



TNO
P.O. Box 45
2496 ZA The Hague
The Netherlands

Summary of Research

EN 1063

Bullet-resistant glazing, november 1999

(This page is a summary, for details refer to the test report 10MB02978/10MB02979/10MB02980)

Date
24-09-2010
Reference
10 DV3/2216

Contractor : Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Produced by : Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Product : **EN 1063 BR/1**

Test level : **BR1 NS**

Test result : The tested sample is **complying**
with the requirements of 'EN 1063' according to level 'BR1 NS'.

Signature :

A handwritten signature in blue ink, appearing to be 'J.P.F. Broos', written over a circular stamp.

J.P.F. Broos
Project leader

A handwritten signature in blue ink, appearing to be 'E.J.M. van Riet', written over a circular stamp.

E.J.M. van Riet
Manager

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Laboratory for Ballistic
Research (LBO)
Visiting address:
Suburb Ypenburg
Ypenburgse Boslaan 2
2496 ZA 's-Gravenhage

Test certificate *

The test has been carried out according to **EN 1063**
class **BR1 NS**

Assignor Allplast B.V.
 Schelde Rijnweg 6
 4691 RW Tholen
 Nederland

Experiment date 26-07-2010

Project Glass

Sample identification EN 1063 BR/1, 2 and 3

For details see page 2 upto page 6.

The tested samples are complying with the requirements of 'EN 1063' according to level 'BR1 NS'.

Subject
Ballistic experiments

Date
21-09-2010

Reference
10MB02978 / 10MB02979 /
10MB02980

Contact
J.P.F. Broos

E-mail
kkw@tno.nl

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the Registry of the District Court and
the Chamber of Commerce in The
Hague shall apply to all instructions
given to TNO.

A handwritten signature in blue ink, appearing to read 'J.P.F. Broos', enclosed in a blue circular stamp.

J.P.F. Broos

Project leader



Test certificate number 10MB02978 / 10MB02979 / 10MB02980

page 3 of 6

Assignor Allplast B.V.

Experiment date 26-07-2010

Test results

Description of testmethod

In order to determine the multi-hit performance of a pane, three experiments are performed according to EN 1063, "Bullet-resistant glazing, November 1999. The pane is clamped on four sides in a specially designed mounting system. The ballistic impact experiments are conducted in a triangular hit pattern with a bullet for the desired protection level as described in the standard. The mutual distance between the consecutive points of impact is 120 ± 10 mm. The triangle position is drawn in the centre of the panel. If no penetrations occur but splinters are released at the rear face of the test panel, this is marked as S (Splinters) behind the protection level in the test results. If not, this is marked as NS (No Splinters). To fulfill the requirements of the EN 1063 the above mentioned test method must be performed on three panels.

Results

EN 1063 BR/1 - 1/3 (10MB02978) : BR1 NS - .22 L/RN

Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW2 10SN05649	377	Stopped	NS	Yes
KKW2 10SN05650	366	Stopped	NS	Yes
KKW2 10SN05651	370	Stopped	NS	Yes

EN 1063 BR/1 - 2/3 (10MB02979) : BR1 NS - .22 L/RN

Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW2 10SN05652	361	Stopped	NS	Yes
KKW2 10SN05653	362	Stopped	NS	Yes
KKW2 10SN05654	379	Stopped	NS	Yes

EN 1063 BR/1 - 3/3 (10MB02980) : BR1 NS - .22 L/RN

Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW2 10SN05655	364	Stopped	NS	Yes
KKW2 10SN05656	372	Stopped	NS	Yes
KKW2 10SN05657	362	Stopped	NS	Yes

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



Test certificate number 10MB02978 / 10MB02979 / 10MB02980

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Assignor Allplast B.V.

Experiment date 26-07-2010

Sample specifications

Assignor identification	:	EN 1063 BR/1 - 1/3	EN 1063 BR/1 - 2/3	EN 1063 BR/1 - 3/3
TNO identification	:	10MB02978	10MB02979	10MB02980
Date of arrival	:	22-07-2010	22-07-2010	22-07-2010
Size	:	500 x 500 mm ²	500 x 500 mm ²	500 x 500 mm ²
Thickness	:	13.7 mm	13.7 mm	13.7 mm
Weight	:	3950 gram	3950 gram	3950 gram
Areal mass	:	15.8 kg/m ²	15.8 kg/m ²	15.8 kg/m ²
Composition of sample in direction as encountered by projectile (Specification assignor)	:	Assignee known to	Assignee known to	Assignee known to
Remarks	:	None	None	None

Test specifications

Experimental facility	:	Small Calibre Firing Range no. 2 Ypenburg	Small Calibre Firing Range no. 2 Ypenburg	Small Calibre Firing Range no. 2 Ypenburg
- temperature	:	22 °C	22 °C	22 °C
- relative humidity	:	64 %	64 %	64 %

Conditioning of sample material

- duration at least	:	12 - hours	12 - hours	12 - hours
- temperature	:	13 - 23 °C	13 - 23 °C	13 - 23 °C
- relative humidity	:	10 - 90 %	10 - 90 %	10 - 90 %
Remarks	:	None	None	None

Ballistic specifications

Weapon	:	SVB	SVB	SVB
- barrel length	:	750 mm	750 mm	750 mm
- rifling twist	:	1 : 406 mm	1 : 406 mm	1 : 406 mm
Projectile	:	.22 L/RN	.22 L/RN	.22 L/RN
- weight	:	2.6 gram	2.6 gram	2.6 gram
- calibre	:	5.56 mm	5.56 mm	5.56 mm
- manufacturer	:	Dynamit Nobel AG	Dynamit Nobel AG	Dynamit Nobel AG
- description	:			
Distance muzzle to target	:	5.8 m	5.8 m	5.8 m
Target obliquity	:	0 °NATO	0 °NATO	0 °NATO

Other specifications

Contract number	:	32242	32242	32242
Backing	:	Aluminium 0,5mm AL-2024	Aluminium 0,5mm AL-2024	Aluminium 0,5mm AL-2024

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Test certificate number 10MB02978 / 10MB02979 / 10MB02980
Assignor Allplast B.V.

page 5 of 6
Experiment date 26-07-2010



Figure 1 : Strike face, sample 10MB02978



Figure 2 : Strike face, sample 10MB02979

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Test certificate number 10MB02978 / 10MB02979 / 10MB02980

page 6 of 6

Assignor Allplast B.V.

