



ALLOY STEELS AND SPECIAL METALS

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**Carbon Steels**

	<b>K1022</b>	AISI C1022 C1522	Low strength and high ductility. Typical U.T.S. 360-560 M.P.A. Excellent weldability. Reasonable machinability. Can be carburised. End use: Lightly stressed parts.
	<b>K1045</b>	AISI C1045 DIN 1.0503 1.1191	Medium strength and good ductility. Typical U.T.S. 570-700 M.P.A. Good machinability. Care needed welding. Can be flame/ind. hardened. End use: Medium stressed parts.

**Bright Steels**

	<b>M1020</b>	AISI C1020 DIN 1.0402 1.1152	Low strength and high ductility. Typical U.T.S. 410-790 M.P.A. Excellent weldability. Good machinability. Can be carburised. End use: Lightly stressed parts.
	<b>M1030</b>	AISI C1030 1.0528 1.1178	Low/medium strength and good ductility. Typical U.T.S. 500-850 M.P.A. Good machinability. Good weldability. Low hardenability. End use: Light/medium stressed parts.
	<b>M1045</b>	AISI C1045 DIN 1.0503 1.1191	Medium strength and good ductility. Typical U.T.S. 600-950 M.P.A. Good machinability. Care needed welding. Can be flame/ind. hardened. End use: Medium stressed parts.
	<b>S1214</b>	AISI 1213/1215 DIN 1.0715	Low strength and moderate ductility. Typical U.T.S. 370-760 M.P.A. Excellent machinability. Care needed welding. Can be carburised. End use: Very lightly stressed parts.
	<b>S12L14</b>	AISI 12L14 DIN 1.07185	Premium grade of free cutting steel. Typical U.T.S. 370-760 M.P.A. Suitable for case hardening used for automotive components.

**Tool Steels**

	<b>D2</b>	AISI D2 DIN 1.2379	12% Chrome steel, high resistance against abrasive wear, dimensionally stable, for cold punches, dies, shear blades, deep drawing, thread rolling dies, fine cutting tools.
	<b>D3</b>	AISI D3 DIN 1.2080	12% Chrome steel, high wear resistance, highly stress cutting and punching tools for thin sheet, profile rolls, paper knives, drawing and deep drawing dies.
	<b>D6</b>	AISI D6 DIN 1.2346	12% Chromium steel with very high wear resistance. End use: Blanking dies, deep drawing tools, stamps and rolls.
	<b>H13</b>	AISI H13 DIN 1.2344	High strength hot work steel such as extrusion and forging dies, pressure casting tools, hot shear knives, tools for the plastic industry, also available in EFS and ESR.
	<b>O1</b>	AISI O1 DIN 1.2510	Medium alloyed cold work steel, good hardening capacity, high wear resistance, for cutting and punching tools, shear knives, thread rolling and measuring tools.
	<b>P20</b>	AISI P20 DIN 1.2311	Plastic mould steel, supplied in the HT condition, for plastic moulds, frames for pressure dies, hydro forming tools, can be nitrided.
	<b>S1</b>	AISI S1 DIN 1.2550	Cold work tool steel with very good toughness, dimensionally stable, high hardness capacity, cold shear knives, paper and wood cutting knives, ejector pins.
	<b>S7</b>	AISI S7 DIN 1.2357	High impact steel with high hardenability and excellent shock resistance. End use: Shear blades, collets, decasting dies, extrusion dies, punches, cold forming dies.

**Case Hardening Steels**

	<b>8620</b>	AISI 8620 DIN 1.8523	General purpose grade with good machinability/weldability. Carb. & H.T.: Case hardness typical RC 62. Core: Good strength and toughness. End use: Lightly stressed parts.
	<b>X4317</b>	AISI 4317 DIN 1.7210	High strength grade with good machinability/weldability. Carb. & H.T.: Case hardness typical RC 62. Core: High strength and good toughness. End use: Moderate/highly stressed parts.
	<b>EN36A</b>	AISI E3310 9310 DIN 1.5752	High nickel grade with good machinability/weldability. Carb. & H.T.: Case hardness typical RC 62. Core: High strength and excellent toughness. End use: Highly stressed parts.
	<b>EN39B</b>	AS 1444 X3915 DIN 1.6723 SAE 9315	High nickel grade with exceptionally high hardenability, good machinability. Case hardened typical RC 62. Core: Very high core strength and toughness.

