

## Mars® steels - Stanag 4569

Threat		Mars® 380	Mars® 440	Mars® 500	Mars® 550	Mars® 600	Mars® 650	Multi-layer system examples (from strike face to back face)									
Recommended minimum thickness for protection (mm)																	
Threat Level	i	Th <sup>1</sup>	AD <sup>2</sup>	Th <sup>1</sup>	AD <sup>2</sup>	Th <sup>1</sup>	AD <sup>2</sup>	Th <sup>1</sup>	AD <sup>2</sup>	Th <sup>1</sup>	AD <sup>2</sup>	Th <sup>1</sup>	AD <sup>2</sup>	Multi-layer system			AD <sup>2</sup>
		Grade / thickness		AG <sup>3</sup>	Grade / thickness												
K1 7,62 x 51 Nato ball 5,56 x 45 Nato SS109 5,56 x 45 M193	0°	10,5	82	8,3	65	6,3	49	8,7	68	5,0	39	5,5	43	Mars®650 - 5,2mm	0	Glass fibers - 6mm	54
				10	78	9,3	73			6,8	49						
		A1 20mm FSP	10	78	9,8	76	8,5	67	-	-	-	-	-				
K2 7,62 x 39 API BZ	0°	13,5	106	13,5	94	12,5	90	10	78	8,5	67	7,5	59	Mars®600 - 4,5mm	30	Mars®500 - 6,5mm	86
	30°	7	55	6,5	51	6	47	-	-	6	47	-	-	-	-	-	-
A2 20mm FSP	0°	15	118	16	126	14	110	-	-	-	-	-	-	-	-	-	-
	60°	8,5	67	8,8	69	6	47	-	-	-	-	-	-	-	-	-	-
K3 <sup>4</sup> 7,62 x 51 AP WC	0°	23	181	21	162	20,5	161	-	-	-	-	-	-	Mars®600 - 9mm	15	Mars®380 - 13,5mm	177
	60°	8,5	67	8	63	8	63	-	-	-	-	-	-	-	-	-	-
K4 14,5 x 114 API B32	0°	37	290	35	274	-	-	-	-	-	-	-	-	Mars®600 - 8,5mm	30	Mars®380 - 15mm	184
	30°	23	181	-	-	-	-	-	-	-	-	-	-	Mars®500 - 6mm	30	Mars®380 - 13,5mm	153

<sup>1</sup>Th : Thickness (mm)

<sup>2</sup>AD : Areal Density (kg/sqm)

<sup>3</sup>AG : Air Gap (mm)

<sup>4</sup>K3 level specific thickness for 7,62 x 54R API B32 and 20mm FSP are available on demand.

All tests are carried out at Stanag recommendations speeds.

All information in this document is for information purpose only. Final configuration must be tested on vehicle. Industeel reserves the right to change its product range at any time without prior notice.

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Threat			Safe 500		Mars® 550		Mars® 600		Mars® 650		
			Recommended minimum thickness for protection (mm)								
Standard & protection level		Munition	V proof * (m/s)	Th <sup>1</sup>	AD <sup>2</sup>	Th <sup>1</sup>	AD <sup>2</sup>	Th <sup>1</sup>	AD <sup>2</sup>	Th <sup>1</sup>	AD <sup>2</sup>
EN 1522	FB4	.44 Magnum FJ/FN/SC	440 ± 10	3.2*	25	-	-	-	-	-	-
	FB4+	7,62 x 39 AK47	720 ± 10	4,2	33	-	-	-	-	-	-
	FB6	7,62 x 51 Ball	830 ± 10	6,5	51	5,7	46	5	39	-	-
		5,56 x 45 SS109	950 ± 10								
	FB7	7,62 x 51 AP (P80)	820 ± 10	-	-	12,8	100	10,5	82	9,5	75
NIJ	Level IIIA	.44 Magnum SWC	426 ± 15	2.5*	19	-	-	-	-	-	-
	Level III	7,62 x 51 M80	838 ± 15	6,5	-	5,7	46	5	39	-	-
	Level IV	.30-06 (7,62 x 63) AP M2	868 ± 15	-	-	-	-	11,5	90	11	86
VPAM	PM6	7,62 x 39 AK47	720 ± 10	-	-	-	-	3,9	31	-	-
	PM6 + Multi hit <sup>3</sup>	7,62 x 39 AK47	720 ± 10	4,2	33	3,9	31	-	-	-	-
	PM7	5,56 x 45 SS109	950 ± 10	-	-	5,7	46	5,0	39	-	-
		7,62 x 51 Ball	830 ± 10								
	PM7 + Multi hit <sup>3</sup>	7,62 x 51 Ball	830 ± 10	6,5	51	-	-	-	-	-	-
	PM8	7,62 x 39 API BZ	740 ± 10	-	-	-	-	8,5	67	7,5	59
	PM9	7,62 x 51 AP (P80)	820 ± 10	-	-	-	-	10,5	82	9,5	75
PM10	7,62 x 54R API B32	860 ± 10	-	-	-	-	14	110	13	102	

EN 1522 and VPAM PM 2006, velocity is recorded at maximum 2,5m from target strike face.  
 NIJ 0108.01, velocity is recorded at 2,5m from target strike face for levels II and IIIA and 12,5m for levels III and IV.  
 For Skin effect (EN 1522 FB6 and VPAM PM7), thickness is increased by 1.5mm for SAFE 500.

\* Mars 500

<sup>1</sup> Th : Thickness (mm)

<sup>2</sup> AD : Areal Density (kg/sqm)

<sup>3</sup> Multi hit test condition : equilateral triangle with sides 4 ± 1 time projectile caliber

All angles of incidence are 0°.

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