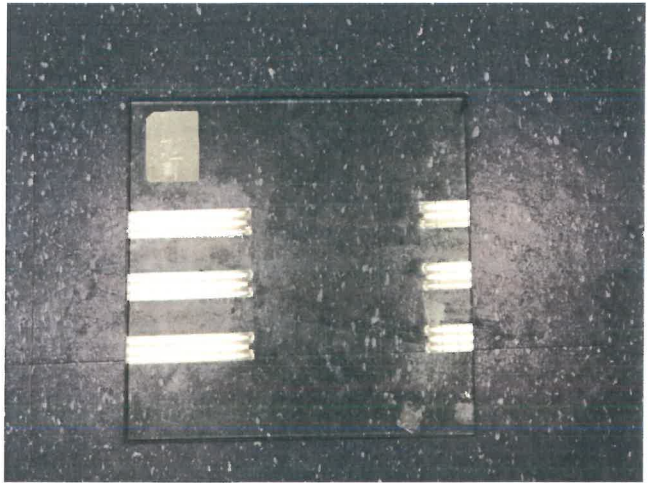


Prüfbericht-Nr.: Test Report No.:	15104983 001	Auftrags-Nr.: Order No.:	154256276	Seite 1 von 9 Page 1 of 9
Kunden-Referenz-Nr.: Client Reference No.:	n.a.	Auftragsdatum: Order date:	June 15, 2017	
Auftraggeber: Client:	Anhui Wanwei Bisheng Co., Ltd. No.56 Chaowei Road., Chaohu City, Anhui Province, 238000 P.R.China			
Prüfgegenstand: Test item:	Laminated Glass			
Bezeichnung / Typ-Nr.: Identification / Type No.:	5 mm + 0.38 mm PVB + 5 mm & 5 mm + 0.76 mm PVB + 5 mm			
Auftrags-Inhalt: Order content:	Initial Type Test for CE			
Prüfgrundlage: Test specification:	EN 14449: 2005 Glass in building- Laminated glass and laminated safety glass - Evaluation of conformity/product standard			
Wareneingangsdatum: Date of receipt:	June 15, 2017			
Prüfmuster-Nr.: Test sample No.:	20170609-02			
Prüfzeitraum: Testing period:	Jun 10, 2017 - Oct 09, 2017			
Ort der Prüfung: Place of testing:	TUV Rheinland (Shanghai) Co.,Ltd.			
Prüflaboratorium: Testing laboratory:	TUV Rheinland (Shanghai) Co.,Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
Oct 20, 2017	Alex Gu / Author	Oct 20, 2017	Lu Junjie / Reviewer	
Datum	Name / Stellung	Datum	Name / Stellung	Unterschrift
Date	Name / Position	Date	Name / Position	Signature
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: Condition of the test item at delivery:		Prüfmuster vollständig und unbeschädigt Test item complete and undamaged		
* 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.				
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.				

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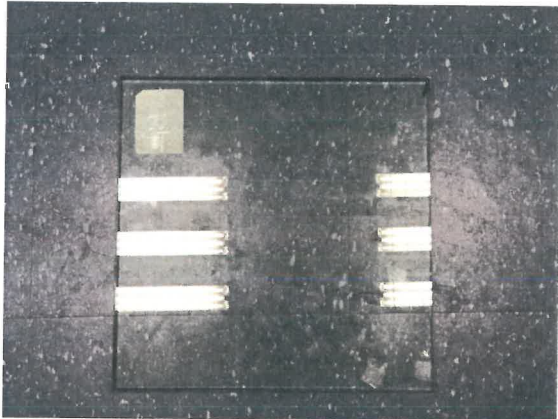
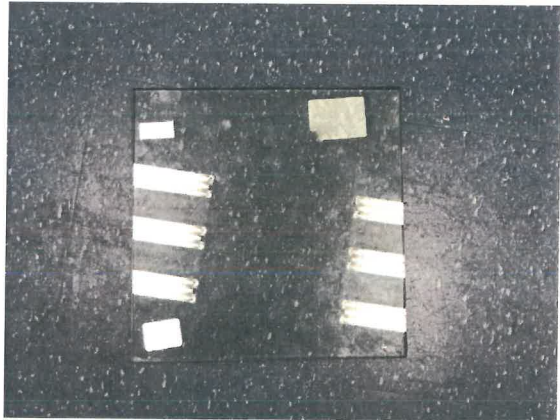
Liste der verwendeten Prüfmittel *List of used test equipment*

