

Schmolz + Bickenbach LeanDupâ„¸ 35N Stainless Steel Bar

Category : Metal , Ferrous Metal , Austenitic , Ferritic , Stainless Steel

Material Notes:

Description: LeanDupâ„¸ 35N also known as (Uranus 35 N) is a dual phase austenitic-ferritic stainless steel that has the ability to become as important as 316L. It offers better corrosion resistance than 316L in many environments, yet has similar machinability to 316L and a reduced cost due to the much lower nickel and molybdenum levels. This could lead to the production of highly corrosion resistant, lower cost parts than can be attained by 316L. LeanDupâ„¸ 35N is one of several Austenitic-Ferritic Stainless Steels, often known as a duplex stainless steel which combines the many advantages of the other stainless steel groups. Duplex grades are generally higher strength and have better corrosion resistance. These alloys generally contain a 50-50 mix of austenite and ferrite, however, this can vary with different grades. The higher chromium content has a reduced scaling resistance than austenitic stainless steels. Plus, the duplex alloys possess increased stress corrosion cracking resistance as well as increased chlorine corrosion and intergranular corrosion resistance. Reduced weld sensitization is another advantage to these grades. These alloys are also interesting in that they contain lower amounts of nickel and can be attractive alternatives to the higher nickel stainless alloys. LeanDupâ„¸ 35N is considered a lean duplex alloy with high chromium, low nickel, and very little molybdenum contents. LeanDupâ„¸ 35N is a high strength duplex grade at almost double that of an austenitic stainless and possesses good physical properties that can offer design advantages, ease of fabrication, and good weldability. Uniform corrosion resistance is very good along with resistance to pitting, crevice, and stress corrosion cracking. Applications: Wherever 304, 304L, 316, 316L or 316LN are used, Energy and process industries, Construction and application with a max service temperature of 570°F Stress Relieving (Heat Treatment): 1750°F @ 1925°F (940°C to 1050°C) followed by rapid quenching in water. Do not stress release between 570 @ 1650°F (285°C @ 885°C) to avoid sigma phase formation. Information provided by Schmolz + Bickenbach

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http://www.lookpolymers.com/polymer_Schmolz-Bickenbach-LeanDup-35N-Stainless-Steel-Bar.php

Physical Properties	Metric	English	Comments
Density	7.81 g/cc	0.282 lb/in ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength	655 - 793 MPa	95000 - 115000 psi	Annealed Bar
	1000 MPa	145000 psi	20% Reduction of Section
	1175 MPa	170400 psi	40% Reduction of Section
	1375 MPa	199400 psi	60% Reduction of Section
	1700 MPa	247000 psi	80% Reduction of Section
Tensile Strength, Yield	793 - 1070 MPa	115000 - 155000 psi	Cold Drawn Bar
	@Thickness <=25.4 mm	@Thickness <=1.00 in	
Tensile Strength, Yield	379 - 552 MPa	55000 - 80000 psi	Annealed Bar
	@Strain 0.200 %	@Strain 0.200 %	

Mechanical Properties	850 MPa Metric	123000 psi English	Comments
	@Strain 0.200 %	@Strain 0.200 %	20% Reduction of Section
	1050 MPa	152000 psi	40% Reduction of Section
	@Strain 0.200 %	@Strain 0.200 %	
	1050 MPa	152000 psi	60% Reduction of Section
	@Strain 0.200 %	@Strain 0.200 %	
	1500 MPa	218000 psi	80% Reduction of Section
	@Strain 0.200 %	@Strain 0.200 %	
	655 - 862 MPa	95000 - 125000 psi	Cold Drawn Bar
	@Strain 0.200 %, Thickness <=25.4 mm	@Strain 0.200 %, Thickness <=1.00 in	
Elongation at Yield	2.0 %	2.0 %	80% Reduction of Section
	7.0 %	7.0 %	60% Reduction of Section
	9.0 %	9.0 %	40% Reduction of Section
	15 %	15 %	20% Reduction of Section
	40 - 50 %	40 - 50 %	Annealed Bar
	20 - 30 %	20 - 30 %	Cold Drawn Bar
	@Thickness <=25.4 mm	@Thickness <=1.00 in	
Reduction of Area	78 - 80 %	78 - 80 %	Annealed Bar
	65 - 75 %	65 - 75 %	Cold Drawn Bar
	@Thickness <=25.4 mm	@Thickness <=1.00 in	
Modulus of Elasticity	200 GPa	29000 ksi	Tension
Charpy Impact	>= 73.2 J	>= 54.0 ft-lb	
	@Temperature -81.7 Â°C	@Temperature -115 Â°F	
	>= 88.1 J	>= 65.0 ft-lb	
	@Temperature 20.0 Â°C	@Temperature 68.0 Â°F	

Thermal Properties	Metric	English	Comments
CTE, linear	13.9 Âµm/m-Â°C	7.75 Âµin/in-Â°F	
	@Temperature 20.0 - 300 Â°C	@Temperature 68.0 - 572 Â°F	

Thermal Properties	Metric	English	Comments
Thermal Conductivity	@Temperature 20.0 °C	@Temperature 68.0 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.030 %	<= 0.030 %	
Chromium, Cr	22 - 24 %	22 - 24 %	
Copper, Cu	0.10 - 0.60 %	0.10 - 0.60 %	
Iron, Fe	>= 66.02 %	>= 66.02 %	
Manganese, Mn	<= 2.0 %	<= 2.0 %	
Molybdenum, Mo	0.10 - 0.60 %	0.10 - 0.60 %	
Nickel, Ni	3.5 - 5.5 %	3.5 - 5.5 %	
Nitrogen, N	0.10 - 0.20 %	0.10 - 0.20 %	
Phosphorous, P	<= 0.035 %	<= 0.035 %	
Silicon, Si	<= 1.0 %	<= 1.0 %	
Sulfur, S	<= 0.015 %	<= 0.015 %	

Processing Properties	Metric	English	Comments
Annealing Temperature	954 - 1052 °C	1750 - 1925 °F	Followed by rapid quenching in water
Hot-Working Temperature	899 - 1200 °C	1650 - 2200 °F	Uniformly heating

Descriptive Properties	Value	Comments
Corrosion Resistance	5% Sulphuric Acid at 106°C	0.19 mm/year
	Acetic Acid	3/4
	Boiling 50% Acetic 50% Formic Acids	0.25 mm/year
	Boiling Acetic Acid	0.1 mm/year
	Boiling Formic Acid	1.4 mm/year
	Boiling Nitric Acid	0.25 mm/year
	Boiling Phosphoric Acid	0.1 mm/year
	H ₂ SO ₄ 2M	25 µA/cm ²

Descriptive Properties	Humidity Value	4/4 Comments
	NaCl (Saline Mist)	4/4
	NaCl 0.86M, 131°F, pH=6.6	210 mV/ECS
	NaCl 0.86M, 131°F, pH=6.6	175 mV/ECS
	Nitric Acid	3/4
	Petroleum	2/4
	Petroleum	2/4
	Phosphoric Acid	2/4
	Seawater	2/4
	Sulfuric Acid	2/4

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