PIPESEARCH®
A CRA AFFILIATE

Alloy 2535 (UNS N08535)

Alloy 2535 (UNS N08535) is a cold-hardened nickel-based alloy intended for corrosion resistance in highly sour (H_2S) environments with moderate chloride content, requiring high strength up to 350°F. Alloy 2535 offers increased resistance to the effects of H_2S relative to stainless steels allowing its use as downhole tubular components, packers, and other subsurface equipment in sour wells with high-pressure and high-temperature (HPHT) conditions and Acid Gas Injection (AGI) wells. However, all environmental factors, including H_2S, CO_2, temperature, pH, and chloride concentration, should be considered before final material selection.

The alloy is classified in MR0175/ISO15156 as a type 4c alloy, with no restrictions to a partial pressure of H_2S below 270°F and resistant to 200 psi H_2S at 350°F.

NOMINAL COMPOSITION

Chromium 25% Nickel 32% Molybdenum 3% Iron Balance

SPECIFIED MECHANICAL PROPERTIES - API 5CRA / ISO 13680 Group 3 Category 25-32-3

Grade	Yield Strength min. (ksi)	Tensile Strength min. (ksi)	Elongation min. (%)	NACE MR0175/ISO 15156 Environmental Limits
110	110	115	11	Table A.14 Type 4c
125	125	130	10	Table A.14 Type 4c
140	140	145	9	Not recommended for sour service.

TYPICAL MECHANICAL PROPERTIES

Grade	Yield Strength (ksi)	Tensile Strength (ksi)	Charpy V-Notch Toughness (ft-lbs at 14°F)
110	120	128	125
125	132	139	105

TYPICAL PHYSICAL PROPERTIES

		70°F	200°F	400°F
Density	lbs/in^3	0.29	0.29	0.29
Thermal Expansion	$X10^{-6}/°F$	8.3	8.3	8.4
Elastic Modulus	$psi \times 10^6$	28.3	27.6	26.3
Poisson Ratio		0.29	0.29	0.29
Thermal Conductivity	Btu/ft h °F	5.0	6.0	6.4
Specific Heat	Btu/lb °F	0.09	0.09	0.09

Legal Disclaimer: Although the data found here has been produced and processed from third party sources believed to be reliable, no warranty expressed or implied is made regarding accuracy, adequacy, completeness, legality, reliability or usefulness of any information.