Creusabro®

CREUSABRO 8000

CREUSABRO 8000 is a patented steel brand of Industeel and suitable for applications in the hardness range of conventional, low-alloy, water-quenched 500 HB wear-resistant steels.

The CREUSABRO brand

CREUSABRO has been a registered trademark of Industeel for 60 years and is known for superior wear-resistant steels that have stood the test of time in the industry for many decades. CREUSABRO is a cost-effective steel that combines high wear resistance with good cold formability/general ease of processing and good notched impact strength. Using a NiCrMo alloy concept and controlled cooling, a unique combination of characteristic metallurgical properties is achieved, resulting in longer service life in critical applications compared to traditional wear plates.

Features

- Surface hardening of up to +70 HB (TRIP effect: transformation induced plasticity) in use
- Fine dispersion of hard micro-alloyed carbides
- High mechanical strength
- Tough and crack resistant
- The TRIP effect leads to a uniform hardness over the thickness
- Deep hardening
- Low residual stress
- High temperature resistance, suitable for permanent use up to approx. 450 °C

Benefits

- Up to 50–100% longer service life compared to traditional wear-resistant steels
- Potential for considerable weight savings and increase in payload thanks to reduced thicknesses with the same service life as traditional wear steels
- Thanks to its toughness and weldability, CREUSABRO is not only suitable for use as a pure wear cladding, but can also withstand static loads
- As a softer material in comparison to 500 HB water quenched steels, it is easier to process – without reducing wear resistance in use, material hardens in use
- Excellent flatness even after processing due to low residual stress
- In service uniform properties over the entire plate and thickness
- Very good formability and weldability
- High operating temperatures up to approx. 450–500°C possible
- Reduced heat-affected zone on flame-cut edges and weld seams
- Outperforms traditional wear-resistant steels or stainless steels subjected to the combined effects of wear and corrosion when in use in damp, wet or moderately corrosive environments

Innovative high-tech product in terms of wear resistance

In addition to the traditional elements chromium and molybdenum, CREUSABRO 8000 also contains titanium. High-temperature resistant carbides are part of the metallurgical concept. In addition to the traditional Cr carbides (with a hardness of 1500 HV) and Mo carbides (with a hardness of 1800 HV), CREUSABRO 8000 is additionally alloyed with titanium. The fine, homogeneous dispersion of extremely hard titanium carbides (with a hardness of 3000 HV) also increases wear resistance significantly. So with CREUSABRO 8000, there is less wear and more utility.

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Temperature resistance

Due to the addition of Cr and Mo, CREUSABRO 8000 has a better temperature resistance compared to water-quenched 500 HB. At service temperatures of up to approx. 450°C, there is no significant loss of hardness. Processing (hot forming: bending, rolling) CREUSABRO 8000 is possible at temperatures of 500–550°C. If this is followed by slow air cooling, no significant drop in hardness can be detected.

Hardening

Due to its moderate hardness on delivery, CREUSABRO 8000 is made to ensure good processability. Processing with standard tools is cold possible. Wear resistance under operating conditions is not affected. The so-called TRIP effect increases the wear resistance by 70 HB when using CREUSABRO 8000 and this applies homogeneously throughout the entire sheet thickness.

This metallurgical process is referred to as transformation-induced plasticity. CREUSABRO 8000 thus offers the ideal combination of wear resistance (excellent surface hardening under wear stress) and ease of processing for the toughest manufacturing and operating conditions.

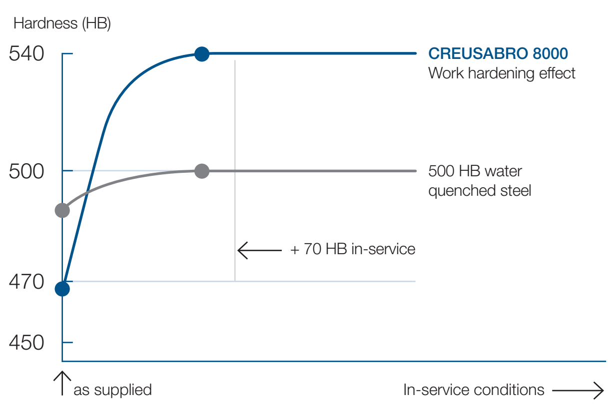
Delayed tearing

CREUSABRO 8000 has the advantage of a higher plastic deformation capacity in case of impact effects.
This improved toughness results in slower wear than water-quenched 500 HB steels.

