

TECHNICAL DATASHEET

[AISI 631]

Datasheet No. SX-0016 · Version 260723

► GENERAL DESCRIPTION

631 (17-7PH, UNS S17700) is a typical precipitation-hardening stainless steel that combines high strength, good spring properties, and excellent corrosion resistance. Through solution treatment and age-hardening processes, the material can achieve a balanced combination of strength and toughness under different heat treatment conditions.

It is particularly suitable for applications requiring high strength, fatigue resistance, and dimensional stability.

► DESIGNATIONS & STANDARDS

DIN	ASTM	UNS	EN 10088	JIS
1.4568	A564/F899/AMS 5643	S17700	X7CrNiAl17-7	SUS631

► PRODUCT FORMS & APPLICABLE STANDARDS

Product Form	Applicable Standards
Plate / Sheet	ASTM A693 Type 631; AMS 5528; AMS 5529; EN 10088-1; EN 10088-2; JIS G4305 SUS631
Bar / Rod	ASTM A564 Type 631; ASTM A579 Grade 62; AMS 5644; EN 10088-1; EN 10088-3; JIS G4303 SUS631
Wire	ASTM A313 Type 631; AMS 5678; EN 10088-3;
Tube / Pipe	AMS 5568

► CHEMICAL COMPOSITION (MASS %) *In accordance with: [ASTM F899]*

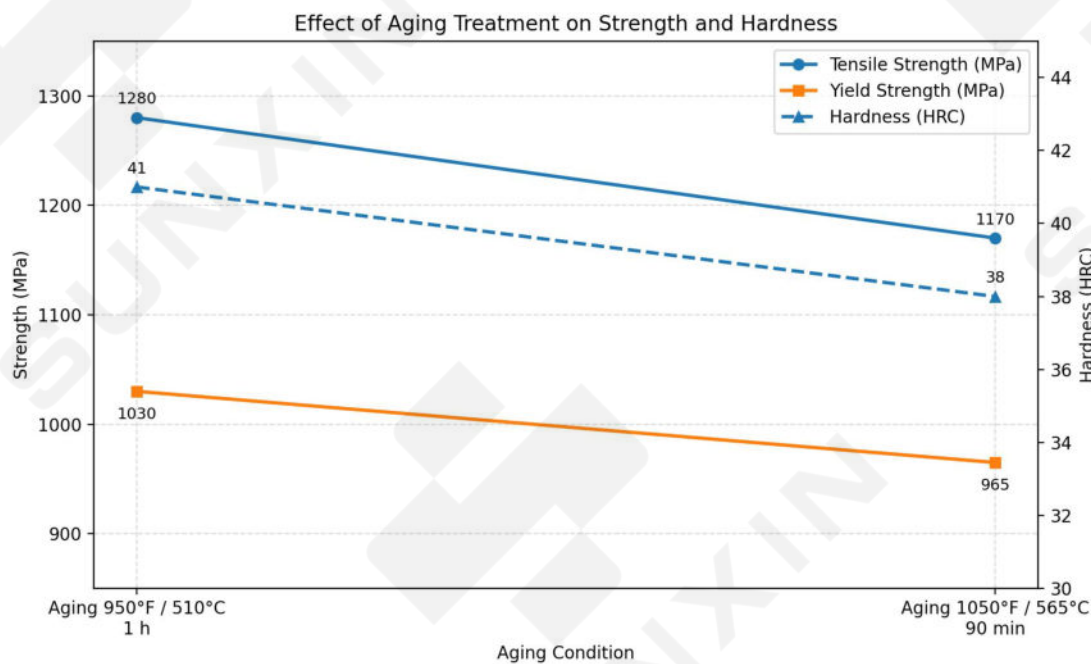
Element	C	Mn	P	S	Si	Cr	Ni	Al	Fe
Content (%)	≤0.09	≤1.00	≤0.04	≤0.03	≤1.00	16.00-18.00	6.50-7.75	0.75-1.50	Balance

► SOLUTION TREATMENT

Condition	Heating Temperature	Holding Time (h)	Tensile Strength (MPa)	Yield Strength (MPa)	Elongation (4D)	Reduction of Area (%)	Hardness (HRC)
Solution Annealed	1900 ± 25 °F/1040±15°C	1	/	/	/	/	≤229

► AGING TREATMENT

Condition	Heating Temperature	Holding Time (h)	Tensile Strength (MPa)	Yield Strength (MPa)	Elongation (4D)	Reduction of Area (%)	Hardness (HRC)
	1750 °F/955 °C	/	/	/	/	/	/
Aged	950°F/510°C	1h	≥1280	≥1030	6	10	≥41
	1400 °F/760 °C	/	/	/	/	/	/
Aged	1050°F/565°C	90min	≥1170	≥965	6	25	≥38



► APPLICATIONS

Condition	Dimension
Medical	Medical spring clips / Springs / Clips / Guidewire auxiliary components / Instrument return springs
Aerospace	Aerospace springs / Washers / Diaphragms / Retaining rings / Fixtures / Lightweight elastic structural components
Industrial	Wave springs / Disc springs / Elastic washers / Sensor spring contacts / Relay spring contacts
Mechanical engineering	Flexible spring clips / Spring contacts / Return springs / Compliant mechanisms / Micro gripper elastic 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

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Stainless Steel · Titanium · Cobalt · Tantalum · Nitinol

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