

Svalson Safety AB
Box 584
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Test of resistance against bullet attack according to SS-EN 1522:1998 – Svalson Ballistic

(1 appendix)

Conclusion

RISE has performed a test of Svalson Safety AB's openable window designated Svalson Ballistic with respect to resistance against bullet attack. The tested window fulfil the requirements according to SS-EN 1522:1998 "*Windows, doors, shutters and blinds – Bullet resistance – requirements and classification*" class FB6(NS).

1 Introduction

At the request of Svalson Safety AB, RISE has performed a test of an openable window with respect to resistance against bullet attack.

2 Test method

The tests are performed according to:

- SS-EN 1523:1998 "*Windows, doors, shutters and blinds – Bullet resistance – test method*".

3 Test object

Openable window designated Svalson Ballistic, see photo 1 and specifications in drawings in appendix 1. According to the client the glass in the window was classified according to EN 1063:1999 class BR6(NS) and was therefor not tested.

The test objects were delivered to RISE Ballistic laboratory AB 2024-03-08.

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Confidentiality level

C2 - Internal

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Accred. No. 1002
Testing
ISO/IEC 17025



Photo 1. Test object

4 Accomplishment and results

The tests were performed at RISE Ballistic laboratory in Varberg, Sweden 2024-03-11. The window sash was closed and locked during the tests. Ammunition according to EN 1522:1998 class FB6, 5.56 x 45 and 7.62 x 51. Test area, target points and weak spots were determined by RISE.

Table 1. Test results 7.62 x 51.

Test Area (Target points*)	Test range (m)	Strike (No)	Ammunition	Bullet Velocity (m/s)	Striking distance (mm)	Remarks
Frame 90° (1 and 5)	10	1	7.62 x 51	833	120 ± 10	OK – Non Splinter
		2	7.62 x 51	822		OK – Non Splinter
		3	7.62 x 51	834		OK – Non Splinter
Sash 90° (6 and 7)	10	1	7.62 x 51	827	120 ± 10	OK – Non Splinter
		2	7.62 x 51	836		OK – Non Splinter
		3	7.62 x 51	826		OK – Non Splinter
Frame / Sash 45° (2 and 3)	10	1	7.62 x 51	831	120 ± 10	OK – Non Splinter
		2	7.62 x 51	837		OK – Non Splinter
		3	7.62 x 51	837		OK – Non Splinter
Photocell hole 45°	10	1	7.62 x 51	837	-	OK – Non Splinter
		2	7.62 x 51	826		OK – Non Splinter
Sash / glass 45° (8)	10	1	7.62 x 51	838	120 ± 10	OK – Non Splinter
		2	7.62 x 51	839		OK – Non Splinter
		3	7.62 x 51	836		OK – Non Splinter
Joint frame 90° (5 and 7)	10	1	7.62 x 51	834	-	OK – Non Splinter
		2	7.62 x 51	824	-	OK – Non Splinter
		3	7.62 x 51	835	-	OK – Non Splinter
		4	7.62 x 51	840	-	OK – Non Splinter

*Target points according to EN 1523:1998 Annex A

Table 2. Test results 5.56 x 45.

Test Area (Target points*)	Test range (m)	Strike (No)	Ammunition	Bullet Velocity (m/s)	Striking distance (mm)	Remarks
Frame 90° (1 and 5)	10	1	5.56 x 45	961	120 ± 10	OK – Non Splinter
		2	5.56 x 45	957		OK – Non Splinter
		3	5.56 x 45	955		OK – Non Splinter
Sash 90° (6 and 7)	10	1	5.56 x 45	953	120 ± 10	OK – Non Splinter
		2	5.56 x 45	954		OK – Non Splinter
		3	5.56 x 45	958		OK – Non Splinter
Frame / Sash 45° (2 and 3)	10	1	5.56 x 45	961	120 ± 10	OK – Non Splinter
		2	5.56 x 45	949		OK – Non Splinter
		3	5.56 x 45	939		OK – Non Splinter
		4	5.56 x 45	961		OK – Non Splinter
Photocell hole 45°	10	1	5.56 x 45	952	-	OK – Non Splinter
Sash / glass 45° (8)	10	1	5.56 x 45	955	120 ± 10	OK – Non Splinter
		2	5.56 x 45	948		OK – Non Splinter
		3	5.56 x 45	952		OK – Non Splinter
Joint frame 90° (5 and 7)	10	1	5.56 x 45	956	-	OK – Non Splinter
		2	5.56 x 45	956	-	OK – Non Splinter
		3	5.56 x 45	962	-	OK – Non Splinter
		4	5.56 x 45	948	-	OK – Non Splinter

