

Section-4

Q2

Ans →

Extrusion

- It is the process of confining metal in a closed cavity and then allowing it to flow from only one opening, so that the metal takes the shape of opening.

The

- Operation is identical to the squeezing of toothpaste out of a toothpaste tube.

*> Types of Extrusion:-

(a) Hot Extrusion:- It is carried out above the recrystallization temp.

- It consists of pressing a metal inside a chamber to force it out of high pressure through an orifice which is shaped to provide the desired form of its finished part.
- Due to higher temp. involved, special equipment is needed and the wear rate is high.

• The various methods of hot extrusion are:-

(i) Direct Extrusion & (ii) Indirect Extrusion.

(b) Cold Extrusion :- It is carried out below the recrystallization temp. of metal being extruded.

- It could also be direct or reverse but extrusion ratio is lower & extrusion pressure is high than the hot extrusion.
- Following are the various cold extrusion processes are :-

(i) Impact Extrusion.

(ii) Hydrostatic Extrusion.

* Defects of Extrusion are following :-

(i) Internal Cracking :-

- Cracks are developed in the centre of extrusion materials or part.
- These are hard to detect in the materials.
- They are also known as :-
 - (a) Centre Cracking
 - (b) Centre Duct
 - (c) Chevron Cracking
 - (d) Arrow head Cracking.

(ii) Surface Cracking :-

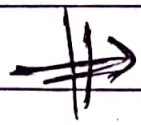
- If the extension temp., extension speed & friction are too high, surface temp. rises significantly and can lead to surface cracking and tearing.
- In hot extension, this form of cracking used is intergranular and is associated with high temp.

(iii) Piping Defect :-

- It occurs during hot extension due to pressure of impurities & oxides.
- It is also known as :-

(a) Tail pipe.

(b) Fish Tailing.



Extrusion:- Extrusion is the process of ~~(2A4A)~~ confining metal in a closed cavity & then allowing to flow from only one opening so that the metal takes the shape of the opening.

- The operation is identical to the squeezing of toothpaste out of a toothpaste tube.

* Types of Extrusion:-

(i) Hot Extrusion:-

- It is carried out above the recrystallization temp.
- Due to higher temp. involved, special equipment is needed & the wear rates are high.

⇒ Methods :- Direct extrusion.

Indirect Extrusion.

(ii) Cold Extension:-

- It is carried out below the recrystallization temp. of metal being extended.
- It could also be direct or reverse but extension ratio is lower and extension press. is higher than the hot extension.

⇒ Methods :- Impact Extension.
Hydrostatic Extension.

⇒ Cold Working:-

- It is defined as the process which is done below recrystallization temp.

⇒ Hot Working:-

- It is defined as the process which is done above recrystallization temp. but below the melting point of the metals.

* Plastic deformation may be defined as the process of permanent deformation which exists in a metal even after the removal of the stress.

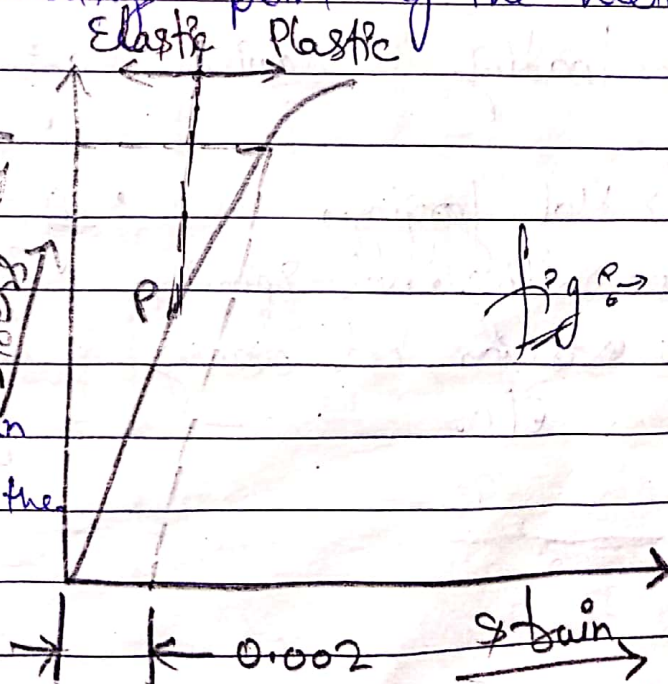


Fig. 2.2 Plastic Deformation