

DIES AND TOOLINGS

They must withstand high stress and thermal shocks/ oxidation. From economics point of view, another important requirement of the dies is that easy replacement of damaged parts and reuse of parts after reworking must be possible.

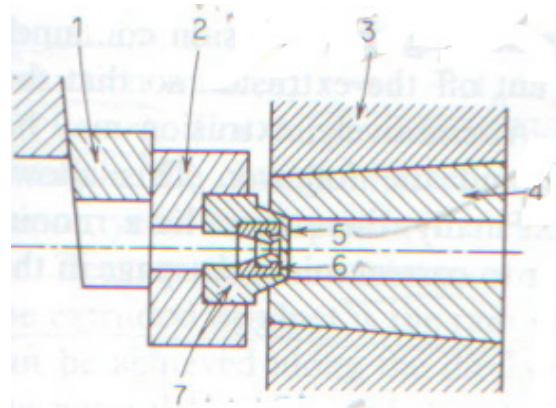


Fig. Typical tooling arrangement

Typical arrangement of extrusion tooling:

- The die is supported in a die (6) holder(5) and bolster (7).
- The die head (2) all the above parts 5,6 and7.
- The wedge (1) applies pressure and seals the entire assembly.
- The liner(4) is shrunk into container(3) to produce compressive pre stress in the inside surface of liner (Liner needs periodic replacements)

Types of extrusion dies

1) Flat Faced Dies

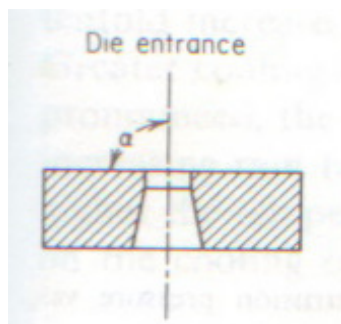


Fig. Flat Die

Some important features:

- It is used when metal entering the die forms a dead zone and shears internally to form its own die angle.

- A parallel land on the exit side of the die strengthens the die.
- It also allows reworking of the flat face on the entrance side without increasing the exit diameter.

2) Conical Dies

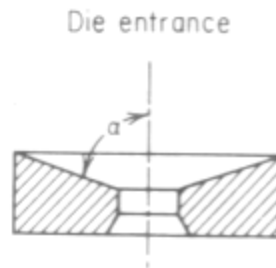


Fig. Conical Die

Some important features:

- The entrance side has conical shape and taper.
- They are used in extrusion with good lubrication.
- Die angle is decreased and this increases homogeneity of deformation and also reduces extrusion pressure.
- If the angle is too small, it leads too high friction in die surface. Hence an optimal angle is necessary.

Other supporting systems required in extrusion equipment:

- a) Provision for heating extrusion container
- b) Billet heating facilities
- c) Automatic transfer equipment for placing the heated billet in the container
- d) Hot saw to cut off extrusion product
- e) Run out table to catch the extrusion
- f) Straightener to correct minor warpage of the extruded product.