



Ballistic Evaluation of 03 Sets of Ballistic Rubber Blocks

Report No. : DRDO-TBRL-BEM-EVR-43-2020

User : Sunflex Recycling Pvt. Ltd., Ahmedabad

Test Report TBRL
Copy No. 1

**Ballistic Evaluation of Materials Group
Terminal Ballistics Research Laboratory
Sector 30, Chandigarh - 160 030**



BEM Group


Report No. : DRDO-TBRL-BEM-EVR-43-2020
Issue Date : 07/09/2020
User : Sunflex Recycling Pvt. Ltd., Ahmedabad
Trial Plan & Date : 1037 dt.02/09/2020
Trial Date : 31/08/2020 - 01/09/2020

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REPORT DOCUMENTATION PAGE

1. Title : Ballistic Evaluation of 03 Sets of Ballistic Rubber Blocks
2. Report No. : DRDO-TBRL-BEM-EVR-43-2020
3. Classification : Restricted
4. Date of issue : 07/09/2020
5. No. of Pages : 09
6. Issuing Group : BEM
7. Trial Plan No. : 1037 dt.02/09/2020
8. Trial date : 31/08/2020 - 01/09/2020
9. Distribution : (a) Sunflex Recycling Pvt. Ltd., Ahmedabad
(b) DH, BEM
10. Abstract : 06 Nos. (03 sets) of Ballistic Rubber Blocks were submitted by Sunflex Recycling Pvt. Ltd., Ahmedabad for ballistic evaluation. As per user requirements 7.62x39mm MSC, 7.62x51mm and 5.56x45mm ammunitions were fired on each set of Ballistic Rubber Blocks (02 Blocks). 05 fair shots were fired on each set. Ballistic Rubber Blocks were able to withstand all the ammunitions.

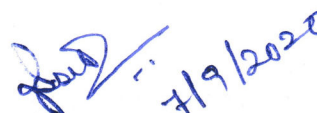
11. Prepared by :


(Sonu Kumar), TO 'A'
Trial Officer

Reviewed by :


(Dr. Debarati Bhattacharjee), Sc. 'E'
DH : BEM

Approved by :


(Ipsita Biswas), Sc. 'G'
GD : BEM & HSRS

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.
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SUMMARY OF RESULTS

No. of Sample : 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/Set-1/R.Block-1 + R.Block-2	7.62x39mm MSC	AK 47	05	706.5	697.4	700±10	No
2	Sunflex/Set-2/R.Block-1 + R.Block-2	7.62x51mm	Bolt Action	05	844.3	830.9	838±15	No
3	Sunflex/Set-3/R.Block-1 + R.Block-2	5.56x45mm	INSAS	05	873.1	856.4	860±15	No
Remarks: nil								

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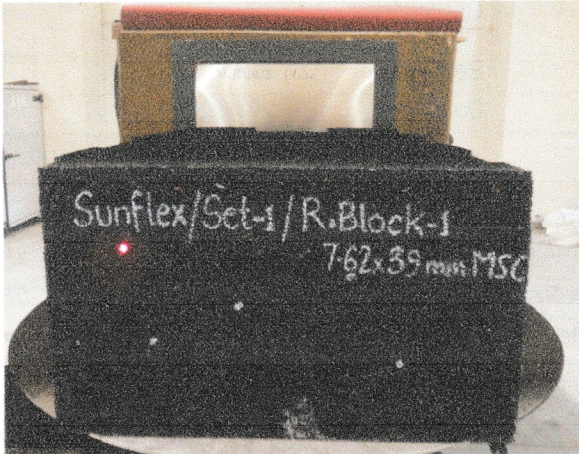
A SAMPLE ID: Sunflex/Set-1/R.Block-1 + R.Block-2		B SAMPLE CONDITIONING: NA	
C PHYSICAL VERIFICATION			
Type of Sample	: Rubber Block	Thickness (mm)	: 300, 300
Length (mm)	: 500, 500	Material	: -
Width (mm)	: 300, 300	Layers/Plies	: -
Weight (kg)	: 38.40, 38.25	Construction	: -
Observations		: NIL	
Ref. Letter		: Email	
Date Recd.		: 29.06.2020	
D TRIAL SET - UP			
Location	: Ballistic Test Facility	Distances from target (m)	Range Conditions
Ref. document	: SOP: TBRL/BEM/TP-01/12	Weapon	: 10.0
Backing material	: NA	Velocity Screens	: 2.5
Witness Plate	: 0.5mm Al. Sheet	Witness Plate	: 0.15
Temperature (° C)		: 21.3	
Relative Humidity (%)		: 57	
E BACKING MATERIAL CONDITIONING			
DROP No.	1	2	3
			4
			5
Average		Requirement	
Depth of Indentation (mm)		NA	
F BALLISTIC EVALUATION			
Ammunition		Weapon	
Type	: 7.62x39mm MSC	Type	: AK 47
Lot No/Year	: 21/06	Regn. No.	: TN 1659
Shot No.	Velocity (m/s)	Impact Angle (°)	Impact Result
1	705.2	0°	Not Perforated
2	703.6	0°	Not Perforated
3	703.5	0°	Not Perforated
4	697.4	0°	Not Perforated
5	706.5	0°	Not Perforated
Fair/ Unfair		Fair	
Fair		Fair	
Fair		Fair	
Fair		Fair	
Fair		Fair	
Remarks: All the shots were stopped in R. Block-1			

