

Miilux wear-resistant steel

Maximum content of chemical composition [%]

Steel grade	Thickness	C	Si	Mn	P	S	Cr	Ni	Mo	B
MIILUX® 400	6-30 mm	0,20	0,70	1,70	0,030	0,015	1,50	0,40	0,50	0,004
MIILUX® 400	30-120 mm	0,24	0,70	1,70	0,030	0,015	1,50	0,70	0,50	0,004
MIILUX® 450	6-120 mm	0,26	0,70	1,70	0,030	0,015	1,50	0,70	0,50	0,004
MIILUX® 500	6-120 mm	0,30	0,70	1,70	0,030	0,015	1,50	0,80	0,50	0,004
MIILUX® 600	6-20 mm	0,44	0,80	0,60	0,015	0,003	0,80	3,50	0,50	0,004

Typical mechanical properties and carbon equivalent value CEV

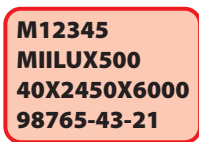
Steel grade	Thickness	Yield point Rp _{0,2} N/mm ²	Tensile strength Rm N/mm ²	Elongation A ₅ %	Impact strength Charpy-V -40°C	Hardness Range HBW	CEV
MIILUX® 400	6-12 mm	1000	1250	10-12	40 J	370-440	0,45
MIILUX® 400	12-30mm	1000	1250	10-12	45 J	380-450	0,45
MIILUX® 400	30-120 mm	1100	1400	8-12	50 J	380-460	0,55
MIILUX® 450	6-12 mm	1150	1450	8-12	30 J	425-485	0,55
MIILUX® 450	12-120 mm	1200	1450	8-12	35 J	425-485	0,55
MIILUX® 500	6-12 mm	1200	1600	8-10	25 J	470-540	0,60
MIILUX® 500	12-120 mm	1250	1600	8-10	30 J	470-540	0,60
MIILUX® 600	6-20 mm	1400	2000	6-8	20 J	570-650	0,75

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

Identification and marking of Miilux wear-resistant steel plates

Miilux wear-resistant steel plates are identified as follows:

- production No.
- order No.
- grade
- dimensions
- heat No.



Certification

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

Miilux wear-resistant steel are tested acc to EN ISO 6506-1. Miilux make a test for all batch of plates or separately if any changes of parameters of production are done.

Surface quality

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

Dimensions and terms of delivery

High quality Miilux plates are produced in thickness range of 6 - 100 mm. Maximal width and length are 2500 resp. 6200 mm. Miilux steel is also supplied as ready to install wear parts and components which are produced acc. to technical documentation.

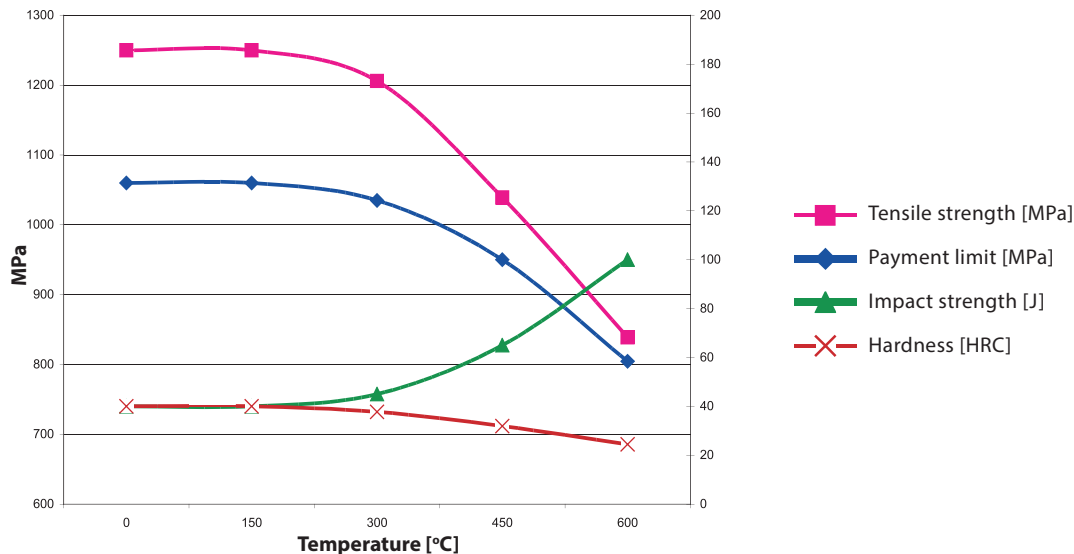
Machining

Despite their high strength and hardness, Miilux wear-resistant steel can be machined. It is of utmost importance that machines are heavy-duty. It is strongly recommended to use appropriate tools (HSS, carbide alloyed) with a satisfactory service life if cutting speed and feed rate are correspondingly adjusted acc. to recommendation.

Heat treatment

Wear resistant 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.

Miilux 400 influence of temperature on material properties



Gas welding and cutting

Miilux[®] 400 plates are very good weldable. The weldability of wear-resistant steels is good or reasonably good if heat input restrictions as well as preheating and working temperatures are paid attention to. The welding of hardness class 400 wear-resistant steels is nearly comparable with the welding of common S355 structural steel, but special attention should be paid to the susceptibility of cracking when welding Miilux 500 wear-resistant steel. Preheating for Miilux 400 is necessary when combined thickness is above 40 mm, for Miilux 450, if thickness is above 30 mm, and for Miilux 500, if thickness is above 20 mm. Miilux 600 needs preheating in all range of thicknesses.

Recommended preheating temperatures

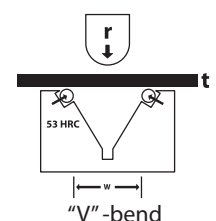
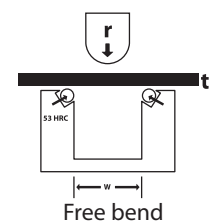
Combined plate thickness	20mm	30mm	40mm	50mm	60mm	80mm
Miilux[®] 400			100°C	125°C	150°C	175°C
Miilux[®] 450		100°C	125°C	150°C	175°C	200°C
Miilux[®] 500	100°C	125°C	150°C	175°C	200°C	200°C
Miilux[®] 600	100°C					

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

Steel grade	Thickness	Free bending < 90° r/t		Free bending < 90° w/t		"V" bending < 90° w/t
		Transverse	Longitudinal	Transverse	Longitudinal	
Miilux[®] 400	6-20mm	3,0	4,0	9,0	11,0	~ 15,0
Miilux[®] 450	6-20mm	4,0	5,0	11,0	13,0	~ 15,0
Miilux[®] 500	6-20mm	6,0	8,0	15,0	19,0	-
Miilux[®] 600	6-20mm	~ 10,0	~ 12,0	~ 23,0	~ 27,0	-



Additional bending recommendations:

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