Experiment date 26-07-2010



Figure 3 : Strike face, sample 10MB02980

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Summary of Research

TNO
P.O. Box 45
2496 ZA The Hague
The Netherlands

EN 1063

Bullet-resistant glazing, november 1999

(This page is a summary, for details refer to the test report 10MB02981/10MB02982/10MB02983)

Date
24-09-2010
Reference
10 DV3/2217

Contractor : Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Produced by : Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Product : **EN 1063 BR/1**

Test level : **BR2 NS**

Test result : The tested samples are **complying**
with the requirements of 'EN 1063' according to level 'BR2 NS'.

Signature :

J.P.F. Broos
Project leader

E.J.M. van Riet
Manager

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Laboratory for Ballistic
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Visiting address:
Suburb Ypenburg
Ypenburgse Boslaan 2
2496 ZA 's-Gravenhage

Test certificate *

The test has been carried out according to **EN 1063**
class **BR2 NS**

Assignor Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Experiment date 26-07-2010

Project Glass

Sample identification EN 1063 BR/2 - 1/3

For details see page 2 upto page 6.

The tested sample is complying with the requirements of 'EN 1063' according to level 'BR2 NS'.

A handwritten signature in blue ink, appearing to read 'J.P.F. Broos', is written over a circular stamp or seal.

J.P.F. Broos

Project leader

Subject
Ballistic experiments

Date
21-09-2010

Reference
10MB02981 / 10MB02982 /
10MB02983

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Test certificate number 10MB02981 / 10MB02982 / 10MB02983

page 3 of 6

Assignor Allplast B.V.

Experiment date 26-07-2010

Test results

Description of testmethod

In order to determine the multi-hit performance of a pane, three experiments are performed according to EN 1063, "Bullet-resistant glazing, November 1999. The pane is clamped on four sides in a specially designed mounting system. The ballistic impact experiments are conducted in a triangular hit pattern with a bullet for the desired protection level as described in the standard. The mutual distance between the consecutive points of impact is 120 ± 10 mm. The triangle position is drawn in the centre of the panel. If no penetrations occur but splinters are released at the rear face of the test panel, this is marked as S (Splinters) behind the protection level in the test results. If not, this is marked as NS (No Splinters). To fulfill the requirements of the EN 1063 the above mentioned test method must be performed on three panels.

Results

EN 1063 BR/2 - 1/3 (10MB02981) : BR2 NS - 9x19 Ball (DM41)				
Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW2 10SN05660	397	Stopped	NS	Yes
KKW2 10SN05661	403	Stopped	NS	Yes
KKW2 10SN05662	399	Stopped	NS	Yes

EN 1063 BR/2 - 2/3 (10MB02982) : BR2 NS - 9x19 Ball (DM41)				
Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW2 10SN05663	398	Stopped	NS	Yes
KKW2 10SN05664	396	Stopped	NS	Yes
KKW2 10SN05665	395	Stopped	NS	Yes

EN 1063 BR/2 - 3/3 (10MB02983) : BR2 NS - 9x19 Ball (DM41)				
Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW2 10SN05666	401	Stopped	NS	Yes
KKW2 10SN05667	402	Stopped	NS	Yes
KKW2 10SN05668	404	Stopped	NS	Yes



Test certificate number 10MB02981 / 10MB02982 / 10MB02983

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Assignor Allplast B.V.

Experiment date 26-07-2010

Sample specifications

Assignor identification	:	EN 1063 BR/2 - 1/3	EN 1063 BR/2 - 2/3	EN 1063 BR/2 - 3/3
TNO identification	:	10MB02981	10MB02982	10MB02983
Date of arrival	:	22-07-2010	22-07-2010	22-07-2010
Size	:	500 x 500 mm ²	500 x 500 mm ²	500 x 500 mm ²
Thickness	:	20.3 mm	20.3 mm	20.3 mm
Weight	:	5900 gram	5900 gram	5900 gram
Areal mass	:	23.6 kg/m ²	23.6 kg/m ²	23.6 kg/m ²
Composition of sample in direction as encountered by projectile (Specification assignor)	:	Assignee known to	Assignee known to	Assignee known to
Remarks	:	None	None	None

Test specifications

Experimental facility	:	Small Calibre Firing Range no. 2 Ypenburg	Small Calibre Firing Range no. 2 Ypenburg	Small Calibre Firing Range no. 2 Ypenburg
- temperature	:	22 °C	22 °C	22 °C
- relative humidity	:	64 %	64 %	64 %

Conditioning of sample material

- duration at least	:	12 - hours	12 - hours	12 - hours
- temperature	:	13 - 23 °C	13 - 23 °C	13 - 23 °C
- relative humidity	:	10 - 90 %	10 - 90 %	10 - 90 %
Remarks	:	None	None	None

