



WILTSHIRE BALLISTIC SERVICES

TESTING CERTIFICATE

Certificate Number: 10/12/2013 10193 580

This is to certify that

FA Glass BR3 Panel

manufactured by

Future Architectural Glass LLC. - UAE.

Of

PO Box 86001
Plot# P278-P284
Al Ghail Industrial Area
Ras Al Khaimah
UAE

has been tested in accordance with the standard

BS EN 1063 (2000)

and has passed all requirements to threat level BR3 with spall/splinters

Devizes, Wiltshire, UK
10 December 2013

Place and Date of Testing

bsi.

Management Representative



WILTSHIRE BALLISTIC SERVICES

TESTING CERTIFICATE

Certificate Number: 06/03/2015 103522160

This is to certify that

BR4 Panel

manufactured by

Future Architectural Glass LLC. - UAE.

Of

PO Box 86001
Plot# P278-P284
Al Ghail Industrial Area
Ras Al Khaimah
UAE

has been tested in accordance with the standard

BSEN 1063 (2000)

and has passed all requirements to threat level BR4 with spall/splinters

Devizes, Wiltshire, UK
06 March 2015

Place and Date of Testing


Management Representative



Wiltshire Ballistic Services Ltd

The Ranges, Station Road, Devizes

Wiltshire, SN10 1BZ, UK

Tel: +44 (0)1380 721644 Fax: +44 (0)1380 721421

<http://www.wiltshireballistics.co.uk>

Future Architectural Glass LLC. - UAE.
PO Box 86001
Plot# P278-P284
Al Ghail Industrial Area
Ras Al Khaimah
UAE

Trial Number 10193

02 January 2014

BALLISTIC TEST REPORT

Please find attached, reports for the following test/s carried out at Wiltshire Ballistic Services on
10 December 2013

| Sample Name or No. | Description | Results |
|--------------------|---|--|
| FA Glass BR3 Panel | .357 Magnum Geco FMJ CB 158gr EN1063 - BR3 | Passed BSEN 1063(2000) BR3, spall rated |

The results contained in this report are only valid for the samples tested and detailed above. The publication of these results in any abridged form is not allowed without approval by Wiltshire Ballistic Services Ltd. in writing.

For and on behalf of Wiltshire
Ballistic Services Ltd

02 January 2014



Wiltshire Ballistic Services Ltd
 The Ranges, Station Road,
 Devizes, Wiltshire, SN10 1BZ
 Tel: 01380 721644
 Fax: 01380 721421

TEST REPORT
 10193 - WBS - 10/12/2013
 02 January 2014

Future Architectural Glass LLC. - UAE.
 PO Box 86001
 Plot# P278-P284
 Al Ghail Industrial Area
 Ras Al Khaimah
 UAE

Trial Number 10193
Trial Date 10/12/2013
Trial Start Time 13:30
Trial Finish Time 14:30

Range Temp (°C) 17.6
Range Humidity (%) 83
Range Pressure (mBar) 1018
Range Technician James May
Range Technician Ben Smith
Range Technician

James Philbrook

Emilia Petrou

Report Completed

James Philbrook

Approved Signatory

Emilia Petrou

BALLISTIC TEST DETAILS

EN1063 - BR3

Velocity From (m/s) 420 **Witness Type** Aluminium Foil **Configuration - Muzzle to Target (m)** 5.0
Velocity To (m/s) 440 **Ammunition** .357 Magnum Geco FMJ CB 158gr **Configuration - Muzzle to Chrono Centre (m)** 2.5

SAMPLE DETAILS

FA Glass BR3 Panel

Future Architectural Glass LLC. - UA

Panel 2 - 6mm Clear, 1.52mm PVB, 10mm Clear,
 1.52mm PVB, 10mm Clear, 1.52mm PVB, 4mm
 Clear; total thickness 33.60mm

Size: 500x500
 Weight (kg): 19.182

| Shot No. | Velocity m/s | Held/ Penetrated | Trauma Code/Spall Rating | Comments | Test Results |
|----------|--------------|------------------|--------------------------|--------------|--------------|
| 1 | 442.56 | Held | Spall | Fast (valid) | Pass |
| 2 | 423.48 | Held | Spall | | Pass |
| 3 | 429.61 | Held | Spall | | Pass |

SAMPLE DETAILS

FA Glass BR3 Panel

Future Architectural Glass LLC. - UA

Panel 3 - 6mm Clear, 1.52mm PVB, 10mm Clear,
 1.52mm PVB, 10mm Clear, 1.52mm PVB, 4mm
 Clear; total thickness 33.30mm

