

Metal Grade Cross Reference

AISI / SAE · EN · DIN W-Nr. · JIS · GB — 46 grade rows

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Family	US (AISI / SAE / UNS)	EN	DIN W-Nr.	JIS	GB (current)	GB (old)	Match	Note
Aluminum	6061-T6 (UNS A96061)	EN AW-6061 / AlMg1SiCu	3.3214	A6061	6061	LD30	Exact	The default general-purpose machining alloy. Good strength, weldable, anodizes predictably.
Aluminum	6082-T6	EN AW-6082 / AlSi1MgMn	3.2315	A6082	6082	—	Exact	EU equivalent of 6061 with slightly higher strength. Common on European drawings.
Aluminum	7075-T6 (UNS A97075)	EN AW-7075 / AlZn5.5MgCu	3.4365	A7075	7A09	LC9	Closest	Highest strength of the common grades. GB 7A09 limits differ slightly from 7075 — confirm before substituting.
Aluminum	2024-T4 (UNS A92024)	EN AW-2024 / AlCu4Mg1	3.1355	A2024	2A12	LY12	Closest	High strength, poor corrosion resistance. GB 2A12 is the Chinese equivalent — close, but not identical.
Aluminum	5052-H32	EN AW-5052 / AlMg2.5	3.3523	A5052	5052	LF2	Exact	Best formability and corrosion resistance of the common machining grades. Lower strength.
Aluminum	3003-H14	EN AW-3003 / AlMn1Cu	3.0517	A3003	3003	LF21	Exact	Low cost and weldable, but low strength. Used for covers and non-structural brackets.
Aluminum	7050-T7451	EN AW-7050 / AlZn6CuMgZr	3.4345	A7050	7050	—	Exact	Thick airframe blocks. Lower residual stress in thick section than 7075.
Aluminum	MIC-6 (cast tooling plate)	—	—	—	—	—	Special	Cast plate, not a wrought alloy. Chosen for flatness and dimensional stability, not strength.
Aluminum	2017-T4 (UNS A92017)	EN AW-2017A / AlCu4MgSi	3.1325	A2017	2A11	LY11	Closest	High-strength rivet alloy, largely replaced by 2024 in new design. GB 2A11 is the current designation for the older LY11.
Stainless steel	303 (UNS S30300)	EN 1.4305 / X8CrNiS18-9	1.4305	SUS303	Y1Cr18Ni9	—	Exact	Free-machining austenitic grade. Best machinability of the 300 series, slightly lower corrosion resistance.
Stainless steel	304 (UNS S30400)	EN 1.4301 / X5CrNi18-10	1.4301	SUS304	06Cr19Ni10	0Cr18Ni9	Exact	General-purpose austenitic grade. Work-hardens aggressively — sharp edges and constant feed matter.
Stainless steel	304L (UNS S30403)	EN 1.4307 / X2CrNi18-9	1.4307	SUS304L	022Cr19Ni10	00Cr19Ni10	Exact	Low-carbon 304 for welded assemblies. Slightly lower strength, better intergranular corrosion resistance.
Stainless steel	316 (UNS S31600)	EN 1.4401 / X5CrNiMo17-12-2	1.4401	SUS316	06Cr17Ni12Mo2	0Cr17Ni12Mo2	Exact	Molybdenum grade for chloride and marine service. The default for medical and food contact.
Stainless steel	316L (UNS S31603)	EN 1.4404 / X2CrNiMo17-12-2	1.4404	SUS316L	022Cr17Ni12Mo2	00Cr17Ni14Mo2	Exact	Low-carbon 316. The grade most often specified on drawings as 316L.
Stainless steel	321 (UNS S32100)	EN 1.4541 / X6CrNiTi18-10	1.4541	SUS321	06Cr18Ni11Ti	0Cr18Ni10Ti	Exact	Titanium-stabilised for elevated temperature service. Machines similarly to 304.
Stainless steel	410 (UNS S41000)	EN 1.4006 / X12Cr13	1.4006	SUS410	12Cr13	1Cr13	Exact	Martensitic, heat-treatable. Machines well in the annealed condition.
Stainless steel	420 (UNS S42000)	EN 1.4021 / X20Cr13	1.4021	SUS420J1	20Cr13	2Cr13	Closest	AISI 420 spans the JIS 420J1/J2 and GB 20Cr13/30Cr13 range. State the hardness you need.
Stainless steel	430 (UNS S43000)	EN 1.4016 / X6Cr17	1.4016	SUS430	10Cr17	1Cr17	Exact	Ferritic and magnetic. Good machinability, moderate corrosion resistance.
Stainless steel	440C (UNS S44004)	EN 1.4125 / X105CrMo17	1.4125	SUS440C	95Cr18	9Cr18	Exact	High-carbon martensitic for bearings and valves. Usually supplied hardened; grinding is the finishing operation.
Stainless steel	17-4 PH (UNS S17400 / 630)	EN 1.4542 / X5CrNiCuNb16-4	1.4542	SUS630	05Cr17Ni4Cu4Nb	0Cr17Ni4Cu4Nb	Exact	Precipitation hardening. Machined in the annealed condition, then aged to H900-H1150.
Stainless steel	2205 duplex (UNS S32205)	EN 1.4462 / X2CrNiMoN22-5-3	1.4462	SUS329J3L	022Cr23Ni5Mo3N	00Cr22Ni5Mo3N	Exact	Duplex. Roughly twice the yield strength of 316L with better chloride resistance. Lower machinability.

