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Semester - 7 Branch - Machanical Engineering
Subject - Manufacturing III

Assignment 1 ; Study of types of chips

Types of Chip ;

There are different types of chips produced during Machining.

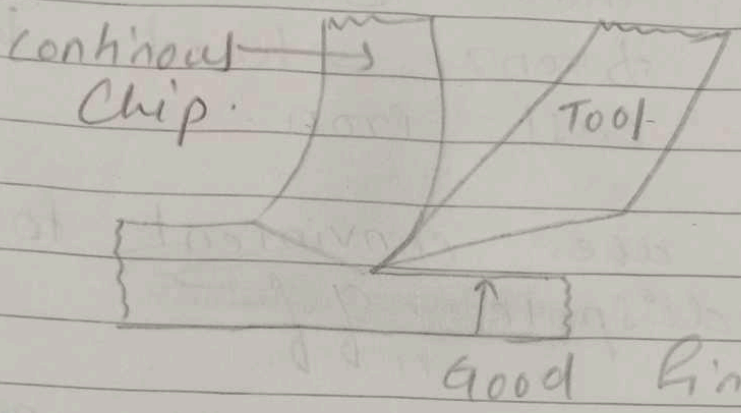
1. Continuous Chips
2. Discontinuous chips
3. Chips with buit up edge

1. Continous Chips

- continous chips are produced while Machining ductile Materials like Mild Steel. Copper and aluminium Because of plastic deformation of duchile Material long and continuos chips are produced.

- The conditions for Continuos chips are,

→ Small chips thickness
→ High cutting speed
→ Sharp cutting speed
→ large cutting tool rake angle and fine feed,
→ Smooth tool face



→ This is desimoble because it produces good surface finish low power consomption and longer tool life.

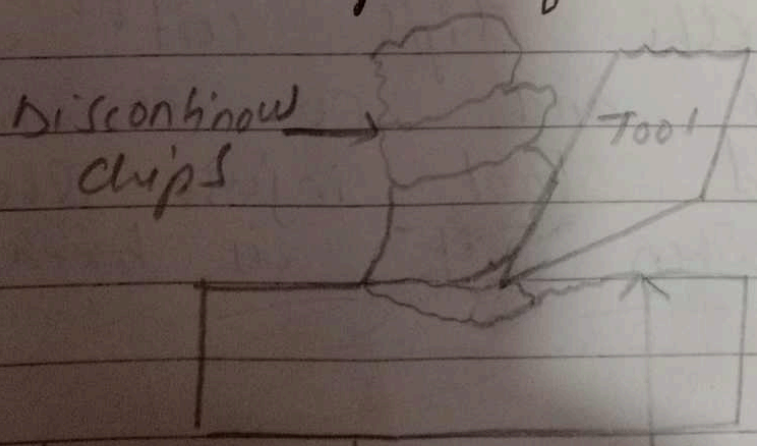
These chips are difficult to handle and dispose off further the chips coil in a helix and to around work and tool injure the operator when it is breaking

- To avoid this chip breakers are used

→ Discontinuous chips:

- These chips are produced when cutting more brittle material like bronze hard brass gray cast iron.
- These are convinient to handle and dispose of
- Discontinous chips are produced in ductile materials under the conditions such as

→ Large chips thickness
→ low cutting speed
→ Small rake angle of Tool:
→ Cutting fluid etc.



Discontinuous chip formation

irregural surface due to chip segmentation

- if these chips are produced from brittle materials then the surface finish is fair power consumption is low and tool life is reasonable.

3. Chips with built up edge.

A small built up edge is sticking to the nose of the cutting tool. These built up edge occurs with continous chips.

→ when machining ductile materials due to condition of high local temprature and extrone presure the cutting zone and also friction which is high in the tool chip interface there are possibilities of work material to weld to the cutting edge of tool and thus forming built up edge

→ This weld Metal is extenely hard and brittle This welding may effect

the cutting action of tool.

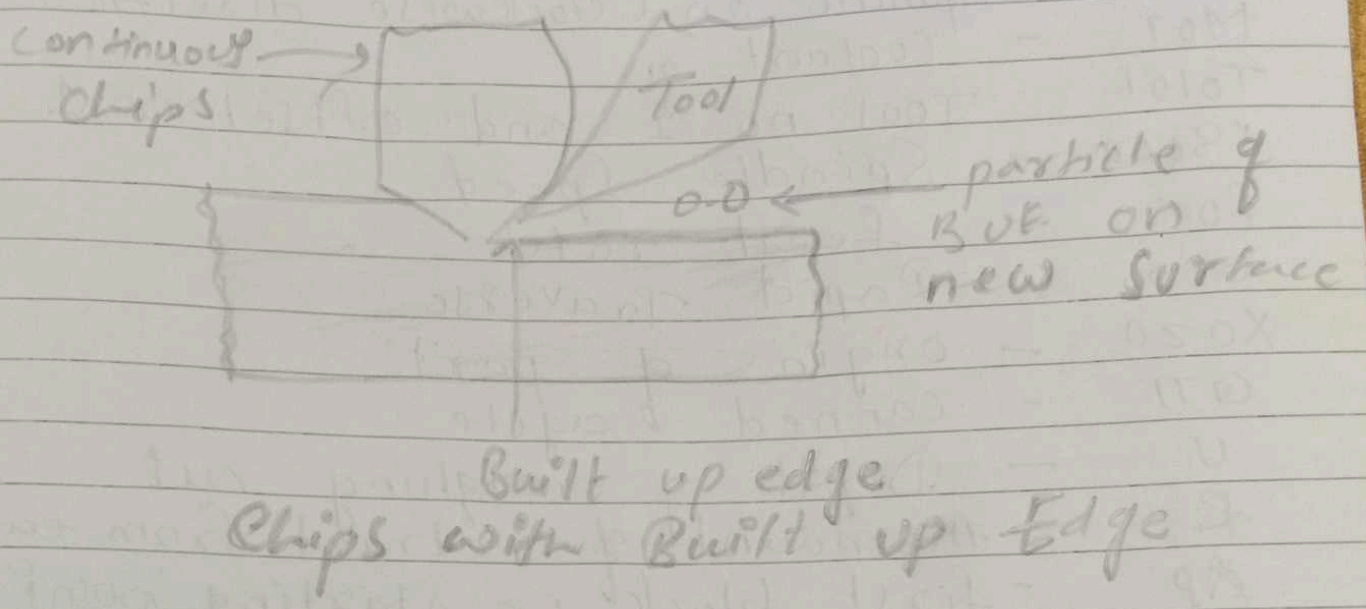
→ Successive layer are added to built up edge when this edge become large and unstable it the tool along with chip while remaining left in the surface being machined.

→ low cutting Spe. lead to the formation of built up edge however with high cutting speeds associated with Sintered carbide tools, the built up edge in negligible.

→ conditions favouring the built edge are

→ low cutting speed.
→ low rake angle
→ high feed and large depth of cut

• These formation can be avoided by the usage of coolants and taking light cuts at high speeds.
• This lead to the formation of crater on the surface of the tool.



Chips with Built up Edge