Material Science

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Chapter 11. Applications and Processing of Polymers

Highlights, Motivation and Critical Concepts:

Though many of the engineering applications are served by metals and alloys, other engineering materials like ceramics and polymers still does play some crucial roles in engineering. The amount of plastic materials used by industry has increased markedly over the past years. E.g.: use of plastics in manufacture of automobiles. Unlike metals and ceramics, polymers and their usefulness depend on many parameters including their morphology (chemical and structural characteristics). The study of polymer structures, influence of different parameters on their mechanical behavior, and polymer processing is thus an important for material scientist. This chapter meant for introducing polymers, explaining polymer processing, their mechanical behavior and different methods to improve their performance.

Multiple Choice Questions' Bank:

1. The word 'polymer' meant for material made from _____.

(a) Single entity (b) Two entities (c) Multiple entities (d) Any entity

2. One of characteristic properties of polymer material _____ .

(a) High temperature stability (b) High mechanical strength
(c) High elongation (d) Low hardness

3. Polymers are _____ in nature.

(a) Organic (b) Inorganic (c) Both (a) and (b) (d) None

4. These polymers can not be recycled:

(a) Thermoplasts (b) Thermosets (c) Elastomers (d) All polymers

5. In general, strongest polymer group is _____ .

(a) Thermoplasts (b) Thermosets (c) Elastomers (d) All polymers

6. These polymers consist of coil-like polymer chains:

(a) Thermoplasts (b) Thermosets (c) Elastomers (d) All polymers

7. Strong covalent bonds exists between polymer chains in _____ .

(a) Thermoplasts (b) Thermosets (c) Elastomers (d) All polymers

8. Following is the unique to polymeric materials:

(a) Elasticity (b) Viscoelasticity (c) Plasticity (d) None

9. Elastic deformation in polymers is due to _____ .

(a) Slight adjust of molecular chains (b) Slippage of molecular chains
(c) Straightening of molecular chains (d) Severe of Covalent bonds

10. Kevlar is commercial name for _____ .

(a) Glass fibers (b) Carbon fibers (c) Aramid fibers (d) Cermets

Answers:

1. c
2. c
3. c
4. b
5. b
6. c
7. b
8. b
9. a
10. c