

# BOHLER K340 ISODUR®

## Premium Cold Work Tool Steel

### General Heat Treatment Recommendations

	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 1550°F, equalize	1. 1200 – 1400°F, equalize 2. 1500 – 1600°F, equalize	1. Bring up to 1200°F, equalize 2. Heat up to 1550°F, equalize
<b>Hardening Temperature* (Austenitizing)</b>	1900 – 1980°F (Typically 1940°F)  Holding time after the tool or part has fully heated through at the hardening temperature: minimum 30 minutes, maximum 1 hour. 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 1000-1100°F, equalize then cool in air  <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 two times)  Temper immediately after quenching when the complete tool reaches 150°F	Tempering Temperatures (°F)  1000 1020 1040  Tempering Times: 1 hour per inch of wall thickness, or hold at temperature a minimum of 2 hours.	Hardening Temperature  1940°F 61-63 HRC 59-61 HRC 56-58 HRC	
<b>Stress Temper performed on hardened tools after EDM or after welding</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 0.0025 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.		

<b>BOHLER K340 ISODUR®</b>	
<b>Good Combination of Toughness &amp; Wear Resistance in a Cold Work Tool Steel</b>	
<ul style="list-style-type: none"> <li>• Toughness similar to A2</li> <li>• Wear resistance similar to D2</li> <li>• Readily nitrided and coated</li> </ul>	

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.