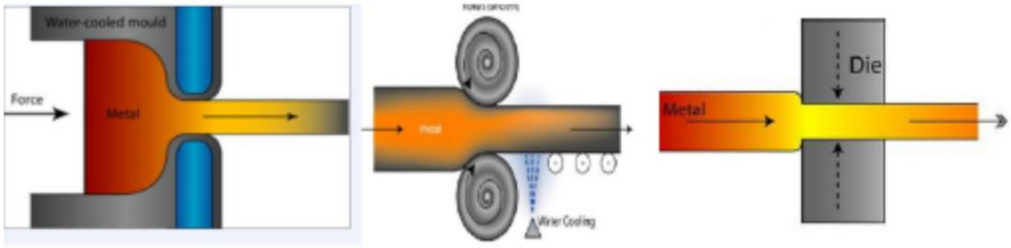
EDPT 601

Materials Manufacturing Technology

3 Bulk Forming

Experimental work



Students Names:

Date

____/____/_____

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Semester_____Student ID_____ Group _____

(For instructor use only) **Evaluation**

Grade

Comments

Prof. Nahed El Mahallawy
TAs:
Eng. Sherifa Taher
Eng. Olivia Louis
Eng. Noha Abdeltawab
Eng. Ramy Amir
Eng. Mahmoud Badr
Eng. Mohamed Magdy

Forging

1) Upsetting

(a) An Aluminum sample is to be pressed on a hydraulic press (upsetting process), fill in the following table:

Initial height (h_o) (mm)	Initial area (A_o) (mm^2)	Dial pressure (bar)	Force on sample (N)	Stress on sample (MPa)	Final height (h_i) (mm)	Final area (A_i) (mm^2)	% reduction in height

Remarks:

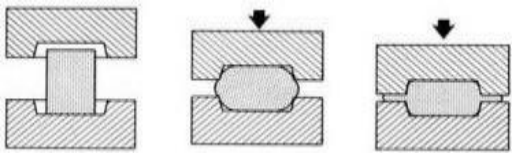
- Bar to MPa (X 0.1)
- Pressing force (F) acting on the sample = dial pressure in bar X Area of piston X 0.1
  = dial pressure in bar X 246.3
- Stress on sample = $\frac{F}{A_i}$
- % reduction in height = $\frac{h_o - h_i}{h_o} X\ 100$

(b) Plot a curve showing % reduction in height (X-axis) against the force F (Y-axis).

(c) Sketch the barreling in the workpiece.

2) Closed die Forging

A closed die forging operation is done on the hydraulic press.

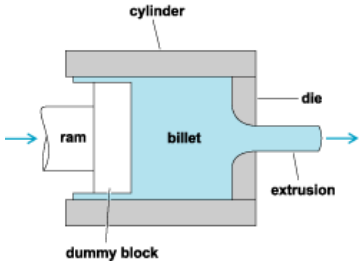


- Sketch the raw material used.

- Sketch the die used.

- Sketch the final product with dimension and write your comments.

Extrusion



Extrusion is performed in the hydraulic press in the lab.

1) Sketch the extrusion set up die.

2) Sketch the extrusion die with dimensions.

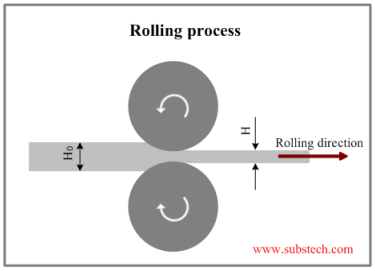
3) Compare the extruded product with the die dimensions.

4) Name and sketch 3 extruded products.

Product Name				
Product Sketch				

Rolling

1) Sketch the rolling operation conducted in the workshop (with dimensions).



2) Complete the missing dimensions in the table:

Rolling pass	Thickness	Length	Width
0			
1			
2			
3			