

## Schmolz + Bickenbach Thermotur® 2365 EFS Extra Fine Structure - Hot Work Die Steel

Category : Metal , Ferrous Metal , Tool Steel , Hot Work Steel

### Material Notes:

**Description:** Thermotur® 2365 is an Extra Fine Structure (EFS) hot work tool steel developed for good high temperature strength and tempering resistance and Supplied in the annealed condition  
**Characteristics:** Good high temperature strength; and Good resistance to thermal fatigue  
**Applications:** Processing of heavy metals, Forging dies, Extrusion rams and Piercing mandrel  
**Hardening (Heat Treatment):** 1850°F- 1885°F Hold at temperature for 30 minutes; Cooling: Vacuum quench at 70°F/ min, to 300°F then cool to below 150°F;  
**Hardness:**

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Schmolz-Bickenbach-Thermotur-2365-EFS-Extra-Fine-Structure-Hot-Work-Die-Steel.php](http://www.lookpolymers.com/polymer_Schmolz-Bickenbach-Thermotur-2365-EFS-Extra-Fine-Structure-Hot-Work-Die-Steel.php)

Physical Properties	Metric	English	Comments
Density	7.83 g/cc	0.283 lb/in <sup>3</sup>	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	40	40	
	@Treatment Temp. 650.0 °C, Time 7200 sec	@Treatment Temp. 1202 °F, Time 2.00 hour	
	47	47	
	@Treatment Temp. 600.0 °C, Time 7200 sec	@Treatment Temp. 1112 °F, Time 2.00 hour	
	50	50	
	@Treatment Temp. 300 °C, Time 7200 sec	@Treatment Temp. 572 °F, Time 2.00 hour	
	50	50	
@Treatment Temp. 400 °C, Time 7200 sec	@Treatment Temp. 752 °F, Time 2.00 hour		
50	50		
@Treatment Temp. 550.0 °C, Time 7200 sec	@Treatment Temp. 1022 °F, Time 2.00 hour		
52	52		
@Treatment Temp. 500 °C, Time 7200 sec	@Treatment Temp. 932 °F, Time 2.00 hour		

Tensile Strength Mechanical Properties	1250 MPa Metric	182000 psi English	40 HRC Comments
	1520 MPa	221000 psi	47 HRC
	1670 MPa	242000 psi	50 HRC

Thermal Properties	Metric	English	Comments
CTE, linear	12.1 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	6.70 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 21.1 - 93.3 $\text{Å}^\circ\text{C}$	@Temperature 70.0 - 200 $\text{Å}^\circ\text{F}$	
	12.6 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	7.00 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 21.1 - 204 $\text{Å}^\circ\text{C}$	@Temperature 70.0 - 400 $\text{Å}^\circ\text{F}$	
	13.3 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	7.40 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 21.1 - 399 $\text{Å}^\circ\text{C}$	@Temperature 70.0 - 750 $\text{Å}^\circ\text{F}$	
Thermal Conductivity	29.3 W/m-K	203 BTU-in/hr-ft $\text{Å}^2\cdot\text{Å}^\circ\text{F}$	
	@Temperature 704 $\text{Å}^\circ\text{C}$	@Temperature 1300 $\text{Å}^\circ\text{F}$	
	31.3 W/m-K	217 BTU-in/hr-ft $\text{Å}^2\cdot\text{Å}^\circ\text{F}$	
	@Temperature 21.1 $\text{Å}^\circ\text{C}$	@Temperature 70.0 $\text{Å}^\circ\text{F}$	
	31.8 W/m-K	221 BTU-in/hr-ft $\text{Å}^2\cdot\text{Å}^\circ\text{F}$	
	@Temperature 343 $\text{Å}^\circ\text{C}$	@Temperature 650 $\text{Å}^\circ\text{F}$	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.35 %	0.35 %	
Chromium, Cr	3.0 %	3.0 %	
Iron, Fe	93.38 %	93.38 %	
Molybdenum, Mo	2.8 %	2.8 %	
Vanadium, V	0.50 %	0.50 %	

Processing Properties	Metric	English	Comments
Annealing Temperature	749 - 799 $\text{Å}^\circ\text{C}$	1380 - 1470 $\text{Å}^\circ\text{F}$	Soft; Cooling: Furnace 20 $\text{Å}^\circ\text{F}/\text{hour}$ to 1200 $\text{Å}^\circ\text{F}$ / Then air cool; < 230 HB

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