

HARDOX®

TechSupport

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#05

HARDOX® HiTuf wear plate for tough situations

HARDOX HiTuf is an abrasion resistant plate with extremely high impact toughness in order to provide excellent crack resistance. The HARDOX HiTuf is intended for applications with extra high demands on the combination of crack and wear resistance.

What is HARDOX® HiTuf?

In HARDOX HiTuf we have focused on making the best wear plate available for heavy section wear applications, with extra high demands on crack resistant and structural integrity.

HARDOX HiTuf is produced by roller quenching followed by subsequent tempering and is supplied in the thickness range of 40–120 mm. The average surface hardness is 350 Brinell.

To obtain the desired impact toughness and thus a high crack resistance, many manufacturers of heavy gauges wear parts today use structural quenched and tempered steels in hardness of 260–290 Brinell. By increasing the steel hardness up to 350 Brinell an increase in wear life of about 10–20% can be reached. This can easily be achieved by an up grading to the HARDOX HiTuf wear plate.

HARDOX® HiTuf vs. 400 HBW Steel

A typical steel used for heavy section wear parts is the 400 Brinell quenched and tempered wear plates. In some cases a 400 HBW steel is not sufficient, and a boost in toughness is needed to manage the forces.

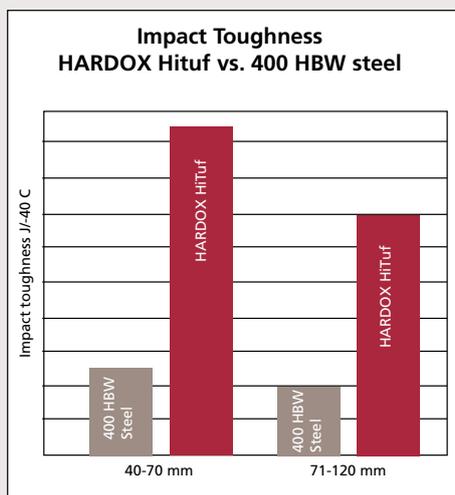
This is the case in production and service of heavy section wear parts subjected to structural loads. HARDOX HiTuf would be of benefit especially if there is a need to facilitate maintenance work involving welding and thermal cutting. The crack susceptibility, when welding or cutting, tends to increase with increasing plate thickness and plate hardness. Here HARDOX HiTuf can have a lot to offer.

Due to the way HARDOX HiTuf is manufactured certain benefits can be obtained compared to other 400 HBW steel.

- Improved weldability (lower preheating)
- Improved thermal cutting, (lower preheating requirements)
- Improved temperature stability (less risk of softening at high service temperatures.)

High Impact toughness

High impact toughness allows the steel to resist failure by cracking when exposed to heavy impact. The higher the toughness the better the crack resistance, meaning a greater versatility in applying the HARDOX HiTuf in thick wear components subjected to structural loads.



Structural characteristics

The HARDOX HiTuf is the wear plate with the most structural steel features of all the wear plates in the HARDOX product programme. A yield stress of 850–900 MPa, an impact toughness of 70–95 J/40 C and an elongation of 16% ensures a reliable ductility to the steels structural integrity.

HARDOX® HiTuf applications

Due to the well balanced properties in respect to crack and wear resistance the HARDOX HiTuf fulfils its place both as a wear plate and as a structural member. The application segments where the HARDOX HiTuf is mainly intended to be used are thick cutting edges, demolition tools and rippers. Due to the low preheat requirements when welding, HARDOX HiTuf is also an excellent steel to be used for maintenance work.



Demolition tools is a typical application where HARDOX HiTuf excellent performance is utilised.



HARDOX HiTuf can be welded with all conventional welding methods available.

Recommended preheat temperature

Combined plate thickness (mm)	Preheat requirement (°C)
80–90	75
90–100	100
>100	150

If preheating can not be fully performed austenitic stainless consumables are recommended to be used.

Welding, low preheat requirements

HARDOX HiTuf can be welded with all conventional welding methods. Preheat recommendations for welding with basic ferritic electrodes is according to the table below. The use of filler material with low hydrogen content (HD < 5 ml/100g) is recommended. If preheating prior to welding can not be performed welding with austenitic stainless consumables can be utilized.

Cutting, low preheating

HARDOX HiTuf can be profiled by any conventional thermal cutting methods. Preheating to 125 – 150° C is recommended when cutting plates in thickness 100 mm.

More information on how HARDOX HiTuf should be handled can be found in HARD FACTS 15 “HARDOX HiTuf in the workshop”

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HARDOX®

WEAR PLATE

HARDOX wear plate only from SSAB Oxelösund
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