

Data Sheet

Sintox™ FA Ballistic (Mac-A950R)

Description

Alumina ceramic with a *minimum* Al₂O₃ content of **95.0%** (typically **96%**).

This lightweight hard-faced material is especially formulated for ballistic applications.

(MTC pioneered monolithic ceramic tiles that are now the accepted standard for body armour.)

Prime Features:

- Excellent ballistic properties
- High mechanical strength
- Can be moulded as double or single curvature monolithic tiles for 'ergonomic' body armour.
- Weight savings of up to 10% in comparison with traditional ballistic tile materials

Specifications

- Quality Assurance to ISO 9002
- Approved supplier to UK Ministry of Defence, and defence equipment manufacturers globally

Typical Applications:

- Ergonomic body armour for defence and security services
- Armour tiles for battlefield vehicles

Production Capabilities

- Body armour — single and double curvature monolithic tiles, groin tiles, and smaller mosaic tiles
- Vehicle armour — standard tiles, tile kits, and prototypes to customer requirements
- Prototype, batch and volume production

Physical Properties *

Colour	Pink
Bulk Density (fired)	3.74 Mg/m ³
Grain Size	4.0 μm
Porosity (apparent)	0% (fully dense) % nominal
Vickers Hardness	12.5 GPa @ Hv 0.5kg
Rockwell hardness (R45N)	78
Compressive Strength	2000 MPa
Flexural Strength (3-point)	350 MPa
Young's modulus	320 GPa
Poisson's ratio	0.23
Fracture toughness	4.6 K _{IC} (SENB), MPa.m ^{1/2}
Sonic modulus (time of flight method)	325 GPa
Shear modulus (time of flight method)	130 GPa
Sonic velocity (time of flight method),	9000 m/s

*Please note that all values quoted are based on test pieces and may vary according to component design. These values are not guaranteed in anyway whatsoever and should only be treated as indicative and for guidance only.

Category	Weapon types	Calibre	Ammunition	Suggested thickness	NIJ Class
Special hand gun rounds	Sub-machine guns, revolvers, pistols	7.62 Tokerev, 9mm pistol, 44 Magnum	Super penetrating & metal piercing types	4mm	3A
Assault rifles & light support weapons	AK74 M16/AR15, etc AK47 (ball rounds) AK47 (API rounds)	5.45 x 39.5mm 5.56 x 45mm 7.62 x 39mm 7.62 x 39mm	All ball rounds including steel core. AP rounds except tungsten cored types	5.5mm 5.5mm 6.0mm 6.5mm	
7.62mm military rifles & machine guns	7.62 NATO rifle & GPMG .30-60 Garrard 7.62 Dragunov & RP machine gun	7.62 x 51mm 7.62 x 63mm 7.62 x 54R.mm	Ball rounds including ones with steel mantel. PS-type ball	6.5 to 8mm 7 to 8mm 7 to 8mm	3
7.62mm military rifles & machine guns	7.62 NATO rifle & GPMG .30-60 Garrard 7.62 Dragunov & RP machine gun	7.62 x 51mm 7.62 x 63mm 7.62 x 54R.mm	Steel-cored AP & API types	8.5 to 9mm 9 to 10mm 9 to 10mm	4

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