Family	US (AISI / SAE / UNS)	EN	DIN W-Nr.	JIS	GB (current)	GB (old)	Match	Note
Carbon and alloy steel	1018 (UNS G10180)	EN C15 / CK15 (closest)	1.1141	S15C	15	—	Closest	Low-carbon, weldable, easy to machine. No exact EN or GB equivalent — quoted as a family, not a grade.
Carbon and alloy steel	1045 (UNS G10450)	EN C45 / CK45	1.0503	S45C	45	—	Exact	Medium-carbon for shafts and gears. Usually supplied normalized or induction hardened.
Carbon and alloy steel	1144 (UNS G11440)	Stressproof — no EN equivalent	—	—	—	—	Special	Resulphurized medium-carbon steel supplied in a stress-relieved condition. Chosen to avoid heat treatment.
Carbon and alloy steel	4140 (UNS G41400)	EN 42CrMo4	1.7225	SCM440	42CrMo	—	Exact	The workhorse alloy steel for shafts and housings. Supplied pre-hardened (28-32 HRC) or Q&T.
Carbon and alloy steel	4340 (UNS G43400)	EN 36CrNiMo4	1.6511	SNCM439	40CrNiMoA	—	Closest	Nickel-chrome-moly for high-section thickness. GB 40CrNiMoA is the closest Chinese grade.
Carbon and alloy steel	12L14 (UNS G12144)	EN 11SMnPb30	1.0718	SUM24L	Y15Pb	—	Closest	Leaded free-cutting steel for high-volume turned parts. Carbon and lead ranges differ between standards, so GB Y15Pb is the nearest listing rather than an identical grade.
Tool and high-speed steel	A2 (UNS T30102)	EN X100CrMoV5-1	1.2363	SKD12	Cr5Mo1V	—	Exact	Air-hardening tool steel for blanking dies. Low distortion on hardening.
Tool and high-speed steel	D2 (UNS T30402)	EN X153CrMoV12	1.2379	SKD11	Cr12Mo1V1	Cr12MoV	Closest	Wear-resistant cold-work steel. GB Cr12Mo1V1 matches D2; the older Cr12MoV has lower vanadium and is not equivalent.
Tool and high-speed steel	M2 (UNS T11302)	EN HS6-5-2	1.3343	SKH51	W6Mo5Cr4V2	—	Exact	Molybdenum high-speed steel for cutting tools and wear parts.
Tool and high-speed steel	O1 (UNS T31501)	EN 100MnCrW4	1.2510	SKS3	9CrWMn	—	Exact	Oil-hardening cold-work steel. Low distortion on hardening, so it is chosen when the part cannot be ground afterwards.
Tool and high-speed steel	H13 (UNS T20813)	EN X40CrMoV5-1	1.2344	SKD61	4Cr5MoSiV1	—	Exact	Hot-work tool steel for die casting and extrusion tooling. Supplied annealed, then hardened to 44-52 HRC.
Titanium	Grade 2 (UNS R50400)	EN Ti-2 / 3.7035	3.7035	JIS Class 2	TA2	—	Exact	Commercially pure. Best corrosion resistance and formability of the CP grades, lowest strength.
Titanium	Grade 5 (UNS R56400 / Ti-6Al-4V)	EN TiAl6V4 / 3.7165	3.7165	JIS Class 60	TC4	—	Exact	The workhorse titanium alloy. Poor thermal conductivity — coolant and feed discipline decide tool life.
Titanium	Grade 7 (UNS R52400 / Ti-0.2Pd)	EN Ti-0.2Pd / 3.7235	3.7235	—	TA9	—	Exact	Palladium-stabilised CP titanium for reducing acids and chloride service.
