

Taxonomy of manufacturing processes

Casting

Sand casting

Plastic mold

Shell mold

Investment casting (lost wax, precision)

Permanent mold

Centrifugal casting

Die casting

Slush or slurry

Full mold

Low pressure

Continuous casting

Molding

Powder metallurgy

Compaction plus sintering

Hot isostatic pressing

Metal injection molding

Plastics (see also rapid-prototyping)

Injection

Compression

Transfer

Extrusion

Blow molding

Dip Molding

Rotational molding

Thermoforming

Laminating

Expandable bead

Foam

Rotomolding

Vacuum plug assist

Pressure plug assist

Matched mold

Shrink fitting

Shrink wrapping

Forming

Forging

Smith

Hammer forge

[Drop forge](#)
[Press](#)
[Impact](#) (see also [Extrusion](#))
[Upset](#)
[No draft](#)
[High-energy-rate](#)
[Cored](#)
[Incremental](#)
[Powder](#)
[Rolling](#) (Thick plate and [Sheet metal](#))
[Cold rolling](#)
[Hot rolling](#)
[Sheet Metal](#)
[Shape](#)
[Ring](#)
[Transverse](#)
[Orbital](#)
[Cross-rolling](#)
[Thread](#)
[Extrusion](#)
[Pressing](#)
[Embossing](#)
[Stretch forming](#)
[Blanking](#) (see drawing below)
[Drawing \(manufacturing\)](#) (*pulling sheet metal, wire, bar or tube*)
[Bulging](#)
[Necking](#)
[Nosing](#)
[Oil-canning](#)
[Deep drawing](#) (sinks, auto body)
[Bending](#)
[Hemming](#)
[Piercing](#)
Stamping: [metal](#), [leather](#), [progressive](#)
[Coining](#)
Miscellaneous other
[Redrawing](#)
[Ironing](#)
[Flattening](#)
[Swaging](#)
[Spinning](#)
[Peening](#)
[Guerin process](#)
[Wheelon process](#)
[Magnetic pulse](#)
[Explosive forming](#)

[Electroforming](#)

[Staking](#)

[Seaming](#)

[Flanging](#)

[Straightening](#)

[Shearing](#)

[Line shearing \(slitting\)](#)

[Trimming](#)

[Shaving](#)

[Notching](#)

[Perforating](#)

[Nibbling](#)

[Dinking](#)

[Lancing](#)

Cutoff

[Machining \(material removal\)](#)

[Mills](#)

[Grist mill](#)

[Hammer mill](#)

[Ball mill](#)

[Buhrstone mill](#)

[Disc mill](#)

[Saw mill](#)

[Steel mill](#)

[Blast furnace](#)

[Smelting](#)

[Refining](#)

[Casting \(see #1 above\)](#)

[Reduction mill](#)

[Annealing](#)

[Pickling](#)

[Passivate](#)

[Coating](#)

[Milling](#)

[Grind](#)

[Cut](#)

[Shear](#)

[Shred](#)

[Fiberize](#)

[Pulverize](#)

[Crushing](#)

[Jaw crusher](#)

[Gyratory crusher](#)

[Rollers](#)

[Edge runner](#)

[Granulate](#)

Crack
Rub
Curl
Fluff
Twist
Hull
Blend
Refine
Atomize
Centrifugal disintegration
Peripheral (slab)
Face
Chemical
Turning
 Lathe
 Facing
 Boring (also Single pass bore finishing)
 Spinning (flow turning)
 Knurling
 Cutoff (parting)
Drilling
 Ream
 Countersink
 Tapping
Sawing
 Filing
Broaching
Shaping
 Horizontal
 Vertical
 Special purpose
Planing
 Double housing
 Open-side
 Edge or plate
 Pit-type
 Abrasive jet machining
 Water jet cutting
 Abrasive belt
Honing (Sharpening)
 Electro-chemical grinding
Finishing
 Polishing
 Buffing
 Burnishing
 Grit- or shot-blasting

