Test report

Test report relating to a glass product according to European standard EN 1063, bullet attack resistance, concerning the product marked as: YILDIZ CAM EN 1063 BR 6 (NS), manufactured by: Yildiz Cam, Sanayi ve Tic. A.S.

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1 Introduction

1.1 Purpose

The tests have been performed in order to establish whether or not the product meets the requirements of the European standard EN 1063 [1].

1.2 Description of the samples

General

Name of the manufacturer	Yildiz Cam, Sanayi ve Tic. A.S.
Address of the manufacturer	Organize Sanayi Bölgesi 2, Cad. No. 37 34777 UMRANIYE, ISTANBUL Turkye
Production plant of the samples	Organize Sanayi Bölgesi 2, Cad. No. 37 34777 UMRANIYE, ISTANBUL Turkye
The product was marked as	YILDIZ CAM YILDIZ CAM
Dimensions of the samples	500 x 500 mm

Specific

Configuration (from the attack side)	10/10/10/10 + 3 PC
Desired classification	BR6 NS
Attack face	as marked by the manufacturer

1.3 Sampling procedure

The test house, acting as notified test body, had no influence on the sampling procedure. As per regulations, the sampling should have been done under the responsibility of the involved notified certification body. The records of the sampling and material details should be available at the involved notified certification body. This is not automatically the case for the tested samples.

1.4 Application

The request for testing was submitted by the manufacturer on 01-11-2011, Assignment Form number: 11.A392.

1.5 Method of testing

All applicable tests have been performed according to the European standard EN 1063 [1].

1.6 Put out to contract

Tests were performed by TNO Defence, Security and Safety, Laboratory for Ballistic Research, Rijswijk, The Netherlands. RvA accreditation number L275.

1.7 Privacy statement

Due to privacy reasons, the names of involved personnel that executed the tests, are not disclosed in the report. However, this information is available on internal work sheets, test forms etc. in the project file.

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1.8 Notifications and accreditations

TÜV Rheinland Nederland B.V. has been notified by the Dutch Ministry of VROM as Notified Test Body (number 1750) and Notified Certification Body (number 0336) for the European Construction Products Directive 89/106/EEC.

TÜV Rheinland Nederland B.V. has been accredited by the Dutch Accreditation Council (RvA) as ISO 17025 Test Laboratory (accreditation number L 484) and EN 45011 Certification Body (accreditation number C058).

TÜV Rheinland Nederland B.V. has been accredited as Technical Service (Laboratory) by RDW competent Administrative Department (Approval Authority) for the Netherlands to grant approvals as mentioned in Directive 70/156/etc. and the 1958 Agreement of the Economic Commission for Europe of the United Nations (UN-ECE) for glass as used in the automotive sector: ECE Regulation 43, safety glazing; EC Directive 92/22, Safety glass; EC Directive 2009/144, Glazing cat. T. (accreditation number RDW-99050043 01).

1.9 The standard EN 1063

This European Test Standard describes the classification of glass compositions with regard to bullet-resistant characteristics. Two groups are identified: hand weapons and shotguns. These two groups consist of various classes for variations in calibres and types of ammunition. Three glass samples measuring 500 mm x 500 mm are tested and all samples must satisfy the requirements of the class in question. Restraining the bullet is naturally the requirement but in certain cases attention is paid to whether potentially harmful glass splinters come loose at the back of the glass (fragmentation). The glass is shot at three points within a defined triangle. There are several classes possible, depending on the calibre, type of weapon and anti-fragmentation at the back side of the glass configuration. There are two groups, handguns and shotguns:

Classification type of gun/bullet, handguns/rifles

- BR1, rifle L/RN;
- BR2, hand gun, 9 mm Luger, type FJ/RN/SC;
- BR3, hand gun, 0.357 Magnum, type FJ/CB/SC;
- BR4, hand gun, 0.44 Rem. Magnum, type FJ/FN/SC;
- BR5, rifle, 5.56 x 45, type FJ/PB/SCP1;
- BR6, rifle, 7.62 x 51, type FJ/PB/SC;
- BR7, rifle, 7.62 x 51, type FJ/PB/HC1.

Classification type of gun/bullet, shot guns

- SG1, cal. 12/70, solid lead slug;
- SG2, cal. 12/70, solid lead slug.

Additional designation

- NS for no splinters, if no perforation of the witness foil by splinters from the back side;
- S for splinters, if perforation of the witness foil by splinters from the back side.

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2 Test results

Test results after performing all applicable tests according to the European standard EN 1063 [1].

Shot number	Impact velocity [m/s]	Stopped / Perforation	Splinters / No splinters	Vr [m/s]	Test valid (Yes/No)
Sample 1	Glass panel A (11MB04650): EN 1063 – BR6 NS – 7.62x51 (Ball) Sintox				
KKW2 11SN07021	843	Stopped	NS	n.a.	Yes
KKW2 11SN07022	837	Stopped	NS	n.a.	Yes
KKW2 11SN07023	832	Stopped	NS	n.a.	Yes
Sample 2	Glass panel B (11MB04651): EN 1063 – BR6 NS – 7.62x51 (Ball) Sintox				
KKW2 11SN07024	824	Stopped	NS	n.a.	Yes
KKW2 11SN07025	827	Stopped	NS	n.a.	Yes
KKW2 11SN07026	821	Stopped	NS	n.a.	Yes
Sample 3	Glass panel C (11MB04652): EN 1063 – BR6 NS – 7.62x51 (Ball) Sintox				
KKW2 11SN07027	836	Stopped	NS	n.a.	Yes
KKW2 11SN07028	842	Stopped	NS	n.a.	Yes
KKW2 11SN07029	825	Stopped	NS	n.a.	Yes

Remark:

Vr [m/s] = rest speed = the speed at the back side of the tested sample.

Vr [m/s] 0 means that the penetrated bullet did not pass the sensors behind the glass, so no measurement could be made.

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3 Conclusion

The tested glass product, marked by the client or manufacturer as: YILDIZ CAM, manufactured by: Yildiz Cam, Sanayi ve Tic. A.S. ,configuration: 10/10/10/10 + 3 PC , meets the applicable requirements as stated in the European standard EN 1063 [1] for class EN 1063 BR6 NS.

The test results exclusively relate to the tested objects.

Remark 1

When and if changes are made in production method and/or equipment, assessment according to this standard shall be reconsidered and re-tests shall be performed when the changes can lead to different specifications of the glass. The decision and responsibility lies at the manufacturer.

Remark 2

It was to the manufacturer's responsibility that the samples made for the initial type test are representative to the production and deviations from perfection were included in the delivered test samples, the sampling was done under responsibility of the notified certification body and that the sampling records have been made available to the notified certification body.

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4 References

1 European standard EN 1063:1999 (E),
Glass in building – Security glazing – Testing and classification of resistance against bullet attack,
European Committee for Standardization, November 1999.

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5 Signatures

Author	Signature
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Peer review	Signature
Mr. M.J.R. Luppens Specialist	
Approved by	Signature
Mr. A.J. Piers, B.Sc. Manager Industrial Services	

(This is the end of this report).