**High Tensile Steels**

	<b>4140</b>	AISI 4140 DIN 1.7220	High strength and good toughness with typical U.T.S. 850-1000 M.P.A. Can be flame/ind. hardened or nitrided. Good machinability. End use: Medium to highly stressed parts.
	<b>4340</b>	AISI 4340 DIN 1.6565	High strength and good toughness with typical U.T.S. 930-1080 M.P.A. Can be flame/ind. hardened or nitrided. Good machinability. End use: Highly stressed parts.
	<b>EN26</b>	AS X9840 DIN 1.6745	High strength plus good toughness and fatigue resistance with typical U.T.S. 1000-1150 M.P.A. Can be flame/ind. hardened or nitrided. Good machinability. End use: Severely stressed parts.
	<b>4145H</b>	SAE J1268 ASTM A304 DIN 1.7225	1% Chrome Moly high tensile steel to API7 specification for oilfield applications.

**Chrome Bar**

	<b>K1045</b>	AISI C1045 DIN 1.0503 1.1191	A medium carbon steel hard chrome plated to a thickness of 0.025/0.050mm and surface hardness of HV1000-1150. Good machinability. Care needed welding. End use: Hydraulic cylinders, etc.
	<b>K1045 I.H.</b>	AISI C1045 DIN 1.0503 1.1191	A medium carbon steel induction hardened to a case depth of 3-2mm and hardness of RC 55-65 before chrome plating (as above). End use: Parts resistant to surface impact.
	<b>4140</b>	AISI 4140 DIN 1.7223 1.7225	A chrome moly steel with typical U.T.S. 850-1000 M.P.A. Chrome plated (as above). Good machinability. End use: Highly stressed hydraulic parts, etc.

**Hollow Bar**

	<b>20MnV6</b>	DIN 1.5217	A low carbon-manganese-vanadium steel with typical U.T.S. 500-750 M.P.A. Excellent machinability and weldability. Can be carburised or nitrided. Used: Medium stressed parts.
	<b>4140</b>	AISI 4140 DIN 1.7212 1.7200	A chrome moly steel with typical U.T.S. 850-1100 M.P.A. Can be flame/ind. hardened or nitrided. Good machinability. Used: Medium/highly stressed parts.
	<b>316L</b>	AISI 316L DIN 1.4401 1.4436	An Austenitic stainless steel with excellent corrosion resistance. Excellent weldability. Reasonable machinability. Used by Chemical and Transport industries.
	<b>EN 20MnV6</b>	DIN 1.5217	A low carbon-manganese-vanadium steel produced to the Euro Norm size range of EN 10294-1:2005 (refer our website for further details).
	<b>EN 4140</b>	AISI 4140 DIN 1.7212 1.7200	A high tensile chrome moly steel produced to the Euro Norm size range of EN 10294-1:2005 (refer our website for further details).

**Stainless Steels**

**Austenitic Grades**

	<b>303</b>	AISI 303 DIN 1.4305	Free machining grade with excellent machinability. Corrosion resistance lowest of all Austenitic grades. Welding not recommended. Used: Where extensive machining is involved.
	<b>304</b>	AISI 304 DIN 1.4301	General purpose grade with improved machinability. Corrosion resistance higher than 303, lower than 316. Readily welded. Main use: Domestic, dairy appliances.
	<b>316/316L</b>	AISI 316 DIN 1.4401 1.4436	Marine grade with improved machinability. Corrosion resistance higher than 321 or 304. 316L (low carbon) has excellent weldability. Used by: Marine and Chemical industries.
	<b>321</b>	AISI 321 DIN 1.4541	Titanium stabilised grade with reasonable machinability. Corrosion resistance similar 304, lower than 316. Excellent weldability, resists scaling up to 800°C plus. Used when welding or high temperature involved.

