

AK Steel NITRONIC® 19-D Duplex Stainless Steel

Category : Metal , Ferrous Metal , Stainless Steel

Material Notes:

AK Steel NITRONIC® 19D is a stainless steel with a mixed ferrite and austenite structure. This alloy provides high yield strength (65 ksi minimum {448 MPa}), good drawing and welding characteristics, excellent chloride stress corrosion cracking resistance, and high cyclic oxidation resistance up to 1800°F (982°C). It also exhibits high ductility (super plasticity) at high temperatures (1800°F {982°C}). Compared to similar duplex stainless alloys such as 2205, NITRONIC 19D Stainless Steel is more economical but less corrosion resistant due to lower alloy content (particularly molybdenum). Inclusion in ASTM A 240 has been granted and the alloy is listed in the A 240-97a publication dated March 1998. Information provided by AK Steel

Order this product through the following link:

http://www.lookpolymers.com/polymer_AK-Steel-NITRONIC-19-D-Duplex-Stainless-Steel.php

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell B	91.5	91.5	0% Cold Work
	93 - 98	93 - 98	Typical, (Gauge, 0.028" -0.084")
	97	97	4.0% Cold Work
	99.5	99.5	9.8% Cold Work
Hardness, Rockwell C	24	24	15.1% Cold Work
	26.5	26.5	20.7% Cold Work
	30	30	40.7% Cold Work
	33	33	57.8% Cold Work
Tensile Strength, Ultimate	681 MPa	98800 psi	0% Cold Work
	718 MPa	104000 psi	4% Cold Work
	782 MPa	113000 psi	9.8% Cold Work
	812 MPa	118000 psi	15.1% Cold Work
	689 - 993 MPa	99900 - 144000 psi	Typical, (Gauge, 0.028" -0.084")
	896 MPa	130000 psi	20.7% Cold Work
	1063 MPa	154200 psi	40.7% Cold Work
	1186 MPa	172000 psi	57.8% Cold Work
	17.9 MPa	2600 psi	Transverse
	@Temperature 1090 °C	@Temperature 2000 °F	

Mechanical Properties	17.9 MPa Metric	2600 psi English	Comments
	@Temperature 1090 °C	@Temperature 2000 °F	
	27.6 MPa	4000 psi	Transverse
	@Temperature 982 °C	@Temperature 1800 °F	
	37.9 MPa	5500 psi	Longitudinal
	@Temperature 982 °C	@Temperature 1800 °F	
	69.6 MPa	10100 psi	Transverse
	@Temperature 871 °C	@Temperature 1600 °F	
	83.4 MPa	12100 psi	Longitudinal
	@Temperature 871 °C	@Temperature 1600 °F	
Tensile Strength, Yield	437 MPa	63400 psi	0% Cold Work
	@Strain 0.200 %	@Strain 0.200 %	
	604 MPa	87600 psi	4.0% Cold Work
	@Strain 0.200 %	@Strain 0.200 %	
	702 MPa	102000 psi	9.8% Cold Work
	@Strain 0.200 %	@Strain 0.200 %	
	785 MPa	114000 psi	15.1% Cold Work
	@Strain 0.200 %	@Strain 0.200 %	
	827 MPa	120000 psi	20.7% Cold Work
	@Strain 0.200 %	@Strain 0.200 %	
	974 MPa	141000 psi	40.7% Cold Work
	@Strain 0.200 %	@Strain 0.200 %	
	1090 MPa	158000 psi	57.8% Cold Work
	@Strain 0.200 %	@Strain 0.200 %	
	5.52 MPa	800 psi	Transverse
	@Strain 0.200 %, Temperature 1090 °C	@Strain 0.200 %, Temperature 2000 °F	
	8.96 MPa	1300 psi	Longitudinal
	@Strain 0.200 %, Temperature 1090 °C	@Strain 0.200 %, Temperature 2000 °F	
	15.9 MPa	2300 psi	Transverse
	@Strain 0.200 %, Temperature 982 °C	@Strain 0.200 %, Temperature 1800 °F	

Mechanical Properties	Metric	English	Comments
	@Strain 0.200 %, Temperature 982 °C	@Strain 0.200 %, Temperature 1800 °F	Longitudinal
	47.6 MPa	6900 psi	Transverse
	@Strain 0.200 %, Temperature 871 °C	@Strain 0.200 %, Temperature 1600 °F	
	57.9 MPa	8400 psi	Longitudinal
	@Strain 0.200 %, Temperature 871 °C	@Strain 0.200 %, Temperature 1600 °F	
	476 - 538 MPa	69000 - 78000 psi	
	@Strain 0.200 %, Temperature 21.1 °C	@Strain 0.200 %, Temperature 70.0 °F	
Elongation at Break	5.2 %	5.2 %	In 2", 40.7% Cold Work
	5.5 %	5.5 %	In 2", 57.8% Cold Work
	12.1 %	12.1 %	In 2", 20.7% Cold Work
	14.6 %	14.6 %	In 2", 15.1% Cold Work
	23.6 %	23.6 %	In 2", 9.8% Cold Work
	30.1 %	30.1 %	In 2", 4.0% Cold Work
	34.5 %	34.5 %	In 2", 0% Cold Work
	31 - 40 %	31 - 40 %	Typical, (Gauge, 0.028" -0.084")
	@Thickness 50.8 mm	@Thickness 2.00 in	
	82.3 %	82.3 %	in 2", Longitudinal
	@Thickness 50.8 mm, Temperature 871 °C	@Thickness 2.00 in, Temperature 1600 °F	
	88 %	88 %	in 2", Transverse
	@Thickness 50.8 mm, Temperature 871 °C	@Thickness 2.00 in, Temperature 1600 °F	
	113 %	113 %	in 2", Longitudinal
	@Thickness 50.8 mm, Temperature 982 °C	@Thickness 2.00 in, Temperature 1800 °F	
	143 %	143 %	in 2", Transverse
	@Thickness 50.8 mm, Temperature 982 °C	@Thickness 2.00 in, Temperature 1800 °F	
	179.5 %	179.5 %	

