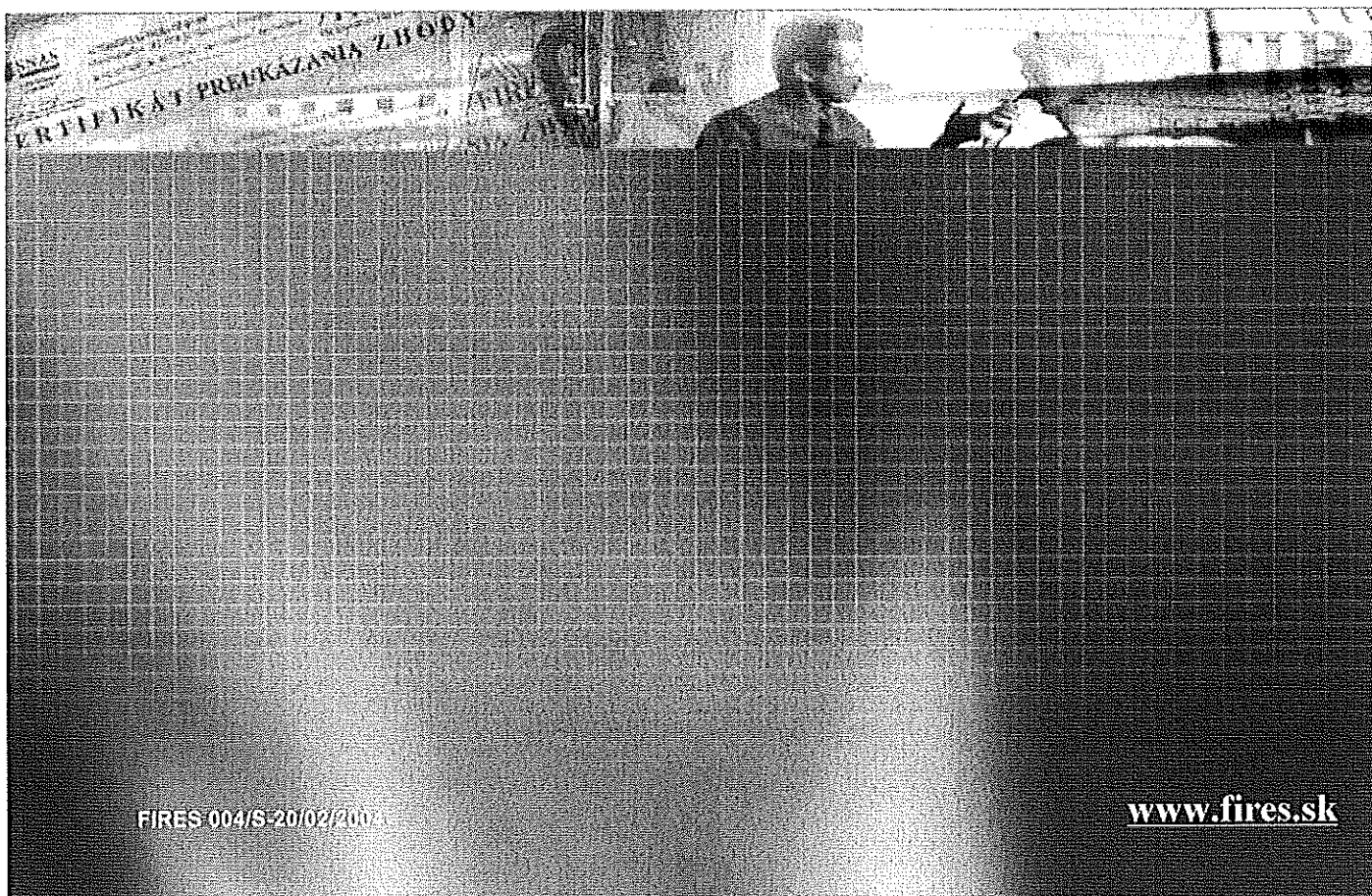


TEST REPORT FIRES FR 006/04 CP (E)

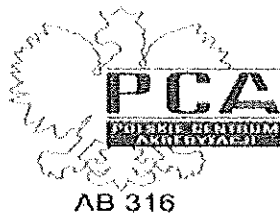
Aluminium single leaf door Wicona Wicstyle 70N FP
with glass Contraflam Lite N2 and Swissflam Lite N2



FIRES Ltd.

Approved Body reg. No. CIS 01/1998

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AB 316

Testing laboratory accredited by
Polish centre for accreditationTesting laboratory No. 1321 accredited by
Czech institute for accreditation, o.p.s.

