

08X16H13M2B (ЭИ680) is a versatile austenitic [stainless steel](#) with excellent creep resistance, weldability, and corrosion resistance.

International Equivalents

Country	Standard	Equivalent Grade
USA	ASTM A240	AISI 316H
EU	EN 10088-2	X6CrNiMo17-12-2
Japan	JIS G4303	SUS 316H
China	GB/T 1220	0Cr17Ni12Mo2

Applications

- **Chemical Industry:** Reactors, pipelines (H₂SO₄, HCl environments).
- **Power Plants:** Boiler tubes, turbine parts (up to 700°C).
- **Aerospace:** Exhaust systems, afterburner components.

Equivalent or Similar Grades - Chemical Composition

Element	08X16H13M2B, ЭИ680	AISI 316H	X6CrNiMo17-12-2	SUS 316H
C	≤0.08	0.04-0.10	≤0.08	≤0.08
Cr	15.0-17.0	16.0-18.0	16.5-18.5	16.0-18.0
Ni	12.0-14.0	10.0-14.0	10.5-13.5	10.0-14.0
Mo	2.0-2.5	2.0-3.0	2.0-2.5	2.0-3.0
Mn	≤2.0	≤2.0	≤2.0	≤2.0
Si	≤0.8	≤0.75	≤0.75	≤1.0
Nb	0.7-1.2 (stabilizer)	-	-	-

Mechanical Properties

Room Temperature (Delivery Conditions: +A, +HT, +QT)

Condition	σ_x (MPa)	$\sigma_{0.2}$ (MPa)	δ (%)	HB
Annealed (+A)	490-690	≥205	≥40	≤215
Quenched (+QT)	590-790	≥295	≥35	≤230

High-Temperature Strength (500–700°C)

Temp (°C)	σ_x (MPa)	Creep Limit (10 ⁵ h, MPa)
600	340–380	90–110
700	220–250	40–60

Physical Properties

Property	Value
Density (g/cm ³)	7.9
Melting Point (°C)	1400–1450
Thermal Conductivity (W/m·K)	15.0 (20°C), 22.5 (600°C)
Coefficient of Expansion (10 ⁻⁶ /K)	16.0 (20–600°C)

Heat Treatment

- **Annealing (A):** 1050–1100°C, rapid cooling (water/air) for stress relief.
- **Quenching & Tempering (QT):**
 - Quench: 1100–1150°C → water
 - Temper: 700–750°C → air (for improved toughness)
- **Solution Treatment (HT):** 1150–1200°C → rapid cool (for max corrosion resistance).

Processing Performance

- **Machining:** Use carbide tools, low speeds, and high feeds.
- **Welding:**
 - **Recommended methods:** TIG, MIG, SAW.
 - **Filler metals:** ЭИ680-compatible rods (e.g., ЦТ-15).
 - **Post-weld heat treatment (PWHT):** Stress relief at 850–900°C.