

Test report

Test report relating to a glass product according to European standard EN 1279-2, concerning the product marked as: Test unit - PolyChem , Demonstrator: PolyChem Sealants Ltd.

Report number	89214824-01
Date	13 March 2019
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Project number	89214824
Project name	19.A029 - EN1279-2-6
Number of pages	12



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1 Introduction

1.1 Purpose

The tests have been performed in order to establish whether or not an insulating glass unit with PolyChem Sealants MAT77 and MAT70 sealants meets the requirements of the European standard EN 1279-2 [1].

1.2 Description of the test specimen

General

Name of the manufacturer (demonstrator)	PolyChem Sealants Ltd.
Address of the manufacturer	Páfrány forduló 14 H-1221 Budapest, Hungary
Production plant (sealants)	N/A
Line ID where the samples are made	N/A
Production date	N/A
Sampling date	-/-
The product was marked as	Test unit - PolyChem

Insulating glass units – Declaration manufacturer	
Name of the manufacturer	Anonymous
Address of the manufacturer	-
Production plant of the samples	-
Production date	-
Trade mark and /or product name	IGU
System description, file number	N/A
Exterior dimensions:	353x502
Total thickness:	20 mm
Construction:	4float/12/4 Climaguard Premium 2
Spacer:	
Spacer material:	Aluminium
Corner construction:	Bended
Corner keys:	None
Linear connector:	1
Desiccant:	PolyChem MATMol Z
Desiccant type:	Molecular sieve 3A
Standard Moisture adsorption capacity (T_C)	20 %
Desiccant amount:	2 sides filled
Outer sealant:	PolyChem MAT77
Polymer type:	Polysulfide
Average sealant depth on spacer back (u)	± 3 mm

Average sealant width on glass surface (s)	5 mm
Inner sealant:	PolyChem MAT70
Polymer type:	Butyl
Average sealant width (r):	11 mm (total width butyl and polysulfide)
Mass of inner sealant/length and side (R)	2.5 – 3.5 g/m
Coating:	Guardian Climaguard 2.0 for the second gas panel
Edge deletion:	10 mm mechanically
Gas filling:	Argon 90%±5%
Temperature during production	25°C
Pressure during production	100.16 hPa
Altitude during production	127 m
Closing of gas filling holes:	None
Special features:	None

1.3 Sampling procedure

TÜV Rheinland B.V., acting as Notified Test Laboratory, has had no influence on the selection of the sample. All test specimen within the sample were test-worthy.

1.4 Application

The request for testing was submitted by the assignor, order or reference number or name: -/-. Quotation number / Assignment Form number: 19.A029.

1.5 Method of testing

All applicable tests have been performed according to the European standard EN 1279-2 [1].

1.6 Put out to contract

No tests were performed at third parties.

1.7 Privacy statement

Due to privacy reasons, the names of involved personnel that executed the tests, are not disclosed in the report. However, this information is available on internal work sheets, test forms etc. in the project file.

1.8 Remark concerning this report

This report can be used to demonstrate that the sealant PolyChem MAT77 and PolyChem MAT70 can pass when used in an insulating glass system when tested according to EN 1279-2 [1].

1.9 Notifications, accreditations, designations

TÜV Rheinland Nederland B.V. has been notified by the Dutch Ministry of Infrastructure and the Environment as Notified Laboratory (number 1750) and Notified (Factory Production Control) Certification Body (number 0336) for the European Construction Products Regulation 305/2011 (EU).

TÜV Rheinland Nederland B.V. has been accredited by the Dutch Accreditation Council (RvA) as ISO 17025 Test Laboratory (nr. L 484) and ISO 17065 Certification Body (nr. C078).

TÜV Rheinland Nederland B.V. has been designated as Technical Service (Laboratory) by the Approval Authorities for Germany (KBA – E1) and the Netherlands (RDW – E4) for automotive safety glass (ECE R43, 92/22/EC, 2009/144/EC).

TÜV Rheinland Nederland B.V. has been recognised by the German Institute for building technics (DIBt) under number NL005 as test, control and certification body.

Remark

The reported tests were performed under ISO 17025 accreditation.