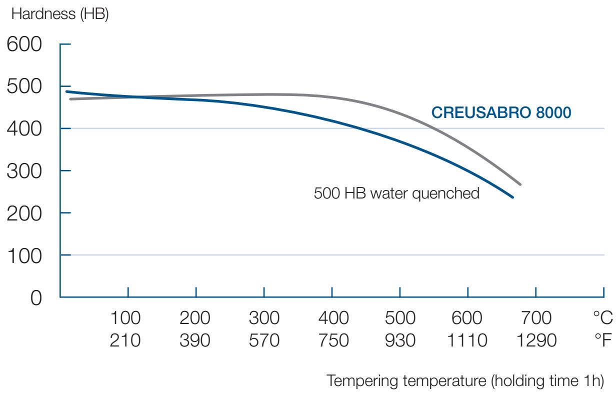
Service life expectancy and processing

Due to its metallurgy, CREUSABRO 8000 is characterised by a higher wear resistance and good workability compared to other wear-resistant steels.

Hardness in service conditions



Softening resistance according to tempering temperature



Inspection certificate

Delivery with inspection certificate 3.1 according to EN 10204

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Dimensions stocked by UnionStahl

Thicknesses	1500 x 3000	1500 x 6000	2000 x 6000	2000 x 8000	2500 x 6000	2500 x 8000
4	•	•				
5–12		•	•	•	•	•
15–25		•	•	•		•
30–60			•	•		•

Other dimensions on request

Flatness 5 mm/m

Chemical analysis

C	S	P	Mn	Ni	Cr	Mo	Ti
≤ 0.28	≤ 0.005	≤ 0.018	≤ 1.6	≤ 1.0	≤ 1.6	≤ 0.40	≤ 0.20

14 chemical elements reported

Steel manufacturing process

using electric arc furnace (EAF)

Mechanical properties

Hardness (HB)	Re (MPa)	Rm (MPa)	A (%)	KCVL -20°C (J)	Modulus of elasticity GPa
470	1250	1630	12	44	205

Guaranteed hardness values (as delivered) 430–500 HB; remaining data represent typical values

Mechanical processing

Cutting

Processes such as autogenous flame cutting, plasma and laser cutting can be used. For tight tolerances, good cutting edge quality and a low heat-affected zone, plasma and laser cutting is recommended. Water jet cutting is also possible.

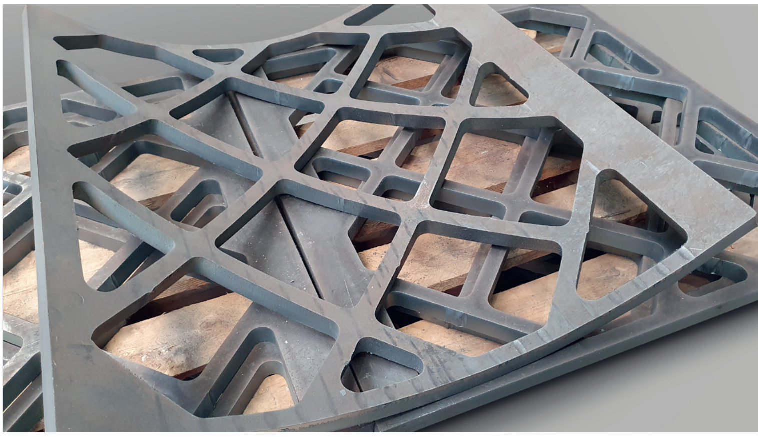
Plate temperature	Plate thickness ≤ 40 mm	Plate thickness > 40 mm
≥ 10°C	No preheating required	Preheating to 150°C
< 10°C	Preheating to 150°C is required for all material thicknesses	

Drilling

is possible with high-speed steel tools.
Type: HSSCO and K 10 / K 20
Positive experiences with Co 8%
Lubrication should be provided using soluble cutting oil.

Milling

is possible with high-speed steel tools.
Type: HSSCO and K 10 / K 20
Positive experiences with Co 8%
Lubrication should be provided using soluble cutting oil.



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Forming

Cold forming of CREUSABRO 8000 is possible under the following conditions:

- Bevelling and deburring edges
- Compliance with the minimum bending radius according to the table
- Plate temperature > 10°C

⊥ to rolling direction	ri ≥ 5 t
// to rolling direction	ri ≥ 6 t
Minimum die opening	V ≥ 14 t

Minimum bending radius, t = plate thickness

The force required for bending with a die opening V = 14 t:

Plate thickness t (mm)	Bending force F = 1 m (t/m)
10	200
20	430

Welding

CREUSABRO 8000 can be welded using all standard methods.

Applications

CREUSABRO 8000 is ideal for the following applications:

- Bucket liners for excavators, bulldozers, etc.
- Cutting edges, stiffeners for different types of buckets
- Truck tray body liners
- Wear parts for crushers
- Mill liners
- Demolition tools (recycling)
- Screens
- And many more.

The steel is suitable for all applications of abrasion, in dry or wet environments, at service temperatures up to approx. 450 °C.

Contact

For further information, please contact our technical sales department.

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