ELASTICITY ANDS PLASTICITY

With the aid of a sketch, explain the difference between elastic and plastic materials

Answer

Elasticity (or stretchiness is the physical property of a material that returns to its original shape after the external force that made it deform is removed.

Plasticity is the property of a material to undergo permanent deformation under load.

Plasticity = deformation exist after removal of load (deformation is irreversible).

Elasticity = deformation disappears after removal of load (deformation is reversible).

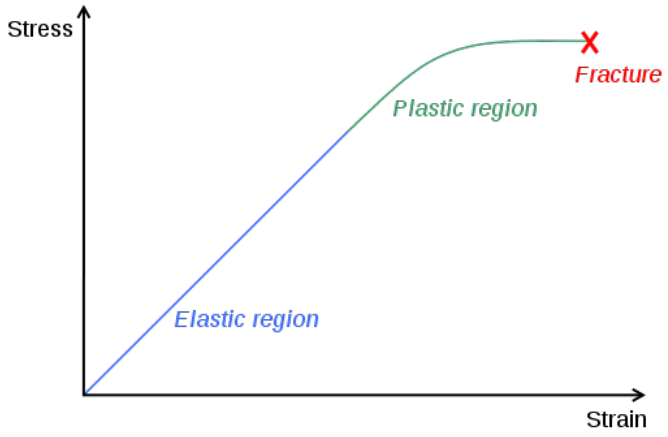

Figure 1: Elastic and plastic regions.

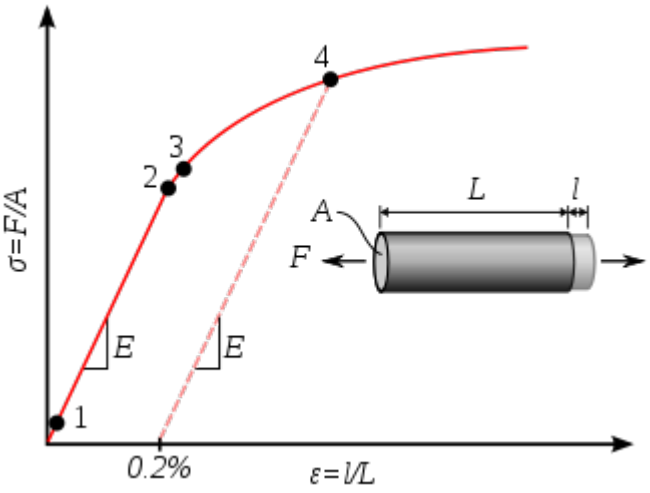

Figure 2: Permanent deformation / Unloading

Can you now tell the difference between ductility and plasticity?

Go back to Q &A 1. And recall the definition of ductility. The two terms differ but relevant.

Can you find out if bitumen is ductile and plastic? Yes it is but at specific temperature range (Too cold bitumen would be brittle = non ductile).