



MATERIAL

Swebor Armor™ Manganese is a Mangalloy or High alloy steel which has proven itself true the history since its discovery in 1882. Its chemical composition as alloyed steel gives this steel properties which radically differ from low alloyed carbon steels.

High toughness, high $R_{p_{0.2}}/R_m$ ratio, supreme elongation combined with strain hardening (final surface hardness up to 600 HV) gives Swebor Armor™ Mn good impact and ballistic resistance.

APPLICATION

Swebor Armor™ Mn can be used in most protection applications i.e. civil armored vehicles (limousines, SUVs or trucks), CIT-vehicles, police cars, security doors and walls, bank counters, shot catches, etc. Swebor Armor™ Mn has excellent ballistic protection properties in combination with its unique strain hardening ability but still remains easy to handle in the workshop.

CHEMICAL COMPOSITION (in wt.%)

MAX	C	Si	Mn	P	S	S + P	Other
	1,20	0,40	12,50	0,020	0,005	0,025	Cu

DELIVERY CONDITION

Quenched

HARDNESS

The hardness is measured according to DIN EN ISO 6506-1. The measurement takes place 1 mm underneath the plate surface. Swebor Armor™ Mn reaches hardness values about 200 HB.

MECHANICAL PROPERTIES (TYPICAL VALUES)

YEILD STRENGTH $R_{p_{0.2}}$ (N/mm ²)	TENSILE STRENGTH R_m (N/mm ²)	ELONGATION A_5 (%)
350	800 - 1000	90

GENERAL WORKING INFOS

Due to its chemical composition Swebor Armor™ Mn has good welding characteristics. Heat input must be controlled during the welding. Furthermore Swebor Mn has good properties for cold bending. Sawing and mechanical cutting as well as milling are poor.

CONSULTANCY

In order that Swebor Armor™ Mn withstands the different customer specific challenges, a careful production and operational planning is required. In this respect it is highly recommended to ask for professional advice which can be obtained by our expert staff or by third-party specialists of our cooperating partners.

DIMENSION RANGE

THICKNESS (mm)	WIDTH (mm)	LENGTH (mm)	NORMAL STOCK DIMENSION (mm)
2,00 - 3,0	1000	1000 - 3000	1000 x 3000
WIDTH TOLERANCE	0 + 20 mm		
FLATNESS	Guaranteed maximum deviation of flatness is 6,0 mm/m		

BALLISTICS DATA

WEAPON (Type)	FIRING DISTANCE (m)	IMPACT VELOCITY (m/s)	ARMOR THICKNESS (mm)	PROTECTION LEVEL (Class)
Handgun 9 mm Para. / FJ/ RN/SC	5	415 ± 10	2,0	EN 1522 FB2 VPAM PM 3
Handgun .357 Mag. / FJ/CB/SC	5	430 ± 10	2,2	EN 1522 FB3 NIJ Level II
Handgun .44 Mag. / FJ/FN/SC	5	440 ± 10	2,5	EN 1522 FB4 NIJ Level IIIA VPAM PM 4