



## MATERIAL

Swebor Armor™ 650 is a ballistic protection steel with extreme high hardness. Swebor Armor 650 hardness surpasses that of conventional armor steel grades, making it highly effective in stopping threats of same level with lower thickness.

Advanced alloying system with carefully managed production from melt, rolling to heat treatment process give Swebor Armor™ 650 unmatched combination of extreme high hardness, high strength, high toughness, great weldability and one of the most advanced ballistic performance properties on the market.

Swebor Armor 650™ complies with MIL – DTL – 32332 (MR, w/amendment 1, 19 July 2019) CLASS 2 with tighter chemical composition range for better material performance.

## APPLICATION

Swebor Armor™ 650 due to its superior ballistic performance is particularly well-suited for applications where the highest level of protection is paramount.

Swebor Armor 650 can be used in most protection application i.e civil armored vehicles (limousines, SUVs, trucks), CIT-vehicles, police cars, security doors and walls, bank counters, shoot catches, critical infrastructure etc.

Swebor Armor™ 650 has one of the most advanced ballistic protection properties on the market.

Swebor Armor™ 650 can be used as base material for protection or as add-on armor for most demanding applications. Regardless of its higher hardness Swebor Armor™ 650 still remains easy to handle in the workshop.

Swebor Armor 650™ represents a significant leap forward in ballistic protection technology where the need for superior ballistic protection is ever-present.

## CHEMICAL COMPOSITION (in wt.%)

MAX	C	Si	Mn	Cr	Ni	P	S	B
	0,50	0,80	0,60	0,80	3,00	0,015	0,003	0,004

\*The steel is grain-refined / All values are in max. wt. %

## DELIVERY CONDITION

Quenched + tempered

## HARDNESS

The hardness is measured according to DIN EN ISO 6506-1. The measurement takes place 1 mm underneath the plate surface. Swebor Armor™ 650 reaches hardness values between 640 and 680 HB.

## GENERAL WORKING INFOS

Due to its chemical composition Swebor Armor™ 650 has good welding characteristics. Because of its extreme hardness bending should be avoided if possible. In order to lose its typical characteristics, especially its hardness, Swebor Armor™ 650 must not be heated above 110°C.

## CONSULTANCY

In order that Swebor Armor™ 650 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)
3,00 - 6,50	1000 - 1550	1500 - 6000	1500 x 3000
7,00 - 9,100	1000 - 1550	1500 - 6000	1500 x 3000

  

WIDTH TOLERANCE	0 + 20 mm
FLATNESS	Guaranteed maximum deviation of flatness is 6,0 mm/m

## BALLISTIC RECOMMENDATIONS SWEBOR ARMOR™ 650

AMMUNITION CALIBER	TYPE	TEST COND. DISTANCE (m)	VELOCITY (m/s)	RECOMMENDED THICKNESS (mm)	NORMS VPAM (Class)	EN 1522/1063	STANAG 4569/AEP55 AND OTHERS	ADD. INFO
5,56x45	FMJ/PB/SCP	30	950 ±10	4,5	7/Part1	FB5/BR5	STANAG Lv.1/Part1	M855/SS109
7,62x51	FMJ/PB/SC	30	830 ±10	4,5	7/Part2	FB6/BR6	STANAG Lv.1/Part2	NATO ball
5,56x45	FMJ/PB/HC	30	937 ±20	5	-	-	STANAG Lv.1/Part3	M193/SS92
7,62x39 API BZ	FMJ/PB/HCI	30	695 ±20	8	-	-	STANAG Lv.2	AK47 API
7,62x51	FMJ/PB/HC	10	820 ±10	9,1	9	FB7/BR7	-	VPAM PM9 - FMJ/PB/HC - P80

FMJ	Full Metal Jacket	CB	Coned Bullet	SC	Soft Core
		RN	Round Nose	FeC	Fe-Core (non hardened)
		PB	Pointed Bullet	SCP	Soft Core Penetrator
		FN	Flat Nose	HC	Hard Core (steel core)
				I	Incendiary