

# Evidence of Performance

## Ageing behaviour of insulating glass units according to DIN EN 1279-2



### Test Report

no. 17-002666-PR09  
(PB-H01-09-en-02)

Client ZHENGZHOU ZHONGYUAN SILANDE HIGH TECHNOLOGY CO., LTD  
No. 28 Dongqing West St,  
Zhengzhou Hi-tech Development Zone  
450001 Zhengzhou  
China

### Basis

DIN EN 1279-2 : 2003-06;  
Glass in building - Insulating  
glass units - Part 2: Long term  
test method and requirements  
for moisture penetration

Replaced Test report  
No. 17-002666-PR09 (PB-H01-  
09-en-01) dated 23.10.2017

Product Insulating glass units

Designation Insulating glass unit - gas filled

Exterior  
dimensions  
(W x H) in mm 352 mm x 502 mm

Construction  
in mm 4 / 12 / 4 mm

Spacers Aluminium, 12A (11.5 mm), original client (desposited at ift)

Sealants Basis Silicone, MF881-25HM, original client (desposited at ift)

external, internal Basis Polyisobutylene, MF910G Hot Applied Butyl Sealant,  
original client (desposited at ift)

Special features -/-

### Instructions for use

This test report serves to  
demonstrate the moisture  
penetration of insulating glass  
units.

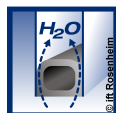
It serves as a basis (ITT) for  
CE-marking according to  
EN 1279-5.

### Validity

The data and results given  
relate solely to the tested and  
described specimen.

The long term test does not  
imply any statement on  
characteristics regarding  
performance and quality.

The insulating glass unit fulfils the requirements of



## DIN EN 1279-2

ift Rosenheim

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### Notes on publication

The ift-Guidance Sheet  
"Conditions and Guidance for  
the Use of ift Test Documents"  
applies.

The cover sheet can be used  
as abstract.

### Contents

The report contains a total of 6  
pages

- 1 Object
- 2 Procedure
- 3 Detailed results
- 4 Evaluation
- 5 Summary

## 1 Object

### 1.1 Description of test specimen

Product	Insulating glass units, gas filled
Manufacturer	Tianjin CSG Architectural Class Co., Ltd Wuqing, Tianjin, China
Date of manufacture	15 <sup>th</sup> March 2014
Designation	Insulating glass unit – gas filled
Exterior dimensions (W x H) in mm	352 x 502
Total thickness in mm	approx. 20
Construction in mm	4 / 12 / 4 mm
Spacer	
Material / Manufacturer	Aluminium, 12A (11.5 mm), original client (desposited at ift)
Fashioning / Corners / Length connector	4 x bend – including steel straight connector, with additional butylation of joint on spacer back
Desiccant	
Type / Manufacturer	Zeolith 3Å, no further information, Zhengzhou Fulong New Material Technical Co. Ltd
Tc-Value in %	no further information
Amount in g	approx. 40 g - 50 g
Type of filling	three – four sides filled
Sealing system	two level
External	
Sealing / Manufacturer	Basis Silicone, MF881-25HM, original client (desposited at ift)
Batch number	A: no further information B: no further information
Thickness of sealant on spacer back in mm	9 - 11
Internal	
Sealing / Manufacturer	Basis Polyisobutylene, MF910G Hot Applied Butyl Sealant, original client (desposited at ift)
Batch number	no further information
visible butyle in mm	5 - 7
one-sided butylation in g/m	approx. 5.2
Coating	none
Decoating of glazing edge in mm	-/-
Gas filling of cavity	manufacturers instructions
Type of gas	Argon
Nominal volume in %	90
Closing plug for gas filling	-/-
Special features	-/-

The description is based on inspection of the test specimen at the **ift**. Item designations / numbers as well as material specifications have been provided by the original client (desposited at ift).

## 2 Procedure

### 2.1 Sampling

The test specimen were manufactured and selected by the original client (deposited at ift).

Number	13
Delivered on	28 <sup>th</sup> May 2014
Number of registration	37150-001

### 2.2 Methods

Basis

DIN EN 1279-2 : 2003-06 Glass in building, Insulating glass units – Part 2: Long term test method and requirements for moisture penetration.

Boundary conditions As specified by the standards

Deviation There have been no deviations from the test method and test conditions

### 2.3 Test equipment

Cyclic test cabinet	Device No. 22601
Constant climate cabinet	Device No. 22173
Normal climate chamber	Device No. 22040
Balance (moisture content)	Device No. 22534
Furnace	Device No. 22567

### 2.4 Testing

Date/Period	16 <sup>th</sup> June 2014 to 22 <sup>th</sup> September 2014
Testing personnel	Miriam Kaube, Jennifer Seyfang, Thomas Eder

### 3 Detailed results

#### 3.1 DIN EN 1279-2

The initial dew point temperature of all units supplied in new condition was  $< -60$  °C.

**Table 1** Moisture content of desiccant

Unit No.	Moisture content of desiccant T in %		Moisture penetration I in %
	$T_i$		
7	3.3	$T_{i,av} = 3.5$	---
8	3.6		---
9	3.4		---
10	3.5		---
		$T_f$	
4	---	3.9	2.7
5	---	3.7	1.5
6	---	3.6	0.91
11	---	3.5	0.30
12	---	4.3	5.1
Average values	---	$T_{f,av} = 3.7$	$I_{av} = 2.1$

The following symbols were used:

$T_i$  initial moisture content of desiccant

$T_{i,av}$  average initial value of moisture content of desiccant

$T_f$  final moisture content of desiccant

$T_{f,av}$  average final value of moisture content of desiccant

$T_{cav}$  average standard moisture adsorption capacity of desiccant

$I_{av}$  average value of moisture penetration in %

## 4 Evaluation

Calculation of the moisture penetration index  $I_{av}$  was based on the average standard moisture adsorption capacity of the desiccant  $T_{cav} = 20 \%$  (DIN EN 1279-2, Annex D, Table D.1).

In summary, the results were as follows:

– Average initial moisture content of desiccant	$T_{iav} = 3.5 \%$
– Average final moisture content of desiccant	$T_{fav} = 3.7 \%$
– Average value of moisture penetration index	$I_{av} = 2.1 \%$
– Maximum individual value of moisture penetration index	$I = 5.1 \%$
– Requirements set out by DIN EN 1279-2 for average value	$I_{av} \leq 20 \%$
– Requirements set out by DIN EN 1279-2 for individual values	$I \leq 25 \%$

Based on the results listed in Table 1 the insulating glass system Insulating glass unit - gas filled fulfils the requirements according to DIN EN 1279-2.

## 5 Summary of test report No. 17-002666-PR09 (PB-H01-09-en-02)

### Insulating glass units – Moisture penetration results according to DIN EN 1279-2

For details, see the test report.

Company:

**ZHENGZHOU ZHONGYUAN SILANDE  
HIGH TECHNOLOGY CO., LTD**

No. 28 Dongqing West St,  
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450001 Zhengzhou  
China

Plant:

no further information

System description:

Not submitted to test body

Product designation:

Insulating glass unit - gas filled

Moisture penetration index  $I_{av} = 2.1 \%$

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