Notes:

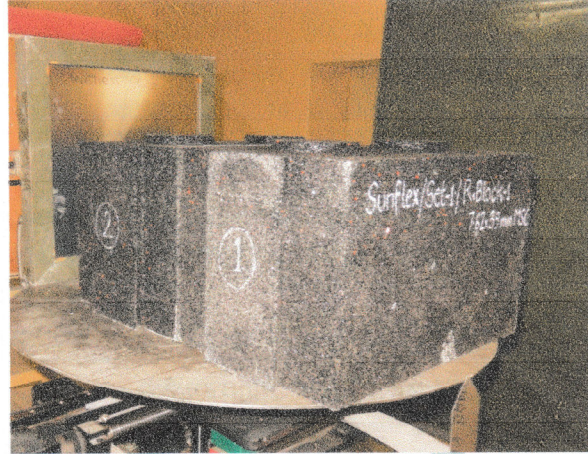
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G SAMPLE ID: Sunflex/Set-1/R.Block-1 + R.Block-2

PHOTOGRAPHS (BEFORE TRIAL)

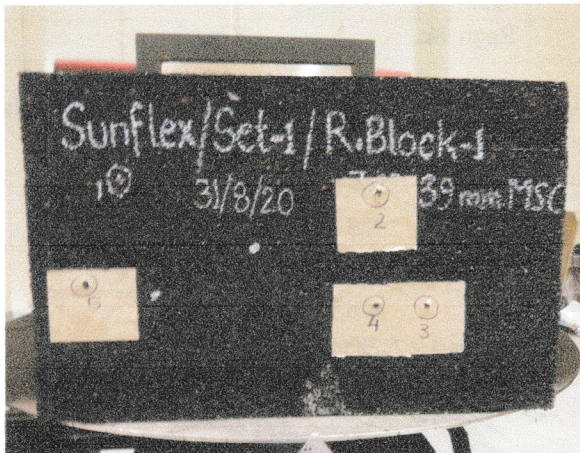


(Front View)

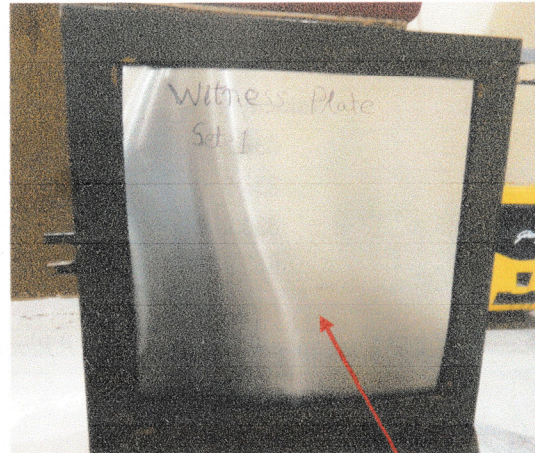


(Side View)

PHOTOGRAPHS (AFTER TRIAL)



(Front View)



