

HM Wire International, Inc.

Ph: 330-244-8501 Fax: 330-244-8561

www.litz-wire.com info@litz-wire.com www.hmwire.com



Alloy 420 Stainless Steel

Description: AISI 420 modified is a 13Cr martensitic stainless steel used extensively on completion equipment in both bars and tubular form, for structural and pressure containing members, in standard and CO2 environment. pH, chlorides, temperature and H2S can limit its use in other environments.

Applications: Extensively used on completion equipment in both bars and tubular form and for structural and pressure containing members.

Nominal Composition:	C	Si	Mn	P	S	Ni	Cr
	18 - 22	0.25 - 1.0	0.25 - 1.0	0.02	0.005	0.5	12.5 - 14
	Cu	Fe	PREN		Pitting Index PREN = %Cr + 3.3%		
	0.25	Balance	12.5 - 14.0		Mo + 16% N		

Mechanical Properties, grade 80ksi, quenched and double tempered (above 590°C)

Mechanical Property	-10°C	20°C	200°C
Tensile Strength, yield (min)	-	551 MPa (80ksi)	-
Tensile Strength, yield (typical)	-	-	-
Tensile Strength, ultimate (min)	-	689 Mpa (100ksi)	-
Tensile Strength, ultimate (typical)	-	-	-
Tensile Modulus (typical)	-	200 GPa	-
Torsion Modulus (typical)	-	81 GPa	-
Elongation (min)	-	20%	-
Reduction of area (min)	-	40%	-
Charpy V-notch impact (typical)	20 Joules	-	-
Fracture toughness KIC (typical)	-	-	-
Hardness (ISO 15156-3 limit)	-	22 HRC	-
Hardness (typical)	-	-	-
Fatigue strength (% of T.S.)	-	-	-

Physical Properties

Mechanical Property	-40°C	20°C	200°C
Density	-	7.80 kg/dm ³	-
Thermal Expansion Coefficient	-	10.3 x 10 ⁻⁶ /°C	-
Thermal Conductivity	-	24.9 Wm ⁻¹ K ⁻¹	-
Specific Heat	-	460 JKg ⁻¹ K ⁻¹	-
Electrical Resistivity	-	0.550 μΩm	-
Poisson's Ratio	-	0.24	-

*To be used as a guideline only.

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