TEST REPORT

Number: **FIRES FR 006/04 CP (E)**
Tested property: Fire resistance
Test method: STN EN 1634-1:2001
Date of issue of original: **02.03.2004**
Date of issue of this language version: **03.03.2004**

Name of product: Aluminium single leaf door Wicona Wicstyle 70N FP with glass Contraflam Lite N2 and Swissflam Lite N2
Producer of the glass: **VETROTECH Saint-Gobain International AG**, Stauffacherstrasse 128, CH-3000 Bern, Switzerland
Producer of the profiles: **WICONA DANESCO SR**, spol.s r.o., Vajnorská 142, 931 04 Bratislava, Slovak Republic
Sponsor: **VETROTECH Saint-Gobain International AG**, Stauffacherstrasse 128, CH-3000 Bern, Switzerland

Task No.: S-FR-03/162-03/104
Specimen received: 17.11.2003
Date of the test: 02.02.2004

Technician responsible for the technical side of this report: Juraj Akuratný

Number of pages: 7 Appendices: 15

Test reports: 2 Copy no: 1

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Copy no. 1: **FIRES, s. r. o.**, Osloboditeľov 282, 059 35 Batizovce, Slovak Republic

Copy no. 2: **VETROTECH Saint-Gobain International AG**, Stauffacherstrasse 128, CH-3000 Bern, Switzerland

1. INTRODUCTION

This test report contains the results of the test carried out at the testing laboratory of FIRES s.r.o. in Batizovce. Persons from the sponsor's side witnessing the test:

Sponsors agents:	Marek Vašíček	(VETROTECH Saint-Gobain)
	Oliver Kienast	(VETROTECH Saint-Gobain)
	Ing. Thomas Hopfinger	(VETROTECH Saint-Gobain)
	Ing. Róbert Šujanský	(WICONA DANESCO SR s.r.o)
Test director:	Ing Miroslav Smolka	
Test carried out by:	Juraj Akuratný	
Operator:	Alexander Reľovský	

Purpose of the test was product classification and acquisition of the information for the direct or extended product application.

2. MEASURING EQUIPMENT

Identification number	Measuring equipment	Notice
F 90 001	Vertical test furnace for fire testing	-
F 69 005	PLC system for data acquisition and control TECOMAT NS 950	-
F 40 010	Visual and calculating software to PLC TECOMAT NS 950	-
F 40 008	SW Control Web 2000	-
F40 011	Driver Tecomat – CW 2000 (SW)	-
F 40 009	Control and communication software to PLC TECOMAT NS 950	-
F 71 008, F 71 009	Transducer of differential pressure (from -50 to +150) Pa	pressure inside the test furnace
F 69 004	Data acquisition unit THPZ-EXT	conditioning of the specimen
F 69 007	Data acquisition unit D 3120	air - conditioned specimen storage room
F 02 511, F 02 513 – F 02 517	Plate thermometers	temperature inside the test furnace, according to EN 1363-1
F 03 001 – F 03 037	Unsheathed thermocouples type K 2 x ϕ 0,5 mm	temperatures on the unexposed face of the specimen
F 54 024	Ruler for deflection measuring	deflection measuring by a laser beam
F 90 005	Gap gauge for fire resistance testing ϕ 25 mm	-
F 90 006	Gap gauge for fire resistance testing ϕ 6 mm	-
F 90 007	Frame for supporting the cotton pad 100 x 100 mm for fire resistance tests	-
F 54 027	Calliper – digital	-
F 54 030	Racking meter 5 m	-
F 57 001	Digital stop-watch	-
F 73 002	Suspension load-cell scale	finding of equilibrium state

3. PREPARATION OF THE SPECIMEN

Testing laboratory has not taken and did not make the selection of the specimen. Taking, selection and delivering of the specimen to the testing laboratory was carried out by the sponsor. Specimen was delivered complete, without glass. Glass was delivered additionally.

Installation of the specimen to the supporting construction was carried out by workers of FIRES s.r.o. according to the sponsor requirements. Glazing was carried out by worker of Pyrobatys s.r.o., Batizovce, SR, under the supervision of the agent of WICONA DANESCO SR.

4. PREPARATION OF THE TEST

4.1 DESCRIPTION OF THE SPECIMEN STRUCTURE

Test specimen consisted of aluminium single leaf glazed door with side lights and sub lights.

Overall specimen dimensions - (2960 x 2930 x 70) mm (width x height x thickness).

