



## Fatigue test

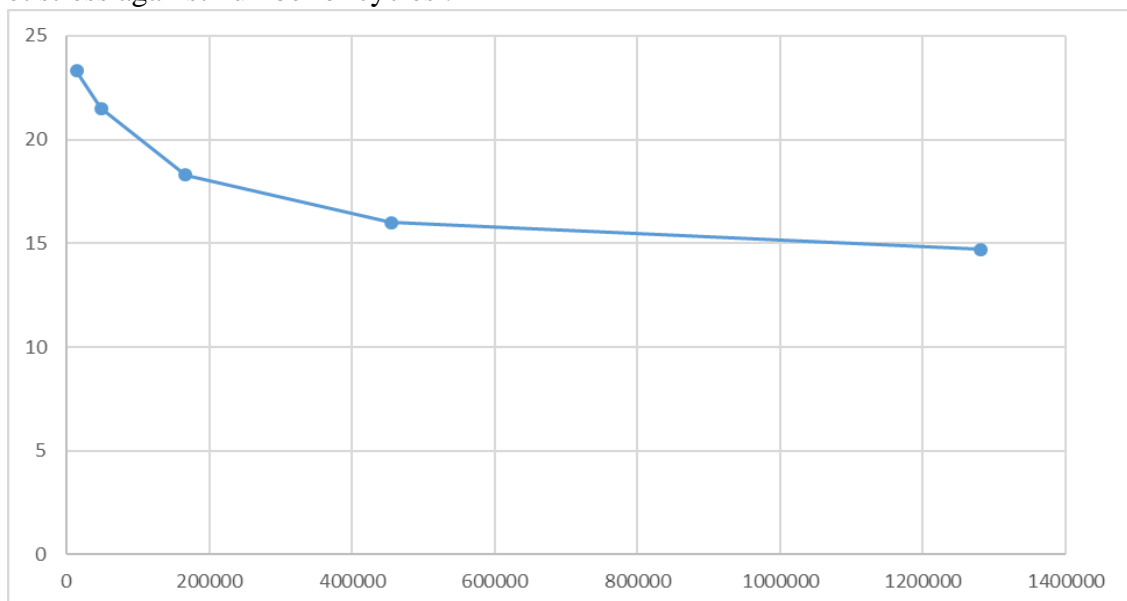
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### Results and Analysis:

# of load cycles for test bar under different loads			
Trial No.	Load $F_a$ (N)	Endurance N (cycles)	Stress $\sigma_a$ (N/mm <sup>2</sup> )
1	195	14030	24.3
2	172	48800	21.5
3	147	167000	18.3
4	128	455000	16.0
5	118	1280800	14.7
$L = 100.5 \text{ mm}$		$d = 8 \text{ mm}$	

- calculate the bending stress : for third trial : bending stress =  $M \cdot C / I$  BUT  $M = F \cdot L$  and  $C = d/2$  and  $I = 3.14/4 \cdot d^4$  then we found that  $(147 \cdot 100 \cdot 10^{-3} \cdot 4 \cdot 10^{-3} \cdot 4) / (3.14 \cdot (8 \cdot 10^{-3})^4) = 18.3$
- plot stress against number of cycles .



- find the endurance limit almost equal 14.9
- Estimate the fatigue strength corresponding to  $4 \cdot 10^5$  cycles : almost equal 16.8