Ballistic Evaluation of Portable Bullet Trap

Report No. : **DRDO-TBRL-BEHI-EVR-01B-08-2021 dt. 23-08-2021**

User : **Sunflex Recycling Pvt. Ltd., Ahmedabad**

Ballistic Evaluation and Hypervelocity Impact
Terminal Ballistics Research Laboratory
Sector 30, Chandigarh – 160 030

REPORT DOCUMENTATION PAGE

1. Title	:	Ballistic Evaluation of Portable Bullet Trap			
2. Report No.	:	DRDO-TBRL-BEHI-EVR– 01B – 08 –2021			
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9. Distribution	:	(a) Sunflex Recycling Pvt. Ltd., Plot No.274/4, Shital Estate, B/H Satyamev Complex, S.G. Highway, Sola, Ahmedabad – 380060, Gujarat, India (b) Director, TBRL (c) TD, BEHI			
10. Abstract	:	A portable bullet trap system consisting of three rubber blocks was submitted by Sunflex Recycling Pvt. Ltd Ahmedabad. The system was tested against 7.62x39 (MSC), 7.62x51 mm and 5.56x45 mm ammunitions. Movement of trolley after each shot was observed. The bullet trap stopped five shots of each ammunition and no movement was observed.			

11. Prepared by : 11/08/2021 (Ajay Kumar), TO 'B' Trial Officer	Reviewed by : 12/8/21 (Dr. Debarati Bhattacharjee) Sc. 'F' : BEHI
Recommended by : 13/08/2021 (Dr. Prince Sharma), Sc. 'F' JD : BEHI	Approved by : 16/8/21 (Ipsita Biswas), Sc. 'G' TD : BEHI

Notes :

1. The test articles were brought to TBRL by the Firm's (user) representative as per their own specifications/fabrication process & were not collected from any production lot.
2. TBRL is not responsible, directly/indirectly, for the quality of production lots being manufactured by the firm (user).
3. The report is valid only for the particular panels evaluated against the specified ammunitions & publication of these results in abridged form is not allowed without written approval from Director, TBRL Chandigarh.
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SUMMARY OF RESULTS

No. of Samples : 03 Type of Test : Perforation/ Non Perforation

S. No.	Sample ID	Ammunition	Weapon	No. of fair Shots	Velocity (m/s)			Perforation
					Max.	Min.	Ref.	
1	Sunflex/R-Block-1	7.62x51 mm	Bolt Action	05	849.8	828.0	838±15	No
2	Sunflex/R-Block-2	7.62x39 (MSC)	AK-47	05	709.5	700.1	710±15	No
3	Sunflex/R-Block-3	5.56x45mm	INSAS	05	918.5	902.9	890±15	No

Remarks: Nil

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A SAMPLE ID: Sunflex/R-Block-1 | **B SAMPLE CONDITIONING:** NA

C PHYSICAL VERIFICATION

Type of Sample	:	Rubber Block + 10 mm steel	Thickness (mm)	:	300	Observations	:	Weight of rubber block only
Length (mm)	:	500	Material	:	-			
Width (mm)	:	300	Layers/Plies	:	-	Ref. Letter	:	E mail from Sunflex Pvt. Ltd.
Weight (kg)	:	38.25	Construction	:	-	Date Recd.	:	04 May 2021

D TRIAL SET – UP

Location	:	Ballistic Test Facility	**Distances from target (m)**			**Range Conditions**		
Ref. document	:	Appendix E of email from Sunflex dt 01.06.21	Weapon	:	10.0	Temperature (° C)	:	22.4
Backing material	:	NA	Velocity Screens	:	2.5	Relative Humidity (%)	:	57
Witness Plate	:	0.5mm Al. Sheet	Witness Plate	:	0.15			

E BACKING MATERIAL CONDITIONING

DROP No.	1	2	3	4	5	Average	Requirement
Depth of Indentation (mm)	NA						

F BALLISTIC EVALUATION

Ammunition			**Weapon**		
Type	**:**	7.62x51 mm	**Type**	**:**	Bolt Actiom
Lot No/Year	:	OFV-90	**Regn. No.**	:	Y-5905

Shot No.	Velocity (m/s)	Impact Angle (°)	Impact Result	Fair/ Unfair	Observation
1	839.8	0°	Not Perforated	Fair	No movement of trolley
2	831.8	0°	Not Perforated *	Fair	No movement of trolley
3	828.0	0°	Not Perforated	Fair	No movement of trolley
4	849.8	0°	Not Perforated	Fair	No movement of trolley
5	843.7	0°	Not Perforated	Fair	No movement of trolley

