TNO Defence, Security and Safety

COMPANY RESTRICTED

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Laboratory for Ballistic Research (LBO)
Visiting address:
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2496 ZA 's-Gravenhage

Test certificate *

The test has been carried out according to **EN 1522-1**
class **FB4 NS, .357 CB**

Assignor ÇUHADAROĞLU Metal Sanayi ve Pazarlama A.Ş.
Yakuplu köyü yolu 34900 Beylikdüzü
Istanbul
Turkey

Subject
Ballistic experiments

Date
28-04-2005

Our reference
05BP679

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Experiment date 19-04-2005
Project Frame
Sample identification AR 83-FB4 (.357 CB)

For details see page 2 upto page 8

The sample does fulfill the ballistic requirements according to level 'FB4 NS, .357 CB'

T.A. van de Voorde
Project leader

* This test certificate can not be used as a product certification

Test certificate *

Test results

Description of testmethod

In order to determine the ballistic protection performance of windows and doors, three experiments are performed according to NEN-EN 1522-1 / 1523-1. The panel is clamped in a specially designed mounting system. The ballistic impact experiments are conducted with a bullet for the desired protection level as described in the standard. Three areas should be tested; 1. Armoured and re-enforced areas, 2. Transition / connection between frame and solid or moving sub-frame, 3. Parts like handle's, lock's, and their connection, weld's, etc. The mutual distance between the consecutive points of impact is 120 + 10 mm. If no penetrations occur but splinters are released at the rear face of the testpanel, this is marked as S (Splinters) behind the protection level in the testresults. If not, this is marked as NS (No Splinters).

Results

Sample identification :	AR 83-FB4 (.357 CB)				
Shotnumber	**V-impact (m/s)**	**Vr (m/s)**	**Valid (Yes/No)**	**Obliquity (°NATO)**	**Results**
GKW1 05SN182	432		Yes	0	Stopped
GKW1 05SN183	439		Yes	0	Stopped
GKW1 05SN184	436		Yes	0	Stopped
GKW1 05SN185	435		Yes	0	Stopped
GKW1 05SN186	436		Yes	0	Stopped
GKW1 05SN187	434		Yes	0	Stopped
GKW1 05SN188	432		Yes	0	Stopped
GKW1 05SN189	434		Yes	0	Stopped
The sample does fulfill the ballistic requirements according to level 'FB4 NS, .357 CB'					

Remarks : See page 4 for impact points.

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Sample specifications

Assignor identification	: AR 83-FB4 (.357 CB)
TNO identification	: 05MB961
Reference number	: -
Date of arrival	: 19-04-2005
Size	: 1200 x 1200 mm²
Thickness	: - mm
Weight	: - gram
Areal mass	: - kg/m²
Composition of sample in direction as encountered by projectile (Specification assignor)	: See page 5 until 8 for composition drawings.
Remarks	: The connection between the Aluminium frame (armoured part) and the sub-frame is, according to the assignor, not comparable with the construction in a building and therefor it is not tested for ballistic resistance.

Test Specifications

Experimental facility	: Large Calibre Firing Range no. 1 Ypenburg
Ambient temperature	: 18 °C
Relative humidity	: 60 %
Conditioning of sample material	:
- duration at least	: 24 hours
- at temperature	: 18 - 22 °C
- at rel. humidity	: 60 - 70 %
Temperature of sample during experiment	: 18 - 22 °C
Remarks	: none

Ballistic specifications

Weapon	: SVB .357
- Barrel length	: 605 mm
- Rifling twist	: 1:450 Omw.:mm
Projectile	: .357 FMJ Coned Bullet (MP)
- Weight	: 10.2 gram
- Calibre	: 0.357 inch
- Manufacturer	: Dynamit Nobel AG
Velocity range	: 300 - 550 m/s
Distance muzzle to target	: 8.00 m

Other specifications

Contract number	: 17268

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Figure 1 : Front sample AR 83 - FB4 after testing with .357 CB and .44 FMJ. Shot no. 05SN182 until 189 concerning .357 CB.

Figure 2 : Back sample AR 83 - FB4 after testing with .357 CB and .44 FMJ.

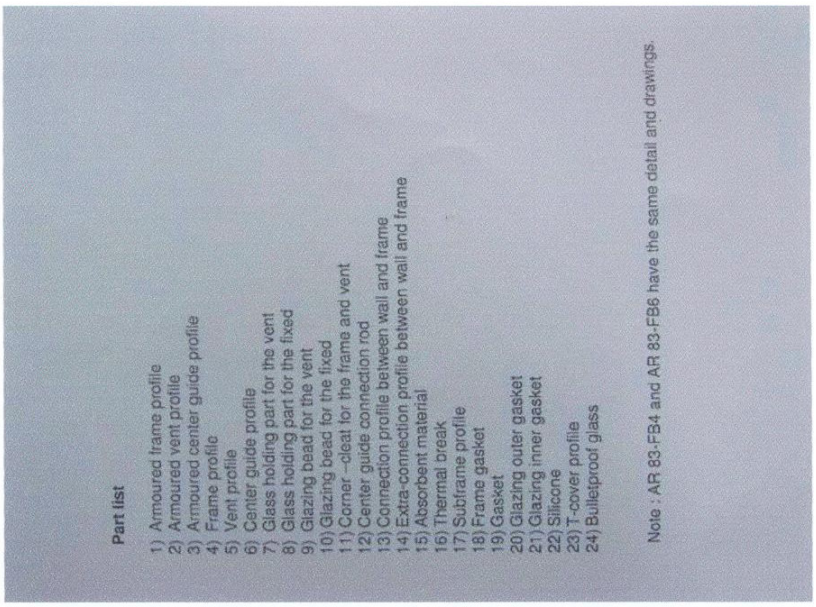

Figure 3 : Part list

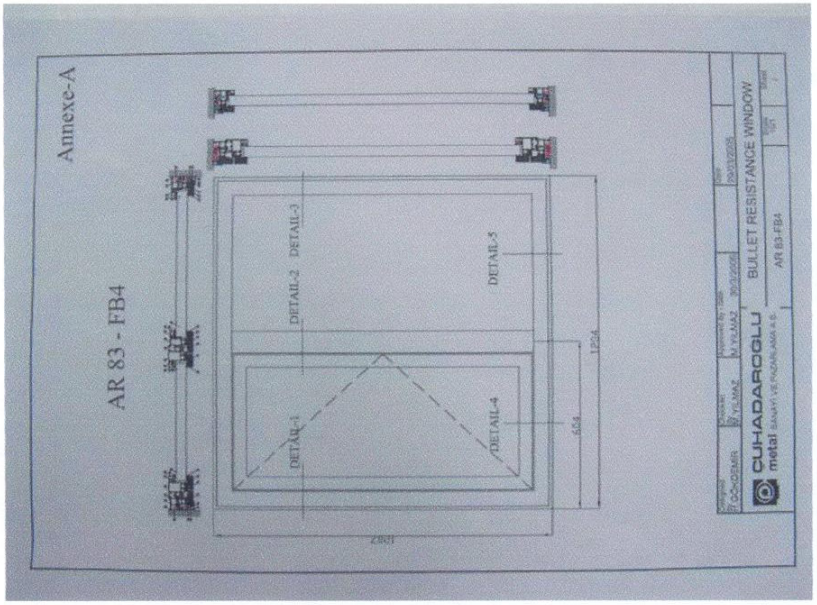

Figure 4 : Sample AR 83 - FB4

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