

Uddeholm Corrax® TIG-Weld

WELDING OF MOULD STEEL

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

Uddeholm Corrax TIG-Weld give a weld metal identical in composition to Uddeholm Corrax with good polishability and suitable for photo-etching.

DIMENSIONS

Diameter		Length	
mm	inch	mm	inch
1.0	0.04	1000	39.4
1.6	0.06	1000	39.4

WELDING OF UDDEHOLM CORRAX

GENERAL

Good results when welding can be achieved if proper precautions are taken (joint preparation, choice of consumables and welding procedure). If the mould is to be polished or photo-etched, 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	Uddeholm Corrax TIG-Weld
Hardness after welding	30–35 HRC

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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CLEANING OF MOULD

The surfaces in the vicinity of the intended repairs/adjustment should be cleaned to base metal prior to welding. Clean the mould 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.

PREHEATING TEMPERATURE

Welding can be done at room temperature.

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.

To ensure the purity of the weld (pores, slag) remelting of each layer is recommended. See figure below.

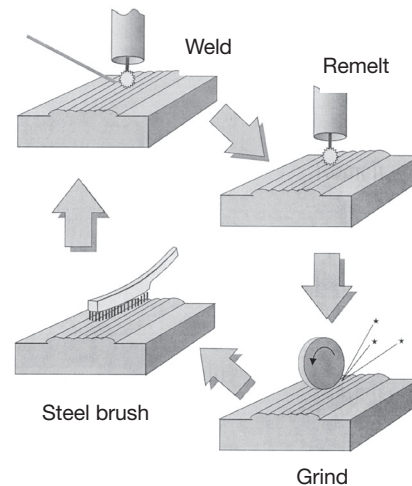


Figure 1. Procedure for TIG-welding when the surface are going to be polished/photo-etched.

The temperature of the tool in the vicinity of the weld should not exceed 300°C (570°F). When passed there is a risk for distortion of the tool.

If severe restraint conditions are expected when welding in delivery condition intermittent welding is recommended. See figure below.

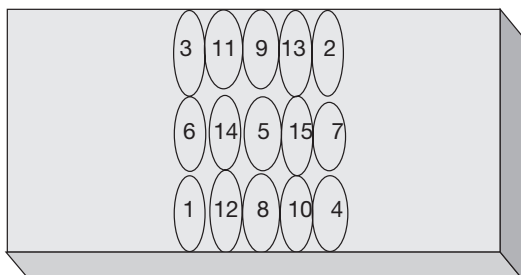


Figure 2. Max length of the strings 20–25 mm (0.8–1.0 inch) at intermittent welding.

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

In order to achieve an even hardness profile heat treatment after welding should be done.

Hardness, HRC	32–35	38–40	45–47	48–50
Cooling rate	20–40°C/h (35–70°F/h) the first 2–3 hours then freely in air < 70°C			
Heat treatment 525°C	desired	Age to (1110°F)	600°C (1070°F)	575°C (980°F)

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