Size: 500x500
 Weight (kg): 19.299

| Shot No. | Velocity m/s | Held/ Penetrated | Trauma Code/Spall Rating | Comments | Test Results |
|----------|--------------|------------------|--------------------------|----------|--------------|
| 1 | 437.98 | Held | Spall | | Pass |
| 2 | 432.41 | Held | Spall | | Pass |
| 3 | 428.58 | Held | Spall | | Pass |

SAMPLE DETAILS

FA Glass BR3 Panel

Future Architectural Glass LLC. - UA

Panel 1 - 6mm Clear, 1.52mm PVB, 10mm Clear,
 1.52mm PVB, 10mm Clear, 1.52mm PVB, 4mm
 Clear; total thickness 34.74mm

Size: 500x500
 Weight (kg): 19.233

| Shot No. | Velocity m/s | Held/ Penetrated | Trauma Code/Spall Rating | Comments | Test Results |
|----------|--------------|------------------|--------------------------|----------|--------------|
| 1 | 429.39 | Held | Spall | | Pass |
| 2 | 431.05 | Held | Spall | | Pass |
| 3 | 430.24 | Held | Spall | | Pass |

FA Glass BR3 Panel **RESULTS** Passed BSEN 1063(2000) BR3, spall rated
 EN1063 - BR3

RANGE EQUIPMENT & CONFIGURATION

THE GUN

All rounds were shot from a track mounted laser-sighted Universal Receiver fitted with the appropriate barrel to give both projectile stability and the required velocity.

VELOCITY MEASUREMENT

The projectile velocity is measured using optical sky screens, with 1.0m separation, positioned on a track-mounted housing fitted with D.C. light sources to detect the passage of the projectile. The optical sky screens are connected to an electronic timing unit and velocity calculating computer, each unit being calibrated and certified in accordance with the manufacturer's requirements. The accuracy of the velocity measurement equipment has been calculated to be 0.17% overall.

NOTE: Unless otherwise stated, projectile velocity is measured at a point 2.5m from the attack face of the sample under test.

SAMPLE HOLDER

The track mounted sample holder trolley is of heavy steel construction to form a rigid mounting into which various specialised sample holders can be fitted to meet a multitude of different testing standards. Provision is also made to allow for turning samples to predetermined angles for angled attacks.

PROJECTILE STABILITY

Where necessary the projectile stability was tested by firing the rounds through a test/witness panel set-up in the same place as the sample to be shot.

SHOT PLACEMENT

All firing is carried out using a laser-sighted Universal Receiver. Accuracy tends to be far better than would usually be the case when hand-held weapons are used. Therefore, unless otherwise stated, all shots have hit the sample in the required pattern and with the required spacing.

WITNESS/BACKING MATERIAL (As Detailed in Report)

PLASTILINA

The material backing is a steel tray measuring 450 x 350 x 95mm filled with Roma Plastilina® No.1 with no air gaps which is replaced every 6 months. This is heated to approximately 40°C so it conforms to the calibration requirements.

CALIBRATION: A steel sphere of grade 100, diameter 63.5mm, and mass 1.043kg is dropped from a height of 2m onto the Plastilina. The mean resulting depression from three drops must be 19mm +/- 2mm.

T3 ALUMINIUM ALLOY

The witness system comprises of a 0.5mm +/- 0.05mm thick 2024 T3 aluminium alloy sheet with a minimum tensile strength of 440N/mm² mounted securely 150mm +/-10mm behind the sample.

ALUMINIUM FOIL

The witness system comprises of a 0.02mm piece of aluminium foil weighing 54g/m² and measuring 700mm x 525mm mounted securely in a splinter collecting box, 500mm +/- 10mm behind the sample.



WILTSHIRE BALLISTIC SERVICES

TESTING CERTIFICATE

Certificate Number: 06/09/2013 10155343

This is to certify that

FA Glass - FZE130800100X

manufactured by

Future Architectural Glass LLC. - UAE.

Of

PO Box 86001
Plot# P278-P284
Al Ghail Industrial Area
Ras Al Khaimah
UAE

has been tested in accordance with the standard

BS EN 1063

and has passed all requirements to threat level BR6 No Spall

Devizes, Wiltshire, UK
06 September 2013

Place and Date of Testing

bsi.

Management Representative