers :

Very large molecular structure

Low densities & flexible

Plastic & rubber

Carbon , hydrogen & other non-metallic elements

Composites :

Consist of more than one material type

display a combination of the best characteristics of each of the component materials.

fiber Glass - acquires strength from the glass & flexibility from the polymer .

Semi conductors

Bio materials

Advanced Materials

Smart materials

Nano materials