Forming

Module -1: Fundamental concepts relevant to metal forming technology

Lecture -3: Mechanical behavior of crystalline materials-1

Quiz - Answers

1. What is the effect of necking during metal forming operation?

Necking is localized deformation. If it happens during forming, especially during sheet forming, the thickness of sections reduces considerably causing failure by cracking.

2. What is the effect of temperature on tensile strength?

Tensile strength of materials decreases with increase in temperature.

3. What is flow curve? Flows stress?

Flow curve refers to the plastic stress-strain curve. Flow stress is the stress required for a material to sustain the plastic strain.

4. For a material, the average flow stress is found to be equal to ¾ of the flow stress at the end of the deformation. What is the value of strain hardening exponent for this material?

We know that the average flow stress is given as:

$\overline{Y}$ =k $\frac{\varepsilon^n}{1+n}$ = ¾($k\varepsilon^n$)→ n = 1/3.