



BÖHLER  **UDDEHOLM**
North America

Hotvar[®] fills the gap between Hot and Cold Work Tool Steels



Between Hot and Cold work applications there is an area where no steel has yet met the demands for top performance. Bohler-Uddeholm presents the answer by introducing Hotvar[®] from Uddeholm.

It has been specially developed to be used where both hot work and cold work properties are needed for best results, for example in hot work applications where hot wear and plastic deformation are the dominating failure mechanisms.

Hot Work Tool Steels

Increased thermal shock resistance

The chemical composition of HOTVAR[®] results in a steel with very good high temperature properties such as hot wear resistance, resistance to thermal fatigue and plastic deformation. For applications requiring these properties a hardness range of 54-58 HRC can be achieved. The composition of HOTVAR[®] is balanced to give good temper resistance and high hot yield strength. HOTVAR[®]'s tooling performance is outstanding up to a surface temperature of 1200°F (650°C). In short, HOTVAR[®] is a hot recommendation for improved tooling performance over a long period of time. Tools made of HOTVAR[®] run and run...miles ahead.

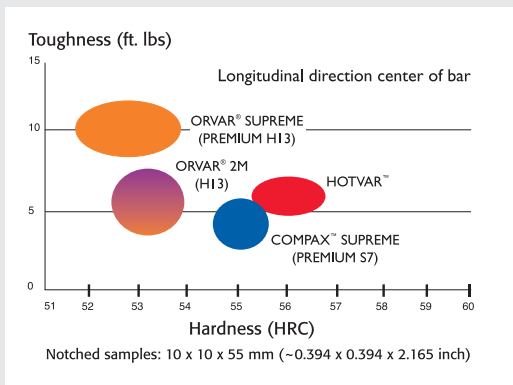
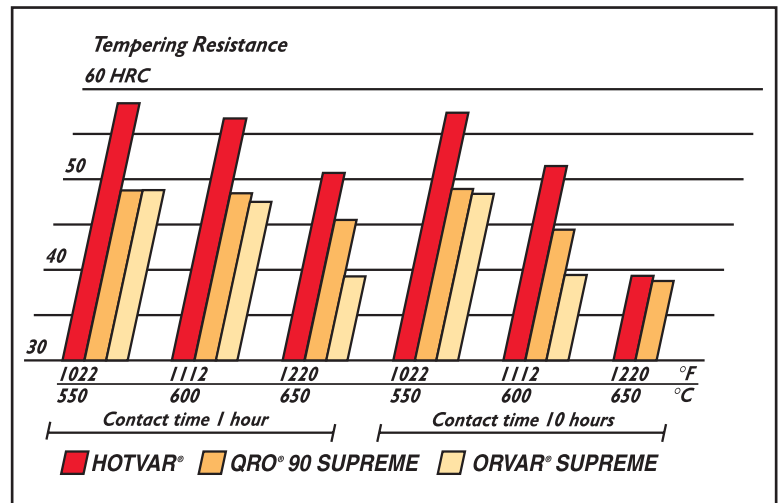


