

MIILUX 450

General product description

Miilux 450 is very popular and widely used abrasion-resistant steel with nominal hardness of 450 HBW. Miilux 450 offers higher utility properties resp. hardness than Miilux 400. That is why Miilux 450 is distinguished by longer service life and is intended for more severe wear applications. This steel is characterized with its excellent wear resistance together with very good values of mechanical parameters and weldability and good bendability.

Typical mechanical properties

Grade	Thickness (mm)	Hardness (HBW)	Yield strength R _{p0.2} (MPa)
Miilux 450	6 - 12	425 - 485	1150
	12 - 120	425 - 485	1200

The hardness by Brinell scale in HBW is performed on the clean milled surface in depth of 0,5-2 mm in acc. with EN ISO 6506-1. Testing is done at every production charge.

Miilux steel wear plates are quenched through the whole cross section.

Impact energy

Grade	Thickness (mm)	Impact energy, -40°C (Charpy V) ¹⁾
Miilux 450	6 - 12	30 J
	12 - 120	35 J

¹⁾ typical value

Chemical composition (heat analysis, max %)

Grade	C	Si	Mn	P	S	Cr	Ni	Mo	B
Miilux 450	0,26	0,70	1,70	0,030	0,015	1,50	0,7	0,50	0,004

Carbon equivalent CEV

Thickness (mm)	CEV max
6 - 120	0,55

$CEV=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15$

Dimensional tolerances

Miilux hot rolled plates are produced in acc. with EN 10051 and EN 10029 Class A.

Certification

High quality wear plates are delivered together with 3.1 certificate in acc. with EN 10204-3.1

Plates marking

You can always find at the each of the Miilux plate:

- production No.
- dimensions in mm
- grade
- plate No.

Surface quality

Under requirements of EN 10163-2 Class A3. Any repair is not allowed.

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Dimensions and delivery conditions

High quality Miilux plates are produced in thickness range of 6 - 120 mm. Maximal width and length are 2500 resp. 6000 mm. We supply Miilux also as ready to install wear parts and components which are produced in acc. to your drawing or task to you. We will implement individual wishes for marking, testing, packing and others into your order.

Miilux plates are delivered with edges cut by thermal cutting. The cutting is done just before the quenching of the plates. Miilux plates are delivered in as-rolled condition in standard.

Heat treatment

Wear plates Miilux must not be exposed by any additional temperature influence resp. heat treatment. These plates achieve its properties by quenching and that's why they lose its hardness resp. strength when operation temperature is above 200° C. This will result negatively on the abrasion resistance of the plate.

Mechanical machining

Miilux plates can be machined by tool steel and high-speed steel drilling tools (HSS) with a satisfactory service life if cutting speed and feed rate are correspondingly adjusted in acc. to recommendations.

Bending

Miilux plates have to be cold formed with maximal possible punch radius value (see instructions below). Pay a special attention when choosing the proper machine as well the tools which must suit to high demands and needs of the high strength material processing. Please call to your local technical support when bending above 20 mm of the plate thickness.

Recommended cold brake pressing instructions

Grade	Thickness (mm)	Free bending < 90° r/t		Free bending < 90° w/t		"V" bending < 90° w/t
		Transverse*	Longitudinal*	Transverse*	Longitudinal*	
Miilux 450	6 - 20	4,0	5,0	11,0	13,0	~ 15,0

- Bending should be done in only one working cycle.
- Slow punch speed is recommended.
- Use a die equipped with rollers (see fig.).

* Bending line v. rolling direction



Welding and thermal cutting

Miilux 450 plates are very good weldable. Preheating is necessary when combined thickness is above 30 mm. See recommended preheating temperatures below. The temperature of the welded material must be minimally at the value of 70% of the recommended temperature. When finishing the welding process then the temperature must not exceed more than 30% above the recommendation. More you can find at the Miilux welding recommendations brochure.

The preheating temperature of the thermal cutting process is equal to the preheating temperature of the welding (see recommendations below).

Recommended preheating temperature

Combined plate thickness	20 mm	30 mm	40 mm	50 mm	60 mm	80 mm
Miilux 450		100°C	125°C	150°C	175°C	200°C