

Product	Description	Properties
<u>Tool Steels/Powder Metals</u>		
A2	A2 is a carbon-chrome air-hardening tool steel. It is known for being a general purpose and versatile tool steel, with better wear resistance than the "S" grades, and more toughness and strength than the "D" grades. Its end applications vary widely	Good toughness, excellent stability, good strength, moderate machinability, moderate grindability
A6	A6 tool steel is an air-hardening tool steel characterized by its tough hardening abilities while using low austenitizing temperatures typically associated with oil-hardening tool steels	Good toughness, excellent stability, medium wear resistance, good machinability
S1	S1 is a shock resisting tool steel for both hot and cold work. The addition of tungsten increases its fatigue resistance. The addition of chromium increases the hardness and resistance to abrasion of the S1	Good machinability, good abrasion resistance, good hot and cold work characteristics, high fatigue strength, medium hot hardness
S5	S5 is a silicon-manganese tool steel that is known for its shock-resistance characteristics. It has the highest impact toughness relative to the rest of the 'S' steel family. It is usually oil-quenched but it can also be quenched in water with satisfactory results	High strength, adequate abrasion resistance, high shock resistance, high load capacity
S7	S7 is a versatile tool steel that contains relatively low levels of carbon when compared to the D2 and A2. It resists distortion during heat treatment and is very tough, but is less resistant to wear than similar materials	Suitable for both hot and cold forming, excellent impact resistance, excellent shock resistance, medium resistance to softening in high temperatures, lower resistance to wear relative to similar elements

M2	M2 is a well balanced high speed steel that is useful in a variety of applications. The M2 is the most popular high speed steel because of its desired properties and economy	High toughness, great resistance to wear, good red hardness, good machinability
M42	M42 is a high-speed, molybdenum based steel alloy that is widely used for its great red-hardness relative to other high speed steels	Good machinability, well-balanced toughness, wear resistance, and red hardness properties
O1	O1 is part of the oil-hardening cold-work tool steels family, which consists of O1, O2, O6, and O7. The O1 consists of chromium, manganese, and tungsten. Moreover, the O1 has the advantage of being relatively inexpensive when compared to the other oil-hardening steels. It is also a good general purpose tool and die steel.	Good durability, excellent wear resistance, holds good cutting edge, excellent toughness
O6	O6 is part of the oil-hardening cold-work tool steels family, which consists of O1, O2, O6, and O7. The O6 consists of carbon, manganese, silicon, and molybdenum. It has outstanding resistance to metal-to-metal sliding wear and galling	Excellent machinability, self-lubricating in dry environments, excellent metal-to-metal resistance
L6	The L6 is an oil-hardening steel that is versatile and useful in many end applications. It has very good toughness due to its relatively high nickel content	Relatively better impact toughness compared to other oil-hardening grades, very good toughness, good hardness, high wear resistance
D2	The D2 is a high carbon, high chromium tool steel. It is commonly used in cold work applications that require high wear resistance and compression strength	High wear resistance, relatively low toughness compared to alloyed steels, sensitive to heat treatment

420	The 420 is a high-quality stainless steel that also contains 13% chromium. It is usually used for molding purposes. Like other stainless steels, the 420 can be hardened by heat treatment	Good ductility, excellent corrosion resistance, good strength, good hardness
P20	The P20 is a general purpose mold steel that is commonly used in the plastics industry. The P20 is versatile, and characterized for its good toughness	Good toughness
H13	The H-13 is an air hardening tool steel that contains 5% chromium. It is one of the most popular hot work steels in the market due to its resistance to a number of environments	Good toughness, high temperature resistance, temper resistance
A11 PM	A11 is a high vanadium, high carbon tool steel known for its exceptional good wear resistance. It provides a mid-point between the oil hardening and the high carbon grades.	Great wear resistance, high toughness, high strength, good machinability, high dimensional stability, great non-deforming properties
T15 PM	T15 PM is a high speed tool steel that combines great wear resistance with high impact toughness and tensile strength. This unique combination is a result of its fine grain size and outstanding cleanliness. Moreover, T15 PM offers a longer cutting tool life relative to the 'M' tool steel family.	High wear resistance, high impact toughness, high bend strength, superior cleanliness, long cutting tool life, excellent cold working properties
M4 PM	M4 PM is a flexible, tungsten molybdenum-vanadium, high speed tool that combines excellent wear resistance with impact toughness and bend strength. It offers superior cutting tool life than the 'M' steel family, and improved cold work tooling than the 'D' steel family	High wear resistance, high impact toughness, high bend strength, great flexibility, good machinability, grindability, and dimensional stability