Specimen was made of Al profiles 70N FP with broken thermal bridge and with glazing - glass SWISSFLAM LITE N2 - 14 mm thick.

Composition: Laminated glass thickness 5,58mm (2,6mm glass float, PVB interlayer 0,38mm, 2,6mm glass float), fire resistance jelly (Interlayer) thickness 3mm, laminated glass 5,58mm (2,6mm glass float, PVB interlayer 0,38mm, 2,6mm glass float).

Glass CONTRAFLAM LITE N2 13 mm thick, placed in side light on the lock side of the door

Composition: 5mm toughened Glass / 3 mm Interlayer / 5mm toughened Glass

Glass dimensions

- door (1188 x 2286) mm (width x height)
- side light on the lock side of the door (1060 x 2387) mm (width x height)
- side light on the hinges side of the door (312 x 2387) mm (width x height)
- sub light over the door (1390 x 321) mm (width x height)
- sub light over the side light on the lock side of the door (1060 x 321) mm (width x height)
- sub light over the side light on the hinges side of the door (312 x 321) mm (width x height)

Glazing was solved by „clip-on“ beads and rubber seal.

More detailed information about specimen construction is shown in the drawing which forms the appendix of this test report. Drawing was delivered by the specimen manufacturer.

All the information about technical specifications of used materials and semi-products, information about their type sign and their producers were delivered by sponsor. This information was not subject of the specimen inspection. Parameters which were checked are quoted in paragraph SPECIMEN INSPECTION.

4.2 DESCRIPTION OF THE SPECIMEN FIXATION

Test specimen was fixed to the standard supporting construction made of aerated concrete blocks with bulk density of 613 kg.m^{-3} , 250 mm thick.

Specimen frame was fixed to the supporting construction by six steel ties placed at the horizontally sides and at the top side of the frame in the distances of 200 mm from the top and bottom edge of the specimen and in cross-dimensions of 500 mm. Gaps between specimen and supporting construction were filled by fire resistance putty.

Orientation of the test specimen during the test:

Hinged side unexposed

Supporting construction, its thickness, specimen orientation and type of specimen fixation to the test frame was selected by the sponsor.

4.3 SPECIMEN INSPECTION

Before and after the fire resistance test, conformity of drawings and test specimen was checked. The specimen corresponded to the drawings which are part of the test report.

Specimen inspection consisted of visual review of the test specimen and used components as well as size verification (measuring of: overall size of the specimen, thickness of the glass, profiles).

4.4 CLIMATIC CONDITIONING OF THE SPECIMEN

Test specimens with supporting construction were stored in the climatic hall and conditioned according to EN 1363-1 under the following climatic conditions:

Relative air humidity [%]		Ambient air temperature [°C]	
mean	standard deviation	mean	standard deviation
47,9	8,4	17,5	2,5

There was found equilibrium state of test specimen humidity by repetitive weighting of the specimens.

4.5 MECHANICAL CONDITIONING

Test specimen was tested by mechanical test before the fire test:

- mechanical test according to EN 1191 – number of cycles 5 000 at max. circumferential speed 0,75 m/s.

Circumferential speed was selected upon the filling material of the test specimen.

Test specimen was not damaged during the mech. test and its function was not failed.

- mechanical test according to EN 12 046-2 :

necessary force to movement initiation of the leaf – 33,6 N

operating force at the door handle – 3,36 Nm

lock-in – 0,18 Nm

unlock – 0,08 Nm

interlock release – 0,50 Nm

There were retention force measured on the leaf before fire resistance test according to EN 1634-1 clause 10.1.3. Retention force was - 33,6 N. After the test the specimen was finally set according to the EN 1634-1 clause 10.1.4.

5. CARRYING OUT THE TEST

5.1 TEST CONDITIONS

Conditions in the test furnace (temperature, pressure, concentration of O₂), in the testing room (ambient temperature) corresponded to EN 1363-1 during the test. Detailed information is shown in appendix of this report, or in Quality records of the testing laboratory.

Values characterising environment in the testing room directly before the test:

Relative air humidity [%]	Ambient air temperature [°C]
48,3	12,4

5.2 TESTS RESULTS

The measured values are shown in tables that form an integral part of this test report.

