

# W360<sup>®</sup>

## General Purpose Tool Steel

### Heat Treatment Recommendation

	Vacuum	Salt Bath / Fluidized Bed	Atmosphere Furnace Muffle Furnace / Packed
<b>Preheating Temperature</b>	1. Bring up to 1200°F, equalize 2. Heat up to 1500°F, equalize	1. 1100 – 1200°F, equalize 2. 1400 –1500°F, equalize	1. Bring up to 1200°F, equalize 2. Heat up to 1500°F, equalize
<b>Hardening Temperature (Austenitizing)</b>	1920°F Holding time after the tool or part has fully heated through at the hardening temperature: 15-30 minutes, Alternatively hold 20 minutes for first 1" and then 15 minutes for each additional inch of wall thickness		
<b>Quenching<sup>1</sup></b>	<b>Alt. 1</b> Inert gas, positive pressure <b>Alt. 2</b> Back-filled pressurized gas to 1050°F, then equalize center and surface. Continue to 600°F and equalize. Then cool in circulating air.	<b>Alt. 1</b> Quench in Salt 390-930°F <b>Alt. 2</b> Circulated high speed inert gas	<b>Alt. 1</b> Circulated inert gas <b>Alt. 2</b> Circulated air
<b>Tempering (minimum two times)</b> Temper immediately after quenching when the complete tool reaches 150°F	Tempering Temperatures (°F)		Hardening Temperature
	1000 1020 1070 1110		1920°F (Vacuum) 56-58 HRC 54-56 HRC 53-55 HRC 51-53 HRC
	Tempering Times: 1 hour per inch of wall thickness, or hold at temperature a minimum of 2 hours.		
<b>Stress Temper performed on hardened tools after EDM.</b>	Temperature: Shall be 50°F (25°C) below the highest tempering temperature. Time: Soak 2 hours once tool comes to temperature. Cool in still air.		
<b>Dimensional Stability</b>	Average size change as a result of hardening and tempering may not exceed 0.0013 inch per inch per dimension if the tool has been stress relieved before finish machining. If Stress relieving is not performed as recommended, dimensional stability maybe inconsistent and cannot be guaranteed.		

**1**

Cooling rate must be adequate to avoid any transformation products, with decreased properties as a result. However, also consider the risk of excessive distortion from very fast cooling.

### W360

- Excellent Heat Resistance – longer tool life
- Higher Hardness – longer tool life
- Good Toughness and Ductility
- Excellent polishability for Plastics Applications

This information is based on our present state of knowledge and is intended to provide general notes on our products and their uses. It should not therefore be construed as a warranty of specific properties of the products described or a warranty for fitness for a particular purpose.

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