



WEEKLY HOME STUDY PACKAGE - WEEK 1 (05/07/21 – 09/07/21)

Subject : Applied Technology Year -11

Strand	Engineering Material
Sub strand	Polymer and Composite
Learning outcome	<ul style="list-style-type: none"><li>• Understand the term polymer and composite</li><li>• Identify the types of polymers.</li><li>• State the advantage and disadvantage of composite material.</li></ul>

### 1. Polymers

The term polymer is derived from two Greek words, poly means many and mer means unit or part. They have high molecular mass. We can say that polymers are high molecular mass substances which consist of structural parts joined to form a solid.

#### Classification of polymers

**Thermoplastic**- plastic that soften when heated and became firm again when cooled. This is the more popular type because heating and cooling may be repeated.

**Thermosetting**- plastics that soften when heated and can be molded but hardened permanently. This will decompose when reheated.

### 2. Composite

A composite material is a combination of two materials with different physical and chemical properties. When combined they produce a material that is specific to a certain work, for instance, to become stronger, lighter, or resistant to electricity and improve strength and stiffness.

For example: concrete is a composite because it is a mixture of cement and aggregate. Fiberglass sheet is a composite since it is made of glass fibers imbedded in a polymer.

#### Advantage of composite material

- They are light in weight and have low density.
- Composites cannot corrode like steel.

#### Disadvantage of composite material.

- It has an excessive price for raw materials and manufacture.
- It is difficult to attach.

Composite has two things in common, matrix material and reinforcement material. Reinforcement material are strong with low density and matrix material is usually ductile or tough material.

Ductile- ability to be drawn into wire.

**Activity**

1. What is a polymer?

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2. What type of plastic often softens when heated and becomes firm again when cooled?

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3. What is thermosetting?

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4. Explain what composite is and give one example of it.

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5. Define ductile

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6. Write down one advantage and one disadvantage of composite material

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