Fig. 1

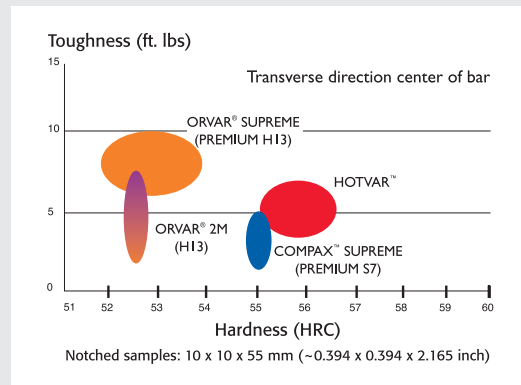


Fig. 2

Cold Work Tool Steels

Increased cracking resistance

Hotvar® vs. AISI S7

- Hotvar® has much better ductility than a premium AISI S7 grade such as our Compax® Supreme. Compared to standard S7 the difference is even larger as shown in the un-notched impact test results in Figures 3 and 4. Hotvar® will have a much better resistance to fatigue cracking and chipping of tools than S7.
- Hotvar® has better toughness (crack propagation resistance) than Compax® Supreme as shown in Figures 1 and 2 where the results of the Charpy-V notch impact toughness test are presented.
- Another benefit of Hotvar® compared to S7 (or A2) is that Hotvar® has a secondary hardening peak. This means that it can be tempered at the high temperatures where most surface coatings (nitriding, PVD, etc.) are applied without losing its original heat treated hardness. It also allows you to perform any stress tempers at higher temperatures, which results in better internal stress reduction.

Hotvar®...miles ahead!

HOT WORK APPLICATIONS:

A hot choice for forging, bending and casting...HOTVAR is the best choice for tools used in various types of forging, but also for tools in rolling, calibration, extrusion, bending, casting and so on.

- Warm forging—dies and punches
- Roll forging—rolling segments
- Rock orbital forging—rolling segments
- Upset forging—clamping tools
- Progressive forging—dies and punches
- Axial closed die rolling—top and bottom dies
- Cross forming—segments
- Hot bending—tools
- Hot calibration—tools
- Zinc die casting—dies
- Al-tube extrusion

COLD WORK APPLICATIONS:

Applications where good cracking/chipping resistance is required, especially when tools are expected to be coated.

- Stamping
- Powder Metal Compacting
- Cold Forming
- Fineblanking
- Scrap Choppers
- Metal Spinning
- Cold Extrusion

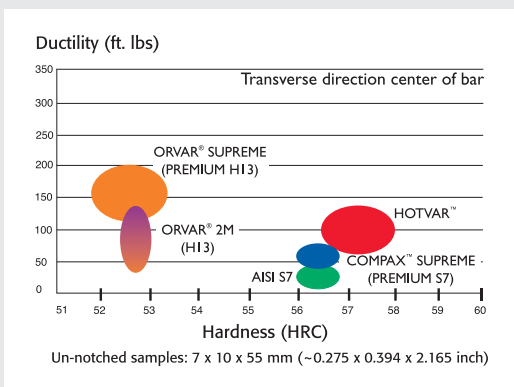


Fig. 3

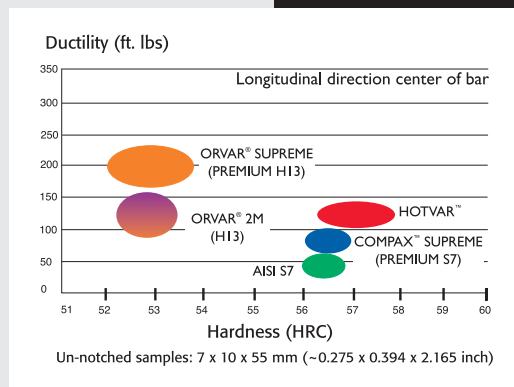


Fig. 4

Relative comparison of resistance to different types of tool failures

Hot Work Tooling	Hot wear	Plastic deformation	Thermal fatigue	Gross cracking
Orvar® Supreme				
QRO® 90 Supreme				
Hotvar®				

Cold Work Tooling	Abrasive wear	Adhesive wear	Cracking resistance		Plastic deformation
			Chipping	Unstable cracking	
A2					
D2					
Compax® Supreme					
Hotvar®					

To purchase Bohler and Uddeholm products in North America please contact:

BÖHLER™ UDDEHOLM
North America
Great Tooling Starts Here!™

Headquarters
 4902 Tollview Drive
 Rolling Meadows, IL 60008
 Sales:
 Tel: (800) 638-2520
 Fax: (905) 812-8659
 www.bucorp.com
 e-mail: info@bucorp.com

USA CANADA

UB 730 - 09/03/1,500

"The data contained in this brochure shall not be binding and shall, in case of a contract conclusion, not be regarded as warranted. These data shall merely constitute average values that become binding only if explicitly specified in a contract concluded with us. The manufacture of our products does not involve the use of substances detrimental to health or to the ozone layer."