Copper and brass	C11000 (ETP copper)	EN Cu-ETP	CW004A	C1100	T2	—	Exact	Electrolytic tough pitch copper for busbars and heat sinks. Gummy to machine — expect built-up edge.
Copper and brass	C36000 (free-cutting brass)	EN CuZn36Pb3	CW603N	C3604	HPb59-1	—	Closest	100% machinability rating. Lead content differs: C36000 is 2.5-3.7% Pb, GB HPb59-1 is 0.8-1.9%.
Copper and brass	C93200 (SAE 660 bearing bronze)	EN CuSn7Zn4Pb7-C	CC493K	—	ZCuSn6Zn6Pb3	ZQSn6-6-3	Closest	Bearing bronze for bushings and wear plates. Chemistry varies more than the name suggests — check the certificate.
Copper and brass	C17200 (beryllium copper)	EN CuBe2	CW101C	—	QBe2	—	Exact	High strength and conductivity. Beryllium dust is a health hazard — machining requires extraction and controls.
Nickel and controlled-expansion alloys	Inconel 718 (UNS N07718)	EN NiCr19Fe19Nb5Mo3	2.4668	—	GH4169	—	Exact	Trade name; UNS N07718 is the generic designation. Age-hardening Ni-Cr alloy, the default where stainless runs out of temperature capability. Work-hardens fast - keep the cut engaged and never dwell.
Nickel and controlled-expansion alloys	Inconel 625 (UNS N06625)	EN NiCr22Mo9Nb	2.4856	—	GH3625	—	Exact	Solid-solution Ni-Cr-Mo-Nb. No age-hardening step and better weldability than 718; specified for seawater and chemical service.
Nickel and controlled-expansion alloys	Hastelloy C-276 (UNS N10276)	EN NiMo16Cr15W	2.4819	—	—	—	Exact	Trade name. The chloride-service alloy - resists pitting and crevice corrosion where stainless fails. No GB or JIS listing is given here; specify by UNS or W-Nr.

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Nickel and controlled-expansion alloys	Monel 400 (UNS N04400)	EN NiCu30Fe	2.4360	—	—	—	Exact	Ni-Cu alloy for seawater and hydrofluoric acid service. Work-hardens quickly - sharp tools and a light, consistent feed.
Nickel and controlled-expansion alloys	Invar 36 (UNS K93600)	EN FeNi36	1.3912	—	4J36	—	Exact	36% nickel iron-nickel alloy with near-zero thermal expansion around room temperature. Chosen for metrology and optical fixtures, not for strength.
Magnesium	AZ31B (UNS M11311)	—	—	AZ31B	—	—	Closest	Wrought magnesium plate and bar. JIS H 4201 uses the same alphanumeric designation. No EN number - specify by composition and temper.
Magnesium	AZ91D (die casting)	—	—	AZ91D	—	—	Closest	Die-cast magnesium, not a wrought grade; parts are machined from a casting rather than bar. JIS H 5303 uses the same designation.

Match column: Exact = equivalent grade under both systems; Closest = near-equivalent, verify mechanical properties before substitution; Special = application-specific, no direct cross-reference. A dash means no established cross-reference was confirmed — do not infer one.