*Target points according to EN 1523:1998 Annex A

Requirements fulfilled for class FB6(NS).

5 Classification

The test specimens were subjected to the described tests defined in SS-EN 1522:1998 and was judged to fulfil the requirements of the resistance class given below.

FB6(NS)

Any additional change in design / construction is only allowed upon written permission and/or testing by the testing laboratory.

6 Measurement uncertainty

The measurement uncertainty for the tests is shown in table 3 below. Reported uncertainty corresponds to an approximate 95 % confidence interval around the measured value. The interval has been calculated in accordance with EA-4/16 (EA guidelines on the expression of uncertainty in quantitative testing), which is normally accomplished by quadratic addition of the actual standard uncertainties and multiplication of the resulting combined standard uncertainty by the coverage factor $k=2$.

Table 3. The measurement uncertainty of measured value.

Measurement	Uncertainty
Test range	± 10 mm
Striking distance	± 0.5 mm
Bullet velocity	± 1 m/s

RISE Research Institutes of Sweden AB Chemistry and Applied Mechanics - Transport and Product Safety

Performed by

Examined by



Christian Larsson

Anna Ehn

Appendix

Drawing of test object.

Appendix 1

FÖRKLÄRINGAR
SAMTLIGA MÅTT ANGES I MILLIMETER.

FÖRESKRIFTER
SKJUTLUCKA SKA VARA
TYP Svalson Ballistic FB6, SVALSON SAFETY AB
(svalson.com, 0911-66725).

KONSTRUKTION
MOTOR, DRIVANORDNING OCH
MOTORSTYRNING SKA
ÄRBJÄNSGIVAS AV
KÄRMKONSTRUKTION.

LÄSNING
LUCKAN SKA LÄSAS AUTOMATISKT
I STÄNGT LÄGE SAMT MED 30 mm INTERVALL
ÖVER HELA ÖPPNINGEN.

YTBEHANDLING
LUCKAN ÄR BEKLÄDD
MED EN KÄRLÅT (FB6).
KÄRLÅTET OCH
STÄLPROFILERNA SKA VARA
PULVERLACKERAD I RAL 9010, VIT (STANDARD).
ALTERNATIVT ANNAN YTBEHANDLING
ÄR TILLÅTEN. LÅTET OCH
ELLER PLÅT BEKLÄDD I ROSTRITT STÅL,
KOPPAR ELLER MÄSSING.)

GLÄS
BRÉNS

SÄKERHET
SKJUTLUCKAN ÄR FÖRSEDD MED FOTOCCELL
FÖR ATT FÖRHINDRA KLAMSKADOR.

SOM TILLVAL FINNS LARMANSUTNING
DÄR LUCKAN STÄNS AUTOMATISKT VID
AKTIVERING AV LARM SAMT BATTERIBACKUP
SOM SÄKERSTÄLLER STRÖMTILLFÖRSÄN VID
EVENYRELLIS TROMBÖRFÄLL.

ÖPPNINGSHASTIGHET
SKJUTLUCKANS ÖPPNINGSHASTIGHET
ÄR CA. 100 mm/SEKUND.

SECTION B-B
SCALE 1 : 2

SECTION A-A
SCALE 1 : 2

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