VALTOR Fastener Material & Grade Reference

Stainless steel fastener grades, special alloys and carbon/alloy-steel property classes

Buyer reference only. Material designation, ISO fastener grade family and mechanical property class are separate requirements. When exact chemistry matters, specify the alloy designation and required material certificate.

1. Common Stainless Steel Materials for Fasteners

Material	UNS / EN	Structure	ISO Fastener Relation	Typical Selection Cue	Service / Temperature Note	Procurement Note
304 / 304L	S30400 / S30403 / 1.4301 / 1.4307	Austenitic	Commonly within A2 / A2L family	General-purpose stainless; atmospheric, food-equipment and general industrial use	Use ISO 3506 property class separately (e.g. A2-70).	A2 is a fastener grade family, not a guarantee that every A2 fastener is exactly Type 304. Request actual material/MTC when chemistry matters.
316 / 316L	S31600 / S31603 / 1.4401 / 1.4404	Austenitic Cr-Ni-Mo	Commonly within A4 / A4L family	Higher corrosion-resistance demand; commonly selected for coastal/chloride and process environments	Use ISO 3506 property class separately (e.g. A4-70 / A4-80).	A4 is a fastener grade family; specify 316/316L chemistry explicitly when required.
321	S32100 / 1.4541	Austenitic, Ti-stabilized	A3 material family	Elevated-temperature / welded applications where stabilization against intergranular corrosion is useful	Material datasheets support elevated-temperature use; final fastener mechanical class must still be specified.	Do not substitute A2-70 wording for a 321 material requirement.
410	S41000 / 1.4006	Martensitic	C1 relation for ISO 3506-1 tensile fasteners; tapping screws use ISO 3506-4	Higher hardness / hardenability; common material family for drilling or cutting-function stainless screws	Corrosion behaviour differs materially from 304/316 austenitic grades.	For self-drilling/tapping screws, specify the applicable screw standard and hardness class rather than assuming an A2/A4 property class.
2205 Duplex	S31803 / S32205 / 1.4462	Duplex	D6	High mechanical strength and improved resistance to chloride SCC, pitting and crevice corrosion	ISO 3506-6 describes D6 as standard duplex; not recommended outside about -40 °C to +280 °C without specific assessment.	Specify D6 property class (70/80/100) separately from the 2205 material designation.
2507 Super Duplex	S32750 / 1.4410	Super-duplex	D8	Highly corrosive chloride environments, seawater/desalination and high-strength service	ISO 3506-6 describes D8 as super-duplex.	Specify D8 property class (70/80/100) and actual material certification.
310S	S31008 / 1.4845	Austenitic heat-resisting	Special material; do not assume a normal A2/A4 ISO 3506-1 grade symbol	High-temperature oxidation service	Outokumpu lists very good oxidation resistance and use up to about 1050 °C for the material; fastener design at temperature requires a suitable high-temperature specification.	Specify material + mechanical requirements/project standard. Consider ISO 3506-5 for applicable high-temperature fasteners.
904L	N08904 / 1.4539	High-alloy austenitic	Special material; do not assume A2/A4 equivalence	Severe corrosion service in chemical/process applications	High alloy content improves corrosion resistance relative to standard austenitic grades.	Specify 904L chemistry, mechanical requirements and certification explicitly; do not infer a property class from the alloy name alone.

2. ISO 3506 Stainless Fastener Grade / Property Class Quick Guide

Grade Family	Typical Material Examples	Property Class(es)	Rm min (MPa)	Rp0.2 / Rpf min (MPa)	Condition / Meaning	Buyer Note
A2 / A3	304-family / 321-family examples	50 / 70 / 80	500 / 700 / 800	210 / 450 / 600	50 soft; 70 soft/work hardened; 80 work hardened high strength	Property class is mechanical strength, not corrosion resistance.
A4 / A5	316-family / stabilized Mo-bearing examples	50 / 70 / 80 / 100	500 / 700 / 800 / 1000	210 / 450 / 600 / 800	Higher classes rely on work hardening / manufacturing condition	Availability depends on fastener geometry, diameter and manufacturing route.
D6	2205 / 1.4462	70 / 80 / 100	700 / 800 / 1000	450 / 600 / 800	Duplex; soft/work hardened or high-strength work hardened	Material grade and property class should both appear on the purchase specification.
D8	2507 / 1.4410	70 / 80 / 100	700 / 800 / 1000	450 / 600 / 800	Super-duplex	Do not use D8 as a generic synonym for every super-duplex chemistry.

3. Carbon / Alloy Steel Property Classes — Supplemental Reference

ISO Property Class	Nominal Tensile Strength (MPa)	Nominal Yield Ratio	Nominal Yield Strength (MPa)	Typical Buyer Use	Reference
4.6	400	0.6	240	General low/medium-strength metric fasteners	ISO 898-1:2013
8.8	800	0.8	640	Common high-strength metric structural / machinery fasteners	ISO 898-1:2013
10.9	1000	0.9	900	Higher-strength machinery / engineered joints	ISO 898-1:2013
12.9	1200	0.9	1080	Very high-strength alloy-steel fasteners, often socket products	ISO 898-1:2013

4. Common U.S. Fastener Material Specifications — Separate Purchasing Standards

Standard	Edition / Status	Product Scope	Typical Use	Cross-Reference Rule	Source
ASTM F593	F593-24 active	Stainless steel bolts, hex cap screws and studs; inch series	General corrosion-resistant stainless fasteners	Do not convert an ASTM alloy group/condition directly into A2/A4 property class without checking chemistry + mechanical requirements.	ASTM
ASTM F594	F594-24 active	Stainless steel nuts	Nuts for general corrosion-resistant stainless applications	Match nut alloy/mechanical requirements to the external fastener specification.	ASTM
ASTM A193/A193M	A193/A193M-26 active	Alloy/stainless bolting for high temperature/high pressure/special purpose	Pressure vessels, valves, flanges, high-temperature/high-pressure bolting	Application-specific standard; not a general ISO 3506 replacement.	ASTM
ASTM A320/A320M	A320/A320M-26 active	Alloy/stainless bolting for low-temperature service	Low-temperature pressure equipment bolting	Application-specific standard; impact/toughness requirements matter.	ASTM

Ordering rule: specify PRODUCT STANDARD + MATERIAL / FASTENER GRADE + PROPERTY CLASS + SIZE / THREAD + SURFACE / FINISH + REQUIRED CERTIFICATE. Example: ISO 4017, A4-80, M10×1.5×40, passivated, EN 10204 3.1.