

Tool and Die Materials by Tool Type

Tool types met in a mold, tool and die shop and the materials normally used for them, from blades, dies and molds to punches, hobs, gages, taps and press tools. Printed from the reference page on aobosteel.com. This is a reference summary of published practice and not an Aobo Steel specification.

Reference only. This card is a reference summary of published practice, not an Aobo Steel specification. The materials listed are possible types of material for each tool type, not a specification for it. Confirm the material against the mill certificate or by test before ordering or welding.

Types of tool and their possible material type

Source table 3.2, printed pages 24 to 28

Types of tool	Possible types of material
Anvils	W1
Axes	1045
Blades, flying shear	D2
Blades, granulator	D2
Blades, hot shearing	H13
Blades, rotary shear	O1
Blades, shear	A2, S1, L6
Blades, shear for hard thin materials	D3
Blades, shear heavy duty cold	D3
Blades, shear thick materials	1.2767
Blocks, die, cold, high pressing stress	6F5
Broaches	O1
Bushings	O1
Cams	O1
Centers, lathe	O1, L3
Chasers	1.2419
Chisels, hand	S1
Chisels, pneumatic	S1
Chucks, collet	W1
Chucks, split	S4
Collets	O1
Cores, hammer	W2
Cores, hot working	1.2567
Cutters, circular for cold rolled strip	D2
Cutters, milling	O1
Cutters, strip splitting	O1
Dies, wire drawing	D2
Dies, blanking	D2, D3, S1
Dies, coining	A2, O1, S1
Dies, cold working	W2
Dies, cupping	D2
Dies, cutting	W110
Dies, cutting, hot	S1
Dies, deep drawing for sheet metal	D2
Dies, die casting	H13
Dies, die forging, small to medium work	L6, S4
Dies, die-casting, to be hobbled	P4
Dies, embossing	6F5, 1.2762
Dies, embossing, hollow	W110
Dies, embossing, large	W110
Dies, extrusion, cold working	D2
Dies, extrusion for aluminum and copper	H13, H21
Dies, extrusion for rubber bonded synthetics	H13, H21
Dies, extrusion, hot working	H19
Dies, forging, cold working	A2, H13
Dies, forging, hot working (non-excessive temps.)	S1
Dies, forging, hot working	H13, H21

Source, Handbook of Mold, Tool and Die Repair Welding (Steve Thompson), table 3.2, printed pages 24 to 28. Types of tool and their possible material type, 185 entries.

Tool and die materials by tool type, continued

Types of tool and their possible material type, continued

Types of tool	Possible types of material
Dies, forging, hot working, heavy duty	1.2744
Dies, forming for sheet metal	D2
Dies, gravity, for aluminum die casting	H13, H21
Dies, gripper	H13
Dies, hammer, drop forge	L6
Dies, heading	D2A, L6
Dies, heading, cold working	A2, L6, H13
Dies, hobbing	D2, L6
Dies, hot extrusion	H21
Dies, hot working for non-ferrous metals	1.2567, H21
Dies, leather	W1
Dies, lower, hot working	H21
Dies, medium run	O1
Dies, molding part	L6
Dies, molding for abrasive powder (ceramic)	D3
Dies, molding, synthetic plastic	P4, 1.2738
Dies, nail making, cold working	S1
Dies, plastic, corrosive	420
Dies, pressing, chemically aggressive compounds	1.2316
Dies, pressing, component	1.2744, 1.2766, H12
Dies, pressure, for aluminum and zinc die cast	H13, H21
Dies, punching	W108, W110, A2, D2
Dies, resin (artificial), highly stressed	P6
Dies, resin, corrosive	420
Dies, snap	W108, S1
Dies, split hot heading	H13
Dies, swaging, hot working (non-excessive temps.)	S1
Dies, thread rolling	A2, D2, D3
Dies, threading	L3
Dies, trimming	A2, D2
Files	1.2008
Gages, master	D3
Gages, plug	D2, O1
Gages, ring	D2, O1
Hammers	W1, 1045
Hobs, cutting	O1
Hobs, master, for cold hobbing	D2, D3, L6, M2, T1
Jaws, chuck	O1
Knives, cloth cutting	O1
Knives, paper cutting	O1
Knives, resin bonded material cutting	A2
Knives, wood cutting	A2
Liners, mold, for bricks and tiles	D3
Mandrels, for aluminum tube drawing	H13
Mandrels, for copper tube drawing	H13
Mandrels, for steel tube drawing	S1

