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22 JAN 2021

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QUESTION 4

a) THE MATERIAL SHOULD HAVE THE FOLLOWING

- GOOD THERMAL PROPERTIES TO DEAL WITH CHANGE IN TEMP
- HIGH FATIGUE STRENGTH
- NON-CORROSIVE
- TOUGH TO WITHSTAND IMPACT
- NON-TOXIC

b

6062 T6 - ~~LOW STRENGTH~~, ~~NOT STRONG ENOUGH~~

304 ALUM - NOT STRONG ENOUGH AND IS ALSO TOO HEAVY (DENSE)
THIS MATERIAL IS CORROSIVE

304 - REALLY STRONG BUT IS ALSO UNSUITABLE DUE TO ITS WEIGHT - USUALLY USED IN HEAVY APPLICATION

6061 ALUMINUM - IS THE STRONGEST CHOICE AND ALSO HAS TO LOWEST DENSITY - IS NON CORROSIVE

~~THIS WOULD BE MY CHOICE DUE TO ITS LIGHTNESS AND WEIGHT (DENSITY)~~

MY CHOICE WOULD BE ALUMINUM BECAUSE OF COST

ITS LIGHTWEIGHT AND EASY OF MANUFACTURE AND CORROSION

c ~~2 x 20 x 10^6~~

$$\epsilon = \frac{2 \text{ Pd}}{\sigma_{\text{YIELD}}}$$

$$= \frac{2 \times 20 \times 10^6 \times 100 \times 10^6}{241 \times 10^6}$$

$$= \frac{2 \times 2000}{241 \times 10^6}$$

$$= \frac{4000}{241 \times 10^6}$$

$$= 16.6 \times 10^{-6} \quad | \quad 16.6$$