

► GENERAL DESCRIPTION

S46500 (Custom 465) is a vacuum-refined precipitation-hardening stainless steel. After aging heat treatment, it provides high strength, excellent toughness, and good corrosion resistance.

Even in the high-strength condition, the material maintains good dimensional stability and processing adaptability, making it suitable for aerospace and other high-end engineering applications.

► DESIGNATIONS & STANDARDS

ASTM	UNS	EN 10088
A564/F899/A693	S46500	X1CrNiMoAlTi12-11-2

► PRODUCT FORMS & APPLICABLE STANDARDS

Product Form	Applicable Standards
Plate / Sheet	ASTM F899 Class 5; ASTM A693
Bar / Rod	ASTM F899 Class 5 ; ASTM A564; AMS 5936;
Wire	ASTM F899 Class 5; ASTM A564
Tube / Pipe	ASTM F899 Class 5;

► CHEMICAL COMPOSITION (MASS %) *In accordance with: [ASTM F564]*

Element	C	Mn	P	S	Si	Cr	Ni	Mo	Ti	N	Fe
Content (%)	≤0.02	≤0.25	≤0.015	≤0.010	≤0.25	11.00-12.50	10.75-11.25	0.75-1.25	1.50-1.80	≤0.01	Balance

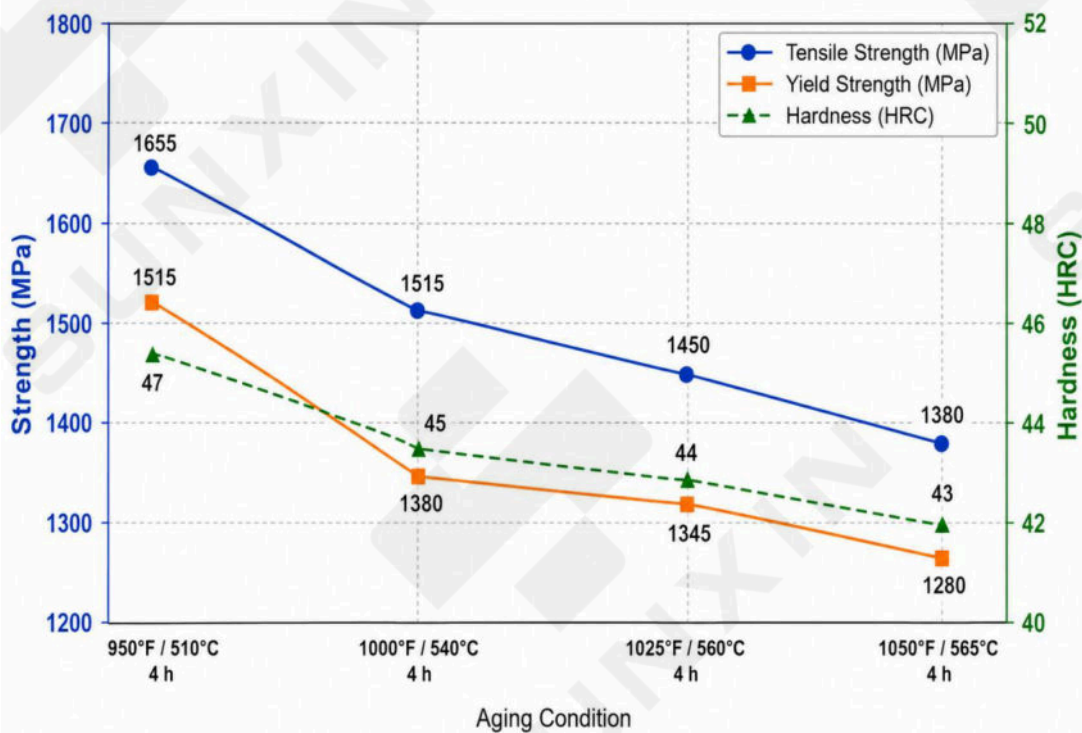
► SOLUTION TREATMENT

Condition	Heating Temperature	Holding Time (h)	Tensile Strength (MPa)	Yield Strength (MPa)	Elongation (4D)	Reduction of Area (%)	Hardness (HRC)
Solution Annealed	1800 ± 25 °F /980 ± 15 °C	1	/	/	/	/	≤36

► AGING TREATMENT

Condition	Heating Temperature	Holding Time (h)	Tensile Strength (MPa)	Yield Strength (MPa)	Elongation (4D)	Reduction of Area (%)	Hardness (HRC)
Aged	950°F/510°C	4	≥1655	≥1515	10	45	≥47
Aged	1000°F/540°C	4	≥1515	≥1380	10	50	≥45
Aged	1025°F/560°C	4	≥1450	≥1345	12	50	≥44
Aged	1050°F/565°C	4	≥1380	≥1280	13	50	≥43
CW 1/2hard +aging	890°F/475°C	1	≥1690	≥1500	6	/	≥48
CW full hard+aging	890°F/475°C	1	≥2205	≥2005	2	/	≥55

Effect of Aging Treatment on Strength and Hardness



► APPLICATIONS

Condition	Dimension
Medical	High-strength surgical tools / Dental instruments / Guide pins / Micro shafts / Medical device elastic parts
Aerospace	Fasteners / Pin shafts / Shaft components / Transmission components / High-strength small structural parts
Industrial	Springs / Valve parts / Pump shafts / Fasteners / Precision mechanical parts
Mechanical engineering	High-strength micro shafts / Gripper connecting pins / Elastic connectors / Corrosion-resistant transmission components

► AVAILABLE FORMS

Available Form	Size Range	Surface Finish	Length (Customizable)	Tolerance (Customizable)	Delivery Condition
Plate	T0.5-T200.0mm	Milled	L:200/250/300 W:200/300/500/1000	-0.0/+1.0mm	Solution Annealed
Bar	φ1.0-φ200.0mm	Ground / Precision Polished	3M/PCS	h6-h9	Solution Annealed
Wire	φ1.0-φ3.0mm	Ground / Precision Polished	1M/PCS	h6-h9	Solution Annealed
Tube	OD: 1.0-10.0mm ID:0.08mm-2.0mm	Ground / Precision Polished	3M/PCS	h6-h9	Solution Annealed

Materials/ specifications or special requirements not shown in the table can all be customized. Please contact our sales team.

► TESTING & CERTIFICATION

TESTING CAPABILITIES	QUALITY & TRACEABILITY
- Chemical: OES · O/N/H analyzer - Mechanical: tensile · Rockwell/Vickers · impact - NDT: ultrasonic testing (UT) - Metallography: optical & electron microscope - Dimensional: straightness / roundness / coaxiality	- ERP full-process traceability · heat-number control - Batch consistency control - Third-party testing: on request/ at extra cost - Standards: ASTM · ISO · EN · AMS · DIN - MTC with each shipment



*We make no express or implied warranties regarding the above or other uses.**