

15.21 This question asks us to choose from a list of materials those which would be expected to be elastomers and those which would be thermosetting polymers.

(a) Linear and crystalline polyethylene would be neither an elastomer nor a thermoset since it is a linear polymer.

(b) Phenol-formaldehyde having a network structure would be a thermosetting polymer since it has a network structure. It would not be an elastomer since it does not have a crosslinked chain structure.

(c) Heavily crosslinked polyisoprene having a glass transition temperature of 50°C would be a thermosetting polymer because it is heavily crosslinked. It would not be an elastomer since it is heavily crosslinked and room temperature is below its T_g .

(d) Lightly crosslinked polyisoprene having a glass transition temperature of -60°C is both an elastomer and a thermoset. It is an elastomer because it is lightly crosslinked and has a T_g below room temperature. It is a thermoset because it is crosslinked.

(e) Linear and partially amorphous poly(vinyl chloride) is neither an elastomer nor a thermoset. In order to be either it must have some crosslinking.