

Armour Plate Steel for Human Protection



Applications

- Armoured civilian vehicles
- Ballistic protection for buildings
- Cash in transit vehicles
- Military vehicles
- Police vehicles
- Security doors and bank counters

Key Benefits

- Facilities for machining, bending and cutting (plasma, laser, water jet).
- Fast ex-mill delivery, with no minimum order quantity.
- Fully accredited quality systems to ISO 9001, 14001 and 18001.
- Material can be supplied as ready to install components.
- Material meets international ballistic test standards.
- Delivered worldwide by our international logistics organisation.

Brown McFarlane provides specialist steel solutions to suit your needs by offering a wide range of Miilux armour plate products.

Products have been tested according to EN1522, MIL-A 46100D and STANAG 4569 together with other international specifications.

Miilux is an established brand of protection steel with a global reputation for high quality and integrity.

Specifications/Grades

Miilux Protection 380
Hardness 320 - 370HB
Supplied from 6mm to 25mm thick

Miilux Protection 400
Hardness 360 - 420HB
Supplied from 5mm to 40mm thick

Miilux Protection 450
Hardness 420 - 480HB
Supplied from 5mm to 40mm thick

Miilux Protection 500
Hardness 480 - 540HB
Supplied from 2.5mm to 40mm thick

Miilux Protection 500T
Hardness 480 - 540HB
Supplied from 2.5mm to 40mm thick

Plate formats up to 6100 x2500mm



Technical specification of Miilux Protection 500.

| Class acc. to EN1522 | Thickness of the test (nominal) | Type of weapon | Calibre | Type of bullet | Weight of the bullet | Shooting distance | Speed of the bullet V2,5 (m/s) |
|----------------------|---------------------------------|----------------|--------------|-------------------------------------|----------------------|-------------------|--------------------------------|
| FB3 | 2.5mm | Revolver | 357 Mag. | Fulljacket, coned bullet, soft core | 10.2g | 5m | 430±10m/s |
| FB4 | 3.0mm | Revolver | 44 Rem. Mag. | Fulljacket, flat nose, soft core | 15.6g | 5m | 440±10m/s |
| | 4.2mm | Rifle | 7.62 x 39mm | AK-47 M43 | 8.0g | 10m | 720±10m/s |
| FB5 | 6.0mm | Rifle | 5.56 x 45mm | SS109 (M855) | 4.0g | 10m | 950±10m/s |
| FB6 | 6.0mm | Rifle | 7.62 x 51mm | M80 Nato Ball | 9.5g | 10m | 830±10m/s |
| FB7 | 14.0mm | Rifle | 7.62 x 51mm | P80 Nato AP | 9.5g | 10m | 820±10m/s |
| Stanag 4569 | 6.0mm | Rifle | 7.62 x 51mm | M80 Nato Ball | 9.5g | 30m | 833±10m/s |
| Level 1 | 6.0mm | | 5.56 x 45mm | SS109 (M855) | 4.0g | 30m | 900±10m/s |
| | 9.0mm | | 5.56 x 45mm | M193 | 3.5g | 30m | 937±10m/s |
| Stanag 4569 Level 2 | 12.0mm | Rifle | 7.62 x 39mm | API BZ | 7.7g | 30m | 695±10m/s |
| Stanag 4569 Level 3 | 24.0mm | Rifle | 7.62 x 51mm | AP (WC core) | 8.4g | 30m | 930±10m/s |
| | 16.0mm | | 7.62 x 54Rmm | B32 API | 10.3g | 30m | 854±10m/s |

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Chemical Properties

Content % maximum (ladle analysis)

| Steel Grade | C | Si | Mn | P | S | Cr | Ni | Mo | B |
|-------------|------|------|------|-------|-------|------|------|------|-------|
| Miilux 380 | 0.13 | 0.40 | 1.40 | 0.020 | 0.010 | 1.50 | 0.40 | 0.40 | 0.005 |
| Miilux 400 | 0.20 | 0.70 | 1.70 | 0.030 | 0.015 | 1.50 | 0.40 | 0.50 | 0.004 |
| Miilux 450 | 0.26 | 0.60 | 1.50 | 0.030 | 0.015 | 1.50 | 0.70 | 0.50 | 0.005 |
| Miilux 500 | 0.30 | 0.70 | 1.70 | 0.030 | 0.015 | 1.50 | 0.80 | 0.50 | 0.004 |
| Miilux 500T | 0.30 | 0.70 | 1.70 | 0.030 | 0.015 | 1.50 | 0.80 | 0.50 | 0.004 |

Typical Mechanical Properties

| Steel Grade | Yield Strength Rpo.2 MPa | Tensile Strength Rm MPa | Elongation A5% | Impact Strength | Hardness Bhn |
|-------------|-----------------------------|----------------------------|-------------------|--------------------|-----------------|
| Miilux 380 | 800 | 1000 | 12 | 40 J | 320 - 370 |
| Miilux 400 | 1000 | 1250 | 10 | 35 J | 360 - 420 |
| Miilux 450 | 1200 | 1450 | 8 | 30 J | 420 - 480 |
| Miilux 500 | 1250 | 1600 | 8 | 20 J | 480 - 540 |
| Miilux 500T | 1250 | 1600 | 8 | 20 J | 480 - 540 |

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

Delivery condition

Quenched (500T quenched and tempered)

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.

Thickness 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.



Quality steel plate suppliers to the world