CERTOTTICA
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TEST REPORT

Client:	**BOLLE' PROTECTION**
Address:	**95 rue Louis Guérin - 69 100 VILLEURBANNE FRANCE**
Article:	**Spectacle**
Model:	**COMBAT in spectacle configuration**
Job n. :	**C110855**
Report n.:	**113809**
Receiving date:	**17/10/2011**
Date of Test Begin:	**08/11/2011**
Date of Test End:	**05/12/2011**
Issuing Date:	**06/12/2011**
Reference standard:	**Internal method.**
	STANAG 2920 (Edition 2): Ballistic test method for personal armour materials and combat clothing.
	STANAG 4296 PCS (Edition 1): Eye protection for the individual soldier – ballistic protection. (Internal Method)

Note 1: This Test Report is valid exclusively for the specimens utilized for tests and any modification shall be solely performed with the issuing of a new test report.
Note 2: The partial reproduction of this Test Report is permitted against written authorization by Certottica.
Note 3: The Test Report in digital format and the relevant attached file of the digital signatures are official documents. The validity of this Test Report can be checked at: http://www.certottica.org.
Note 4: The tests were performed on specimens that sampled the customer.

Test conditions:

- Calibre: 3.6 mm
- Bullet type: FSP STANAG 2920 (edition 2) FSP A3/6723/6
- Test weapon: Air gun
- Barrel length:
- Propellant: compressed air
- Angle of incidence: 90°
- Impact points: frontal impacts at the eye centres
- Witness system: 0.5 mm thick aluminium alloy sheet, 2 cm behind sample.
- Test head-form: medium head-form approximates a 50^{th} percentile adult male with internal core covered by a nominal 12 mm thick layer of polyurethane.
- Room temperature: 23°C ± 3°C
- Conditioning of the samples: 24 hours at a temperature of 20°C ± 2°C and a relative humidity of 65 % ± 5 %

Requirements

The V_{50} ballistic limit is determined by the average of an equal number of highest partial penetration velocities and the lowest complete penetration velocities which occur within a specified velocity spread. The test equipment use an high pressure air gun with projectile FSP A3/6723/6 shaped of 3.6 mm calibre. The witness system consists in a 0.5mm thick aluminium plate, placed 2 mm behind the test sample. The samples are conditioned for at least 24 h prior to testing. Testing procedures use an electronic velocity detection by light beam; the projectile impacts the visual centre perpendicularly to the device's surface, after the impact the device and the witness are submitted to visual examination. The classification of results is as follow:

- Complete penetration (CP) means the situation in which the impacting projectile or any fragment thereof, or any fragment of the test specimen perforates the witness plate.
- Partial penetration (PP) in any impact which can't be considered a complete penetration.

Unacceptable shot is determined by the number of corners visible in the impact site: if less than 3 corner were visible the shot was considered invalid.

NOTE: any deviations from standard as agreed to by client; the standard STANAG 4296 concerns visor and goggle.

Results

Sample	Ocular	Velocity [m/s]	Result	Data used for V_{50}
113809 25	Left	272	CP	---
113809 26	Left	234	PP	X
113809 27	Left	251	CP	---
113809 28	Right	241	CP	---
113809 30	Right	246	CP	---
113809 32	Right	224	PP	X
113809 33	Right	225	CP	X
113809 34	Right	229	CP	X
113809 35	Right	224	PP	---
113809 36	Right	232	PP	X
113809 37	Right	220	PP	X
113809 38	Left	235	CP	X
113809 39	Left	235	CP	X
V_{50} [m/s]			229	

The testing samples has 1.5 ÷ 2.5 mm Clear Polycarbonate lenses thickness and a weight of 29g.
The tested samples met the requirements according to STANAG 4296 paragraph 5 and 6.

Figure1: specimen picture

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