Remarks: ** Stopped by Steel*

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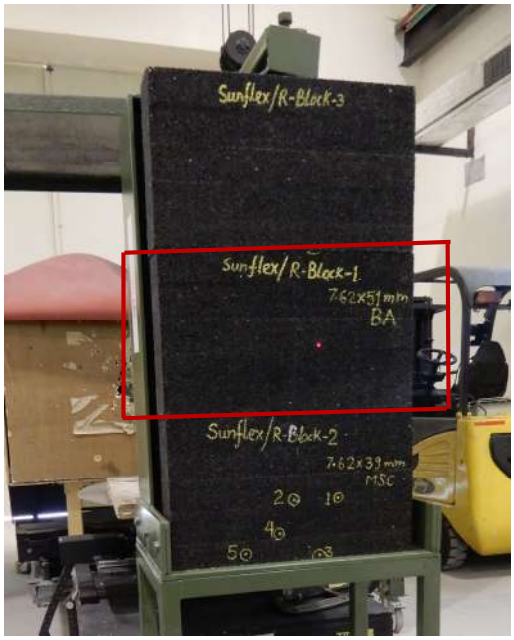
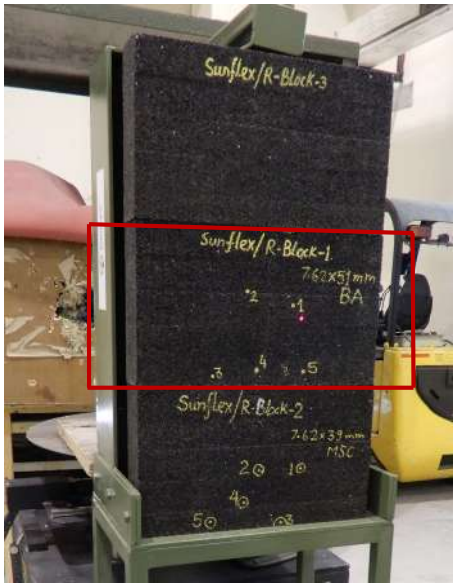
G SAMPLE ID: SAMPLE ID: Sunflex/R-Block-1

PHOTOGRAPHS (BEFORE TRIAL)



PHOTOGRAPHS (AFTER TRIAL)



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A SAMPLE ID: Sunflex/R-Block-2 | **B SAMPLE CONDITIONING:** NA

C PHYSICAL VERIFICATION

Type of Sample	:	Rubber Block+ 10 mm Steel	Thickness (mm)	:	300	Observations	:	Weight of rubber block only
Length (mm)	:	500	Material	:	-			
Width (mm)	:	300	Layers/Plies	:	-	Ref. Letter	:	E mail from Sunflex Pvt. Ltd.
Weight (kg)	:	38.25	Construction	:	-	Date Recd.	:	04 May 2021

D TRIAL SET – UP

Location	:	Ballistic Test Facility	**Distances from target (m)**			**Range Conditions**		
Ref. document	:	Appendix E of email from Sunflex dt 01.06.21	Weapon	:	10.0	Temperature (° C)	:	22.4
Backing material	:	NA	Velocity Screens	:	2.5	Relative Humidity (%)	:	57
Witness Plate	:	0.5mm Al. Sheet	Witness Plate	:	0.15			

E BACKING MATERIAL CONDITIONING

DROP No.	1	2	3	4	5	Average	Requirement
Depth of Indentation (mm)	NA						

F BALLISTIC EVALUATION

Ammunition			**Weapon**		
Type	**:**	7.62x39 mm (MSC)	**Type**	**:**	AK-47
Lot No/Year	:	21/06	**Regn. No.**	:	TN 1659

Shot No.	Velocity (m/s)	Impact Angle (°)	Impact Result	Fair/ Unfair	Observation
1	704.9	0°	Not Perforated	Fair	No movement of trolley
2	709.5	0°	Not Perforated *	Fair	No movement of trolley
3	703.1	0°	Not Perforated *	Fair	No movement of trolley
4	700.1	0°	Not Perforated	Fair	No movement of trolley
5	703.5	0°	Not Perforated	Fair	No movement of trolley

