Description

Image



Image caption

(1) Metal sheet shear © Advliege at Wikimedia Commons (CC BY-SA 3.0) (2) Textured craft card, in a variety of colours © MichaelMaggs at Wikimedia Commons (CC BY-SA 3.0) (3) Stainless Steel Sheet Plate Strip Coil Circle © Jatinsanghvi at Wikimedia Commons (CC BY-SA 3.0)

The process

In CROPPING and GUILLOTINING an upper blade is forced past a lower one to shear sheet material along a straight line. The blades can be mounted at an angle to give a scissor-like action, reducing the force required. Small guillotines are operated by hand, sometimes with a counter-weight for stronger materials; larger ones are hydraulic or electric. The process is used on many different types of material: metal, plastic, paper. The cut edge is burred and slightly deformed .

Process schematic

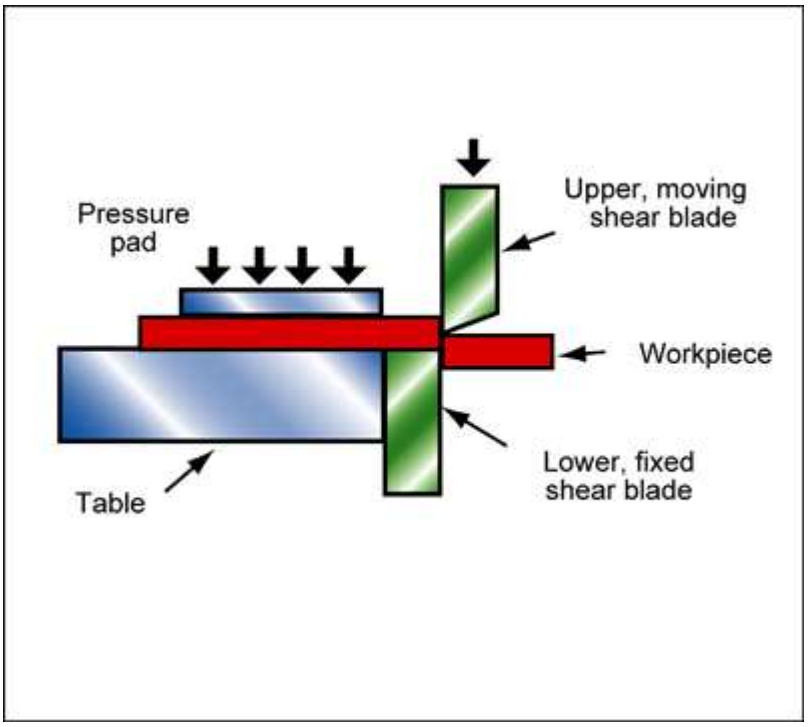

Figure caption

Shear-cutting by guillotining.

Material compatibility

Composites	✓
Foams	✓
Metals - ferrous	✓
Metals - non-ferrous	✓
Natural materials	✓
Polymers - thermoplastics	✓
Polymers - thermosets	✓

Shape

Flat sheet	✓

Economic compatibility

Relative tooling cost	low			
Relative equipment cost	low			
Labor intensity	medium			
Economic batch size (units)	1	-	1e6	

Physical and quality attributes

Range of section thickness	3.94	-	512	mil
Tolerance	0.591	-	7.87	mil
Roughness	0.0394	-	0.492	mil
Surface roughness (A=v. smooth)	A			

Process characteristics

Primary shaping processes	✗
Machining processes	✓
Cutting processes	✓
Discrete	✓
Prototyping	✓

Supporting information

Design guidelines

Most sheet metal, plastic, card and paper can be guillotined. The process is routinely used for carbon, low alloy and stainless steels; aluminum, nickel, magnesium and titanium alloys, fiberboard, cork wood and laminates.

Typical uses

Stock cutting; sheet metal cutting; cutting of paper and card; cutting printed circuit boards.

The economics

Guillotining is fast and

The environment

Safety measures to protect the operator are essential with all cutting operations.

Links

MaterialUniverse

Reference