# Test & Evaluation Centre

# BTT Laboratory

## Test Report

### Ballistic Resistance of Bullet Proof Glass Sample
### "Future Architectural Glass LLC/ UAE"

**KADDB/BTT/TR/12/5**

UKAS TESTING
4515

# Approval

## Ballistic Resistance of Bullet Proof Glass Sample
## "Future Architectural Glass LLC/ UAE"

Compiled by
Head of Weapons and Ammunition Testing
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Approved by
Test & Evaluation Manager
Col. Eng. Mohammad Arajneh

Signature

Date
17/7/2012

## 1. TEST DATA

| | |
|---|---|
| **Contractor** | Exova Certification and Inspection Services Limited/ Dubai/ UAE |
| **Requester** | KADDB/ Sales |
| **Correspondences** | • KADDB/Sales/2012/4493, dated 03/07/2012 "Internal Memo"<br>• KADDB/TEST/BTT/TP/2012/14 "Technical Testing Proposal, 03/07/2012"<br>• Exova Purchase order No. DFL0584 Po1, dated 13/07/2012<br>• Agreement with Exova Business Relationship dated 1-January 2011 |
| **Test Sample/ Dimension / Weight** | Bullet Proof Glass **Sample** (*See photo No. 1*):<br>• **Sample #01** / 500 x 500 x 41.5 mm / 24.4 kg<br>• **Sample #02** / 500 x 500 x 41.5 mm / 24.4 kg<br>• **Sample #03**/ 500 x 500 x 40.0 mm / 24.2 kg<br>*(During inspection process for sample #03, a crack is found on the upper right corner)*<br>• **Sample #04** / 500 x 500 x 41.0 mm / 24.3 kg |
| **Manufacturing Date & S.N of Test Sample** | Not Available |
| **Developer of Test Samples** | Future Architectural Glass LLC/ UAE |
| **Test Type** | Ballistic Resistance |
| **Test Standard** | European Standard EN 1063 / Protection Level "BR5" |
| **Test Weapon & Caliber** | Universal Ballistic Breech with standard barrel type 5.56X45mm (S.N: 3715 ) |
| **Type of Bullets** | 5.56X45mm (***62gr, full copper alloy jacket, pointed bullet, soft core "lead" and steel penetrator "type SS I 09"***) Lot.110928 |
| **Shot Angles** | 90 degrees to the surface of the samples |
| **Test Temperature** | 18 °C |
| **Test Site** | KADDB/Ballistic Test Tunnel (BTT) |
| **Test Date** | 05 July 2012 |

*Note:*The results contained in this report are only valid for detailed above.

## 2. TEST RESULTS

| Test Sample | Number of shots@10 m | Bullet Velocity (m/s) @ 2.5 m in front of test piece | | |
|---|---|---|---|---|
| | | 1st shot | 2nd shot | 3rd shot |
| 1st Test piece<br>Sample#01<br>500x500x41.5mm | Three shots / **5.56X45mm (SS109, 62gr)**<br>Triangle/ Striking distance: 120mm | 942 | 968 | 951 |
| | | NS | S | S |
| **Test Results:**<br>***S: No perforation of the glazing by the bullet or parts of the bullet, but with perforation of the witness foil by glass splinters.***<br>**(See photo No. 2)** | | | | |
| | | | | |
| 2nd Test piece<br>Sample#02<br>500x500x41.5mm | Three shots/ **5.56X45mm (SS109, 62gr)**<br>Triangle/ Striking distance: 120mm | 940 | 952 | 941 |
| | | S | S | S |
| **Test Results:**<br>***S: No perforation of the glazing by the bullet or parts of the bullet, but with perforation of the witness foil by glass splinters.***<br>**(See photo No. 3)** | | | | |
| | | | | |
| 3rd Test piece<br>Sample#04<br>500x500x41.0mm | Three shots/ **5.56X45mm (SS109, 62gr)**<br>Triangle/ Striking distance: 120mm | 939 | 939 | 934 |
| | | NS | S | S |
| **Test Results:**<br>***S: No perforation of the glazing by the bullet or parts of the bullet, but with perforation of the witness foil by glass splinters.***<br>**(See photo No. 4)** | | | | |
| | | | | |

***Performance Requirements According to European Standard EN 1063:***

*"NS" (No Splinters): No perforation of the glazing by the bullet or parts of the bullet and no perforation of the witness foil by glass splinters from the rear face.*

*"S" (Splinters): No perforation of the glazing by the bullet or parts of the bullet, but with perforation of the witness foil by glass splinters from the protected face.*

*"P" (Perforation): Piercing of a test piece by a bullet or by bullet fragments, and/or creation of an opening from the attack face to the rear face.*