Remarks: ** Stopped by Steel*

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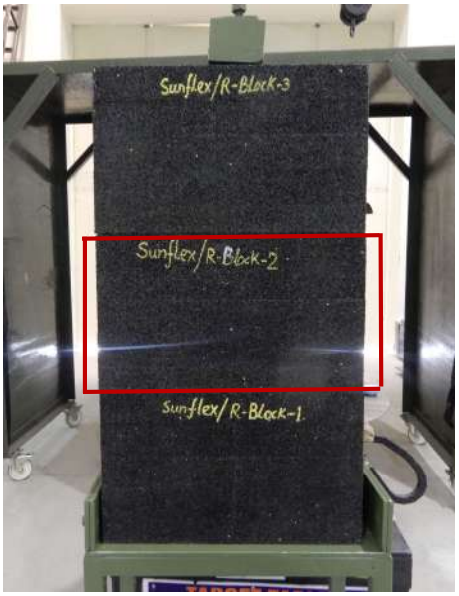

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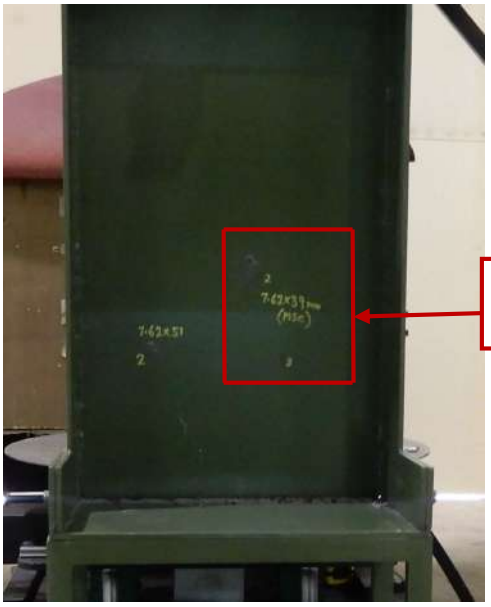

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A SAMPLE ID: Sunflex/R-Block-3 | **B SAMPLE CONDITIONING:** NA

C PHYSICAL VERIFICATION

Type of Sample	:	Rubber Block + 10 mm Steel	Thickness (mm)	:	300	Observations	:	Weight of rubber block only
Length (mm)	:	500	Material	:	-			
Width (mm)	:	300	Layers/Plies	:	-	Ref. Letter	:	E mail from Sunflex Pvt. Ltd.
Weight (kg)	:	38.15	Construction	:	-	Date Recd.	:	04 May 2021

D TRIAL SET – UP

Location	:	Ballistic Test Facility	**Distances from target (m)**			**Range Conditions**		
Ref. document	:	Appendix E of email from Sunflex dt 01.06.21	Weapon	:	10.0	Temperature (° C)	:	22.4
Backing material	:	NA	Velocity Screens	:	2.5	Relative Humidity (%)	:	57
Witness Plate	:	0.5mm Al. Sheet	Witness Plate	:	0.15			

E BACKING MATERIAL CONDITIONING

DROP No.	1	2	3	4	5	Average	Requirement
Depth of Indentation (mm)	NA						

F BALLISTIC EVALUATION

Ammunition			**Weapon**		
Type	:	5.56x45 mm	**Type**	:	INSAS
Lot No/Year	:	OFV-04	**Regn. No.**	:	681724DT2

Shot No.	Velocity (m/s)	Impact Angle (°)	Impact Result	Fair/ Unfair	Observation
1	903.8	0°	Not Perforated	Fair	No movement of trolley
2	909.8	0°	Not Perforated	Fair	No movement of trolley
3	918.5	0°	Not Perforated	Fair	No movement of trolley
4	909.2	0°	Not Perforated	Fair	No movement of trolley
5	902.9	0°	Not Perforated	Fair	No movement of trolley

