

## Crucible Steel HALGRAPH® Tool Steel, AISI O6

Category : Metal , Ferrous Metal , Tool Steel , Oil-Hardening Steel

### Material Notes:

Halgraph is an oil-hardening graphitic tool steel with excellent non-deforming properties. Free graphite in its structure affords exceptional free-machining properties. The combination of graphite and hard carbides give Halgraph tools excellent resistance to adhesive wear (galling) in applications such as ring gauges, plug gauges, and bushings. Information provided by Crucible Industries

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Crucible-Steel-HALGRAPH-Tool-Steel-AISI-O6.php](http://www.lookpolymers.com/polymer_Crucible-Steel-HALGRAPH-Tool-Steel-AISI-O6.php)

Physical Properties	Metric	English	Comments
Density	7.70 g/cc	0.278 lb/in <sup>3</sup>	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	187 - 221	187 - 221	
Hardness, Rockwell C	64 - 66	64 - 66	hardened at 1475°F then quenched
	45 - 47	45 - 47	hardened at 1475F then tempered
	@Tempering Temp. 482 °C	@Tempering Temp. 900 °F	
	49 - 51	49 - 51	hardened at 1475F then tempered
	@Tempering Temp. 427 °C	@Tempering Temp. 800 °F	
	53 - 55	53 - 55	hardened at 1475F then tempered
	@Tempering Temp. 371 °C	@Tempering Temp. 700 °F	
	55 - 57	55 - 57	hardened at 1475F then tempered
	@Tempering Temp. 343 °C	@Tempering Temp. 650 °F	
	57 - 59	57 - 59	hardened at 1475F then tempered
	@Tempering Temp. 288 °C	@Tempering Temp. 550 °F	
	57 - 59	57 - 59	hardened at 1475F then tempered
	@Tempering Temp. 316 °C	@Tempering Temp. 600 °F	
	58 - 60	58 - 60	hardened at 1475F then tempered
	@Tempering Temp. 260 °C	@Tempering Temp. 500 °F	
	59 - 61	59 - 61	

Mechanical Properties	Metric	English	Comments
	@ Tempering Temp. 232 °C	@ Tempering Temp. 450 °F	1475F then tempered
	60 - 62	60 - 62	
	@ Tempering Temp. 204 °C	@ Tempering Temp. 400 °F	hardened at 1475F then tempered
	61 - 63	61 - 63	
	@ Tempering Temp. 177 °C	@ Tempering Temp. 350 °F	hardened at 1475F then tempered
	62 - 64	62 - 64	
	@ Tempering Temp. 149 °C	@ Tempering Temp. 300 °F	hardened at 1475F then tempered
Modulus of Elasticity	207 GPa	30000 ksi	
Charpy Impact	27.1 J	20.0 ft-lb	hardened at 1475°F then tempered; C-notch
	@ Tempering Temp. 149 °C	@ Tempering Temp. 300 °F	
	27.1 J	20.0 ft-lb	hardened at 1475°F then tempered; C-notch
	@ Tempering Temp. 260 °C	@ Tempering Temp. 500 °F	
	36.6 J	27.0 ft-lb	hardened at 1475°F then tempered; C-notch
	@ Tempering Temp. 204 °C	@ Tempering Temp. 400 °F	
	36.6 J	27.0 ft-lb	hardened at 1475°F then tempered; C-notch
	@ Tempering Temp. 316 °C	@ Tempering Temp. 600 °F	
	47.5 J	35.0 ft-lb	hardened at 1475°F then tempered; C-notch
	@ Tempering Temp. 371 °C	@ Tempering Temp. 700 °F	
	56.9 J	42.0 ft-lb	hardened at 1475°F then tempered; C-notch
	@ Tempering Temp. 427 °C	@ Tempering Temp. 800 °F	
	71.9 J	53.0 ft-lb	hardened at 1475°F then tempered; C-notch
	@ Tempering Temp. 482 °C	@ Tempering Temp. 900 °F	

Thermal Properties	Metric	English	Comments
CTE, linear	11.2 µm/m-°C	6.20 µin/in-°F	
	@ Temperature 21.1 - 204 °C	@ Temperature 70.0 - 400 °F	

Thermal Properties	Metric	English	Comments
	12.8 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	7.10 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	
	@Temperature 21.1 - 316 $^\circ\text{C}$	@Temperature 70.0 - 600 $^\circ\text{F}$	
	12.8 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	7.10 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	
	@Temperature 21.1 - 427 $^\circ\text{C}$	@Temperature 70.0 - 800 $^\circ\text{F}$	
Thermal Conductivity	34.5 W/m-K	239 BTU-in/hr-ft <sup>2</sup> - $^\circ\text{F}$	
	@Temperature 95.0 $^\circ\text{C}$	@Temperature 203 $^\circ\text{F}$	

Component Elements Properties	Metric	English	Comments
Carbon, C	1.5 %	1.5 %	
Iron, Fe	96.45 %	96.45 %	as balance
Manganese, Mn	0.75 %	0.75 %	
Molybdenum, Mo	0.30 %	0.30 %	
Silicon, Si	1.0 %	1.0 %	

Chemical Properties	Metric	English	Comments
Critical Temperature	751.7 $^\circ\text{C}$	1385 $^\circ\text{F}$	

## 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