**Martensitic Grades**

	<b>410</b>	AISI 410 DIN 1.4006	Standard grade with typical U.T.S. 700-850 M.P.A. Corrosion resistance similar 420, lower than 431. Extreme care needed welding. Used in Medium tensile parts.
	<b>416</b>	AISI 416 DIN 1.4005	Free machining grade with typical U.T.S. 550-700 M.P.A. Corrosion resistance the lowest of the Martensitic grades. Excellent machinability. Welding not recommended. Used where extensive machining involved.
	<b>420</b>	AISI 420 DIN 1.4021 4028	Medium carbon grade with typical U.T.S. 700-930 M.P.A. Corrosion resistance similar to 410. Good machinability. Welding not recommended. Used in pump and valve parts, etc.
	<b>431</b>	AISI 431 DIN 1.4057	Low nickel grade with typical U.T.S. 850-1000 M.P.A. Corrosion resistance approaching 302. Good machinability. Welding not recommended. Used in high tensile parts.
	<b>440C</b>	AISI 440C DIN 1.4125	High carbon grade supplied fully annealed. Low machinability. Do not weld. Can be H & T to RC 55-60 with excellent wear resistance. Corrosion resistance best H & T. Used in surgical knives, etc.

**Precipitation Hardened**

	<b>630</b>	AISI 630 DIN 1.4542 1.4548	Martensitic age hardening grade. Typical U.T.S. 930-1100 M.P.A. Corrosion resistance similar to 304. Reasonable machinability. Good weldability. Used where strength and corrosion resistance required.
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**Duplex**

	<b>2205</b>	ASTM A276-98b DIN 1.4462	Ferritic/Austenitic grade with high YS. Typical 570 M.P.A. Corrosion resistance higher than 316L/316. Reasonable machinability. Good weldability. Used where high strength/corrosion resistance required.
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**Cast Iron**

	<b>2P</b>	AS 1830 T260	A grey cast iron hollow bar with typical U.T.S. 220-260 M.P.A. Excellent wear resistance. Very good machinability. Used: Piston rings, cylinder liners, etc.
	<b>3D</b>	AS 1831 400-250-12	A spheroidal graphite cast iron with typical U.T.S. 415 M.P.A. Excellent machinability, shock and fatigue resistance. Used: Gears, moulds, etc.
	<b>4E</b>	AS 1830 T260	A grey cast iron with typical U.T.S. 220-260 M.P.A. Excellent machinability. Good wear resistance. Used: Pistons, pulleys, bushings, etc.

**Bronze**

	<b>AB1</b>	AS C95210	An aluminium bronze with typical U.T.S. 500 M.P.A. Very good corrosion resistance. Good machinability. Used: Marine, oil and chemical industries.
	<b>L62</b>	AS C83600	A leaded gunmetal bronze with typical U.T.S. 270 M.P.A. Excellent machinability. Good corrosion resistance. Used: Bushings, bearings, valve/pump bodies.
	<b>PB1</b>	AS C90710	A phosphor bronze with typical U.T.S. 360 M.P.A. Very good corrosion resistance. Good toughness. Used: Gears, bearings and bushes.

**Cylinder Tube**

	<b>UNHONED</b>	Supplied with undersized I.D. suitable for honing to finished diameter. Agricultural & Industrial cylinders.
	<b>READY TO USE (SSID)</b>	Economical alternative to a honed finish, specially drawn tubes drawn for use in less critical applications, i.e. agricultural cylinders.
	<b>HONED</b>	I.D. pre-honed to size. Precision finish suitable for agricultural & Industrial hydraulic applications.
	<b>SKIVED &amp; ROLLER BURNISHED</b>	Thin layers of material removed from I.D. by knives "skiving" Followed by rollers "burnishing" ensuring a smooth finish.

**Feedline Tube**

	<b>ST37.4</b>	ASTM A179/A450 DIN 1.0255	Ideally suited for hydraulic/pneumatic applications where both bending and flaring is normally required.
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**Aluminium**

	<b>2011T6</b>	DIN 3.1655	General purpose free machining grade. Not suitable for anodising.
	<b>6061T6</b>	DIN 3.3211	High strength, corrosive resistant. Aircraft, marine, automotive and electrical parts. Can be anodised.
	<b>6026T6</b>		Good corrosion resistance. Automotive components. Can be anodised.

**Brass**

	<b>385</b>	DIN 1.7672 ASTM B455	Specifically developed for the mass production of brass components in high speed lathes. End use: Nuts, bolts, screw threads.
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\*NC Signifies no colour code. Colour coding should only ever be used as a secondary source of identification.

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