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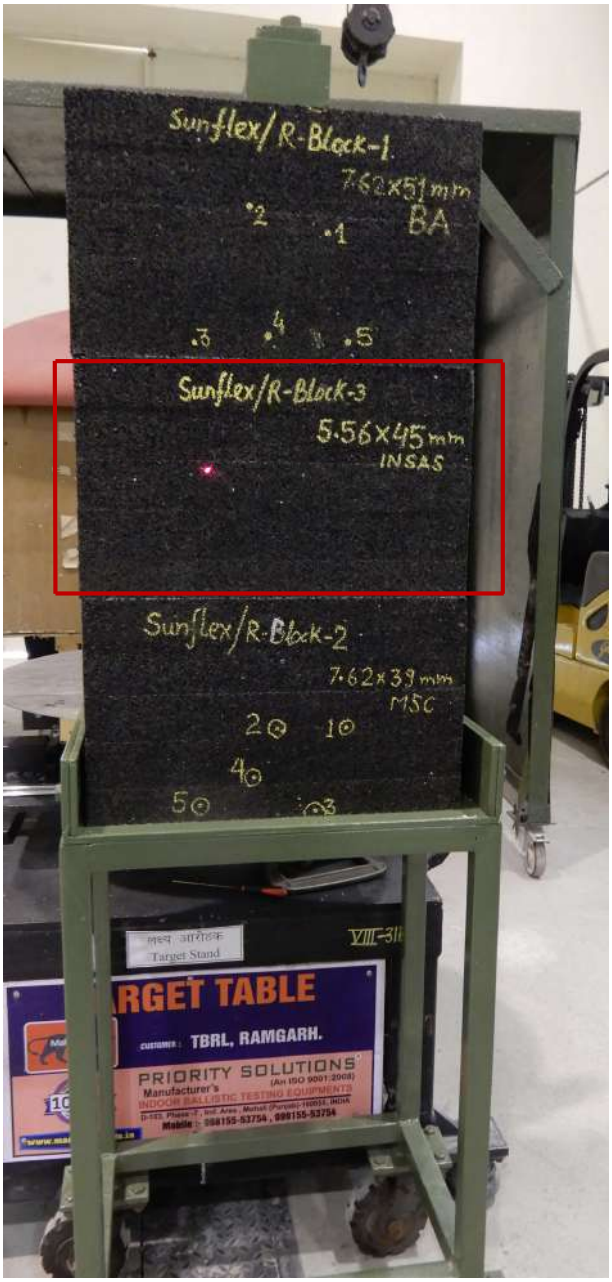	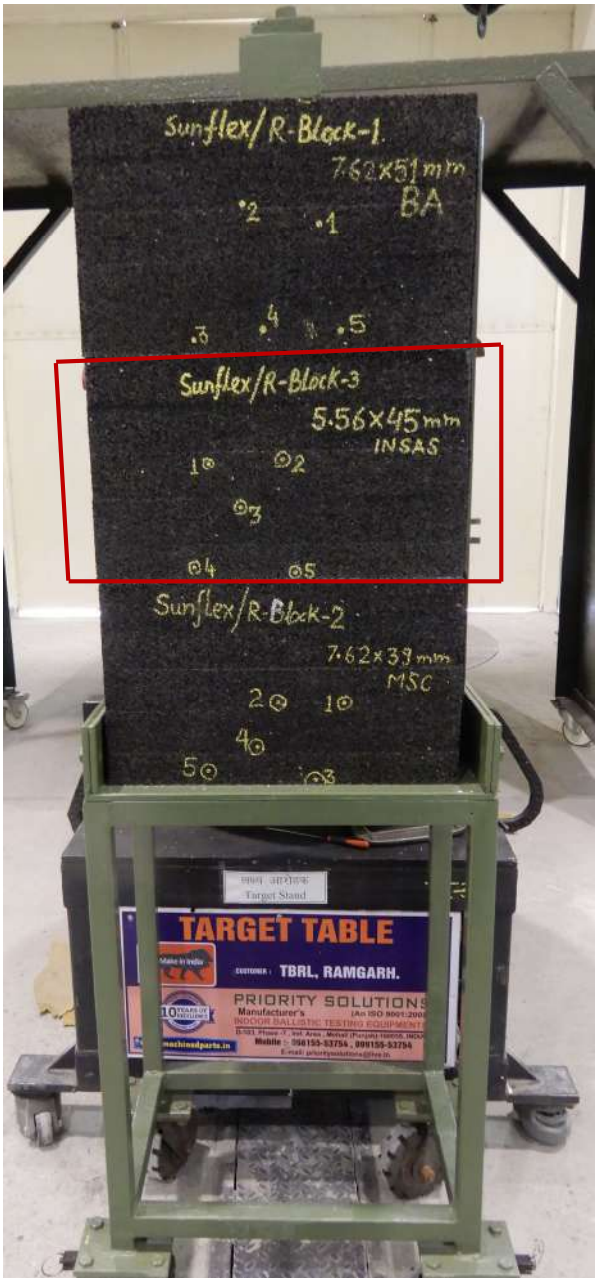

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