<p>CR1018</p>	<p>CR1018 is a low carbon steel that is best used for carburized parts. CR1018 produces a hard and uniform case. Also, it shows better mechanical properties, machining, and hardness relative to similar metals</p>	<p>Good balance of toughness, strength, and ductility, good hardness, good machinability, good mechanical properties</p>
<p>A36</p>	<p>A36 is a relatively low cost, low-carbon steel. It is suitable for a large variety of applications, but is mostly used in the construction sector in different industries</p>	<p>High strength, great formability, great weldability</p>

Specs	Markets	Applications
	Industrial	Blanking tools, punch dies, gauges, blades, stamping dies, trim dies, hammers, industrial knives, plastic injection tools
ASTM A681	Industrial	Blanking dies, forming dies, stamping dies, precision tools, plastic molds, ball screws, punches, thread roll dies
ASTM A681, FED QQ-T-570, SAE J437, SAE J438, UNS T41901	Industrial	Punches, chisels, tools, shear blades, slitter knives, coining dies
ASTM A681, FED QQ-T-570, SAE J437, SAE J438, UNS T41905	Industrial	Pneumatic tools, shear blades, mandrels, heavy-duty punches, and stamping dies
	Industrial	Shear blades, swaging dies, gripper dies, chisels, punches, plastic injection molds, hot work tools

ASTM A681	Industrial	Cutting tools, milling cutters, end mills, form tools
	Industrial	Cutting tools, milling cutters, end mills, form tools, saws, knives
DIN 1.2510, B.S. BO 1, ASTM A681, FED QQ-T-570, SAE J437, SAE J438, UNS T31501	Industrial	Gauges, cutting tools, woodworking tools
ASTM A681, FED QQ-T-570, SAE J437, SAE J438, UNS T31506	Industrial	Thread gauges, cams, sleeves, forming rolls, dies, arbors, other machine tool parts
ASTM A681, UNS T61206, SAE J437, SAE J438	Industrial, Automotive & Transportation	Arbors, clutch parts, dis saws, drift pins, swages, hubs, shear blades
ASTM A681, DIN 1.2379, SAE J437, SAE J438	Industrial	Shear blades, planer blades, knife blades, industrial cutting tools

ASTM A276	Aerospace, Industrial, Automotive & Transportation, Energy	Knife blades, shear blades, scissors, hand tools, cutlery, surgical equipment
ASTM A681		Plastic molds, backers, hydro forming mold tools
ASTM A681		Extrusion tooling, bolsters, forging dies, die inserts, mandrels
AISI A11	Industrial	Blanking dies, forming dies, screw tips, wear inserts, shear blades, woodworking tools, slitter knives
	Industrial	Broaches, End Mills, Form Tools, Hobs, Tabs, and Cut Off Blades
ASTM A600, SAE J438, SAE J437, UNS T11304	Industrial	Cutting tools, punches, dies, shears, compacting tools, milling tools, broachers

	Industrial	fixtures, mounting plates, pinions, bending, crimping, swaging
ASTM 36	Industrial, Automotive & Transportation, Energy	bridges, buildings, general structural applications, automotive components, oil and gas structures

Forms

Bar, Rectangular Bar,
Plate, Tubing, Sheet,
Strip,
Coil

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