Witness Plate

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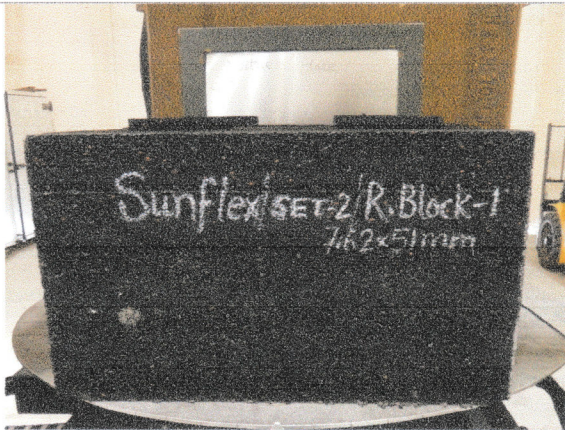
A SAMPLE ID: Sunflex/Set-2/R.Block-1 + R.Block-2		B SAMPLE CONDITIONING: NA	
C PHYSICAL VERIFICATION			
Type of Sample	: Rubber Block	Thickness (mm)	: 300, 300
Length (mm)	: 500, 500	Material	: -
Width (mm)	: 300, 300	Layers/Plies	: -
Weight (kg)	: 38.55, 38.40	Construction	: -
Observations	: NIL		
Ref. Letter	: Email		
Date Recd.	: 29.06.2020		
D TRIAL SET - UP			
Location	: Ballistic Test Facility	Distances from target (m)	Range Conditions
Ref. document	: SOP: TBRL/BEM/TP-01/12	Weapon	: 10.0
Backing material	: NA	Velocity Screens	: 2.5
Witness Plate	: 0.5mm Al. Sheet	Witness Plate	: 0.15
Temperature (° C)	: 21.3		
Relative Humidity (%)	: 57		
E BACKING MATERIAL CONDITIONING			
DROP No.	1	2	3
Depth of Indentation (mm)	NA		
4	5	Average	Requirement
F BALLISTIC EVALUATION			
Ammunition		Weapon	
Type	: 7.62x51mm	Type	: Bolt Action
Lot No/Year	: OFV 90	Regn. No.	: Y 5905
Shot No.	Velocity (m/s)	Impact Angle (°)	Impact Result
1	836.2	0°	Not Perforated
2	836.5	0°	Not Perforated
3	830.9	0°	Not Perforated
4	842.2	0°	Not Perforated
5	844.3	0°	Not Perforated
			Fair/ Unfair
			Fair
			Fair
			Fair
			Fair
			Fair
Remarks: 3 rd & 5 th shot got perforated through R.Block-1 and stopped in R.Block-2			

Notes:

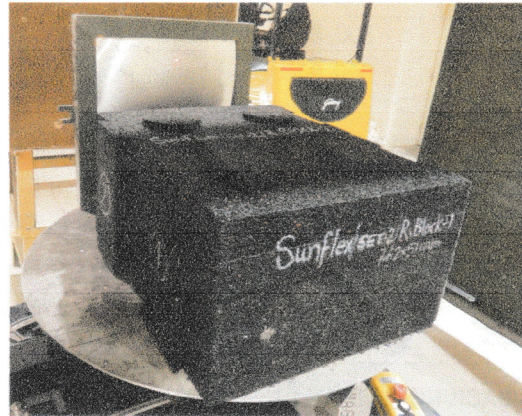
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G SAMPLE ID: Sunflex/Set-2/R.Block-1 + R.Block-2

PHOTOGRAPHS (BEFORE TRIAL)



(Front View)

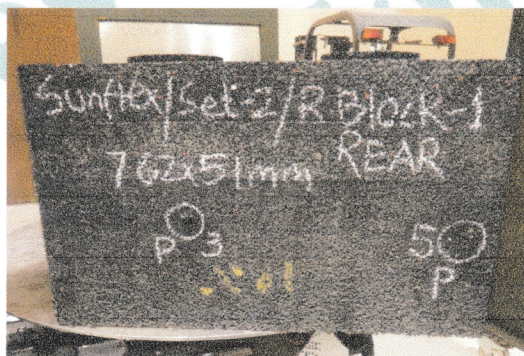


(Side View)

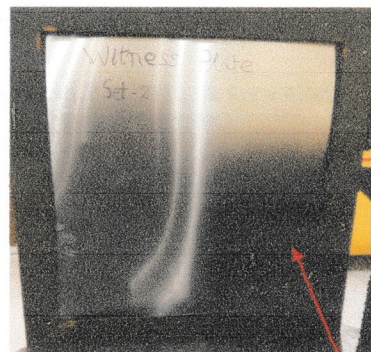
PHOTOGRAPHS (AFTER TRIAL)



(Front View)



(Rear view of block-1)



