

Report No.: 18REP0312

(This page is a summary, for details see the official reports)

Statement of Compliance

STANAG 2920

V_{proof} test protocol

Contractor: Shotstop Ballistics LLC
1000 Campus Drive, #300
OH 44224 Stow
USA

Produced by: See Contractor

Product: Type C2 /020418 /DURITIUM III+ PA (D1652SSB)

Test: STANAG 2920, V_{proof} test
Class B4

Test result: All the tested samples comply with the requirements
for the parts tested.



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Laboratory for Ballistics
Research (LBR)

Visiting address:
Ypenburgse Boslaan 2
2496 ZA Den Haag

Date
11/19/2018

Order
18OD190

Reference
18 LBR/2425

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The Standard Conditions for
Research Instructions given to
TNO, as filed at the Registry of
the District Court and the
Chamber of Commerce in The
Hague shall apply to all
instructions given to TNO.

Signature


J.P.F Broos
Project leader



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Test report

18REP0312

 Experiment according to **STANAG 2920**
 Class **Vproof**

 Assignor Shotstop Ballistics LLC
 1000 Campus Drive, #300
 OH 44224 Stow
 USA

Contact Mr. James Gentile Mr.

Sample references Type C2 / 020418-468 - 475 / DURITIUM III+ PA (D1652SSB)

TNO project no
 060.31128/01.11.01

Date
 15-10-2018

Reference
 18OD190

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The Standard Conditions for Research Instructions given to TNO, as filed at the Registry of the District Court and the Chamber of Commerce in The Hague shall apply to all instructions given to TNO.

Summary

The samples were tested according to 'STANAG 2920' class B4 'Vproof' with 7.62x39 mm Ball (M43, Mild Steel Core) projectiles.

All 22 impacts partially penetrated the samples and clay indent depths were within the prescribed range.

 J.P.F. Broos
 Project leader

Test report number 18REP0312
Assignor Shotstop Ballistics LLC

Description test method

A Vproof shall be validated by a series of impacts, containing at least 22 fair impacts. All fair impacts in the series shall result in a PP and when applicable shall meet the behind armour assessment criterion specified by the NA. This is applicable for single or multi hit assessments.

Experiment specifications

Experiment No. : 18MB02284
Experiment date : 10-10-2018
Backing : Roma no. 1 clay

Conditioning of sample materials

Conditioning temperature : 20 °C ± 2 °C
Conditioning humidity : 55 %Rh ± 15 %Rh
Minimum conditioning time : 6 hrs.

Results

| 18SC02227 | | STANAG 2920 - Vproof - 7.62x39 mm Ball (M43, Mild Steel Core) ZV | | |
|----------------|-------|--|------------------|-----------------|
| Shot | Valid | Impact velocity[m/s] | Indent depth[mm] | Result PP/CP *) |
| KKW2 18SN04176 | Yes | 711 | 26 | PP |
| KKW2 18SN04177 | Yes | 713 | 35.5 | PP |
| KKW2 18SN04178 | Yes | 721 | 31.5 | PP |

*) PP: Partial Penetration CP: Complete Penetration

| 18SC02228 | | STANAG 2920 - Vproof - 7.62x39 mm Ball (M43, Mild Steel Core) ZV | | |
|----------------|-------|--|------------------|-----------------|
| Shot | Valid | Impact velocity[m/s] | Indent depth[mm] | Result PP/CP *) |
| KKW2 18SN04179 | Yes | 719 | 35.5 | PP |
| KKW2 18SN04180 | Yes | 724 | 29 | PP |
| KKW2 18SN04181 | Yes | 718 | 30 | PP |

*) PP: Partial Penetration CP: Complete Penetration

| 18SC02229 | | STANAG 2920 - Vproof - 7.62x39 mm Ball (M43, Mild Steel Core) ZV | | |
|----------------|-------|--|------------------|-----------------|
| Shot | Valid | Impact velocity[m/s] | Indent depth[mm] | Result PP/CP *) |
| KKW2 18SN04182 | Yes | 718 | 31 | PP |
| KKW2 18SN04183 | Yes | 711 | 26.5 | PP |
| KKW2 18SN04184 | Yes | 720 | 27 | PP |