Description of specimen behaviour during the test:

Time [min]	Observation
2	cracking and reaction of the glazing,
4	falling out of the glazing layers from the exposed side,
10	opaque glass on the entire surface, high deflection of the top corner on the lock side of the leaf from the test furnace,
12	specimen integrity test with cotton pad on created gap between leaf and door frame near lock, cotton pad was not ignited - specimen integrity was not failed,
19	sustained flaming from the gap between leaf and frame near lock - specimen integrity was failed,
20	specimen integrity test with gap gauge Ø 6 mm into the created gap near lock between leaf and door frame - penetration of the gap gauge to the test furnace, gap length was more than 150 mm - specimen integrity was failed, test continues at the request of the sponsor,
28	flaming around the door leaf perimeter in the corners between profiles,
31	flaming of the rubber seal on the hinged side of the door leaf and around sub light perimeter over the door,
31	termination of the test,

5.3 EVALUATION OF THE TEST

Performance criteria	Achieved time to the performance criteria failure [min]
Integrity - gap gauge Ø 6 mm	18 minutes
Insulation (total)	17 minutes
insulation - average temperature glass <i>Contraflam Lite N2</i>	17 minutes
insulation - average temperature glass <i>Swissflam Lite N2</i>	18 minutes *
insulation - average temperature glass <i>Swissflam Lite N2 - door</i>	18 minutes *
insulation - maximum temperature	17 minutes
insulation - maximum temperature – door frame	18 minutes *
radiation	30 minutes no failure

The test was discontinued in the 31st minute at the request of the sponsor.

*Performance criteria insulation failed because of aluminium construction integrity failure in the 19th minute of the test. Integrity of the glass was not failed. Calculated average and maximum temperatures on the unexposed face of the specimen until termination of the test in 31st minute are shown in appendix of this report.

6. CLOSING

- This report details the method of construction, the test conditions and results obtained when the specific element of construction described herein was following the procedure outlined in EN 1363-1, and where appropriate EN 1363-2. Any significant deviation with respect to size, constructional details, loads, stress, edge or end conditions other than those allowed under the field of direct application in the relevant test method is not covered by this report.
- Because of the nature of the fire resistance testing and consequent difficulty in quantifying the uncertainty of measurement of fire resistance, it is not possible to provide a stated degree of accuracy of the result.
- The test results refer only to the tested subjects. This test report is not an approval of the tested product by the test laboratory or the accreditation body overseeing the laboratory's activities. The test was carried out on testing equipment that is the property of FIRES Ltd. Without the written permission of the test laboratory this test report may be copied and/or distributed only as the whole. Any modifications of the test report can be made only by the fire resistance test laboratory FIRES Ltd. Batizovce.
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Report checked by: Marek Gorlický

Translated by: Juraj Akuratný

Issued by:

responsible for the technical side of this report

Ing. Miroslav Smolka MBA
leader of the test laboratory

Juraj Akuratný
technician of the test laboratory

7. NORMATIVE REFERENCES

STN EN 1634-1:2001	Fire resistance tests for door and shutter assemblies – Part 1: Fire doors and shutters
STN EN 1363-1:2001	Fire resistance tests– Part 1: General requirements
STN EN 1363-2:2001	Fire resistance tests – Part 2: Alternative and additional procedures
STN EN 1191:2001	Windows and doors. Resistance to repeated opening and closing. Test method.
STN EN 12 046-2:2001	Operating forces. Test method. Part 2: Doors

