OCR
Oxford Cambridge and RSA

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.

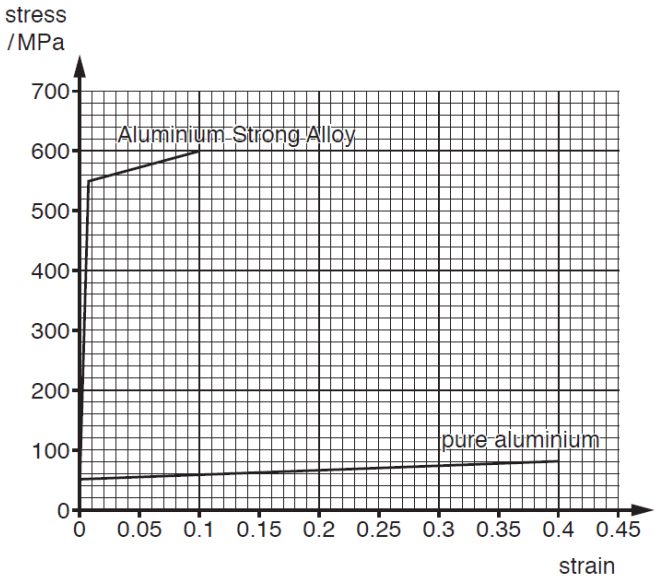

Fig. 1

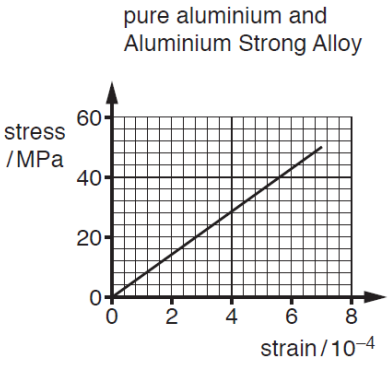

Fig.2

(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.

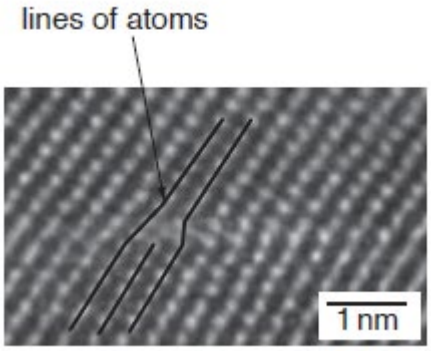

Fig. 3

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