

A level Physics B

H557/01 Fundamentals of physics

Question Set 14

1.

This question compares the properties of pure aluminium with Aluminium Strong Alloy.

Fig.1 and **Fig.2** show stress against strain graphs for these metals. **Fig.2** shows that both metals have the same initial elastic regions.

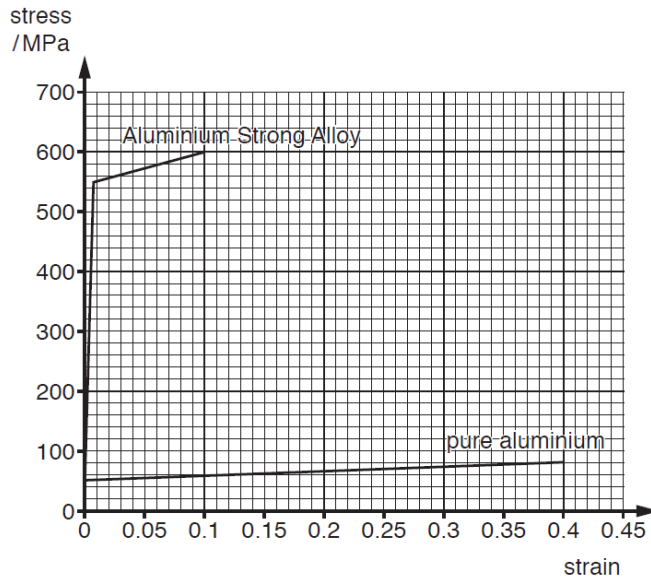


Fig. 1

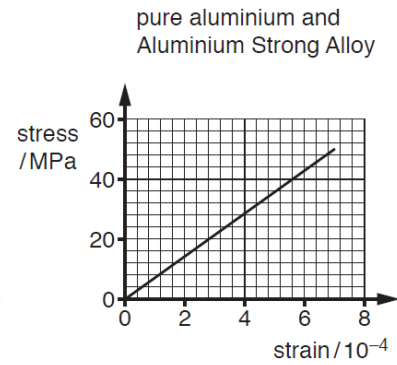


Fig.2

- (a) Calculate the Young modulus for the metals using data from **Fig.2**

Young modulus =Pa

[1]

- (b) State and justify which of the metals you would use for the crumple zone of a car.

[2]

- (c) **Fig.3** shows a TEM (transmission electron microscope) image of atoms in a metal with a scale marker of 1 nm.

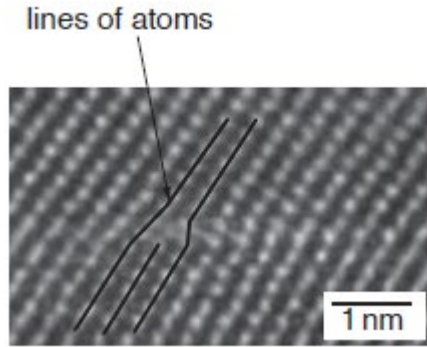


Fig. 3

- i Use the **Fig.3** to estimate the diameter of a metal atom.

diameter =.....m

[2]

- ii Name the feature represented by the lines of atoms added to the image.

name of feature.....

[1]

- (d)* Use ideas about bonding and structures in pure metals and alloys to explain the similarities and differences in elastic and plastic properties of aluminium and its strong alloy shown in **Fig.1**.

[6]

Total Marks for Question Set 14: 12

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