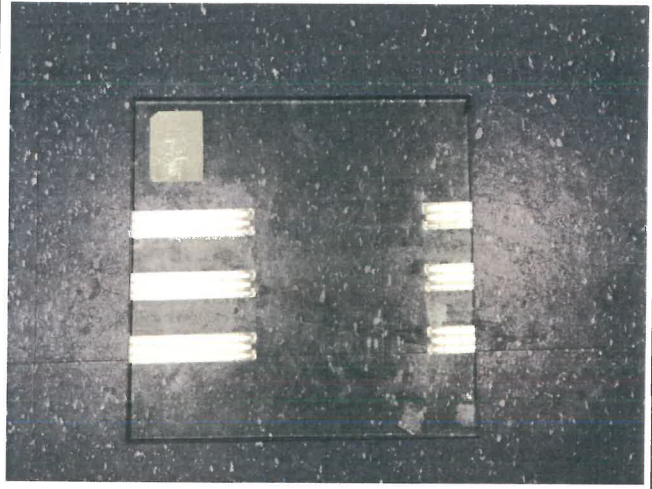
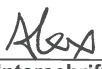



Prüfbericht-Nr.: <i>Test Report No.:</i>	15107523 001	Auftrags-Nr.: <i>Order No.:</i>	154256276	Seite 1 von 6 Page 1 of 6
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	n.a	Auftragsdatum: <i>Order date:</i>	June 15, 2017	
Auftraggeber: <i>Client:</i>	Anhui Wanwei Bisheng Co., Ltd. No.56 Chaowei Road., Chaohu City, Anhui Province, 238000 P.R.China			
Prüfgegenstand: <i>Test item:</i>	Laminated Glass			
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	5 mm + 0.38 mm PVB + 5 mm & 5 mm + 0.76 mm PVB + 5 mm			
Auftrags-Inhalt: <i>Order content:</i>	High-temperature Test, Humidity Test, Radiation Test and Pendulum Impact Test			
Prüfgrundlage: <i>Test specification:</i>	Requirement: EN ISO 12543-2:2011 Test method: EN ISO 12543-4:2011 & EN 12600:2002			
Wareneingangsdatum: <i>Date of receipt:</i>	June 15, 2017			
Prüfmuster-Nr.: <i>Test sample No.:</i>	20170609-02			
Prüfzeitraum: <i>Testing period:</i>	Jun 10, 2017 - Oct 09, 2017			
Ort der Prüfung: <i>Place of testing:</i>	Shanghai			
Prüflaboratorium: <i>Testing laboratory:</i>	TUV Rheinland (Shanghai) Co.,Ltd.			
Prüfergebnis*: <i>Test result*:</i>	Siehe Sonstiges / See Other			
geprüft von / tested by:		kontrolliert von / reviewed by:		
Oct 20, 2017	Alex Gu / Author		Oct 20, 2017	Lu Junjie / Reviewer
Datum <i>Date</i>	Name / Stellung <i>Name / Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name / Stellung <i>Name / Position</i>
				
				Unterschrift <i>Signature</i>
Sonstiges / Other:				
Remark:				
1. Test results are listed in the following pages. The test sample was prepared by client.				
2. Test items were performed at Shanghai Institute of Quality Inspection and Technical Research and witnessed by Alex Gu from TUV Rheinland (Shanghai) Co., Ltd.				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>		
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend N/A = nicht anwendbar	4 = ausreichend N/T = nicht getestet
Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory N/A = not applicable	4 = sufficient N/T = not tested
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

Prüfbericht-Nr.: 15107523 001
Test Report No.:

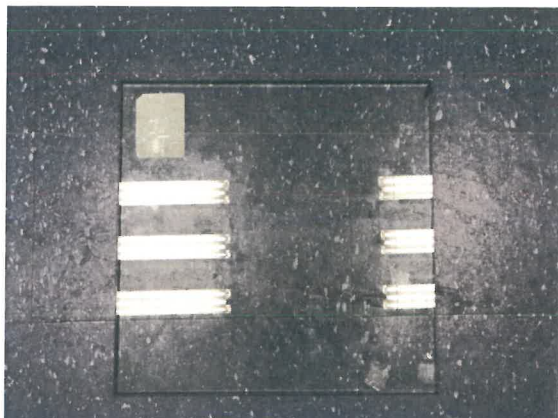
Seite 3 von 6
Page 3 of 6

Produktbeschreibung
Product description

1	Produktdetails <i>Product details</i>	Laminated glass
2	Maße <i>Dimensions</i>	5 mm + 0.38 mm PVB + 5 mm & 5 mm + 0.76 mm PVB + 5 mm
3	Bedienelemente <i>Operating elements</i>	n.a
4	Ausstattung / Zubehör <i>Equipment / Accessories</i>	n.a
5	Verwendete Materialien <i>Used materials</i>	Single glass pane: 5 mm float glass
6	Sonstiges <i>Other</i>	n.a

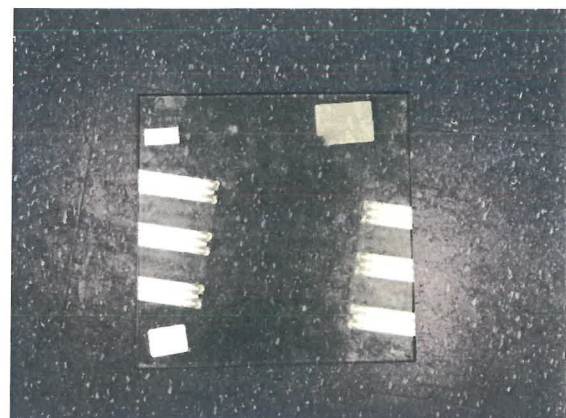
Production date	June 2017
Sampling date	June 2017
Trade mark and / or product name	Laminated glass
Kind of glass	5mm Float glass
Type of the laminated safety glass	5 mm + 0.38 mm PVB + 5 mm & 5 mm + 0.76 mm PVB + 5 mm
Information of interlayer	0.38mm PVB & 0.76mm PVB
	Manufacturer: Anhui Wanwei Bisheng Co., Ltd.

Test sample received



5 mm + 0.38 mm PVB + 5 mm

Test sample received



5 mm + 0.76 mm PVB + 5 mm

Prüfbericht-Nr.: 15107523 001
Test Report No.:

Seite 4 von 6
Page 4 of 6

Absatz	EN ISO 12543-2:2011	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation

Test Standard	EN ISO 12543-4:2011, clause 5
Requirement	EN ISO 12543-2:2011
Test Item	High-temperature test, Humidity test, Radiation test and Pendulum impact test

High-temperature test:

5 mm + 0.38 mm PVB + 5 mm	
Test condition	100 °C in oven, maintaining for 16 hours (not including heating-up time)
Sample 1	After test, no fault (i.e. bubbles, delamination, haze or cloudiness) was found.
Sample 2	After test, no fault (i.e. bubbles, delamination, haze or cloudiness) was found.
Sample 3	After test, no fault (i.e. bubbles, delamination, haze or cloudiness) was found.

5 mm + 0.76 mm PVB + 5 mm	
Test condition	100 °C in oven, maintaining for 16 hours (not including heating-up time)
Sample 1	After test, no fault (i.e. bubbles, delamination, haze or cloudiness) was found.
Sample 2	After test, no fault (i.e. bubbles, delamination, haze or cloudiness) was found.
Sample 3	After test, no fault (i.e. bubbles, delamination, haze or cloudiness) was found.

Verdict: Pass

Remark:

1. Disregard all faults within 15 mm from an original edge and 20 mm from a cut edge.
2. Heating-up time is 30 minutes.

Humidity test:

5 mm + 0.38 mm PVB + 5 mm	
Test condition	Keep 3 samples vertically over water in a closed container, maintain the temperature of the air in the container at (50~55) °C for 2 weeks (not including heating-up time)
Sample 1	After test, no fault (i.e. bubbles, delamination, haze or cloudiness) was found.
Sample 2	After test, no fault (i.e. bubbles, delamination, haze or cloudiness) was found.
Sample 3	After test, no fault (i.e. bubbles, delamination, haze or cloudiness) was found.

