

w&p Baustoffe GmbH
Alois Kern Strasse 1
8120 Peggau



Vienna City Administration
MUNICIPAL DEPARTMENT 39
Research Centre, Laboratory
and Certification Services
VFA – Construction Technology Labs
Address: Rinnböckstrasse 15
A-1110 Vienna
Tel.: (+43 1) 79514-8039
Fax: (+43 1) 79514-99-8039
E-Mail: post@ma39.wien.gv.at
Homepage: www.ma39.wien.at

MA 39 – VFA 2012-0639.01

Vienna, 5 September 2012

Test Report

concerning the

**Reaction to fire performance of the thermal insulation composite system
consisting of insulation boards designated as “Stiferite Class SK” (140 mm thick)
(Test of 11 May 2012)**

- Client:** w&p Baustoffe GmbH
- Date of commission:** 10 May 2012
- Test material:** Thermal insulation composite system consisting of:
- Adhesive: Baunit KlebeSpachtel light
 - Insulation board: “Stiferite Class SK”, 140 mm thick
 - Dowels: Baunit UniversalDübel STR U: 215 mm
 - Base coat: Baunit KlebeSpachtel light, layer thickness: 3 mm
 - Reinforcement: Baunit TextilglasGitter textile glass mesh
 - Primer: Baunit UniPrimer
 - Finishing coat: Baunit GranoporTop, particle size 3 mm
- Test programme:** Test of reaction to fire performance of the façade structure in case of fire bursting through window on second storey above primary seat of fire, scale test, pursuant to ÖNORM B 3800-5
- Summary assessment:** Under the test conditions chosen, no fire expansion on or under the façade surface was observed during the test. No flammable parts, large parts (> 0.4 m² or > 5 kg) and no essential other parts fell off. Temperatures behind the façade surface were never higher than at the front of the façade until the wood stack producing the external fire collapsed.

This report consists of 5 pages and 1 attachment (13 pages).

Tests relate to the test material exclusively. All pages of this report are stamped with the official seal of the City of Vienna Administration. Publications and extracts from this report require the prior written consent of MA 39. Please take note of the current General Terms and Conditions of MA 39 which can be found on the Internet at <http://www.wien.gv.at>.

Accredited as a testing and inspection body pursuant to the Austrian Act on Accreditation (AKKG) under an official decree of the Federal Ministry for Economic Affairs and Labour based on ÖVE/ÖNORM EN ISO/IEC 17025 and ÖVE/ÖNORM EN ISO/IEC 17020 (EN 45004); PSD 89.
Accredited as a testing and inspection body pursuant to WBAG under an accreditation decree issued by Österreichisches Institut für Bautechnik on the basis of ÖVE/ÖNORM EN ISO/IEC 17025 and EN 45004.
Notified testing and inspection body under the Construction Product Directive (89/106/EEC of 21/12/1988), identification number 1140.



Certified pursuant to the requirements of ÖNORM EN ISO 9001:2008 and ÖNORM EN ISO 14001:2004 by Quality Austria

Office hours: Mon to Fri: 7:30 – 15:30. VAT registration number: ATU 36801500

Banking connection: Bank Austria AG, account no. 5148007186, bank code 12000, IBAN: AT631200051428007186, SWIFT: BKAUTWWW, Data Processing Register number: 0000191

1 General Information

On 10 May 2012 the client commissioned MA 39 with testing the fire performance of a façade structure.

2 Test procedure

The test procedure is described in Austrian standard ÖNORM B 3800-5 whereby the test specimen is mounted on an indoor test rig in the same way as it would be mounted in an original installation setup and exposed to thermal stress under a certain fire load in the presence of natural ventilation conditions.

The fire load, setup and ventilation as well as the geometrical structure interact with each other, simulating a scenario which could happen in case of window flashover onto the façade of a building from a room with a fully developed fire (drawing of setup see attachment, page 1).

The criteria for the assessment of the specimen are fire expansion and falling of large parts of the structure.

3 Test specimen

From 3 April 2012 to 10 April 2012 clients' specialists mounted the façade structure directly on the test rig. The specimen was installed as a corner structure with an opening, it was 5.5 m wide, with a back wall of 3.5 m and a side wall of 2.0 m. The structure was 6.0 m high. It was connected to the fire chamber opening with a reveal in line with technical practice.

