

# Uddeholm Dievar® TIG-Weld

## WELDING OF HOT WORK TOOL

Uddeholm Dievar TIG-Weld is a TIG filler rod special composed as to be compatible with the steel grade Uddeholm Dievar.

Uddeholm Dievar TIG-Weld gives a weld metal identical in composition to Uddeholm Dievar with good polishability and a high temperature strength.

### DIMENSIONS

#### UDDEHOLM DIEVAR TIG-WELD

Diameter		Length	
mm	inch	mm	inch
1.0	0.04	1000	40
1.6	0.06	1000	40
2.4	0.09	1000	40
3.2	0.13	1000	40

## WELDING OF UDDEHOLM DIEVAR

### GENERAL

Good results when welding can be achieved if proper precautions are taken (joint preparation, choice of consumables and welding procedure). If the tool is to be polished, it is necessary to use a filler material that has the same chemical composition as the base material.

Welding method	Gas Tungsten Arc Welding GTAW (TIG)
Filler material	Dievar TIG-Weld
Hardness after welding	50–55 HRC

## STORAGE OF ELECTRODES

Always keep the electrodes in a thermostatically controlled drying cabinet at 50–150°C (120–300°F) once the package has been opened. The electrodes can be stored unpacked as long as they are kept in the cabinet. Make it a rule that electrodes are clean and dry prior to welding.

### CLEANING OF TOOL

The surfaces in the vicinity of the intended repairs/adjustment should be cleaned to base metal prior to welding. Clean the tool carefully with degreasing agent or by grinding. Make sure that the cavity surfaces are protected during welding, especially if these are polished.

### JOINT PREPARATION

For a satisfactory result, it is imperative that the region to be welded is carefully prepared. Cracks should be ground out so that the joint bottom is well rounded and such that the sides make an angle of at least 30° to the vertical. Any damage occurring during welding should be ground down to "sound steel" before re-welding.

### PRE-HEATING TEMPERATURE

The temperature of the tool should be maintained constant during the entire welding process. This is best achieved using electrical heating elements. If the tool is preheated in a furnace prior to welding, then it is important that the furnace temperature is below 300°C / 570°F when the tool is put in.

	Soft annealed 160 HB	Hardened 42–53 HRC
Preheating temperature	325–375°C (620–710°F)	325–375°C (620–710°F)
Max. interpass temperature	475°C (880°F)	475°C (880°F)

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.

Classified according to EU Directive 1999/45/EC For further information see our "Material Safety Data Sheets".

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## BUILDING UP THE WELD

The root runs should be done with low heat input, maximum current about 120 A. The first two layers should always be welded with the same low heat input, while a greater heat input can be used for the remaining layers.

At least two runs even for small repairs is recommended. Do not oscillate the gun.

When there is a polishing demand, remelting of each layer is recommended to ensure the purity of the weld (pores, slag).

The temperature of the tool in the vicinity of the weld should not exceed 475°C / 880°F (interpass temperature). When passed there could be a risk for distortion of the tool.

The transition region between the weld and the base material should be carefully inspected prior to stopping welding. Arcing sores or undercut should be repaired before further processing.

After welding the final layer of weld metal is ground away prior to any heat treatment.

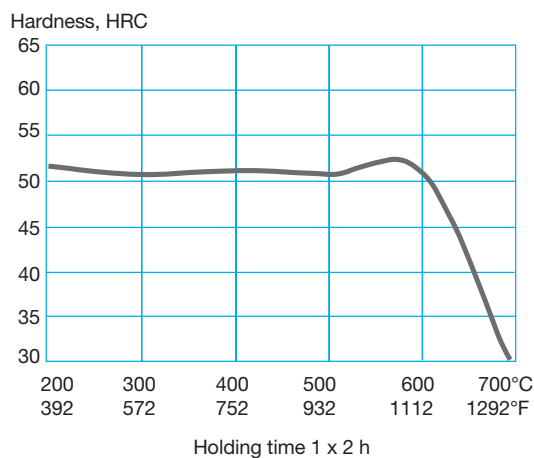
For more detailed information, see the Uddeholm brochure "Welding of Tool Steel".

## POST TREATMENT

	Soft annealed	Hardened
Hardness	160HB	42–53 HRC
Cooling rate	20–40°C/h (35–70°F/h) for the first 2–3 hours then freely in air < 70°C (160°F)	
Heat treatment	Soft anneal Harden Temper	Temper 10–20°C (20–35°F) below the highest previous tempering temperature

## TEMPERING GRAPH FOR FILLER MATERIAL

Hardness as welded 50–55 HRC.



For heat treatment data see Uddeholm Product Information for Uddeholm Dievar.

## FURTHER INFORMATION

Please contact your local Uddeholm office for further information on the selection, heat treatment, application and availability of Uddeholm tool steel. For more information, please visit [www.uddeholm.com](http://www.uddeholm.com)