2 Test results

2.1 Description of the test

The test specimens (insulating glass unit or IGU's) are conditioned for a minimum of two weeks at standard laboratory conditions. Five specimens are submitted to the specified climate test.

The climate test consists of two parts. The first part consists of 56 cycles of 12 hours from -18 °C to +53 °C with slopes of 14 °C/h where at -18 °C and at +53 °C the temperature is constant for 1 hour. This part is followed by a second part consisting of a period of 7 weeks at a constant temperature of 58 °C. For both parts a relative humidity of > 95 % is applied in case the temperature is above 0 °C.

After the climate test the specimens are stored at (23±2) °C and (50±5) % relative humidity for at least 1 week before measuring the moisture content (T_f). With the average initial moisture content (T_i) the standard moisture absorption capacity (T_c) the moisture penetration index is calculated for each IGU after the climate test.

5 units were subjected to the standard climate test, which is 4 weeks cycling climate followed by 7 weeks constant temperature.

At the same time 2 units were subjected to the short climate test as described in EN1279-6 Annex B [2], which is 3 weeks at constant temperature.

2.2 Results and requirement

Prior to ageing, all 15 IGU's were visually inspected. No special deviations above variations due to the production process were found. After the visual inspection the test specimen were analysed on dew points. All IGU's showed dew points lower then -60°C. The test specimens were randomly numbered and the moisture contents (T_i & T_f) were determined with drying method. From these results the individual penetration indices I and I_{av} were calculated. According to the standard [1] the measurement uncertainty of I is maximal 0.1.

Evaluation of the moisture penetration index measured in accordance with EN1279-2:2002 [1]

Exterior dimensions:	502 x 352 mm
Total thickness before ageing	20 mm
Corner construction	Bent
Desiccant amount: only for desiccant in bulk	2 sides filled approx. 35 gr
Average sealant depth on spacer back (u)	2 – 3.5 mm
Average sealant width on glass surface (s)	4 – 5.5 mm
Average inner sealant width (r):	4.5 – 5.5 mm
Edge deletion	Yes
Special features	No
Marking	On spacer bar

Table 2.1. Detailed test results

Initial values					
Unit no.	m_o [g]	m_i [g]	m_r [g]	T_i [%]	
7	34.3366	54.5760	54.1391	2.21	
8	34.7839	54.8256	54.3997	2.17	
9	34.7853	54.8261	54.4149	2.09	
10	34.6932	54.7595	54.3539	2.06	
Average				2.13	
After climate exposure					
Short climate test					
Unit no.	m_o [g]	m_i [g]	m_r [g]	T_f [%]	$I^*)$
1	34.3316	54.5936	54.1467	2.26	0.007
2	34.3391	54.4637	53.9387	2.68	0.031
Average					0.019
Standard climate test					
4	36.5884	56.6471	56.1222	2.69	0.03
5	34.5480	54.5703	54.0493	2.67	0.03
6	34.8651	54.9649	54.4589	2.58	0.03
11	34.7917	54.9587	54.4466	2.61	0.03
12	37.5377	57.6453	57.1383	2.59	0.03
Average					0.03

*) I is calculated with a standard value of 20 % for T_c as declared by the manufacturer.

Required	Value of the test	Pass / fail
EN 1279-2:2002 4.1 Moisture penetration index		
Insulating glass units shall fulfil their functions during an economically reasonable working life. Therefore the following values are verified on test specimens submitted to the climate test described in this Part of the standard.		
The average moisture penetration index I_{av} over the five test specimen shall not exceed 0.20	I_{av} over the five test specimen = 0.03	pass
The unit with the highest moisture penetration index shall have an index value I not exceeding 0.25	Highest moisture penetration index $I = 0.03$	pass
EN 1279-6:2002 B.4 Moisture penetration index (short climate)		
The moisture vapour penetration index I shall be equal or less than I_{req} . (I_{req} is equal to average I of the initial short climate test increased with 0.025).	see table 2.1	not applicable, is initial short climate test $I_{req}=0.044$
OR when no initial short climate test is performed, I shall be equal or less than 0.085.	see table 2.1	pass

3 Conclusion

The tested glass product, marked by the client or manufacturer as: Test unit - PolyChem , manufactured by: PolyChem Sealants Ltd., with inner sealant with trade mark/type: PolyChem MAT70 and outer sealant with trade mark/type: PolyChem MAT77, meets the applicable requirements as stated in the European standard EN 1279-2 [1].