Ballistic specifications

Weapon	:	SVB	SVB	SVB
- barrel length	:	470 mm	470 mm	470 mm
- rifling twist	:	1 : 250 mm	1 : 250 mm	1 : 250 mm
Projectile	:	9x19 Ball (DM41)	9x19 Ball (DM41)	9x19 Ball (DM41)
- weight	:	8 gram	8 gram	8 gram
- calibre	:	9 mm	9 mm	9 mm
- manufacturer	:	RUAG	RUAG	RUAG
- description	:			
Distance muzzle to target	:	5.8 m	5.8 m	5.8 m
Target obliquity	:	0 °NATO	0 °NATO	0 °NATO

Other specifications

Contract number	:	32242	32242	32242
Backing	:	Aluminium 0,5mm AL-2024	Aluminium 0,5mm AL-2024	Aluminium 0,5mm AL-2024

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Test certificate number 10MB02981 / 10MB02982 / 10MB02983
Assignor Allplast B.V.

page 5 of 6

Experiment date 26-07-2010



Figure 1 : Strike face, sample 10MB02981



Figure 2 : Strike face, sample 10MB02982

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Test certificate number 10MB02981 / 10MB02982 / 10MB02983

page 6 of 6

Assignor Allplast B.V.

Experiment date 26-07-2010



Figure 3 : Strike face, sample 10MB02983



Summary of Research

TNO
P.O. Box 45
2496 ZA The Hague
The Netherlands

EN 1063

Bullet-resistant glazing, november 1999

(This page is a summary, for details refer to the test report 10MB02987/10MB02988/10MB02989)

Date
24-09-2010
Reference
10 DV3/2220

Contractor : Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Produced by : Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Product : EN 1063 BR/4

Test level : BR4 NS

Test result : The tested sample is **complying**
with the requirements of 'EN 1063' according to level 'BR4 NS'.

Signature :

J.P.F. Broos
Project leader

E.J.M. van Riet
Manager

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Visiting address:
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2496 ZA 's-Gravenhage

Test certificate *

The test has been carried out according to **EN 1063**
class **BR4 NS**

Assignor Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Experiment date 26-07-2010

Project Glass

Sample identification EN 1063 BR/4, 1, 2 and 3

For details see page 2 upto page 6.

The tested samples are complying with the requirements of 'EN 1063' according to level 'BR4 NS'.

J.P.E. Broos

Project leader

Subject

Ballistic experiments

Date

21-09-2010

Reference

10MB02987 / 10MB02988 /
10MB02989

Contact

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Test certificate number 10MB02987 / 10MB02988 / 10MB02989

page 3 of 6

Assignor Allplast B.V.

Experiment date 26-07-2010

Test results

Description of testmethod

In order to determine the multi-hit performance of a pane, three experiments are performed according to EN 1063, "Bullet-resistant glazing, November 1999. The pane is clamped on four sides in a specially designed mounting system. The ballistic impact experiments are conducted in a triangular hit pattern with a bullet for the desired protection level as described in the standard. The mutual distance between the consecutive points of impact is 120 ± 10 mm. The triangle position is drawn in the centre of the panel. If no penetrations occur but splinters are released at the rear face of the test panel, this is marked as S (Splinters) behind the protection level in the test results. If not, this is marked as NS (No Splinters). To fulfill the requirements of the EN 1063 the above mentioned test method must be performed on three panels.

Results

EN 1063 BR/4 - 1/3 (10MB02987) : BR4 NS - .44 FMJ FN

Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW2 10SN05674	434	Stopped	NS	Yes
KKW2 10SN05675	430	Stopped	NS	Yes
KKW2 10SN05676	441	Stopped	NS	Yes

EN 1063 BR/4 - 2/3 (10MB02988) : BR4 NS - .44 FMJ FN

Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW2 10SN05677	436	Stopped	NS	Yes
KKW2 10SN05678	433	Stopped	NS	Yes
KKW2 10SN05679	434	Stopped	NS	Yes

EN 1063 BR/4 - 3/3 (10MB02989) : BR4 NS - .44 FMJ FN

Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW2 10SN05680	442	Stopped	NS	Yes
KKW2 10SN05681	440	Stopped	NS	Yes
KKW2 10SN05682	433	Stopped	NS	Yes

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Test certificate number 10MB02987 / 10MB02988 / 10MB02989

page 4 of 6

Assignor Allplast B.V.

Experiment date 26-07-2010

Sample specifications

Assignor identification	:	EN 1063 BR/4 - 1/3	EN 1063 BR/4 - 2/3	EN 1063 BR/4 - 3/3
TNO identification	:	10MB02987	10MB02988	10MB02989
Date of arrival	:	22-07-2010	22-07-2010	22-07-2010
Size	:	500 x 500 mm ²	500 x 500 mm ²	500 x 500 mm ²
Thickness	:	31.8 mm	31.8 mm	31.8 mm
Weight	:	9550 gram	9550 gram	9550 gram
Areal mass	:	38.2 kg/m ²	38.2 kg/m ²	38.2 kg/m ²
Composition of sample in direction as encountered by projectile (Specification assignor)	:	Assignee known to	Assignee known to	Assignee known to
Remarks	:	None	None	None

Test specifications

Experimental facility	:	Small Calibre Firing Range no. 2 Ypenburg	Small Calibre Firing Range no. 2 Ypenburg	Small Calibre Firing Range no. 2 Ypenburg
- temperature	:	22 °C	22 °C	22 °C
- relative humidity	:	64 %	64 %	64 %

Conditioning of sample material

- duration at least	:	12 - hours	12 - hours	12 - hours
- temperature	:	13 - 23 °C	13 - 23 °C	13 - 23 °C
- relative humidity	:	10 - 90 %	10 - 90 %	10 - 90 %
Remarks	:	None	None	None