*) PP: Partial Penetration CP: Complete Penetration

| 18SC02230 | | STANAG 2920 - Vproof - 7.62x39 mm Ball (M43, Mild Steel Core) ZV | | |
|----------------|-------|--|------------------|-----------------|
| Shot | Valid | Impact velocity[m/s] | Indent depth[mm] | Result PP/CP *) |
| KKW2 18SN04185 | Yes | 726 | 29.5 | PP |
| KKW2 18SN04186 | Yes | 716 | 39 | PP |
| KKW2 18SN04187 | Yes | 720 | 29.5 | PP |

*) PP: Partial Penetration CP: Complete Penetration

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Test report number 18REP0312
 Assignor Shotstop Ballistics LLC

| 18SC02231 | | STANAG 2920 - Vproof - 7.62x39 mm Ball (M43, Mild Steel Core) ZV | | |
|----------------|-------|--|------------------|-----------------|
| Shot | Valid | Impact velocity[m/s] | Indent depth[mm] | Result PP/CP *) |
| KKW2 18SN04188 | Yes | 728 | 26 | PP |
| KKW2 18SN04189 | Yes | 722 | 22 | PP |
| KKW2 18SN04190 | Yes | 723 | 31 | PP |

*) PP: Partial Penetration CP: Complete Penetration

| 18SC02232 | | STANAG 2920 - Vproof - 7.62x39 mm Ball (M43, Mild Steel Core) ZV | | |
|----------------|-------|--|------------------|-----------------|
| Shot | Valid | Impact velocity[m/s] | Indent depth[mm] | Result PP/CP *) |
| KKW2 18SN04191 | Yes | 721 | 20 | PP |
| KKW2 18SN04192 | Yes | 719 | 29 | PP |
| KKW2 18SN04193 | Yes | 710 | 26.5 | PP |

*) PP: Partial Penetration CP: Complete Penetration

| 18SC02233 | | STANAG 2920 - Vproof - 7.62x39 mm Ball (M43, Mild Steel Core) ZV | | |
|----------------|-------|--|------------------|-----------------|
| Shot | Valid | Impact velocity[m/s] | Indent depth[mm] | Result PP/CP *) |
| KKW2 18SN04194 | Yes | 713 | 26 | PP |
| KKW2 18SN04195 | Yes | 726 | 38 | PP |
| KKW2 18SN04196 | Yes | 717 | 27 | PP |

*) PP: Partial Penetration CP: Complete Penetration

| 18SC02234 | | STANAG 2920 - Vproof - 7.62x39 mm Ball (M43, Mild Steel Core) ZV | | |
|----------------|-------|--|------------------|-----------------|
| Shot | Valid | Impact velocity[m/s] | Indent depth[mm] | Result PP/CP *) |
| KKW2 18SN04197 | Yes | 720 | 29 | PP |

*) PP: Partial Penetration CP: Complete Penetration

Sample composition specifications

Sample composition No. : 18SC02227

| Layer | Sample No. | Customer Sample reference |
|-------|------------|---------------------------|
| 1 | 18SA02316 | Type C2 / 020418-472 |

Sample composition No. : 18SC02228

| Layer | Sample No. | Customer Sample reference |
|-------|------------|---------------------------|
| 1 | 18SA02317 | Type C2 / 020418-469 |

Sample composition No. : 18SC02229

| Layer | Sample No. | Customer Sample reference |
|-------|------------|---------------------------|
| 1 | 18SA02318 | Type C2 / 020418-470 |

Sample composition No. : 18SC02230

| Layer | Sample No. | Customer Sample reference |
|-------|------------|---------------------------|
| 1 | 18SA02319 | Type C2 / 020418-471 |

Sample composition No. : 18SC02231

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Assignor Shotstop Ballistics LLC

| Layer | Sample No. | Customer Sample reference |
|-------|------------|---------------------------|
| 1 | 18SA02320 | Type C2 / 020418-468 |

Sample composition No. : 18SC02232

| Layer | Sample No. | Customer Sample reference |
|-------|------------|---------------------------|
| 1 | 18SA02321 | Type C2 / 020418-473 |

Sample composition No. : 18SC02233

| Layer | Sample No. | Customer Sample reference |
|-------|------------|---------------------------|
| 1 | 18SA02322 | Type C2 / 020418-474 |

Sample composition No. : 18SC02234

| Layer | Sample No. | Customer Sample reference |
|-------|------------|---------------------------|
| 1 | 18SA02323 | Type C2 / 020418-475 |