Witness

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Type of Sample	: Rubber Block	Thickness (mm)	: 300, 300
Length (mm)	: 500, 500	Material	: -
Width (mm)	: 300, 300	Layers/Plies	: -
Weight (kg)	: 38.40, 37.95	Construction	: -
Observations		: NIL	
Ref. Letter		: Email	
Date Recd.		: 31.08.2020	
D TRIAL SET - UP			
Location	: Ballistic Test Facility	Distances from target (m)	Range Conditions
Ref. document	: SOP: TBRL/BEM/TP-01/12	Weapon	: 10.0
Backing material	: NA	Velocity Screens	: 2.5
Witness Plate	: 0.5mm Al. Sheet	Witness Plate	: 0.15
Temperature (° C)		: 21.3	
Relative Humidity (%)		: 57	
E BACKING MATERIAL CONDITIONING			
DROP No.	1	2	3
	4	5	Average
Depth of Indentation (mm)	NA		
F BALLISTIC EVALUATION			
Ammunition		Weapon	
Type	: 5.56x45mm	Type	: INSAS
Lot No/Year	: OFV 04	Regn. No.	: 15823584
Shot No.	Velocity (m/s)	Impact Angle (°)	Impact Result
1	873.1	0°	Not Perforated
2	868.7	0°	Not Perforated
3	868.1	0°	Not Perforated
4	861.5	0°	Not Perforated
5	856.4	0°	Not Perforated
Fair/ Unfair		Fair	
Remarks: All the shots were stopped in R.Block-1			

Notes :

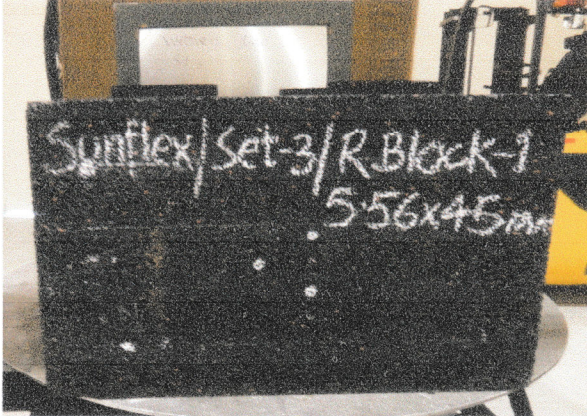
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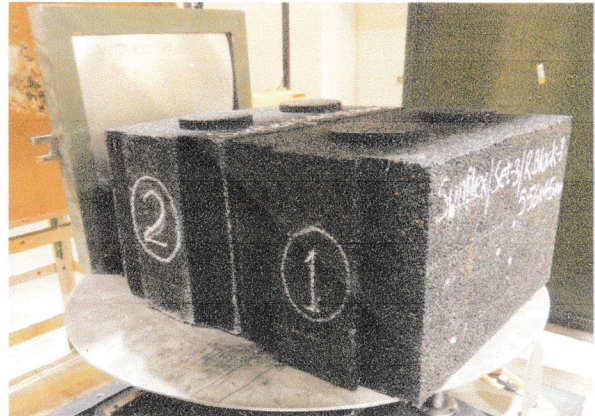
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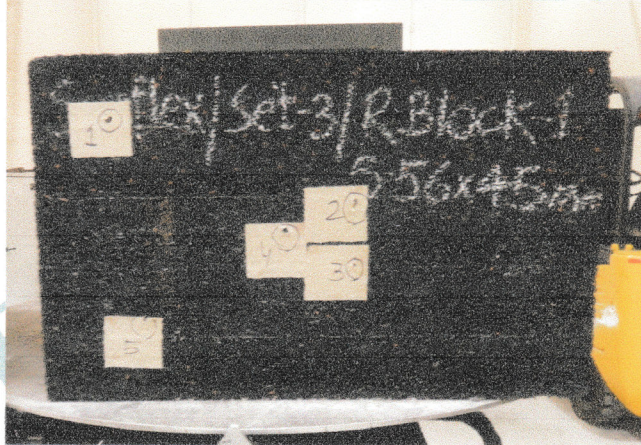


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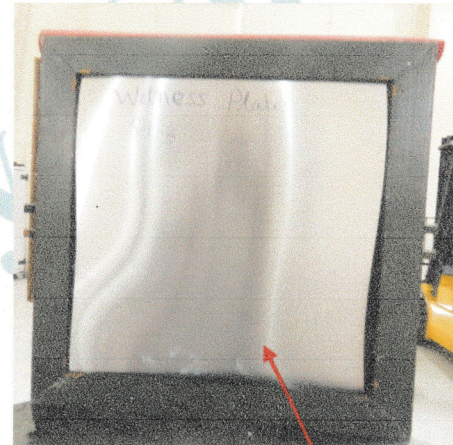


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(Front View)



Witness Plate

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