The test results exclusively relate to the tested objects.

Remark 1

Due to the fact that the purpose of this test report is not an initial type test for an IG manufacturer no system description can be mentioned to be used as reference. This report is thus also not allowed to be used in cascading and/or shared ITT procedures (if allowed or applicable). The identification of the actual IG manufacturer for this ITT report is not relevant and is called anonymous or published only if the IG manufacturer has given written agreement that his/her name is allowed to be mentioned. When this statement is not communicated on forehand to TÜV Rheinland, then anonymous will be used per default.




4 References

- 1 European standard EN 1279-2:2002 (E),
Glass in building – Insulating glass units – Part 2: Long term test method and requirements for moisture penetration, European Committee for Standardization, November 2002.
- 2 European standard EN 1279-6:2002 (E),
Glass in building – Insulating glass units – Part 6: Factory production control and periodic tests, European Committee for Standardization, July 2002

5 Signatures

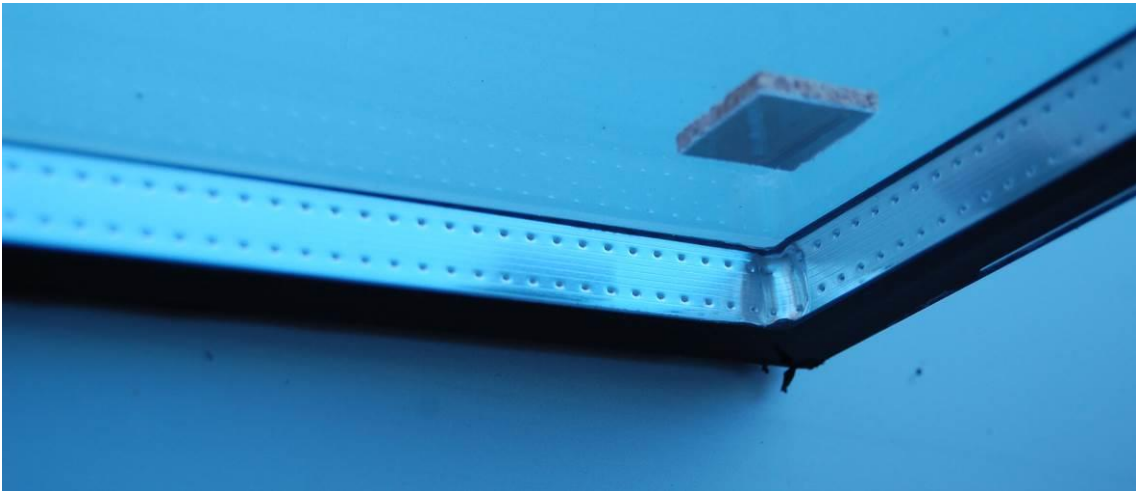
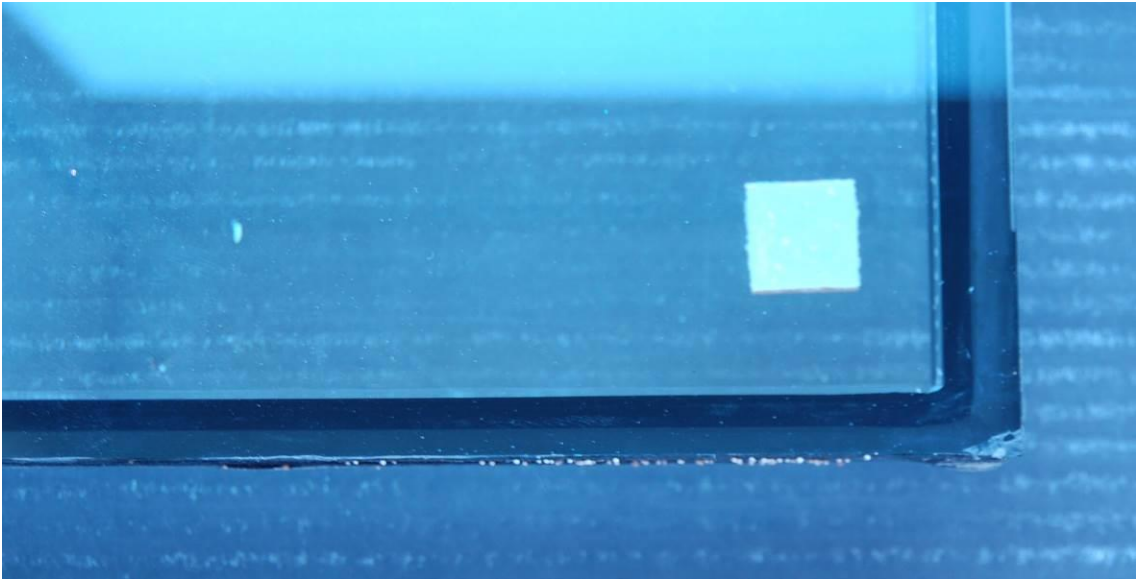
