Toolox® 44

General Product Description

Toolox® 44 is a steel already heat treated to the final properties.Thus saving time, costs and risks associated with heat treatment.

The very high strength is combined with a high and guaranteed toughness as well as an excellent fatigue resistence. Making Toolox® 44 the ideal choice for the most demanding engineering and mould and die applications.

Toolox® 44 can be surface hardened with methods like nitriding, laser and induction. Giving the possibilities to even further improve the performance.

Dimension Range

Toolox® 44 is available as plates in thicknesses between 6.0 - 130.0 mm, and as forged block in thickness up to 320 mm.

Mechanical Properties

Thickness (mm)	Hardness [1] (HBW)	Yield strength $R_{p0.2}$ (min MPa)	Tensile strength R_m (min MPa)	Elongation A_5 (min %)
6.0 - 130.0	410 - 475	1150	1300	8
131.0 - 320.0	410 - 475	—	—	—

[1] Hardness is measured, according to EN ISO 6506-1, on a milled surface 0.5 - 2 mm below the plate surface.

Impact Properties

Thickness (mm)	Min impact energy for transversal testing, Charpy V 10x10 mm test specimen [1]
6.0 - 130.0	18 J / 20 °C
131.0 - 320.0	11 J / 20 °C

[1] Unless otherwise agreed, transverse impact testing according to EN 10025-6 option 30 will apply. For thicknesses between 6 - 11.9 mm, sub-size Charpy V-specimens are used. The specified minimum value is then proportrional to the cross-sectional area of the specimen compared to a full-size specimen (10 x 10 mm).

Ultrasonic testing

Ultrasonic inspection is carried out according to: EN 10160 with extra demands according to specification SSAB V6.

Tolerances

More details are given in SSAB's brochure Toolox® Guarantees and on www.ssab.com.

Thickness

Tolerances according to Toolox® Thickness Guarantee.

Toolox® Guarantees meets the requirements of EN 10029 Class C, but offers more narrow tolerances for plates.

Thickness tolerances for Toolox® forged blocks are according to 0/+3.2 mm.

Length and Width

Length and width tolerances according to EN 10029 for Toolox® plates.

Length tolerances for Toolox® forged blocks are -500/+500 mm.

Flatness

Tolerances for Toolox® plates are according to Toolox® Flatness Guarantees, which are more restrictive than EN 10029 Class N (steel type L).

Maximum accepted flatness deviation for Toolox® forged blocks are 1 mm/m.

Surface Properties

According to EN 10163-2 Class B, Subclass 3 for Toolox® plate.

Surface condition for Toolox® forged blocks are milled to roughness of max Ra 12.5 um, and oiled as corrosion protection.

Delivery Conditions

Quenched and Tempered at a minimum temperature of 590 °C.

On delivery from SSAB, Toolox® material meet the following specifications:

- Free from mill scale
- Not repair welded

Delivery requirements can be found in SSAB's brochure Toolox® Guarantees or at www.ssab.com.

Fabrication and Other Recommendations

Welding, bending and machining

For information concerning welding and fabrication, see SSAB's brochures on www.ssab.com or consult Tech Support.

Appropriate health and safety precautions must be taken when welding, cutting, grinding or otherwise working on the product. Grinding, especially of primer coated products, may produce dust with high particle concentration.

Surface Hardening

Toolox® is an excellent steel for different type of surface hardening. The high yield strength and ductility of Toolox make it an ideal base material Microcracks in the hardened layer stops when reaching the base material. Surface hardening such as laser or induction when done in the right way only changes the properties locally. The steel below the hardened layer keeps its original properties intact.

Nitriding and surface coatings represent a very interesting way to increase hardness, lower friction and some cases improve corrosion resistance When done below 590 °C the material properties are not affected.

Contact Information

www.ssab.com/contact

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