Ballistic specifications

Weapon	:	SVB	SVB	SVB
- barrel length	:	605 mm	605 mm	605 mm
- rifling twist	:	1 : 450 mm	1 : 450 mm	1 : 450 mm
Projectile	:	.44 FMJ FN	.44 FMJ FN	.44 FMJ FN
- weight	:	15.6 gram	15.6 gram	15.6 gram
- calibre	:	11.18 mm	11.18 mm	11.18 mm
- manufacturer	:	CCI-Speer	CCI-Speer	CCI-Speer
- description	:			
Distance muzzle to target	:	5.8 m	5.8 m	5.8 m
Target obliquity	:	0 °NATO	0 °NATO	0 °NATO

Other specifications

Contract number	:	32242	32242	32242
Backing	:	Aluminium 0,5mm AL-2024	Aluminium 0,5mm AL-2024	Aluminium 0,5mm AL-2024

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Test certificate number 10MB02987 / 10MB02988 / 10MB02989
Assignor Allplast B.V.

page 5 of 6

Experiment date 26-07-2010



Figure 1 : Strike face, sample 10MB02987



Figure 2 : Strike face, sample 10MB02988

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Test certificate number 10MB02987 / 10MB02988 / 10MB02989

page 6 of 6

Assignor Allplast B.V.

Experiment date 26-07-2010



Figure 3 : Strike face, sample 10MB02989

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Summary of Research

TNO
P.O. Box 45
2496 ZA The Hague
The Netherlands

EN 1063

Bullet-resistant glazing, november 1999

(This page is a summary, for details refer to the test report 10MB02990/10MB02991/10MB02992)

Date
24-09-2010
Reference
10 DV3/2221

Contractor : Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Produced by : Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Product : **EN 1063 SG/2**

Test level : **SG2 NS**

Test result : The tested sample is **complying**
with the requirements of 'EN 1063' according to level 'SG2 NS'.

Signature :

J.P.F. Broos
Project leader

E.J.M. van Riet
Manager

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Research (LBO)
Visiting address:
Suburb Ypenburg
Ypenburgse Boslaan 2
2496 ZA 's-Gravenhage

Test certificate *

The test has been carried out according to **EN 1063**
class **SG2 NS**

Assignor Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Experiment date 26-07-2010

Project Glass

Sample identification EN 1063 SG/2, 1, 2 and 3

For details see page 2 upto page 6.

The tested samples are complying with the requirements of 'EN 1063' according to level 'SG2 NS'.

J.P.F. Broos

Project leader

Subject

Ballistic experiments

Date

21-09-2010

Reference

10MB02990 / 10MB02991 /
10MB02992

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Test certificate number 10MB02990 / 10MB02991 / 10MB02992

page 3 of 6

Assignor Allplast B.V.

Experiment date 26-07-2010

Test results

Description of testmethod

In order to determine the multi-hit performance of a pane, three experiments are performed according to EN 1063, "Bullet-resistant glazing, November 1999. The pane is clamped on four sides in a specially designed mounting system. The ballistic impact experiments are conducted in a triangular hit pattern with a bullet for the desired protection level as described in the standard. The mutual distance between the consecutive points of impact is 120 ± 10 mm. The triangle position is drawn in the centre of the panel. If no penetrations occur but splinters are released at the rear face of the test panel, this is marked as S (Splinters) behind the protection level in the test results. If not, this is marked as NS (No Splinters). To fulfill the requirements of the EN 1063 the above mentioned test method must be performed on three panels.

Results

EN 1063 SG/2 - 1/3 (10MB02990) : SG2 NS - Brenneke				
Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW2 10SN05684	401	Stopped	NS	Yes
KKW2 10SN05685	406	Stopped	NS	Yes
KKW2 10SN05686	397	Stopped	NS	Yes

EN 1063 SG/2 - 2/3 (10MB02991) : SG2 NS - Brenneke				
Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW2 10SN05687	407	Stopped	NS	Yes
KKW2 10SN05688	407	Stopped	NS	Yes
KKW2 10SN05689	406	Stopped	NS	Yes

EN 1063 SG/2 - 3/3 (10MB02992) : SG2 NS - Brenneke				
Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW2 10SN05690	407	Stopped	NS	Yes
KKW2 10SN05691	417	Stopped	NS	Yes
KKW2 10SN05692	410	Stopped	NS	Yes

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



Test certificate number 10MB02990 / 10MB02991 / 10MB02992

page 4 of 6

Assignor Allplast B.V.

Experiment date 26-07-2010

Sample specifications

Assignor identification	:	EN 1063 SG/2 - 1/3	EN 1063 SG/2 - 2/3	EN 1063 SG/2 - 3/3
TNO identification	:	10MB02990	10MB02991	10MB02992
Date of arrival	:	22-07-2010	22-07-2010	22-07-2010
Size	:	500 x 500 mm ²	500 x 500 mm ²	500 x 500 mm ²
Thickness	:	31.8 mm	31.8 mm	31.8 mm
Weight	:	9550 gram	9550 gram	9550 gram
Areal mass	:	38.2 kg/m ²	38.2 kg/m ²	38.2 kg/m ²
Composition of sample in direction as encountered by projectile (Specification assignor)	:	Assignee known to	Assignee known to	Assignee known to
Remarks	:	None	None	None

Test specifications

Experimental facility	:	Small Calibre Firing Range no. 2 Ypenburg	Small Calibre Firing Range no. 2 Ypenburg	Small Calibre Firing Range no. 2 Ypenburg
- temperature	:	22 °C	22 °C	22 °C
- relative humidity	:	64 %	64 %	64 %