[Tumbling](#)
[Wire brushing](#)
[Superfinishing](#)
[Barrel finishing](#)
[Vibratory finishing](#)
[Spindle finishing](#)
[Electroplating](#)
[Electropolishing](#)
[Plating](#)
[Sand blasting](#)
[Flame etching](#)
[Routing](#)
[Hobbing \(hubbing\)](#)
[Ultrasonic](#)
[Electrical discharge](#)
[Electron beam](#)
[Electrochemical](#)
[Chemical](#)
[Photochemical](#)
[Laser beam](#)
[Joining \(see also \[Joinery \\(woodworking\\)\]\(#\)\)](#)
[Welding](#)
 [Arc](#)
 [Manual metal](#)
 [Shielded metal](#)
 [Gas metal](#)
 [Pulsed](#)
 [Short circuit](#)
 [Electrogas](#)
 [Spray transfer](#)
 [Gas tungsten](#)
 [Flux-cored](#)
 [Submerged](#)
 [Plasma arc](#)
 [Carbon arc](#)
 [Stud](#)
 [Electroslag](#)
 [Atomic hydrogen](#)
 [Plasma-MIG \(metal inert gas\)](#)
 [Impregnated tape](#)
 [Oxyfuel gas](#)
 [Oxy-acetylene gas](#)
 [Methylacetylene propadiene \(MAPP\)](#)
 [Air-acetylene](#)
 [Oxyhydrogen](#)
 [Pressure gas](#)

[CO₂](#)

[Resistance](#)

[Spot welding](#)
[Shot welding](#)

[Projection](#)

[Seam](#)

[Flash butt](#) (flash)
[Upset \(butt\)](#)

[Percussion \(manufacturing\)](#)

[Solid state](#)

[Ultrasonic](#)
[Explosive](#)
[Diffusion](#)
[Hot press](#)
[Isostatic hot gas](#)
[Vacuum furnace](#)

[Friction welding](#)

[Inertia](#)
[Forge](#)
[Cold](#)
[Roll](#)

[Electron beam welding](#)

[Laser welding](#)

[Pencil](#)

[How Pencil made](#)
[Solid state](#)
[Axial-flow gas](#)
[Cross-flow gas](#)

[Thermite](#)

[Induction](#)

[Low frequency](#) (50-450 Hz)
[High frequency](#) (induction resistance; 200-450 kHz)

[Other types of welding](#)

[Friction welding](#)
[Heated metal plate](#)
[Solvent](#)
[Dielectric](#)
[Magnetics](#)
[Ultrasonic](#)
[Radio frequency welding](#)
[High frequency resistance](#)
[Electromagnetic](#)
[Flow](#)
[Resistance](#)
[Infrared](#)
[Vacuum](#)

Hot-air-welding

Brazing

Torch

Induction

Furnace

Dip

Soldering

Iron

Hot plate

Oven

Induction

Dip

Wave

Ultrasonic

Sintering

Adhesive bonding (incomplete)

Thermo-setting and thermoplastic

Epoxy

Modified epoxy

Phenolics

Polyurethane

Adhesive alloys

Miscellaneous other powders, liquids, solids, and tapes

Fastening wood and metal

Nailing

Screwing

(By material fastened)

Machine (Metal)

Wood Screws

(By slot type)

Phillips ("Plus sign" in Canada)

Straight ("Minus sign in Canada")

(By shape)

Round head

Flat head

Box head

Hex

Lag

Nuts and bolting

Riveting

Pining

Cotter

Groove

Tapered

Roll

Retaining rings

Quick-release

Stitching

Stapling

Press fitting

Rapid manufacturing

Stereolithography

Selective laser sintering

Fused deposition modeling

Three dimensional printing

Laminated object manufacturing

Laser Engineered Net Shaping

Mining

quarrying

Blasting

Woodworking

Joinery (see also joining above)

Lapping

Morticing

Routing (see above)

Biscuit (woodworking)