[illegible]

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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
Test sample received		Test sample received
 <p>5 mm + 0.38 mm PVB + 5 mm</p>		 <p>5 mm + 0.76 mm PVB + 5 mm</p>
Blank		Blank

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Absatz	EN 14449:2005	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation
1	Scope This document covers the evaluation of conformity and the factory production control of laminated glass and laminated safety glass for use in buildings.	5mm + 0.38mm PVB + 5mm & 5mm + 0.76mm PVB + 5mm Single glass pane: 5 mm float glass	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
2	Normative references ⇒ See details in EN 14449:2005		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
3	Terms and definitions ⇒ See details in EN 14449:2005		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4	Requirements	Details see the following clauses	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.1	Product Description Laminated glass	5mm + 0.38mm PVB + 5mm & 5mm + 0.76mm PVB + 5mm	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.2	Conformity with the definition of laminated glass and laminated safety glass Products shall conform to the definition and fulfil the requirements of laminated glass or laminated safety glass as defined in EN 14449.		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.3	Determination of the characteristic's performances	Details see the following clauses	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.3.1	Characteristics of laminated glass and laminated safety glass ⇒ See details in EN 14449:2005		P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.3.2	Determination of characteristic of laminated glass and laminated safety glass	Details see the following clauses	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.3.2.1	Safety in the case of fire – Resistance to fire Fire resistance shall be determined and classified in accordance with EN 13501-2	No fire resistance requirement of intended use.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>

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Absatz	EN 14449:2005	Messergebnisse - Bemerkungen	Bewertung
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4.3.2.2	Safety in the case of fire – Reaction to fire Reaction to fire shall be determined and classified in accordance with EN 13501-1	No fire reaction requirement of intended use.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
4.3.2.3	Safety in the case of fire – External fire behavior Where the manufacturer wishes to declare external fire performance, the product shall be tested and classified in accordance with prEN 13501-5	No external fire behavior requirement of intended use.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
4.3.2.4	Safety in use – Bullet resistance: shatter properties and resistance to attack Bullet resistance shall be determined and classified in accordance with EN 1063	No bullet resistance requirement of intended use.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
4.3.2.5	Safety in use – Explosion resistance: impact behavior and resistance to impact Explosion resistance shall be determined and classified in accordance with EN 13541	No explosion resistance requirement of intended use.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
4.3.2.6	Safety in use – Burglar resistance: shatter properties and resistance to attack Burglar resistance shall be determined and classified in accordance with EN 356	No burglar resistance requirement of intended use.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
4.3.2.7	Safety in use – Pendulum body impact resistance: shatter properties (safe breakability) and resistance to attack Pendulum body impact resistance shall be determined and classified in accordance with EN 12600	5mm + 0.38mm PVB +5mm: Class: 2(B)2 5mm + 0.76mm PVB +5mm: Class: 1(B)1	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
4.3.2.8	Safety in use – mechanical resistance: Resistance against sudden temperature changes and temperature differentials The resistance against sudden temperature changes and temperature differential is a generally accepted value. That value is given in the relative standards for the appropriate glass substrate.	No mechanical resistance (resistance against sudden temperature changes and temperature differentials) requirement of intended use.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
4.3.2.9	Safety in use – mechanical resistance: Resistance against wind, snow, permanent load and/or imposed loads of the glass unit The ordered assemblies of laminated glass or laminated safety glass (thickness and types of glass components or plastic glazing sheet materials – interlayers) shall ensure the resistance against wind, snow, permanent load, and other mechanical, (quasi-) static action, which shall be checked in accordance with design standards.	No mechanical resistance (resistance against wind, snow, permanent load and/or imposed loads of the glass unit) requirement of intended use.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>