Mechanical Properties	Metric @Thickness 50.8 mm, Temperature 1090 °C	English @Thickness 2.00 in, Temperature 2000 °F	in 2" Transverse Comments
	236.5 %	236.5 %	
	@Thickness 50.8 mm, Temperature 1090 °C	@Thickness 2.00 in, Temperature 2000 °F	in 2", Longitudinal
Reduction of Area	61.6 %	61.6 %	Transverse
	@Temperature 871 °C	@Temperature 1600 °F	
	65 %	65 %	Longitudinal
	@Temperature 871 °C	@Temperature 1600 °F	
	80 %	80 %	Longitudinal
	@Temperature 982 °C	@Temperature 1800 °F	
	80 %	80 %	Transverse
	@Temperature 982 °C	@Temperature 1800 °F	
	84.3 %	84.3 %	Longitudinal
	@Temperature 1090 °C	@Temperature 2000 °F	
	97 %	97 %	Transverse
	@Temperature 1090 °C	@Temperature 2000 °F	
Charpy Impact, Notched	15.0 J/cm ²	71.4 ft-lb/in ²	Transverse
	@# of Cycles 2.00 , Temperature -101 °C	@# of Cycles 2.00 , Temperature -150 °F	
	17.8 J/cm ²	84.7 ft-lb/in ²	Longitudinal
	@# of Cycles 2.00 , Temperature -101 °C	@# of Cycles 2.00 , Temperature -150 °F	
	38.9 J/cm ²	185 ft-lb/in ²	Transverse
	@# of Cycles 2.00 , Temperature -73.3 °C	@# of Cycles 2.00 , Temperature -100 °F	
	50.6 J/cm ²	241 ft-lb/in ²	Transverse
	@# of Cycles 1.00 , Temperature -101 °C	@# of Cycles 1.00 , Temperature -150 °F	
	54.4 J/cm ²	259 ft-lb/in ²	Transverse
	@# of Cycles 1.00 , Temperature -73.3 °C	@# of Cycles 1.00 , Temperature -100 °F	
	69.3 J/cm ²	330 ft-lb/in ²	Transverse
	@# of Cycles 1.00 , Temperature -30.0 °C	@# of Cycles 1.00 , Temperature -22.0 °F	

Mechanical Properties	77.5 J/cm ² Metric	369 ft-lb/in ² English	Comments Transverse
	@# of Cycles 1.00 , Temperature -17.8 °C	@# of Cycles 1.00 , Temperature 0.000 °F	
	81.6 J/cm ²	388 ft-lb/in ²	Transverse
	@# of Cycles 2.00 , Temperature -30.0 °C	@# of Cycles 2.00 , Temperature -22.0 °F	
	83.9 J/cm ²	399 ft-lb/in ²	Transverse
	@# of Cycles 1.00 , Temperature 22.8 °C	@# of Cycles 1.00 , Temperature 73.0 °F	
	85.8 J/cm ²	408 ft-lb/in ²	Longitudinal
	@# of Cycles 2.00 , Temperature -73.3 °C	@# of Cycles 2.00 , Temperature -100 °F	
	89.5 J/cm ²	426 ft-lb/in ²	Transverse
	@# of Cycles 2.00 , Temperature -17.8 °C	@# of Cycles 2.00 , Temperature 0.000 °F	
	105.1 J/cm ²	500.2 ft-lb/in ²	Transverse
	@# of Cycles 2.00 , Temperature 22.8 °C	@# of Cycles 2.00 , Temperature 73.0 °F	
	111.1 J/cm ²	528.8 ft-lb/in ²	Longitudinal
	@# of Cycles 1.00 , Temperature -101 °C	@# of Cycles 1.00 , Temperature -150 °F	
	138.3 J/cm ²	658.2 ft-lb/in ²	Longitudinal
	@# of Cycles 1.00 , Temperature -73.3 °C	@# of Cycles 1.00 , Temperature -100 °F	
	144.9 J/cm ²	689.6 ft-lb/in ²	Longitudinal
	@# of Cycles 2.00 , Temperature -30.0 °C	@# of Cycles 2.00 , Temperature -22.0 °F	
	159.2 J/cm ²	757.7 ft-lb/in ²	Longitudinal
	@# of Cycles 2.00 , Temperature -17.8 °C	@# of Cycles 2.00 , Temperature 0.000 °F	
	169.8 J/cm ²	808.1 ft-lb/in ²	Longitudinal
	@# of Cycles 1.00 , Temperature -30.0 °C	@# of Cycles 1.00 , Temperature -22.0 °F	
	184.7 J/cm ²	879.0 ft-lb/in ²	Longitudinal
	@# of Cycles 1.00 , Temperature -17.8 °C	@# of Cycles 1.00 , Temperature 0.000 °F	
	271.9 J/cm ²	1294 ft-lb/in ²	Longitudinal
	@# of Cycles 2.00 ,	@# of Cycles 2.00 ,	

Mechanical Properties	Temperature 22.8 °C	Temperature 73.0 °F	
	Metric	English	Comments

Contact Songhan Plastic Technology Co.,Ltd.

Website : www.lookpolymers.com
Email : sales@lookpolymers.com
Tel : +86 021-51131842
Mobile : +86 13061808058
Skype : lookpolymers
Address : United North Road 215,Fengxian District, Shanghai City,China