8. LIST OF APPENDICES

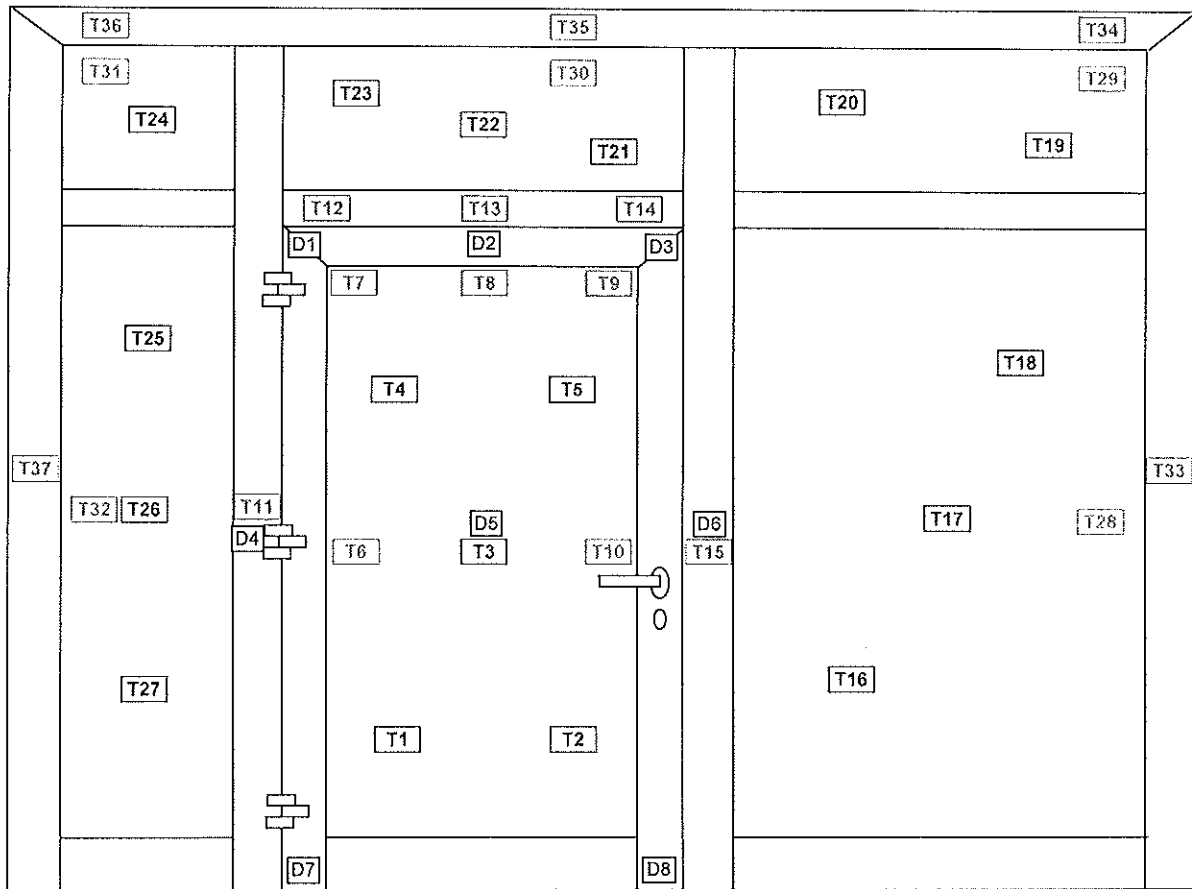
Appendix 1	Field of direct application of test results
Appendix 2	Measured values inside the test furnace
Appendix 3	Measured values inside the test furnace / graph
Appendix 4	Measured temperature rises on the unexposed specimen surface
Appendix 5	Measured temperature rises on the unexposed specimen surface / graph
Appendix 6	Measured temperature rises on the unexposed specimen surface
Appendix 7	Measured temperature rises on the unexposed specimen surface / graph
Appendix 8	Measured and calculated values on the unexposed specimen surface
Appendix 9	Measured and calculated values on the unexposed specimen surface / graph
Appendix 10	Layout of the measuring points on the unexposed face of the specimen
Appendix 11-12	Photos taken during the course of the test
Appendix 13-15	Drawing





FIELD OF THE DIRECT APPLICATION OF THE TEST RESULTS

The result of the fire resistance is directly applicable to similar construction where one or more of the changes listed below are made and the construction continues to comply with appropriate design code for its stiffness and stability (no other changes are allowed):

- size reduction is allowed up to 50% width and 75% height provided that:
 - the relative positioning of movement restrictors (position of the : hinges, lock needle, steel cap, latch) shall remain the same as tested, or any changes to the distances between them will be limited to the same percentage reduction as the decrease of specimen size.
- changes in finish paint on the frame and leaf are allowed,
- the number of fixings used to attach fire resisting doors to supporting constructions (six pieces) may be increased but shall not be decreased and the distance between fixing may be reduced but shall not be increased,
- the number of movement restrictors such as lock and hinges may be increased but shall not be decreased,
- the type of glazing/panels and the edge fixing technique shall not be changed from those tested,
- the number of glazed/panels apertures and each of the dimensions may be decreased but shall not be increased,
- the distance between the edge of glazing/panels and the perimeter of the door leaf, or the distance between panels shall not be reduced,
- the result of the test of specimen tested in rigid standard supporting construction according to EN 1363-1 of bulk density of 613 kg.m^{-3} and thickness of 250 mm is applicable to any other specimen fixed within the same type and to any other wall, providing the bulk density and thickness of the wall is the same or greater as tested.

Layout of the measuring points on the unexposed face of the specimen



-  Thermocouples for average and maximum temperature assessment
-  Thermocouples for maximum temperature assessment - 100 mm from door and door frame edge
-  Thermocouples for maximum temperature assessment - on the door frame
-  Measuring deflection