

Test report

Test report relating to a glass product according to European standard EN 1279-3, concerning the product marked as: Sanco, manufactured by: Glas Ockels BV

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Date	29 January 2013
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Client	Nedex Chemie Deutschland GmbH Konrad- Zuse- Strasse 33 D 47445 Moers Germany
Project number	89202496
Project name	Sanco
Number of pages	10

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1 Introduction

1.1 Purpose

The tests have been performed in order to establish whether or not the product meets the requirements of the European standard EN 1279-3 [1].

1.2 Description of the samples

General

Name of the manufacturer	Nedex Chemie Deutschland GmbH
Address of the manufacturer	Konrad- Zuse- Strasse 33 D 47445 Moers Germany
Production plant of the samples	Glas Ockels BV Steenhouwer 29 9502 EV Stadskanaal The Netherlands
Line ID where the samples are made	1
Production date	20-9-2012
Sampling date	20-9-2012
The product was marked as	Sanco
System description, file number	286358
Dimensions of the samples	(502 ±2) mm x (352 ±2) mm

Specific

Type of glass	Clear float glass
Configuration of the samples	4-12-4 mm
Type of gas content	Argon
DESICCANT	
Trademark / type of desiccant	Nedex Zeolan K (NA3) 0.5-0.9
INNER sealant	
Trademark / type of inner sealant	Nedex PIB 996
Kind of inner sealant	polyisobutylene (butyl)
OUTER sealant	
Trademark / type of outer sealant	Nedex PS 998R
Kind of outer sealant	polysulfide
SPACER	
Trademark / type of spacer	Profilglass, Aluminium
Trademark / type of corners	bent

1.3 Sampling procedure

The samples have been submitted by the assignor. The test house, acting as notified test body, has had no influence on the selection of the samples.

1.4 Application

The request for testing was submitted by the assignor on 24 September 2012. Assignment Form number: 11.A470_rev2.

1.5 Method of testing

All applicable tests have been performed according to the European standard EN 1279-3 [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 ITT report

For any other manufacturer this initial type test (ITT) report is not automatically valid. The manufacturer for this ITT report is defined at 1.2.

Reference to test report for moisture penetration index according to EN 1279-2 [2]: 89202496-20.

1.9 Notifications and accreditations

TÜV Rheinland Nederland B.V. has been notified by the Dutch Ministry of Infrastructure and the Environment as Notified Test Body (number 1750) and Notified Certification Body (number 0336) for the European Construction Products Directive 89/106/EEC.

TÜV Rheinland Nederland B.V. has been accredited by the Dutch Accreditation Council (RvA) as ISO 17025 Test Laboratory (accreditation number L 484) and EN 45011 Certification Body (accreditation number C058).

TÜV Rheinland Nederland B.V. has been accredited as Technical Service (Laboratory) by RDW competent Administrative Department (Approval Authority) for the Netherlands to grant approvals as mentioned in Directive 70/156/etc. and the 1958 Agreement of the Economic Commission for Europe of the United Nations (UN-ECE) for glass as used in the automotive sector: ECE Regulation 43, safety glazing; EC Directive 92/22, Safety glass; EC Directive 2009/144, Glazing cat. T (accreditation number RDW-99050043 01).

2 Test results

Description of the test

The 6 test specimens are conditioned for a minimum of one week at standard laboratory conditions. At least 5 pre-selected samples are submitted to the specified climate test.

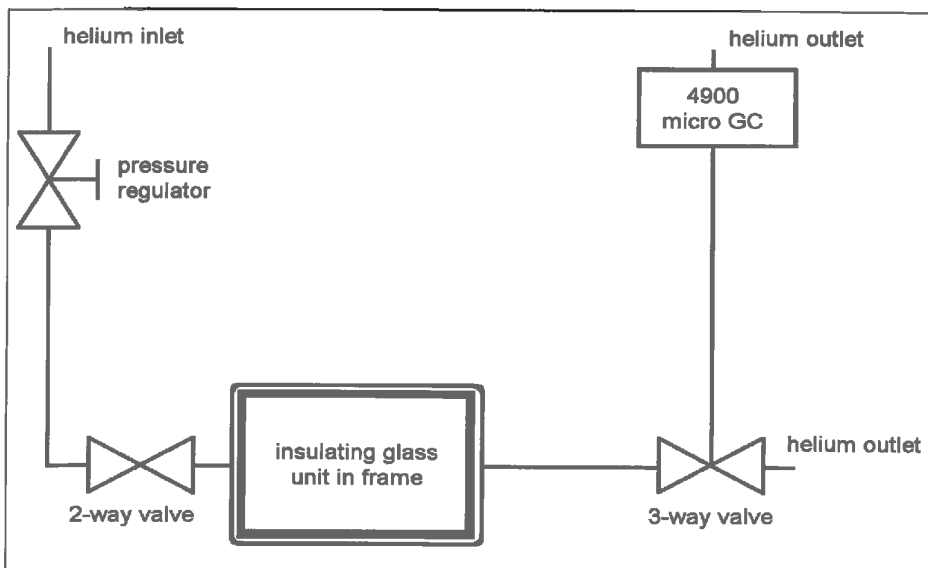
The climate test consists of two parts. The first part consists of 28 cycles of 12 hours from -18°C to +53°C with slopes of 14°C/hr where at -18°C and at +53°C the temperature is constant for 1 hour. This part is followed by a second part consisting of a period of 4 weeks at a constant temperature of 58°C. For both parts a relative humidity of > 95 % is applied in case the temperature is above 0°C.

