

Best practice

Flame cutting of TOOLOX33®

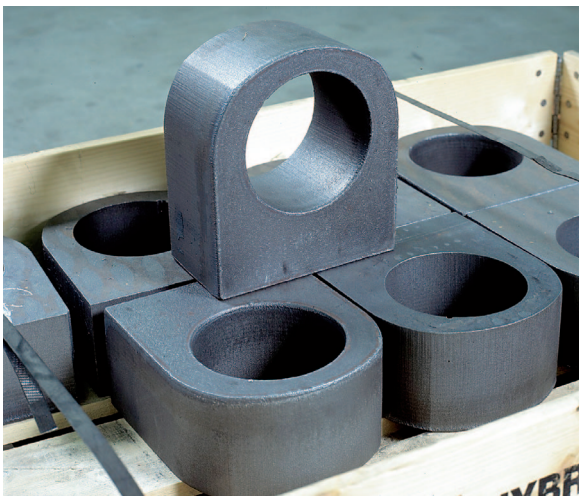


November 2006

Recommended flame cutting procedure TOOLOX33

1. When flame cutting TOOLOX33 preheat both sides of the kerf, approximately 100-150 mm on each side.
The preheat temperature shall be reached in the plate centre. Maintain the preheat temperature throughout the entire cutting operation.
The preheat temperature for TOOLOX 33 is 150-200 °C
2. Cut.
3. Apply a post-cut heat treatment of 560-580 °C for the whole cut piece or, if large sizes are cut, 100 – 150 mm from the cutting edge. The post-cut heat treatment shall start within a limited time after the pieces have been cut. The soaking time shall be 5 min/mm thickness or at least 60 min. The soaking time to be counted from when the centre part has reached the aimed heat treatment temperature. Normally, 2 hours soaking time is sufficient.
Maximum time to elapse before starting heat treatment after flame cutting is 9 hours.
4. The plate/part shall cool in open air to room temperature.
5. From the gas-cut edge:
*5 mm shall be milled off to remove the heat affected zone generated by the cutting operation.
*Another 5 mm shall be milled off if a shape stable material is necessary for further machining/sawing etcetera.
6. Calibrate your post heat treatment procedure by hardness control of the base material and of the heat affected zone. The base material shall show no hardness deterioration. The heat affected zone shall have the same, or almost the same hardness as the un-affected base material.

Before flame cutting in TOOLOX44 please contact SSAB Oxelösund.



Flame cut blanks for a bearing house.



Final product.

TOOLOX®
PREHARDENED TOOL & MACHINE STEEL

Best practice

Welding of TOOLOX®



November 2006

Recommended welding procedure

1. Preheat both sides of the weld groove, approximately 100-150 mm on each side. The preheat temperature shall be reached in the plate centre. Maintain the preheat temperature throughout the entire welding operation, especially during tack welding.

The preheat temperature:

*170-200 °C for TOOLOX 33

*225-275 °C for TOOLOX 44

2. Use as soft electrodes as possible, or stainless electrodes. The electrodes must be dry with a maximum hydrogen content of 5 ml/100g weld deposit.

For best texturing quality use TIG-welding with a filler wire of the same chemical composition as the base material. The easiest way is then to saw a rod from a spare part of the base material.

3. Weld with a heat input giving $\Delta_{t8/5}$ between 10 and 20 s.

4. During welding:

Maintain a minimum interpass temperature of:

*170 °C for TOOLOX 33

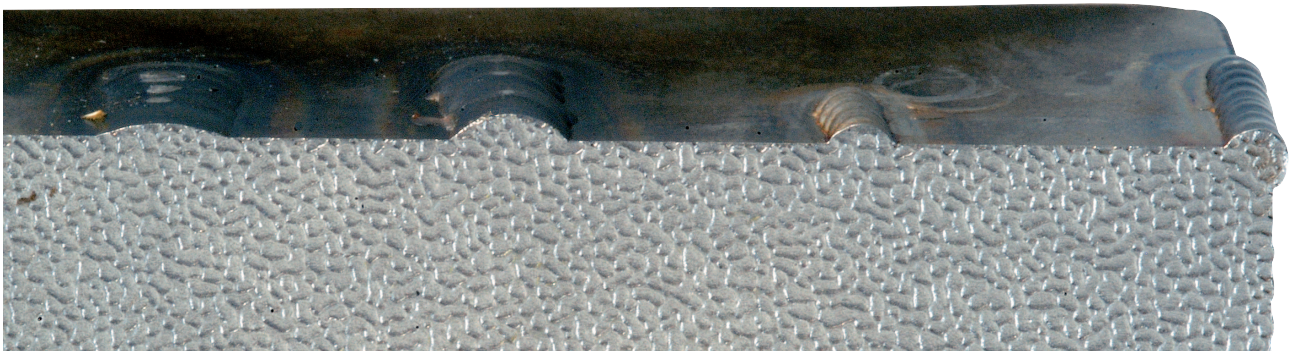
*225 °C for TOOLOX 44

5. Apply a post-weld heat treatment approximately 100-150 mm from each side of the weld. The soaking time shall be 5 min/mm plate thickness or minimum 60 minutes. Normally, 2 hours soaking time is sufficient. The soaking time shall be counted from when the temperature has been reached in the entire tempering volume.

***Use a post-weld heat treatment temperature of 150-200 °C if low demands are put on shape stability.**

***Use a post-weld heat treatment temperature of 560-580 °C if high demands are put on shape stability and to minimize the influence from the weld on the texturing result.**

6. After the post-weld heat treatment the component shall cool in open air to room temperature.



Welded and textured TOOLOX.

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PREHARDENED TOOL & MACHINE STEEL