1.6 Textile fibres and fabrics: Test Pack

AQA 8552 · Calculator allowed · about 20 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions.

1 A workshop is sorting fibres before making household textiles.

(a) State the source of each fibre: cotton, wool and polyester. **(3)**

(b) Explain why absorbency is useful in a towel used to dry hands. **(2)**

(Total for Question 1 is 5 marks)

2 A work shirt uses a blend of 65% polyester and 35% cotton by mass. A fabric panel has a mass of 240 g, excluding fasteners and thread. For this design, polyester is selected for crease resistance and cotton for absorbency.

(a) Calculate the mass of each fibre in the panel. **(3)**

(b) Explain why the designer uses a blend rather than only one of these fibres. Use the two stated properties. **(2)**

(Total for Question 2 is 5 marks)

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3 A designer tests treatments for a light shower cape. Every sample uses the same base fabric. Higher water-beading scores mean more surface water forms droplets and rolls off. Water penetration pressure measures resistance to water being forced through the fabric. Higher water-vapour transmission allows more moisture vapour to escape.

Treatment	Initial beading score /100	Beading after 10 washes /100	Water penetration pressure (kPa)	Water-vapour transmission (g/m2 per day)
R: repellent finish	90	50	2	700
C: continuous coating	95	85	20	180

(a) Explain why a high beading score alone does not prove that a fabric will resist water being forced through it. Use R as evidence. **(2)**

(b) Choose a treatment if the main priority is high water-vapour transmission during a short walk in a light shower. Explain the choice and one compromise shown by the data. **(2)**

(Total for Question 3 is 4 marks)

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Mark scheme · 1.6 Textile fibres and fabrics: Test Pack

Question 1

(a) Cotton comes from the cotton plant; accept seed hairs. **B1**

(a) Wool comes from sheep; accept another named wool-producing animal such as alpaca. **B1**

(a) Polyester is a manufactured synthetic polymer fibre; accept made from petrochemicals. Do not accept a plant or animal source. **B1**

(a) Answer: Cotton: cotton plant. Wool: sheep. Polyester: manufactured synthetic polymer.

(b) Absorbency allows the towel to take up water. **B1**

(b) Links this to removing water from wet hands or leaving hands drier; no second mark for repeating absorbency. **B1**

(b) Answer: An absorbent fabric takes up water from the skin, leaving the hands drier.

Question 2

(a) Uses 65/100 x 240 or 35/100 x 240 to find a component mass. **M1**

(a) Polyester = 156 g. **A1**

(a) Cotton = 84 g. Accept 240 minus a correct polyester mass. Correct answers without working earn full marks. **A1**

(a) Answer: Polyester: 0.65 x 240 = 156 g. Cotton: 0.35 x 240 = 84 g.

(b) Links polyester crease resistance to a useful effect for the shirt, such as less ironing or a neater appearance during wear. **B1**

(b) Links cotton absorbency to taking up moisture/perspiration from the wearer. Accept other relevant applications of the stated properties; do not require a claim that the blend outperforms both pure fibres. **B1**

(b) Answer: Polyester contributes crease resistance, reducing ironing, while cotton contributes absorbency for moisture from the wearer.

Question 3

(a) Distinguishes surface repellency/beading from resistance to water passing through the fabric. **B1**

(a) Uses R having a beading score of 90 but a penetration pressure of only 2 kPa, or compares its 2 kPa with C at 20 kPa. **B1**

(a) Answer: Beading describes surface droplets, whereas penetration pressure measures resistance to water passing through. R scores 90 for beading but resists only 2 kPa.

(b) Chooses R and links its higher transmission (700 versus 180, or an accurate qualitative comparison) to moisture vapour escaping. **B1**

(b) Explains a data-supported compromise: lower penetration resistance (2 versus 20 kPa) or poorer retained beading after washing (50 versus 85). Accept a smaller initial beading score (90 versus 95) as reduced initial surface repellency. **B1**

(b) Answer: R transmits 700 rather than 180 g/m2 per day, allowing more vapour to escape. Its penetration resistance is lower (2 rather than 20 kPa).

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