

AK Steel 439 ULTRA FORM® Stainless Steel

Category : Metal , Ferrous Metal , Stainless Steel

Material Notes:

AK Steel 439 ULTRA FORM™ was developed for applications requiring oxidation and corrosion resistance superior to Type 409 as well as superior formability to AK Steel 439 Stainless Steel. As a result, the material offers advantages for parts requiring more complex shapes than possible from these stainless steels. Examples include tubular manifolds and other exhaust system components where temperatures may exceed the oxidation limit of Type 409, or where wet corrosion resistance, particularly to chlorides, is needed. Information provided by AK Steel.

Order this product through the following link:

http://www.lookpolymers.com/polymer_AK-Steel-439-ULTRA-FORM-Stainless-Steel.php

Physical Properties	Metric	English	Comments
Density	7.685 g/cc	0.2776 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell B	72.9	72.9	Annealed
	74	74	Annealed, Transverse Orientation
	85.4	85.4	5% Cold Worked
	89.1	89.1	10% Cold Worked
	92.1	92.1	15% Cold Worked
	95.6	95.6	30% Cold Worked
Tensile Strength, Ultimate	438 MPa	63500 psi	Annealed
	484 MPa	70200 psi	5% Cold Worked
	546 MPa	79200 psi	10% Cold Worked
	618 MPa	89600 psi	15% Cold Worked
	713 MPa	103000 psi	30% Cold Worked
	785 MPa	114000 psi	50% Cold Worked
	35.0 MPa	5080 psi	
	@Temperature 816 °C	@Temperature 1500 °F	
	70.0 MPa	10200 psi	
	@Temperature 704 °C	@Temperature 1300 °F	

Mechanical Properties	Metric ^{Pa}	English ^{psi}	Comments
	@Temperature 593 °C	@Temperature 1100 °F	
	373 MPa	54100 psi	
	@Temperature 371 °C	@Temperature 700 °F	
	404 MPa	58600 psi	
	@Temperature 204 °C	@Temperature 400 °F	
	462 MPa	67000 psi	Annealed, Transverse Orientation
	@Temperature 23.9 °C	@Temperature 75.0 °F	
Tensile Strength, Yield	263 MPa	38100 psi	Annealed
	@Strain 0.200 %	@Strain 0.200 %	
	460 MPa	66700 psi	5% Cold Worked
	@Strain 0.200 %	@Strain 0.200 %	
	544 MPa	78900 psi	10% Cold Worked
	@Strain 0.200 %	@Strain 0.200 %	
	613 MPa	88900 psi	15% Cold Worked
	@Strain 0.200 %	@Strain 0.200 %	
	680 MPa	98600 psi	30% Cold Worked
	@Strain 0.200 %	@Strain 0.200 %	
	753 MPa	109000 psi	50% Cold Worked
	@Strain 0.200 %	@Strain 0.200 %	
	25.0 MPa	3630 psi	
	@Strain 0.200 %, Temperature 816 °C	@Strain 0.200 %, Temperature 1500 °F	
	49.0 MPa	7110 psi	
	@Strain 0.200 %, Temperature 704 °C	@Strain 0.200 %, Temperature 1300 °F	
	130 MPa	18900 psi	
	@Strain 0.200 %, Temperature 593 °C	@Strain 0.200 %, Temperature 1100 °F	
	191 MPa	27700 psi	
	@Strain 0.200 %, Temperature 371 °C	@Strain 0.200 %, Temperature 700 °F	
	206 MPa	29900 psi	

Mechanical Properties	Metric	English	Comments
	@Strain 0.200 %, Temperature 204 °C	@Strain 0.200 %, Temperature 400 °F	
	283 MPa	41000 psi	Annealed, Transverse Orientation
	@Strain 0.200 %, Temperature 21.1 °C	@Strain 0.200 %, Temperature 70.0 °F	
Elongation at Break	2.8 %	2.8 %	In 2", 50% Cold Worked
	3.8 %	3.8 %	In 2", 30% Cold Worked
	6.5 %	6.5 %	In 2", 15% Cold Worked
	12 %	12 %	In 2", 10% Cold Worked
	24.3 %	24.3 %	In 2", 5% Cold Worked
	34.8 %	34.8 %	In 2", Annealed
	35 %	35 %	In 2", Annealed, Transverse Orientation
Fatigue Strength	10.0 MPa	1450 psi	r=0.1
	@# of Cycles 1.00e+7 , Temperature 816 °C	@# of Cycles 1.00e+7 , Temperature 1500 °F	
	28.0 MPa	4060 psi	r=0.1
	@# of Cycles 1.00e+7 , Temperature 704 °C	@# of Cycles 1.00e+7 , Temperature 1300 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.010 %	0.010 %	
Chromium, Cr	17.35 %	17.35 %	
Iron, Fe	81.3535 %	81.3535 %	Balance
Manganese, Mn	0.25 %	0.25 %	
Molybdenum, Mo	0.10 %	0.10 %	
Nickel, Ni	0.20 %	0.20 %	
Niobium, Nb (Columbium, Cb)	0.020 %	0.020 %	
Nitrogen, N	0.010 %	0.010 %	
Phosphorous, P	0.020 %	0.020 %	
Silicon, Si	0.35 %	0.35 %	
Sulfur, S	0.0015 %	0.0015 %	

Component Elements Properties	Metric	English	Comments
Descriptive Properties		Value	Comments
Olsen Cup Height (in)		0.33	0.022"-0.028"
		0.342	0.030"
		0.371	0.035"
		0.408	0.056"-0.059"
Typical rm value		1.62	0.056"-0.059"
		1.78	0.035"
		1.96	0.022"-0.028"
		2.03	0.030"

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