Assab Steels ASP 23 Cold Work Steel

Category : Metal , Ferrous Metal , Chrome-moly Steel , Tool Steel , Cold Work Steel

Material Notes:

ASP 23 is a chromium-molybdenum-tungsten-vanadium alloyed high speed steel which is characterized by:High wear resistance (abrasive profile)High compressive strengthVery good through-hardening propertiesGood toughnessVery good dimensional stability on heat treatmentVery good temper resistanceASP 23 is especially suitable for blanking and forming of thinner work materials where a mixed (abrasive-adhesive) or abrasive type of wear is encountered and where the risk for plastic deformation of the working surfaces of the tool is high, e.g.:Blanking of medium to high carbon steelsBlanking of harder materials such as hardened or cold-rolled strip steelsPlastics mold tooling subjected to abrasive wear conditionPlastics processing parts, e.g. feed screws, barrel liners, nozzles, screw tips, non-return check ring valves, pellitizer blades, granulator knives.AISI M3:2/W.-Nr. 1.3344

Order this product through the following link:
http://www.lookpolymers.com/polymer_Assab-Steels-ASP-23-Cold-Work-Steel.php

Physical Properties	Metric	English	Comments
Density	7.94 g/cc	0.287 lb/in³	
	7.78 g/cc @Temperature 600 °C	0.281 lb/in³ @Temperature 1110 °F	
	7.83 g/cc @Temperature 400 °C	0.283 lb/in³ @Temperature 752 °F	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	36	36	Holding time 100 hours. Austenitizing temperature: 1050°C. Tempering 3 x 1 h at 560°C. 650°C working temperature
	37	37	Holding time 100 hours. Austenitizing temperature: 1130°C. Tempering 3 x 1 h at 560°C. 650°C working temperature
	44	44	Holding time 100 hours. Austenitizing temperature: 1050°C. Tempering 3 x 1 h at 560°C. 600°C working temperature
	48	48	Holding time 100 hours. Austenitizing temperature: 1130°C. Tempering 3 x 1 h at 560°C. 600°C working temperature
	57	57	Holding time 5 hours. Austenitizing temperature: 1050°C. Tempering 3 x 1 h at 560°C. 600°C working temperature
	58	58	Final hardness after tempering 3 times for 1 hour at 560°C. 1020°C

Mechanical Properties	Metric	English	Austenitizing temperature Comments
	60	60	Holding time 0.1 hours. Austenitizing temperature: 1050°C. Tempering 3 x 1 h at 560°C. 600°C working temperature
	63	63	Holding time 5 hours. Austenitizing temperature: 1130°C. Tempering 3 x 1 h at 560°C. 600°C working temperature
	65	65	Holding time 0.1 hours. Austenitizing temperature: 1130°C. Tempering 3 x 1 h at 560°C. 600°C working temperature
	66	66	Final hardness after tempering 3 times for 1 hour at 560°C. 1180°C Austenitizing temperature
Hardness, Vickers	200 @Temperature 700 °C	200 @Temperature 1290 °F	Hot Hardness. Austenitizing temperature: 1180°C. Tempering: 3x1h at 560°C. Holding time 10 minutes at 700°C
	550 @Temperature 600 °C	550 @Temperature 1110 °F	Hot Hardness. Austenitizing temperature: 1180°C. Tempering: 3x1h at 560°C. Holding time 10 minutes at 600°C
	800 @Temperature 200 °C	800 @Temperature 392 °F	Hot Hardness. Austenitizing temperature: 1180°C. Tempering: 3x1h at 560°C. Holding time 10 minutes at 200°C
Modulus of Elasticity	230 GPa	33400 ksi	
	184 GPa @Temperature 400 °C	26700 ksi @Temperature 752 °F	
Flexural Strength	5000 MPa	725000 psi	58 HRC. Four point bend testing. 5 mm ø. 5mm/min. Austenitizing temperature: 990-1180°C, Tempering: 3X1 h at 560°C
	5000 MPa @Diameter 5.00 mm	725000 psi @Diameter 0.197 in	66 HRC. Four point bend testing. 5mm/min. Austenitizing temperature: 990-1180°C, Tempering: 3X1 h at 560°C
	5400 MPa @Diameter 5.00 mm	783000 psi @Diameter 0.197 in	62 HRC. Four point bend testing. 5mm/min. Austenitizing temperature: 990-1180°C, Tempering: 3X1 h at 560°C
Flexural Yield Strength	2600 MPa	377000 psi	57 HRC. Four point bend testing. 5 mm ø. 5mm/min. Austenitizing temperature: 990-1180°C, Tempering: 3X1 h at 560°C
	3500 MPa @Diameter 5.00 mm	508000 psi @Diameter 0.197 in	66 HRC. Four point bend testing. 5mm/min. Austenitizing temperature: 990-1180°C, Tempering: 3X1 h at 560°C

Mechanical Properties	Metric	English	Comments
Impact Test	40.0 J @Temperature 23.0 °C	29.5 ft-lb @Temperature 73.4 °F	
	50.0 J @Temperature 23.0 °C	36.9 ft-lb @Temperature 73.4 °F	

Thermal Properties	Metric	English	Comments
CTE, linear	11.1 µm/m-°C @Temperature 20.0 - 200 °C	6.17 µin/in-°F @Temperature 68.0 - 392 °F	
	12.1 µm/m-°C @Temperature 20.0 - 400 °C	6.72 µin/in-°F @Temperature 68.0 - 752 °F	
Specific Heat Capacity	0.418 J/g-°C @Temperature 20.0 °C	0.100 BTU/lb-°F @Temperature 68.0 °F	
Thermal Conductivity	24.0 W/m-K @Temperature 20.0 °C	167 BTU-in/hr-ft²-°F @Temperature 68.0 °F	
	27.0 W/m-K @Temperature 600 °C	187 BTU-in/hr-ft²-°F @Temperature 1110 °F	
	28.0 W/m-K @Temperature 400 °C	194 BTU-in/hr-ft²-°F @Temperature 752 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	1.28 %	1.28 %	
Chromium, Cr	4.2 %	4.2 %	
Iron, Fe	80.02 %	80.02 %	
Molybdenum, Mo	5.0 %	5.0 %	
Tungsten, W	6.4 %	6.4 %	
Vanadium, V	3.1 %	3.1 %	

Descriptive Properties	Value	Comments
Total Deflection, mm	2.1	66 HRC. Four point bend testing. 5 mm ø. 5mm/min. Austenitizing temperature: 990-1180°C, Tempering: 3X1 h at 560°C
	2.5	62 HRC. Four point bend testing. 5 mm ø. 5mm/min. Austenitizing temperature: 990-1180°C,

Descriptive Properties	Value	Comments
		Tempering: 3X1 h at 560°C
	3.25	58 HRC. Four point bend testing. 5 mm ø. 5mm/min. Austenitizing temperature: 990-1180°C, Tempering: 3X1 h at 560°C

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