Description of test specimen:

Thermal insulation composite system consisting of insulation boards designated as "EPS-F" and using a fire protection lintel designated as "Stiferite Class SK"

Structure of the thermal insulation composite system

Adhesive: Baumit KlebeSpachtel light

Maximum grain size: 1.5 mm

Dry bulk density: app. 1050 kg/m³

Quantity used: app. 3.5 kg/m²

Insulation board: Stiferite Class SK

Reaction to fire performance, class: E pursuant to EN 13501-1

Density: 35 +/- 1.5 kg/m³

Nominal thickness: 140 mm

Material: FCHC- and HFCHC-free polyiso hard foam board coated with glass mat on both sides.

Dowels: Baumit UniversalDübel STR U

Material: plastic

Dowels length: 215 mm

Anchor plate diameter: 60 mm

Base coat: Baumit KlebeSpachtel light

Layer thickness: 3 mm

Dry bulk density: app. 1050 kg/m³

Quantity used: 3.0 -4.0 kg/m²

Reinforcement: Baumit TextilglasGitter textile glass mesh

Mesh size: 4 mm x 4 mm

Surface density: ≥ 145 g/m²

Primer coat: Baumit UniPrimer

Density: app. 1.65 kg/dm³

Maximum grain size: 0.5 mm

Quantity used: 0.40 kg/m²

Finishing coat: Baumit GranoporTop

Maximum grain size: 3.0 mm

Bulk density: app. 1.8 kg/m³

Quantity used: app. 4.2 kg/m³

MA 39 is in possession of data sheets for all components used. These are kept on file with MA 39. the system structure has to confirm to the data sheets deposited with our office.

For details of the structure please refer to the photo documentation attached.

4 Test set-up

The test specimen was conditioned under laboratory conditions during the period 10 April 2012 to 10 May 2012.

Thermoelectric elements were installed in the area above the test chamber, 200 mm above the edge of the opening, 2000 mm above the edge of the opening and at the upper edge of the test rig, always 100 mm in front of the façade and in the centre of the back-ventilation chink (thermoelectric element positions see attachment, page 2).

5 Testing

The fire load was a wood stack composed of planed spruce sticks (each 4 cm wide, 4 cm high and 50 cm long). The wood stack consisted of 72 sticks with a total weight of 25 +/- 1 kg nailed together crosswise. The resulting wood stack measured 0.5 m x 0.5 m and was 0.48 m high (this corresponds to app. 350 – 400 kW).

The wood stack was placed in the fire chamber on a metal substructure open on all sides, with a surface area of 0.5 m² (height 0.25 m). The lateral distance between the wood stack and the walls of the fire chamber was 0.25 m. The front of the wood stack was flush with the front of the test bench before the cladding was positioned.

The wood stack was set on fire with isopropanol. For this purpose, two sheet metal troughs were slid into the bottom layer of the wooden sticks (each in the respective penultimate interstice from the outside) and filled with 200 ml of isopropanol each. The isopropanol was ignited by open flame.

Two minutes after ignition, a fan behind the wood stack was switched on, generating additional airflow (volume flow 400 m³/h) through a round opening (0.3 m in diameter).

The test was carried out on 10 May 2012. The temperature in the hall was 23°C, relative air humidity was 47.3% and air pressure was 994.8 mbar.

6 Results

Observations during testing:

Beginning of test:	Ignition of isopropanol
2 minutes:	Fan started
2 minutes 20 seconds:	Surface of rendering darkened
4 minutes 10 seconds:	Surface of rendering above the upper edge of the opening started smouldering
15 minutes 40 seconds:	Parts of rendering from upper edge fell off
23 minutes 20 seconds:	Wood stack collapsed
30 minutes:	End of test

Maximum apparent flame height was up to 2.2 m.

Records of thermoelectric element measurements can be found in the Attachment, page 3. The photo documentation constitutes pages 4 to 13 in the Attachment.

After removal of the rendering at the end of the test, the insulation material showed charring up to a height of 2 m above the upper edge of the opening (see also picture on page 13 of the attachment). The maximum size of rendering parts which fell off was 0.05m².

7 Assessment

Under the given testing conditions, visual observation did not show any flashover on or under the façade surface during the test. No combustible parts, large parts (> 0.4 m² or > 5 kg) or essential other parts fell off. Temperatures behind the façade surface were never higher than those at the front of the façade until the wood stack producing external fire collapsed.

The thermal insulation composite system consisting of insulation boards designated as "Stiferite Class SK" bonded and dowelled to the test rig has fulfilled the requirements of ÖNORM B 3800-5.