Prüfbericht-Nr.: 15107523 001
Test Report No.:

Seite 5 von 6
Page 5 of 6

Absatz	EN ISO 12543-2:2011	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation

5 mm + 0.76 mm PVB + 5 mm

Test condition	Keep 3 samples vertically over water in a closed container, maintain the temperature of the air in the container at (50~55) °C for 2 weeks (not including heating-up time)
Sample 1	After test, no fault (i.e. bubbles, delamination, haze or cloudiness) was found.
Sample 2	After test, no fault (i.e. bubbles, delamination, haze or cloudiness) was found.
Sample 3	After test, no fault (i.e. bubbles, delamination, haze or cloudiness) was found.

Verdict: Pass

Remark:

- Disregard all faults within 15 mm from an original edge and 20 mm from a cut edge.

Radiation test:

5 mm + 0.38 mm PVB + 5 mm

Test condition	The total irradiance level in the plane of the test samples: (900±100) W/m ² The temperature of the test samples maintained: (45±5)°C The exposure time: 2000 hours
Sample 1	After test, no fault (i.e. bubbles, delamination, haze or cloudiness) was found.
Sample 2	After test, no fault (i.e. bubbles, delamination, haze or cloudiness) was found.
Sample 3	After test, no fault (i.e. bubbles, delamination, haze or cloudiness) was found.

Sample No.	Type of test	Initial LT	>65%? Y/N	LT after exposure	Delamination Y/N	Report value
1	Ultravitalux	85.0%	Y	84.5%	N	0.6%
2	Ultravitalux	87.5%	Y	87.2%	N	0.3%
3	Ultravitalux	85.0%	Y	84.5%	N	0.6%

5 mm + 0.76 mm PVB + 5 mm

Test condition	The total irradiance level in the plane of the test samples: (900±100) W/m ² The temperature of the test samples maintained: (45±5)°C The exposure time: 2000 hours
Sample 1	After test, no fault (i.e. bubbles, delamination, haze or cloudiness) was found.
Sample 2	After test, no fault (i.e. bubbles, delamination, haze or cloudiness) was found.
Sample 3	After test, no fault (i.e. bubbles, delamination, haze or cloudiness) was found.

Prüfbericht-Nr.: 15107523 001
Test Report No.:

Seite 6 von 6
Page 6 of 6

Absatz	EN ISO 12543-2:2011	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation

Sample No.	Type of test	Initial LT	>65%? Y/N	LT after exposure	Delamination Y/N	Report value
1	Ultravitalux	85.0%	Y	84.5%	N	0.5%
2	Ultravitalux	87.8%	Y	87.5%	N	0.3%
3	Ultravitalux	86.4%	Y	85.9%	N	0.6%

Verdict: Pass

Remark:

1. LT=Light Transmittance
2. Method A was used for radiation test.

Pendulum impact test:

Mass of the impactor: 50 kg
Maximum drop height: 1200 mm

5 mm + 0.38 mm PVB + 5 mm

Result: After impact, all of 4 test samples didn't break at drop height of 450mm. Afterwards, the drop height raised to 1200mm. After impact, all of 4 test samples broke at drop height of 1200mm, 1 sample didn't break safely as defined in EN 12600:2002 clause 4.a).

Verdict: Class 2(B)2

5 mm + 0.76 mm PVB + 5 mm

Result: After impact, all of 4 test samples didn't break at drop height of 450mm. Afterwards, the drop height raised to 1200mm. After impact, all of 4 test samples broke at drop height of 1200mm, all of 4 test samples broke safely as defined in EN 12600:2002 clause 4.a).

Verdict: Class 1(B)1

-----The End of Report-----