1.4 Polymers and composites: 10-minute Pack

AQA 8552 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions.

1 A designer is choosing a polymer for a reusable lunch-box lid. It needs to be shaped in production and may be warmed during washing. Explain the difference between thermoplastic and thermosetting polymer behaviour when heated. [4 marks]

(Total for Question 1 is 4 marks)

2 Choose a suitable forming process for each product: (i) a low-volume, shallow thermoplastic packaging insert; (ii) a high-volume, detailed thermoplastic appliance casing; (iii) a small batch of a thermoset electrical component. Use vacuum forming, injection moulding or compression moulding once each. [3 marks]

(Total for Question 2 is 3 marks)

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Mark scheme · 1.4 Polymers and composites: 10-minute Pack

Question 1

Thermoplastic softens when heated	**B1**
Thermoplastic can be reshaped and sets on cooling	**B1**
Thermosetting polymer is cured into a rigid structure	**B1**
It does not remelt for reshaping on reheating (allow: may char/decompose)	**B1**

Answer: Thermoplastics soften when heated and can be reshaped; on cooling they set again. Thermosetting polymers form a rigid, cross-linked structure during curing and do not soften into a mouldable melt on reheating; excessive heat eventually causes damage or decomposition.

Question 2

(i) Vacuum forming	**B1**
(ii) Injection moulding	**B1**
(iii) Compression moulding	**B1**

Answer: (i) Vacuum forming; (ii) injection moulding; (iii) compression moulding.

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