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4.3.2.10	Protection against noise – Direct airborne sound reduction The sound reduction indexes shall be determined in accordance with EN 12758.	No protection against noise requirement of intended use.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
4.3.2.11	Energy conservation and heat retention – Thermal properties The thermal transmittance value (U-value) shall be determined by calculation in accordance with EN 673.	No energy conservation and heat retention (Thermal properties requirement of intended use.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
4.3.2.12	Energy conservation and heat retention – Radiation properties: Light transmittance and reflectance The light transmittance and reflectance shall be determined in accordance with EN 410	No energy conservation and heat retention (Radiation properties: Light transmittance and reflectance) requirement of intended use.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
4.3.2.13	Energy conservation and heat retention – Radiation properties: Solar energy characteristics The solar energy transmittance and reflectance shall be determined in accordance with EN 410	No energy conservation and heat retention (Radiation properties: Solar energy characteristics) requirement of intended use.	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
4.4	Durability When products conform to the definition of laminated glass or laminated safety glass are ensured during an economically reasonable working life. The durability of glass products, including their characteristics, shall be ensured by the following: - Compliance with this European Standard - Compliance with instructions from the glass product manufacturer or supplier.	No durability requirement of intended use	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
4.5	Dangerous substance ➔ See details in EN 14449:2005.	No dangerous substance requirement of intended use	P <input type="checkbox"/> F <input type="checkbox"/> N/A <input checked="" type="checkbox"/> N/T <input type="checkbox"/>
5	Evaluation of conformity	Details see the following clauses	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
5.1	General Evaluation of conformity in accordance with this document shall be as a result of FPC and ITT in accordance with this document.	Factory Production Control was maintained by the manufacturer. Initial type testing details see clause 5.2.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>

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Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation
5.2	<p>Initial type testing of the product</p> <p>To establish if a product conforms to the definition of laminated glass or laminated safety glass, initial type testing shall consist of:</p> <p>1. High-temperature test</p> <p>Three test specimens (shall not be smaller than 300 mm × 100 mm) shall be tested.</p> <p>After test, no fault (i.e. bubbles, delamination, haze or cloudiness) shall be found in three test specimens.</p> <p>Disregard all faults within 15 mm from an original edge and 20 mm from a cut edge. Individual bubbles in the immediate vicinity of inlaid wires are permissible.</p> <p>If faults are found in only one test specimen, three new specimens shall be tested. No fault shall be found in any of these specimens.</p> <p>2. Humidity test</p> <p>Three test specimens (shall not be smaller than 300 mm × 100 mm) shall be tested.</p> <p>After test, no fault (i.e. bubbles, delamination, haze or cloudiness) shall be found in three test specimens.</p> <p>Disregard all faults within 15 mm from an original edge and 20 mm from a cut edge. Individual bubbles in the immediate vicinity of inlaid wires are permissible.</p> <p>If faults are found in only one test specimen, three new specimens shall be tested. No fault shall be found in any of these specimens.</p> <p>3. Radiation test</p> <p>Three test specimens (shall not be smaller than 300 mm × 100 mm) shall be tested.</p> <p>Laminated glass or laminated safety glass shall be tested in accordance with ISO 12543-4:2011, clause 7. The luminous transmittance of three irradiated test specimens shall not change by more than:</p>	<p>1. High-temperature test</p> <p>Size of test specimens: 300 mm × 300 mm</p> <p>After exposure in oven with a temperature of (100±2)°C for a period of 16 hours, no fault was found in three test specimens.</p> <p>2. Humidity test</p> <p>Size of test specimens: 300 mm × 300 mm</p> <p>Three test specimens were kept vertically over water in a closed chamber with a temperature of the air in it at (50~55) °C for two weeks. After exposure, no fault was found in three test specimens.</p> <p>3. Radiation test</p> <p>Size of test specimens: 300 mm × 300 mm</p> <p>Test was performed according to ISO 12543-4:2011, clause 7.3, method A.</p>	<p>P <input checked="" type="checkbox"/></p> <p>F <input type="checkbox"/></p> <p>N/A <input type="checkbox"/></p> <p>N/T <input type="checkbox"/></p>