Sample specifications

| Sample No. | Customer reference | Arrival | Size | Thickness | Weight | Areal density |
|---|----------------------|------------|--------------|-----------|--------|-----------------------|
| 18SA02316 | Type C2 / 020418-472 | 10-10-2018 | 300 x 220 mm | 28 mm | 951 g | 14.4kg/m ² |
| *) Duritium III + PA Rifle Plate (D1652SSB)(With Trauma Pad) Lot nr. 1-12+18 | | | | | | |
| 18SA02317 | Type C2 / 020418-469 | 10-10-2018 | 300 x 220 mm | 28 mm | 957 g | 14.5kg/m ² |
| *) Duritium III + PA Rifle Plate (D1652SSB)(With Trauma Pad) Lot nr. 1-12+18 | | | | | | |
| 18SA02318 | Type C2 / 020418-470 | 10-10-2018 | 300 x 220 mm | 28 mm | 965 g | 14.6kg/m ² |
| *) Duritium III + PA Rifle Plate (D1652SSB)(With Trauma Pad) Lot nr. 1-12+18 | | | | | | |
| 18SA02319 | Type C2 / 020418-471 | 10-10-2018 | 300 x 220 mm | 28 mm | 941 g | 14.3kg/m ² |
| *) Duritium III + PA Rifle Plate (D1652SSB)(With Trauma Pad) Lot nr. 1-12+18 | | | | | | |
| 18SA02320 | Type C2 / 020418-468 | 10-10-2018 | 300 x 220 mm | 28 mm | 982 g | 14.9kg/m ² |
| *) Duritium III + PA Rifle Plate (D1652SSB)(With Trauma Pad) Lot nr. 1-12+18 | | | | | | |
| 18SA02321 | Type C2 / 020418-473 | 10-10-2018 | 300 x 220 mm | 28 mm | 947 g | 14.3kg/m ² |
| *) Duritium III + PA Rifle Plate (D1652SSB)(With Trauma Pad) Lot nr. 1-12+18 | | | | | | |
| 18SA02322 | Type C2 / 020418-474 | 10-10-2018 | 300 x 220 mm | 28 mm | 974 g | 14.8kg/m ² |
| *) Duritium III + PA Rifle Plate (D1652SSB)(With Trauma Pad) Lot nr. 1-12+18 | | | | | | |
| 18SA02323 | Type C2 / 020418-475 | 10-10-2018 | 300 x 220 mm | 28 mm | 964 g | 14.6kg/m ² |
| *) Duritium III + PA Rifle Plate (D1652SSB)(With Trauma Pad) Lot nr. 1-12+18 | | | | | | |

*All specification of the materials are provided by the assignor

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Test report number 18REP0312
Assignor Shotstop Ballistics LLC

Test specifications

Experimental facility : TNO, LBR, Small Calibre Firing Range KKW 2
- Ambient Relative Humidity : 53 %Rh
- Ambient temperature : 21 °C

Ballistic specifications

Weapon : SVB-3 (KKW 2)
- Barrel length : 660 mm
- Rifling twist : 1 : 240 mm
Projectile : 7.62x39 mm Ball (M43, Mild Steel Core) ZV
- Weight : 7.95 g
- Calibre : 7.62 mm
- Manufacturer : Sellier & Bellot
Shooting distance : 7.8 m
Shot angle experiment : 0 °NATO

Test report number 18REP0312
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Photos



Strike Face sample 18SA02316 after test 18MB02284



Body Side sample 18SA02316 after test 18MB02284

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Test report number 18REP0312
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Strike Face sample 18SA02317 after test 18MB02284



Body Side sample 18SA02317 after test 18MB02284

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Test report number 18REP0312
Assignor Shotstop Ballistics LLC



Strike Face sample 18SA02318 after test 18MB02284



Body Side sample 18SA02318 after test 18MB02284

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Test report number 18REP0312
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Strike Face sample 18SA02319 after test 18MB02284



Body Side sample 18SA02319 after test 18MB02284

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Test report number 18REP0312
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Strike Face sample 18SA02320 after test 18MB02284



Body Side sample 18SA02320 after test 18MB02284

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Test report number 18REP0312
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Strike Face sample 18SA02321 after test 18MB02284



Body Side sample 18SA02321 after test 18MB02284

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Strike Face sample 18SA02322 after test 18MB02284



Body Side sample 18SA02322 after test 18MB02284

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Strike Face sample 18SA02323 after test 18MB02284



Body Side sample 18SA02323 after test 18MB02284

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