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- (a) You are required to explain the chain structure of the polymers in a thermoset and state one property of a thermoset that is caused by the chain structure of the polymer. Thermosets are made from polymer chains which form cross linkages between one another whenever they are heated for the first time. The cross linkages make thermoset hard and heat resistant. This makes it difficult to change the structure by heating after it has been moulded. Once thermoset are cooled, they remain hard.

Answers:

The chain structure of the polymers in a thermoset is made up of polymer chains which have cross linkages between one another after it has been heated for the first time.

Struktur rantai polimer dalam suatu termoset terdiri daripada rantai-rantai polimer yang membentuk rangkai silang antara satu dengan yang lain selepas dipanaskan pada kali pertama.

The cross linkages between the **polymer** chains in a thermoset make the **thermoset** hard and heat resistant.

Rangkai silang antara rantai-rantai polimer dalam termoset menjadikan termoset itu keras dan tahan panas.

- (b) You are required to construct the concept of thermoplastic. The explanation should include the aspects given. You have to know the facts about the common characteristics of thermoplastics. Besides that, you also must remember the examples of thermoplastic and thermosetting plastics. Use common characteristics based on the effect of heat and number of time it can be moulded to construct the concept of thermoplastic.

- Two common characteristics of thermoplastic:

Answers:

1. Can be moulded more than once

Boleh diacu semula lebih daripada satu kali

2. Soft when heated and hard when cooled

Lembut apabila dipanaskan dan keras apabila disejukkan

- One other example of thermoplastic:

Answers:

Nylon, Perspex, polypropene, terylene

Nilon, Perspeks, polipropena, terilena

(any one)/(mana-mana satu)

- Two examples of non-thermoplastic:

Answers:

Melamine, bakelite, epoxyl glue, kevlar, mylar, nomex

Melamin, bakelit, gam epoksi, kevlar, mylar, nomex

(any two)/(mana-mana dua)

- The concept of thermoplastic:

Answers:

Thermoplastics are polymers that can be melted and moulded repeatedly. They are soft when heated and hard when cooled.

Termoplastik adalah polimer yang boleh dilebur dan diacu dengan berulang kali.

Termoplastik adalah lembut apabila dipanaskan dan keras apabila disejukkan.