

## EDRO #3 Prehardened Mold Quality P20 Alloy Steel

Category : Metal , Ferrous Metal , Alloy Steel , Chrome-moly Steel

### Material Notes:

EDRO #3™ is a vacuum-degassed, ladle refined, Cr-Ni-Mo- alloyed steel which is supplied in the hardened and tempered condition. EDRO #3™ is manufactured to consistently high quality standards with a very low sulfur content, giving a steel with the following characteristics: excellent polishing and photo-etching properties, good machinability, high purity and good homogeneity, and uniform hardness in all dimensions. Applications: injection molds for thermo-plastics, extrusion dies for thermo-plastics, blow molds, forming tools, press-brake dies, structural components, shafts  
Information provided by EDRO

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_EDRO-3-Prehardened-Mold-Quality-P20-Alloy-Steel.php](http://www.lookpolymers.com/polymer_EDRO-3-Prehardened-Mold-Quality-P20-Alloy-Steel.php)

Physical Properties	Metric	English	Comments
Density	7.67 g/cc	0.277 lb/in <sup>3</sup>	Hardened and tempered to 310 HB
	@Temperature 399 °C	@Temperature 750 °F	
	7.75 g/cc	0.280 lb/in <sup>3</sup>	Hardened and tempered to 310 HB
	@Temperature 199 °C	@Temperature 390 °F	
	7.81 g/cc	0.282 lb/in <sup>3</sup>	Hardened and tempered to 310 HB
	@Temperature 20.0 °C	@Temperature 68.0 °F	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	277 - 332	277 - 332	as supplied
	340	340	Tempered for 2 hr
	@Treatment Temp. 650 °C	@Treatment Temp. 1200 °F	
Hardness, Rockwell C	380	380	Tempered for 2 hr
	@Treatment Temp. 600 °C	@Treatment Temp. 1110 °F	
	45	45	Tempered for 2 hr
@Treatment Temp. 500 °C	@Treatment Temp. 932 °F		
Hardness, Rockwell C	47	47	Tempered for 2 hr
	@Treatment Temp. 400 °C	@Treatment Temp. 752 °F	
	49	49	Tempered for 2 hr
@Treatment Temp. 300 °C	@Treatment Temp. 572 °F		

Mechanical Properties	<sup>52</sup> Metric	<sup>52</sup> English	Comments
	@Treatment Temp. 180 °C	@Treatment Temp. 356 °F	Tempered for 2 hr
	52	52	
	@Treatment Temp. 200 °C	@Treatment Temp. 392 °F	Tempered for 2 hr
	55	55	
	@Treatment Temp. 300 °C	@Treatment Temp. 572 °F	Hardened for 2 hr, then Tempered
	59	59	
	@Treatment Temp. 200 °C	@Treatment Temp. 392 °F	Hardened for 2 hr, then Tempered
	60	60	
	@Treatment Temp. 180 °C	@Treatment Temp. 356 °F	Hardened for 2 hr, then Tempered
Hardness, Vickers	650	650	
	@Treatment Temp. 525 °C	@Treatment Temp. 977 °F	Nitriding in ammonia gas
	700	700	
	@Treatment Temp. 570 °C	@Treatment Temp. 1060 °F	Tufftriding (Tenifer process)
Tensile Strength, Ultimate	793 MPa	115000 psi	
	@Temperature 399 °C	@Temperature 750 °F	Round bar 1" diameter, 310 HB
	951 MPa	138000 psi	
	@Temperature 199 °C	@Temperature 390 °F	Round bar 1" diameter, 310 HB
	1010 MPa	146000 psi	
	@Temperature 20.0 °C	@Temperature 68.0 °F	Round bar 1" diameter, 310 HB
Tensile Strength, Yield	627 MPa	91000 psi	
	@Temperature 399 °C	@Temperature 750 °F	Round bar 1" diameter, 310 HB
	752 MPa	109000 psi	
	@Temperature 199 °C	@Temperature 390 °F	Round bar 1" diameter, 310 HB
	800 MPa	116000 psi	
	@Temperature 20.0 °C	@Temperature 68.0 °F	Round bar 1" diameter, 310 HB
Elongation at Yield	20 %	20 %	
	@Temperature 20.0 °C	@Temperature 68.0 °F	in 2"

Mechanical Properties	Metric	English	Comments
	@Temperature 199 °C	@Temperature 390 °F	
	25 %	25 %	in 2"
	@Temperature 399 °C	@Temperature 750 °F	
Reduction of Area	60 %	60 %	
	@Temperature 20.0 °C	@Temperature 68.0 °F	
	63 %	63 %	
	@Temperature 199 °C	@Temperature 390 °F	
	65 %	65 %	
	@Temperature 399 °C	@Temperature 750 °F	
Modulus of Elasticity	185 GPa	26800 ksi	
	@Temperature 399 °C	@Temperature 750 °F	
	200 GPa	29000 ksi	
	@Temperature 199 °C	@Temperature 390 °F	
	205 GPa	29700 ksi	
	@Temperature 20.0 °C	@Temperature 68.0 °F	
Charpy Impact	50.2 J	37.0 ft-lb	Round bar 1" diameter, 310 HB
	@Temperature 20.0 °C	@Temperature 68.0 °F	
	55.6 J	41.0 ft-lb	Round bar 1" diameter, 310 HB
	@Temperature 199 °C	@Temperature 390 °F	
	65.1 J	48.0 ft-lb	Round bar 1" diameter, 310 HB
	@Temperature 399 °C	@Temperature 750 °F	

Thermal Properties	Metric	English	Comments
CTE, linear	12.6 $\mu\text{m}/\text{m}\cdot\text{°C}$	7.00 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature 20.0 - 199 °C	@Temperature 68.0 - 390 °F	
	13.5 $\mu\text{m}/\text{m}\cdot\text{°C}$	7.50 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature 20.0 - 399 °C	@Temperature 68.0 - 750 °F	
Specific Heat Capacity	0.460 J/g·°C	0.110 BTU/lb·°F	
	@Temperature 20.0 °C	@Temperature 68.0 °F	

Thermal Properties	Metric	English	Comments
	@Temperature 20.0 °C	@Temperature 68.0 °F	
	29.5 W/m-K	205 BTU-in/hr-ft <sup>2</sup> -°F	
	@Temperature 199 °C	@Temperature 390 °F	
	31.1 W/m-K	216 BTU-in/hr-ft <sup>2</sup> -°F	
	@Temperature 399 °C	@Temperature 750 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.31 %	0.31 %	
Chromium, Cr	1.2 %	1.2 %	
Iron, Fe	96.122 %	96.122 %	As Balance
Manganese, Mn	0.75 %	0.75 %	
Molybdenum, Mo	0.41 %	0.41 %	
Nickel, Ni	0.80 %	0.80 %	
Silicon, Si	0.40 %	0.40 %	
Sulfur, S	0.0080 %	0.0080 %	

Descriptive Properties	Value	Comments
Color Code	Orange	

## Contact Songhan Plastic Technology Co.,Ltd.

Website : [www.lookpolymers.com](http://www.lookpolymers.com)

Email : [sales@lookpolymers.com](mailto:sales@lookpolymers.com)

Tel : +86 021-51131842

Mobile : +86 13061808058

Skype : lookpolymers

Address : United North Road 215,Fengxian District, Shanghai City,China