Conditioning of sample material

- duration at least	:	12 - hours	12 - hours	12 - hours
- temperature	:	13 - 23 °C	13 - 23 °C	13 - 23 °C
- relative humidity	:	10 - 90 %	10 - 90 %	10 - 90 %
Remarks	:	None	None	None

Ballistic specifications

Weapon	:	SVB	SVB	SVB
- barrel length	:	650 mm	650 mm	650 mm
- rifling twist	:	1 : 1200 mm	1 : 1200 mm	1 : 1200 mm
Projectile	:	Brenneke	Brenneke	Brenneke
- weight	:	31.5 gram	31.5 gram	31.5 gram
- calibre	:	18.5 mm	18.5 mm	18.5 mm
- manufacturer	:	Rottweil	Rottweil	Rottweil
Distance muzzle to target	:	5.8 m	5.8 m	5.8 m
Target obliquity	:	0 °NATO	0 °NATO	0 °NATO

Other specifications

Contract number	:	32242	32242	32242
Backing	:	Aluminium 0,5mm AL-2024	Aluminium 0,5mm AL-2024	Aluminium 0,5mm AL-2024

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



Test certificate number 10MB02990 / 10MB02991 / 10MB02992
Assignor Allplast B.V.

page 5 of 6
Experiment date 26-07-2010



Figure 1 : Strike face, sample 10MB02990



Figure 2 : Strike face, sample 10MB02991



Test certificate number 10MB02990 / 10MB02991 / 10MB02992

page 6 of 6

Assignor Allplast B.V.

Experiment date 26-07-2010



Figure 3 : Strike face, sample 10MB02992



TNO
P.O. Box 45
2496 ZA The Hague
The Netherlands

Summary of Research

EN 1063

Bullet-resistant glazing, november 1999

(This page is a summary, for details refer to the test report 10MB02996/10MB02997/10MB02998)

Date
24-09-2010
Reference
10 DV3/2222

Contractor : Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Produced by : Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Product : **EN 1063 BR/6**

Test level : **BR6 NS**

Test result : The tested sample is **complying**
with the requirements of 'EN 1063' according to level 'BR6 NS'.

Signature :

A blue ink signature of J.P.F. Broes, consisting of stylized initials and a surname.

J.P.F. Broes
Project leader

A blue ink signature of E.J.M. van Riet, consisting of stylized initials and a surname.

E.J.M. van Riet
Manager

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Laboratory for Ballistic
Research (LBO)
Visiting address:
Suburb Ypenburg
Ypenburgse Boslaan 2
2496 ZA 's-Gravenhage

Test certificate *

The test has been carried out according to **EN 1063**
class **BR6 NS**

Assignor Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Experiment date 26-07-2010

Project Glass

Sample identification EN 1063 BR/6, 1, 2 and 3

For details see page 2 upto page 6.

The tested samples are complying with the requirements of 'EN 1063' according to level 'BR6 NS'.

A blue ink signature of J.P.F. Broos, consisting of stylized initials and a surname.

J.P.F. Broos

Project leader

Subject

Ballistic experiments

Date

21-09-2010

Reference

10MB02996 / 10MB02997 /
10MB02998

Contact

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Test certificate number 10MB02996 / 10MB02997 / 10MB02998

page 3 of 6

Assignor Allplast B.V.

Experiment date 26-07-2010

Test results

Description of testmethod

In order to determine the multi-hit performance of a pane, three experiments are performed according to EN 1063, "Bullet-resistant glazing, November 1999. The pane is clamped on four sides in a specially designed mounting system. The ballistic impact experiments are conducted in a triangular hit pattern with a bullet for the desired protection level as described in the standard. The mutual distance between the consecutive points of impact is 120 ± 10 mm. The triangle position is drawn in the centre of the panel. If no penetrations occur but splinters are released at the rear face of the test panel, this is marked as S (Splinters) behind the protection level in the test results. If not, this is marked as NS (No Splinters). To fulfill the requirements of the EN 1063 the above mentioned test method must be performed on three panels.

Results

EN 1063 BR/6 - 1/3 (10MB02996) : BR6 NS - 7.62x51 Ball (Sintox)				
Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW1 10SN05450	831	Stopped	NS	Yes
KKW1 10SN05451	836	Stopped	NS	Yes
KKW1 10SN05452	843	Stopped	NS	Yes

EN 1063 BR/6 - 2/3 (10MB02997) : BR6 NS - 7.62x51 Ball (Sintox)				
Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW1 10SN05453	832	Stopped	NS	Yes
KKW1 10SN05454	840	Stopped	NS	Yes
KKW1 10SN05455	828	Stopped	NS	Yes

EN 1063 BR/6 - 3/3 (10MB02998) : BR6 NS - 7.62x51 Ball (Sintox)				
Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW1 10SN05456	832	Stopped	NS	Yes
KKW1 10SN05457	839	Stopped	NS	Yes
KKW1 10SN05458	825	Stopped	NS	Yes

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



Test certificate number 10MB02996 / 10MB02997 / 10MB02998

page 4 of 6

Assignor Allplast B.V.