Two insulating glass units are installed into separate test frames. The frames enclose the units with some space left between the glass units and the frames. Both the units and the test frames are hermetically closed.

After placing the aged insulating glass units in the test frames, the test frames are closed and purged with a helium flow of ± 400 ml/min for 1 hour. At the end of this purge time, the inlet and outlet valves are closed in succession to ensure an atmospheric pressure inside the frame (starting leak time). After a minimum of 10 hours leak time, the helium in the frame is measured for its argon, oxygen and nitrogen concentration using gas chromatography (4900 Micro GC).

The amount of argon is then determined and by calculation based on the measured amount of argon gas and the collection time, the amount of gas leakage per time (year) can be determined. The requirement is an argon gas leakage rate of less than 1% per year.

The schematic diagram of the equipment is as follows:



Test results after performing all applicable tests according to European standard EN 1279-3 [1].

Requirements and end result

Required	Value of the test	Pass / fail
4.1 Gas leakage rate		
The gas leakage rate, L_i , for gases with concentrations higher than 15%, and also for air, measured as described in clause 5 shall be: $L_i < 1.00$ in % a ⁻¹ (one year)	test specimen 1: 0.91 test specimen 2: 0.81	pass

Detailed test results

Gas leakage rate determination

Six insulating glass units were visually inspected. No special deviations above variations due to the production process were found. The test specimens were randomly numbered and the units were aged. After ageing the gas leakage rate was determined on two insulating glass units.

For calculation of the gas leakage rate, values are used for pressure ($p = 1028$ hPa) and temperature ($T = 293$ K) during production of the samples. The results are as follows:

Test specimen	$m_{i,1}$ [µg/hr]	$m_{i,2}$ [µg/hr]	$m_{i,3}$ [µg/hr]	$m_{i,4}$ [µg/hr]	M_{avg} [µg/hr]	L_i [%/y]*
1	3.55	3.37	3.25	3.35	3.38	0.91
2	3.23	2.97	2.93	2.94	3.02	0.81

* corrected for actual gas filling degree

Gas concentration percentage

The two insulating glass units were measured for the gas concentration percentage. The results are as follows:

Test specimen	Ar [%]
1	93.3
2	93.8

3 Conclusion

The tested glass product, marked by the client or manufacturer as: Sanco, manufactured by: Glas Ockels BV with inner sealant with trade mark/type: Nedex PIB 996 and outer sealant with trade mark/type: Nedex PS 998R, meets the applicable requirements as stated in the European standard EN 1279-3 [1].

The test results exclusively relate to the tested objects.

Remark 1

When and if changes are made in production method and/or equipment, assessment according to this standard shall be reconsidered and re-tests shall be performed when the changes can lead to different specifications of the glass. The decision and responsibility lies at the manufacturer.



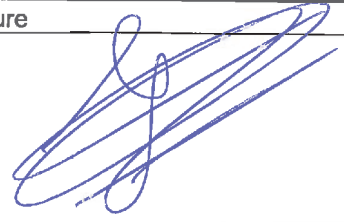
Remark 2

If no reference of the product description was supplied by the manufacturer, then that document shall be added to this test report by the manufacturer. It was to the manufacturer's responsibility that the samples delivered for initial type test are representative to the production and deviations from perfection were included in the delivered test samples.

4 References

- 1 European standard EN 1279-3:2002 (E).
Glass in building – Insulating glass units – Part 3: Long term test method and requirements for gas leakage rate and for gas concentration tolerances.
European Committee for Standardization. November 2002.
- 2 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.

5 Signatures

Author Mr. M.A.A.M. Schets. B.Sc	Signature 
Specialist Peer review Mr. M.J.R. Luppens	Signature 
Specialist Approved by Mr. H. van Ginkel	Signature 
Business field manager	



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Summary of report n°: 89202496-30-30

Date: 29 January 2013

**Insulating glass units - Evaluation of the gas leakage rate and gas concentration
measured according to EN 1279-3**

For details, see the test report

Company: Name: Nedex Chemie Deutschland GmbH
Address: Konrad- Zuse- Strasse 33
D 47445 Moers
Germany

Plant: Name: Glas Ockels BV
Address: Steenhouwer 29
9502 EV Stadskanaal
The Netherlands

System description, file number: 286358

Product name: The glass product: Sanco with inner sealant: Nedex PIB 996
and outer sealant: Nedex PS 998R and aluminium spacer

Reference to test report for moisture
penetration index according EN 1279-2: 89202496-20

Applied gas(es) i:	Argon	Argon
Unit number	1	2
Measured concentration c_i (in %):	93.3	93.8
Nominal concentration $c_{i.o.}$ (in %):	90	90
Gas leakage rate L_i (in %·a-1):	0.91	0.81

System conforms:

YES	
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Signature: M.A.A.M. Schets
Project leader


Signature: H. van Ginkel
Business field manager

(This is the end of this report).