Tool and die materials by tool type, continued

Types of tool and their possible material type, continued

Types of tool	Possible types of material
Molds, aluminum or zinc die cast	H13, H21
Molds, chemically aggressive material	420, 420mod.
Molds, complicated/intricate	A2, D2, O1
Molds, compression	H13
Molds, compression, for lead, zinc and tin alloys	420, 420mod.
Molds, compressive, high	EN30B
Molds, cutting	EN30B, 410
Molds, cutting, high wear resisting	D2
Molds, die casting, heavy duty	420, 420mod.
Molds, glass	420
Molds, long production run	A2, D2, O1, 420mod.
Molds, plastic, cut	D2
Molds, plastic injection, very high polish	420mod.
Molds, plastic injection, very large	P20
Molds, presser casting, for light metals	H11
Molds, pressure casting	1.2567
Molds, pressure casting, brass	H19
Molds, rubber seal	D2
Molds, transfer	H13
Pins, core, for molds	D2
Pins, ejector	H13, L1
Plungers	H13
Presses, metal extruding, non-ferrous metals	H12
Punches, blanking	D3
Punches, cold working	L2
Punches, cutting, complicated	1.2127
Punches, drawing	O1
Punches, engraving	S1
Punches, head	S1
Punches, high silicon and transformer material	D2, D3
Punches, hot working	H13, S1
Punches, stainless steel sheet and plate	D2
Punches, steel sheet and plate	D2, D3
Punches, tableting for abrasive and corrosive powders	D3
Reamers	L3, D3, D2, O1
Rings, hammer roll	1.2766
Rollers, sheet metal forming	D2
Rollers, spinning	A2
Rolls, cold, small	1.2057
Rolls, tube expanding	O1
Saddles, hammer	W1, S4
Saddles, pressing	S4
Saws, circular, woodworking	1.1830
Saws, frame, woodworking	1.1830
Saws, metal cutting	1.2442
Scythe	W110

Tool and die materials by tool type, continued

Types of tool and their possible material type, continued

Types of tool	Possible types of material
Shears	1045
Sleeves, abrasive and corrosive powder tableting	D3
Sleeves, drill	1.2378
Stamps, minting	W2
Strainers	W108
Taps, cold	O1, L2
Taps, special	D2, M2
Tools, bending	1.2767
Tools, blanking, hot	S1
Tools, blanking, nut	S1
Tools, burnishing	1.2008
Tools, countersinking	L2
Tools, cutting, cold	W108
Tools, cutting, dynamo and transformer sheets	1.2378
Tools, cutting, heavy duty, cold	D3
Tools, cutting, medium duty, cold	A2, S1
Tools, cutting, medium temperature	S4
Tools, cutting, precision, cold	1.2008
Tools, cutting, thread machining	O1
Tools, drawing, cold	1.2057
Tools, embossing	W110, 1.2767
Tools, embossing, high stress	1.2762
Tools, heading, cold	W2
Tools, impact, cold	W108
Tools, knurling	A2, 1.2057
Tools, medium temperature piercing	S1
Tools, metal extrusion press	H11
Tools, metal extrusion	L6
Tools, piercing, hot	H13
Tools, pneumatic	S1
Tools, pre-forming	S1
Tools, press, extrusion, heavy duty	H10A
Tools, press, for fine and medium work	D2, O1
Tools, press, heavy duty	D2, D3
Tools, pressing, hot, complexed engravings	1.2767
Tools, pressing, tube	L6
Tools, processing, synthetic plastics	P20
Tools, punching, heavy duty, cold	D3
Tools, punching, hot	S1
Tools, punching, medium duty, cold	A2
Tools, scraping	L2
Tools, stone working, hard	W110
Tools, stone working, medium hard	W1
Tools, trimming, cold	S4
Tools, trimming, hot	H13, M2, S1, S4
Tools, trimming, medium temp.	S1, M1, M2

Aobo Steel, tool steel supplier

Aobo Steel supplies tool steel to distributors and mold, tool and die shops, including D2, D3, O1, A2, H13, H11, M2, L6, P20 and 420 stainless. Forged or hot rolled, annealed, cut to your sizes, with test certificates.

Reference data compiled from Handbook of Mold, Tool and Die Repair Welding (Steve Thompson), table 3.2, printed pages 24 to 28.

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