Experiment date 26-07-2010

Sample specifications

Assignor identification	:	EN 1063 BR/6 - 1/3	EN 1063 BR/6 - 2/3	EN 1063 BR/6 - 3/3
TNO identification	:	10MB02996	10MB02997	10MB02998
Date of arrival	:	22-07-2010	22-07-2010	22-07-2010
Size	:	500 x 500 mm ²	500 x 500 mm ²	500 x 500 mm ²
Thickness	:	43 mm	43 mm	43 mm
Weight	:	20850 gram	20850 gram	20850 gram
Areal mass	:	83.4 kg/m ²	83.4 kg/m ²	83.4 kg/m ²
Composition of sample in direction as encountered by projectile (Specification assignor)	:	Assignee known to	Assignee known to	Assignee known to
Remarks	:	None	None	None

Test specifications

Experimental facility	:	Small Calibre Firing Range no. 1 Ypenburg	Small Calibre Firing Range no. 1 Ypenburg	Small Calibre Firing Range no. 1 Ypenburg
- temperature	:	22 °C	22 °C	22 °C
- relative humidity	:	66 %	66 %	66 %

Conditioning of sample material

- duration at least	:	12 - hours	12 - hours	12 - hours
- temperature	:	13 - 23 °C	13 - 23 °C	13 - 23 °C
- relative humidity	:	10 - 90 %	10 - 90 %	10 - 90 %
Remarks	:	None	None	None

Ballistic specifications

Weapon	:	SVB	SVB	SVB
- barrel length	:	665 mm	665 mm	665 mm
- rifling twist	:	1 : 254 mm	1 : 254 mm	1 : 254 mm
Projectile	:	7.62x51 Ball (Sintox)	7.62x51 Ball (Sintox)	7.62x51 Ball (Sintox)
- weight	:	9.55 gram	9.55 gram	9.55 gram
- calibre	:	7.62 mm	7.62 mm	7.62 mm
- manufacturer	:	Metallwerk Elisenhutte Gmbh	Metallwerk Elisenhutte Gmbh	Metallwerk Elisenhutte Gmbh
- description	:	FMJ, NATO proofed cartridge	FMJ, NATO proofed cartridge	FMJ, NATO proofed cartridge
Distance muzzle to target	:	7.8 m	7.8 m	7.8 m
Target obliquity	:	0 °NATO	0 °NATO	0 °NATO

Other specifications

Contract number	:	32242	32242	32242
Backing	:	Aluminium 0,5mm AL-2024	Aluminium 0,5mm AL-2024	Aluminium 0,5mm AL-2024

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



Test certificate number 10MB02996 / 10MB02997 / 10MB02998
Assignor Allplast B.V.

page 5 of 6
Experiment date 26-07-2010



Figure 1 : Strike face, sample 10MB02996



Figure 2 : Strike face, sample 10MB02997

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



Test certificate number 10MB02996 / 10MB02997 / 10MB02998

page 6 of 6

Assignor Allplast B.V.

Experiment date 26-07-2010



Figure 3 : Strike face, sample 10MB02998

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Summary of Research

TNO
P.O. Box 45
2496 ZA The Hague
The Netherlands

EN 1063

Bullet-resistant glazing, november 1999

(This page is a summary, for details refer to the test report 10MB02999/10MB03000/10MB03001)

Date
24-09-2010
Reference
10 DV3/2223

Contractor : Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Produced by : Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Product : **EN 1063 BR/7.1**

Test level : **BR7 NS**

Test result : The tested sample is **complying**
with the requirements of 'EN 1063' according to level 'BR7 NS'.

Signature :

J.P.F. Broos
Project leader

E.J.M. van Riet
Manager

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Laboratory for Ballistic
Research (LBO)
Visiting address:
Suburb Ypenburg
Ypenburgse Boslaan 2
2496 ZA 's-Gravenhage

Test certificate *

The test has been carried out according to **EN 1063**
class **BR7 NS**

Assignor Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Experiment date 26-07-2010

Project Glass

Sample identification EN 1063 BR/7.1, 1, 2 and 3

For details see page 2 upto page 6.

The tested samples are complying with the requirements of 'EN 1063' according to level 'BR7 NS'.



J.P.F. Broos

Project leader

Subject
Ballistic experiments

Date
21-09-2010

Reference
10MB02999 / 10MB03000 /
10MB03001

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the Chamber of Commerce in The
Hague shall apply to all instructions
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Test certificate number 10MB02999 / 10MB03000 / 10MB03001

page 3 of 6

Assignor Allplast B.V.

Experiment date 26-07-2010

Test results

Description of testmethod

In order to determine the multi-hit performance of a pane, three experiments are performed according to EN 1063, "Bullet-resistant glazing, November 1999. The pane is clamped on four sides in a specially designed mounting system. The ballistic impact experiments are conducted in a triangular hit pattern with a bullet for the desired protection level as described in the standard. The mutual distance between the consecutive points of impact is 120 ± 10 mm. The triangle position is drawn in the centre of the panel. If no penetrations occur but splinters are released at the rear face of the test panel, this is marked as S (Splinters) behind the protection level in the test results. If not, this is marked as NS (No Splinters). To fulfill the requirements of the EN 1063 the above mentioned test method must be performed on three panels.

Results

EN 1063 BR/7.1 - 1/3 (10MB02999) : BR7 NS - 7.62x51 AP (P80/1)				
Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW1 10SN05460	825	Stopped	NS	Yes
KKW1 10SN05461	824	Stopped	NS	Yes
KKW1 10SN05462	827	Stopped	NS	Yes

EN 1063 BR/7.1 - 2/3 (10MB03000) : BR7 NS - 7.62x51 AP (P80/1)				
Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW1 10SN05463	818	Stopped	NS	Yes
KKW1 10SN05464	824	Stopped	NS	Yes
KKW1 10SN05465	824	Stopped	NS	Yes

EN 1063 BR/7.1 - 3/3 (10MB03001) : BR7 NS - 7.62x51 AP (P80/1)				
Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW1 10SN05466	811	Stopped	NS	Yes
KKW1 10SN05467	826	Stopped	NS	Yes
KKW1 10SN05468	823	Stopped	NS	Yes

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



Test certificate number 10MB02999 / 10MB03000 / 10MB03001

page 4 of 6

Assignor Allplast B.V.