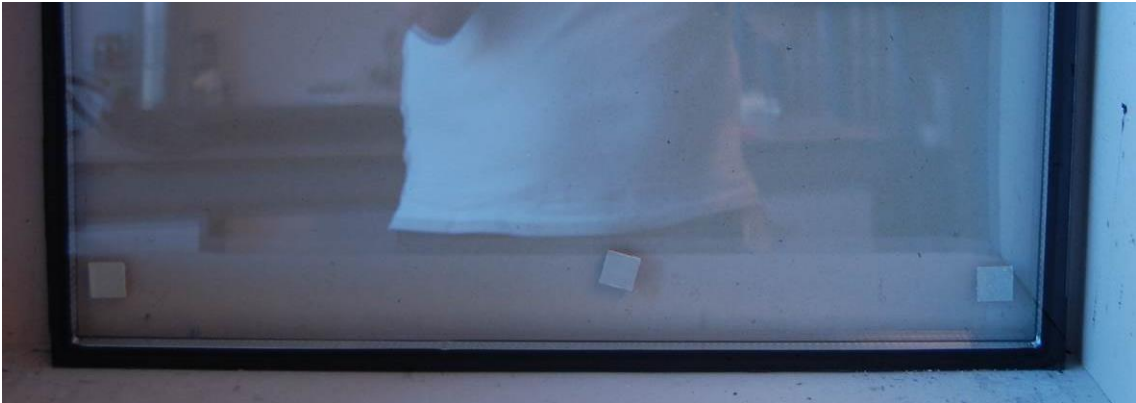
Author Mr. M.A.A.M. Schets, B.Sc.	Signature 
Specialist	
Peer review Mr. S. el Bardai	Signature 
Specialist	
Approved by Mr. H van Ginkel	Signature 
LSM	

Appendix A, Summary of test results

 TÜVRheinland [®] Precisely Right. TÜV Rheinland Nederland B.V. P.O. Box 2220, 6802 CE Arnhem, The Netherlands Notified Laboratory no. 1750	
Summary of report no: 89214824-01	
Date: 13 March 2019	
Insulating glass units - Moisture penetration results according to EN 1279-2 For details is referred to the complete test report.	
Company: (Demonstrater)	Name: PolyChem Sealants Ltd. Address: Páfrány forduló 14 H-1221 Budapest Hungary
Plant:	Name: Anonymous Address:
System description, file number: -/-	
Product name:	Test unit - PolyChem Edge seal composition: inner sealant: PolyChem MAT70 outer sealant: PolyChem MAT77 and aluminium spacer
System conforms: YES	
NOTE: Comparisons of moisture penetration indices of different insulating glass unit system are meaningless.	
 Signature: M.A.A.M. Schets, B.Sc. Specialist	 Signature: Mr. H. van Ginkel LSM

NOTE: This Summary is not a certificate.

Appendix B, Pictures of the test specimen



- End of report -