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Absatz	EN 14449:2005	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation
	<p>a) $\pm 3\%$ of their value before exposure for initial light transmittances of greater than 65%, or</p> <p>b) $\pm 2\%$ of their absolute value for initial light transmittances of less than or equal to 65%</p> <p>When visually inspected, no fault (i.e. bubbles, delamination, haze or cloudiness) shall be found in the three irradiated test specimens.</p> <p>Disregard all faults within 15 mm from an original edge and 20 mm from a cut edge. Individual bubbles in the immediate vicinity of inlaid wires are permissible.</p> <p>If faults are found in only one test specimen, three new specimens shall be tested. No fault shall be found in any of these specimens.</p>	<p>After 2000 hours exposure, no fault was found in three test specimens.</p> <p>Luminous transmittance of three specimens before and after exposure:</p> <p>5mm + 0.38mm PVB +5mm: Specimen 1: 85.0 % (before exposure) 84.5 % (after exposure) 0.6 % (change)</p> <p>Specimen 2: 87.5 % (before exposure) 87.2 % (after exposure) 0.3 % (change)</p> <p>Specimen 3: 85.0 % (before exposure) 84.5 % (after exposure) 0.6 % (change)</p> <p>5mm + 0.76mm PVB +5mm: Specimen 1: 85.0 % (before exposure) 84.6 % (after exposure) 0.5 % (change)</p> <p>Specimen 2: 87.8 % (before exposure) 87.5 % (after exposure) 0.3 % (change)</p> <p>Specimen 3: 86.4 % (before exposure) 85.9 % (after exposure) 0.6 % (change)</p>	
5.3	<p>Factory production control and inspection of samples in accordance with a prescribed test plan</p> <p>Factory production control means the permanent internal control of production exercised by the manufacturer</p>	<p>FPC system is controlled by manufacturer according to AoC4 system of CPR.</p> <p>Note: Refers to manufacturer's FPC declaration.</p>	<p>P <input checked="" type="checkbox"/></p> <p>F <input type="checkbox"/></p> <p>N/A <input type="checkbox"/></p> <p>N/T <input type="checkbox"/></p>

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Absatz	EN 14449:2005	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation
5.4	Initial inspection of factory and of factory production control → See details in EN 14449:2005	Initial inspection of factory and FPC was conducted by the manufacturer. Note: There may be a need to involve a third party for the purpose of regulatory marking.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
5.5	Continuous surveillance and assessment of the factory production control → See details in EN 14449:2005	Continuous surveillance and assessment of the factory production control was conducted by the factory.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
6	Marking and/or labeling → See details in EN 14449:2005	See the CE marking declared by the manufacturer.	P <input checked="" type="checkbox"/> F <input type="checkbox"/> N/A <input type="checkbox"/> N/T <input type="checkbox"/>
/	Annex A Factory production control (normative) → See details in EN 14449:2005		
/	Annex B Tests for ensuring conformity (informative) → See details in EN 14449:2005		
/	Annex C Laminated safety glass: Mechanical resistance tests (informative) → See details in EN 14449:2005		
/	Annex D Criteria for deciding if a change within an assembly requires a new initial type test (informative) → See details in EN 14449:2005		
/	Annex E Provisions for voluntary involvement of third party(ies) (informative) → See details in EN 14449:2005		
/	Annex ZA Clause of this European Standard addressing the provisions of EU Construction Products Directive (informative) → See details in EN 14449:2005.		

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