Experiment date 26-07-2010

Sample specifications

Assignor identification	:	EN 1063 BR/7.1 - 1/3	EN 1063 BR/7.1 - 2/3	EN 1063 BR/7.1 - 3/3
TNO identification	:	10MB02999	10MB03000	10MB03001
Reference	:			
Date of arrival	:	22-07-2010	22-07-2010	22-07-2010
Size	:	500 x 500 mm ²	500 x 500 mm ²	500 x 500 mm ²
Thickness	:	83.9 mm	83.9 mm	83.9 mm
Weight	:	42700 gram	42700 gram	42700 gram
Areal mass	:	170.8 kg/m ²	170.8 kg/m ²	170.8 kg/m ²
Composition of sample in direction as encountered by projectile (Specification assignor)	:	Assignee known to	Assignee known to	Assignee known to
Remarks	:	None	None	None

Test specifications

Experimental facility	:	Small Calibre Firing Range no. 1 Ypenburg	Small Calibre Firing Range no. 1 Ypenburg	Small Calibre Firing Range no. 1 Ypenburg
- temperature	:	22 °C	22 °C	22 °C
- relative humidity	:	66 %	66 %	66 %

Conditioning of sample material

- duration at least	:	12 - hours	12 - hours	12 - hours
- temperature	:	13 - 23 °C	13 - 23 °C	13 - 23 °C
- relative humidity	:	10 - 90 %	10 - 90 %	10 - 90 %
Remarks	:	None	None	None

Ballistic specifications

Weapon	:	SVB	SVB	SVB
- barrel length	:	645 mm	645 mm	645 mm
- rifling twist	:	1 : 254 mm	1 : 254 mm	1 : 254 mm
Projectile	:	7.62x51 AP (P80/1)	7.62x51 AP (P80/1)	7.62x51 AP (P80/1)
- weight	:	9.75 gram	9.75 gram	9.75 gram
- calibre	:	7.62 mm	7.62 mm	7.62 mm
- manufacturer	:	FN Herstal SA	FN Herstal SA	FN Herstal SA
Distance muzzle to target	:	7.8 m	7.8 m	7.8 m
Target obliquity	:	0 °NATO	0 °NATO	0 °NATO

Other specifications

Contract number	:	32242	32242	32242
Backing	:	Aluminium 0,5mm AL-2024	Aluminium 0,5mm AL-2024	Aluminium 0,5mm AL-2024

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



Test certificate number 10MB02999 / 10MB03000 / 10MB03001

page 5 of 6

Assignor Allplast B.V.

Experiment date 26-07-2010



Figure 1 : Strike face, sample 10MB02999

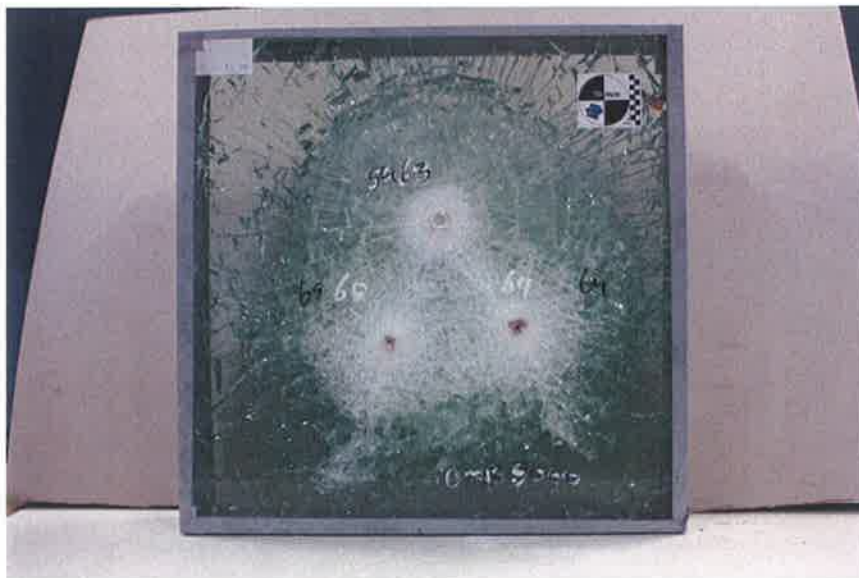


Figure 2 : Strike face, sample 10MB03000

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



Test certificate number 10MB02999 / 10MB03000 / 10MB03001

page 6 of 6

Assignor Allplast B.V.

Experiment date 26-07-2010



Figure 3 : Strike face, sample 10MB03001



Summary of Research

TNO
P.O. Box 45
2496 ZA The Hague
The Netherlands

EN 1063

Bullet-resistant glazing, november 1999

(This page is a summary, for details refer to the test report 10MB03005/10MB03006/10MB03007)

Date
24-09-2010
Reference
10 DV3/2224

Contractor : Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Produced by : Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Product : **EN 1063 BR/7.2**

Test level : **BR7 NS**

Test result : The tested sample is **complying**
with the requirements of 'EN 1063' according to level 'BR7 NS'.

Signature :

J.P.F. Broos
Project leader

E.J.M. van Riet
Manager

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Laboratory for Ballistic
Research (LBO)
Visiting address:
Suburb Ypenburg
Ypenburgse Boslaan 2
2496 ZA 's-Gravenhage

Test certificate *

The test has been carried out according to **EN 1063**
class **BR7 NS**

Assignor Allplast B.V.
Schelde Rijnweg 6
4691 RW Tholen
Nederland

Experiment date 26-07-2010

Project Glass

Sample identification EN 1063 BR/7.2, 1, 2 and 3

For details see page 2 upto page 6.

