

25 Chrome (UNS S31260)

25 Chrome (UNS S31260), also referred to as 2507 Duplex or Duplex 25 Chrome, is a cold hardened duplex stainless steel intended for corrosion resistance in sweet (CO₂) and mildly sour (H₂S) environments with high chloride content, requiring high strength up to 450°F. 25 Chrome offers increased resistance to the effects of CO₂, chlorides, pH, and temperatures relative to 22 Chrome allowing use as downhole tubular components, packers, and other subsurface equipment in deeper wells with high-pressure and high-temperature (HPHT) conditions where pitting corrosion from high chlorides are a concern.

This alloy is classified in MR0175/ISO15156 as a duplex stainless steel having a Pitting Resistance Equivalent Number ≤40, suitable for H₂S partial pressure ≤0.3 psi.

NOMINAL COMPOSITION

Chromium 25% Nickel 7.0% Molybdenum 3.0% Nitrogen 0.18% Iron Balance

SPECIFIED MECHANICAL PROPERTIES - API 5CRA / ISO 13680 Group 2 Category 25-7-3

Grade	Yield Strength min. (ksi)	Tensile Strength min. (ksi)	Elongation min. (%)	Hardness max. (HRC)	NACE MR0175/ISO 15156 Environmental Limits
110	110	125	11	36	Table A.25
125	125	130	10	36	Table A.25
140	140	145	9	38	Not recommended for sour service

TYPICAL PHYSICAL PROPERTIES

		70°F	200°F	400°F
Density	lbs/in ³	0.28		
Thermal Expansion	X10 ⁻⁶ / °F	7.0	7.5	8.0
Elastic Modulus	psi x 10 ⁶	29.0	28.2	27.0
Poisson Ratio		0.24	0.24	0.24
Thermal Conductivity	Btu/ft h °F	8	9	10
Specific Heat	Btu/lb °F	0.12	0.12	0.12