



Chemical composition content % maximum (ladle analysis)

| Steel grade | Thickness | C | Si | Mn | P | S | Cr | Ni | Mo | B |
|-----------------------|-----------|------|------|------|-------|-------|------|------|------|-------|
| Miilux Protection 450 | 5-40 mm | 0,26 | 0,60 | 1,50 | 0,030 | 0,015 | 1,50 | 0,70 | 0,50 | 0,005 |

Typical mechanical properties

| Steel grade | Thickness | Yield strength Rp 0,2 N/mm ² | Tensile strength Rm N/mm ² | Elongation A5 % | Impact Charpy-V -40 °C Kv Joule | Hardness Range HBW | CEV |
|-----------------------|-----------|--|--|--------------------|------------------------------------|-----------------------|------|
| Miilux Protection 450 | 5-40 mm | 1200 | 1450 | 8 | 30 | 420-480 | 0,58 |

Technical specification of Miilux® Protection 450

| Class acc. to | Thickness of the test (nominal) | Type of weapon | Calibre | Type of bullet | Weight of the bullet | Shooting distance | Speed of the bullet V _{2,5} (m/s) |
|---------------------|---------------------------------|----------------|--------------|----------------|----------------------|-------------------|--|
| EN1522 FB6 | 8,0 mm | Rifle | 7,62 x 51 mm | M80 Nato Ball | 9,5 g | 10 m | 830 ± 10 m/s |
| EN1522 FB7 | 16,0 mm | Rifle | 7,62 x 51 mm | P80 Nato AP | 9,5 g | 10 m | 820 ± 10 m/s |
| Stanag 4569 Level 2 | 14,0 mm | Rifle | 7,62 x 39 mm | API BZ | 7,7 g | 30 m | 695 ± 20 m/s |

Test results mentioned above are according to EN 1522 and Stanag 4569, but we have tested also other classes e.g. MIL-standards. Ask for more information about delivery-specific tests from technical customer service and sales.

Miilux[®] Protection 450

Ballistic steel plates and components for human protection

Delivery condition

- Quenched

Tolerances

- Dimensions according to EN 10029 or EN 10051
- Thickness according to EN 10029 class C and flatness according to EN 10029 class N, steel type H

Surface condition

- According to EN 10163-2 class B subclass 3

General technical delivery condition

- According to EN 10021. Unless otherwise agreed. Inspection documents EN 10204-2.2. Issued in English.

Dimensional tolerances according to EN 10029

| Plate thickness in mm | Tolerances in mm |
|-----------------------|------------------|
| 3-4 | - 0,0 + 0,35 |
| 5-6 | - 0,0 + 0,70 |
| 7-9 | - 0,0 + 0,90 |
| 10-13 | - 0,0 + 1,00 |
| >13 | - 0,0 + 1,10 |

Other thickness tolerances by special agreement.

Workshop recommendations

Machining

Miilux protection products can be machined with rapid steel and hard metal (HSS) drills with a satisfactory service life if the drill advance and cutting speed are correspondingly accommodated.

Welding

Miilux Protection 450 is limited with heat input and maximum welding energy. Preheating is needed with Miilux Protection 450 when combined plate thickness is more than 20mm. More information available in Miilux Protection welding brochure.

Cold forming

Cold forming directive limits

| Steel grade | Plate thickness (mm) | Free bending < 90° rounding radius of press/ plate thickness R/t Bending line to rolling direction | | Free bending -Free hole width/plate thickness W/t | | Bottoming 90° -Free hole width/ plate thickness W/t |
|-----------------------|----------------------|--|--------------|---|--------------|---|
| | | Transverse | Longitudinal | Transverse | Longitudinal | |
| Miilux Protection 450 | 5-20 | 4,0 | 5,0 | 11,0 | 13,0 | ~ 15,0 |

Bending should be done with one press | Slow pressing speed is recommended | Lower tool should be roller-type (see drawings)