The tested samples are complying with the requirements of 'EN 1063' according to level 'BR7 NS'.

Subject
Ballistic experiments

Date
21-09-2010

Reference
10MB03005 / 10MB03006 /
10MB03007

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the Registry of the District Court and
the Chamber of Commerce in The
Hague shall apply to all instructions
given to TNO.

A handwritten signature in blue ink, appearing to be 'J.P.F. Broos', enclosed in a blue circular stamp.

J.P.F. Broos

Project leader



Test certificate number 10MB03005 / 10MB03006 / 10MB03007

page 3 of 6

Assignor Allplast B.V.

Experiment date 26-07-2010

Test results

Description of testmethod

In order to determine the multi-hit performance of a pane, three experiments are performed according to EN 1063, "Bullet-resistant glazing, November 1999. The pane is clamped on four sides in a specially designed mounting system. The ballistic impact experiments are conducted in a triangular hit pattern with a bullet for the desired protection level as described in the standard. The mutual distance between the consecutive points of impact is 120 ± 10 mm. The triangle position is drawn in the centre of the panel. If no penetrations occur but splinters are released at the rear face of the test panel, this is marked as S (Splinters) behind the protection level in the test results. If not, this is marked as NS (No Splinters). To fulfill the requirements of the EN 1063 the above mentioned test method must be performed on three panels.

Results

EN 1063 BR/7.2 - 1/3 (10MB03005) : BR7 NS - 7.62x51 AP (P80/1)				
Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW1 10SN05469	824	Stopped	NS	Yes
KKW1 10SN05470	819	Stopped	NS	Yes
KKW1 10SN05471	815	Stopped	NS	Yes

EN 1063 BR/7.2 - 2/3 (10MB03006) : BR7 NS - 7.62x51 AP (P80/1)				
Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW1 10SN05472	820	Stopped	NS	Yes
KKW1 10SN05473	822	Stopped	NS	Yes
KKW1 10SN05474	829	Stopped	NS	Yes

EN 1063 BR/7.2 - 3/3 (10MB03007) : BR7 NS - 7.62x51 AP (P80/1)				
Shot number	Impact velocity [m/s]	Stop / Perforation	Splinters	Valid (Yes/No)
KKW1 10SN05475	820	Stopped	NS	Yes
KKW1 10SN05476	824	Stopped	NS	Yes
KKW1 10SN05477	825	Stopped	NS	Yes

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



Test certificate number 10MB03005 / 10MB03006 / 10MB03007

page 4 of 6

Assignor Allplast B.V.

Experiment date 26-07-2010

Sample specifications

Assignor identification	:	EN 1063 BR/7.2 - 1/3	EN 1063 BR/7.2 - 2/3	EN 1063 BR/7.2 - 3/3
TNO identification	:	10MB03005	10MB03006	10MB03007
Reference	:			
Date of arrival	:	22-07-2010	22-07-2010	22-07-2010
Size	:	500 x 500 mm ²	500 x 500 mm ²	500 x 500 mm ²
Thickness	:	91.8 mm	91.8 mm	91.8 mm
Weight	:	45300 gram	45300 gram	45300 gram
Areal mass	:	181.2 kg/m ²	181.2 kg/m ²	181.2 kg/m ²
Composition of sample in direction as encountered by projectile (Specification assignor)	:	Assignee known to	Assignee known to	Assignee known to
Remarks	:	None	None	None

Test specifications

Experimental facility	:	Small Calibre Firing Range no. 1 Ypenburg	Small Calibre Firing Range no. 1 Ypenburg	Small Calibre Firing Range no. 1 Ypenburg
- temperature	:	22 °C	22 °C	22 °C
- relative humidity	:	66 %	66 %	66 %

Conditioning of sample material

- duration at least	:	12 - hours	12 - hours	12 - hours
- temperature	:	13 - 23 °C	13 - 23 °C	13 - 23 °C
- relative humidity	:	10 - 90 %	10 - 90 %	10 - 90 %
Remarks	:	None	None	None

Ballistic specifications

Weapon	:	SVB	SVB	SVB
- barrel length	:	645 mm	645 mm	645 mm
- rifling twist	:	1 : 254 mm	1 : 254 mm	1 : 254 mm
Projectile	:	7.62x51 AP (P80/1)	7.62x51 AP (P80/1)	7.62x51 AP (P80/1)
- weight	:	9.75 gram	9.75 gram	9.75 gram
- calibre	:	7.62 mm	7.62 mm	7.62 mm
- manufacturer	:	FN Herstal SA	FN Herstal SA	FN Herstal SA
Distance muzzle to target	:	7.8 m	7.8 m	7.8 m
Target obliquity	:	0 °NATO	0 °NATO	0 °NATO

Other specifications

Contract number	:	32242	32242	32242
Backing	:	Aluminium 0,5mm AL-2024	Aluminium 0,5mm AL-2024	Aluminium 0,5mm AL-2024

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



Test certificate number 10MB03005 / 10MB03006 / 10MB03007
Assignor Allplast B.V.

page 5 of 6
Experiment date 26-07-2010



Figure 1 : Strike face, sample 10MB03005



Figure 2 : Strike face, sample 10MB03006



Test certificate number 10MB03005 / 10MB03006 / 10MB03007
Assignor Allplast B.V.

page 6 of 6
Experiment date 26-07-2010



Figure 3 : Strike face, sample 10MB03007