

# BOHLER W360 ISOBLOC®

## Premium Hot Work and Cold Work Tool Steel Heat Treatment Recommendation

	Vacuum	Salt Bath** / Fluidized Bed	Atmosphere Furnace Muffle Furnace / Packed
	** Salt Bath heat treatment can be performed but is not recommended for details with blind holes or threaded holes that will not be rework after heat treatment.		
<b>Preheating Temperature</b>	1. Bring up to 1200°F, equalize 2. Heat up to 1500°F, equalize	1. 1100 – 1200°F, equalize 2. 1500 – 1500°F, equalize	1. Bring up to 1200°F, equalize 2. Heat up to 1500°F, equalize
	3. For cross section larger than 8" thick use a 1510°F second preheat and a third preheat at 1700°F.		
<b>Hardening Temperature (Austenitizing)</b>	Typically 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 *</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 930-1020°F <b>Alt. 2</b> Circulated high speed inert gas	<b>Alt. 1</b> Circulated inert gas  <b>Alt. 2</b> Circulated air
	*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.		
<b>Tempering</b>  (minimum three times)  Temper immediately after quenching when the complete tool reaches 150°F	Tempering Temperatures (°F)  1000 1020 1070 1110  Tempering Times: 1 hour per inch of wall thickness, or hold at temperature a minimum of 2 hours.	Hardening Temperature <u>1920°F</u> 56-58 HRC 54-56 HRC 53-55 HRC 51-53 HRC	
<b>Stress Temper performed on hardened tools after EDM, welding or during preventative maintenance</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 0.003 inch/inch/maximum dimension if the tool has been stress relieved before finish machining.  If Stress relieving is not performed as recommended, dimensional stability may be inconsistent and cannot be guaranteed.		

### BOHLER W360 ISOBLOC® High Hardness Hot and Cold Work Tool

- Excellent heat resistance
- Good toughness and ductility
- Excellent polishability for plastic applications
- Good weldability

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. It is your responsibility to confirm you have the latest revision of this document (verify on our website) and that you forward to your Heat Treatment service provider. Failure to do so may result in inferior material properties.