
Sample Assignment: Unit 11 Materials for a Purpose

ASSIGNMENT BRIEF

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|--|--------------------------------|
| Unit Name: Materials for a Purpose | Unit Number: 11 |
| Assignment Title: Quality Checks | Assignment Number: 11.2 |
| Date Set: | Due Date: See plan |
| Assessment Objective(s): AO3a AO3b | |
| Brief: The quality control departments of materials manufacturers check the properties of samples from the production line at regular intervals. Some of these checks use expensive high-tech machinery. In other cases product consistency can be confirmed by simple and cheap tests. You are required to design two such tests, carry them out and produce a report, to the quality control department, of your findings. | |
| Assignment: The practical work must be carried out safely by you in the laboratories that you usually work in. Both investigations could be hazardous if appropriate precautions are not taken. Your risk assessment should be agreed by your teacher before you start. | |
| Task 1 A fishing line manufacturer wishes to monitor the extension of a sample of fishing line when under tension. <ul style="list-style-type: none">• Plan and carry out experimental work by mounting fishing line so that it hangs vertically from a bracket on a wall and suspend weights from it.• Decide the best way to measure the extension and record your results. (The equivalent industrial testing machine is called a tensometer).• Produce a report for the company include the risk assessment used give details of your plan, the results and plot a suitable graph. In addition for MB2/MB3, you will need to test two different types of fishing line, show repeats in your testing and include with your report: <ul style="list-style-type: none">• The gradient of any graphs plotted• Calculation of Young's Modulus• Comments on the results of the samples tested. | |

Task 2

A manufacturer of kitchen worktops needs to ensure that the surface is not easily damaged by objects dropped on it.

- Plan and carry out experiments by dropping a pointed heavy object on the surface of the samples to find out what weight will produce an indentation of a given size. (Equivalent impact-testing machines include Vickers, Brinell, and Rockwell machines).
- Produce a suitable report showing details of your experimental work, with diagram and your plan. Include the safety precautions taken/risk assessment and results obtained.

In addition, for MB2/MB3, you will need to include with your report:

- A comparison of your results with the recognised industrial standards
- Any suggested improvements of your apparatus used in these laboratory tests.

Mark Allocation

- Carry out safely all the experimental work
 - (i) Extension experiment: 2 marks
 - (ii) Impact experiment: 3 marks
- Record to show your plan has been completed with evidence of any changes or modifications recorded and carried out
 - (i) Extension experiment: 2 marks
 - (ii) Impact experiment: 2 marks
- Write a scientific report on your investigation include what you have found out. Show how this links to the results you have made and evaluate the work you completed.
 - (i) Extension experiment: 4 marks
 - (ii) Impact experiment: 4 marks

Max marks possible for this assignment: 16

Assessment Recording Sheet: Unit 11 Materials for a Purpose

Name of Student:.....

Aim of Investigation

Task 1:

Task 2:

| Task 1 Fishing Line/Extension | Mark | Comments | Resubmission | | Mark |
|--|-------------|-----------------|---------------------|--|-------------|
| Experimental Work/Safety AO3a2 marks | | | | | |
| Plan/Record AO3a2 marks | | | | | |
| Results/Graph/Calculations AO3a4marks | | | | | |

Final Mark (AO3a)

| Task 2 Surfaces/Impact | Mark | Comments | Resubmission | | Mark |
|--|-------------|-----------------|---------------------|--|-------------|
| Experimental Work/Safety AO3b2 marks | | | | | |
| Plan/Record AO3b2 marks | | | | | |
| Results/Comparisons/Evaluation AO3b4marks | | | | | |

Final Mark (AO3b)

Comments:

Final Agreed Total Mark:

Student Signature:.....**Tutor Signature:**.....