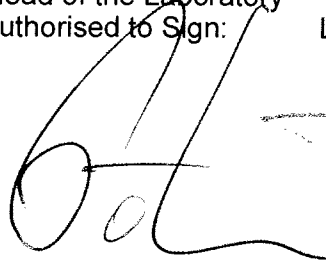
This test report is valid for a period of 2 years. When this period has expired, re-testing for an extension of the validity period is possible.

The Case Manager:



Dipl.-Ing.D.Werner, MSc

The Head of the Laboratory
Authorised to Sign:



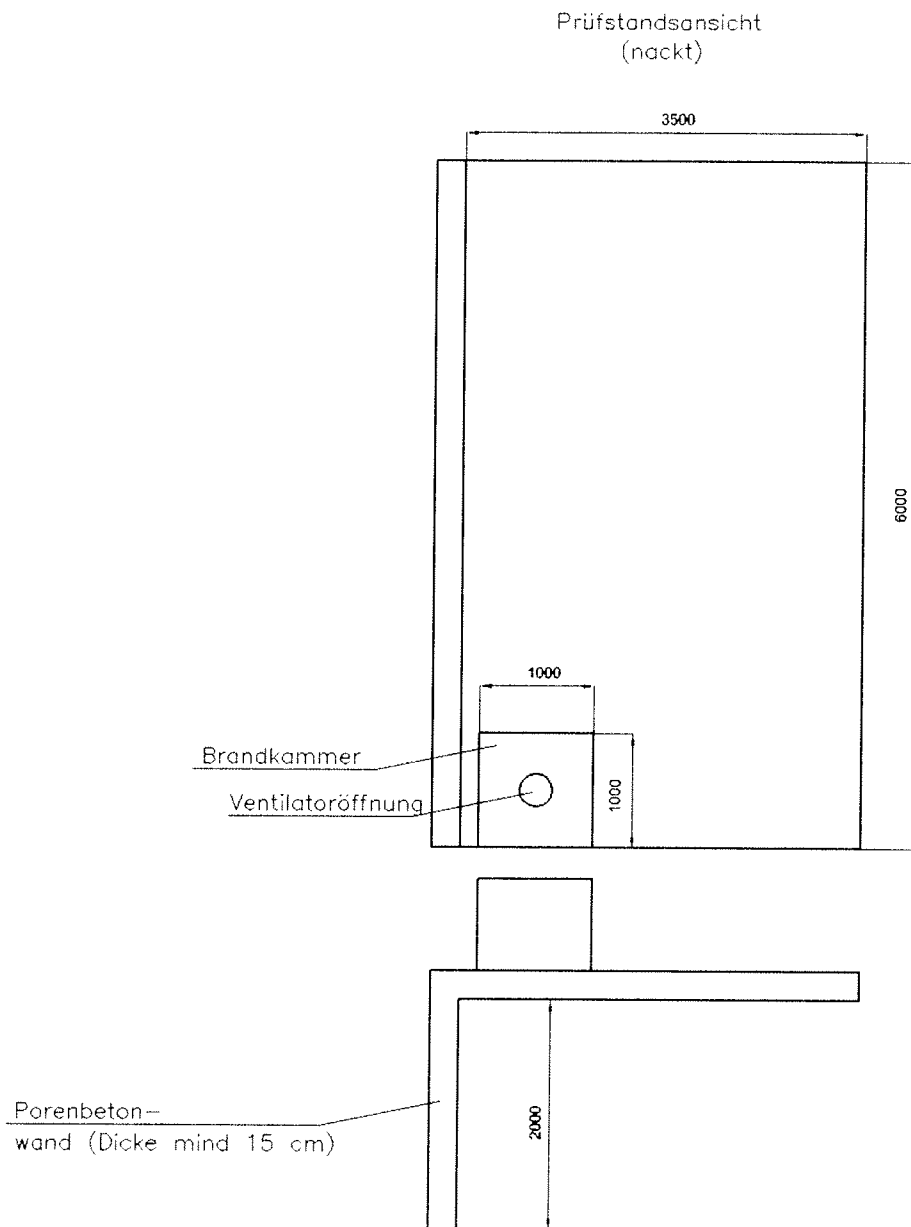
Dipl.-Ing.Dr.techn.C.Pöhn

The Head of the Research Centre,
Laboratory and Certification Services:



Dipl.-Ing.G.Pommer

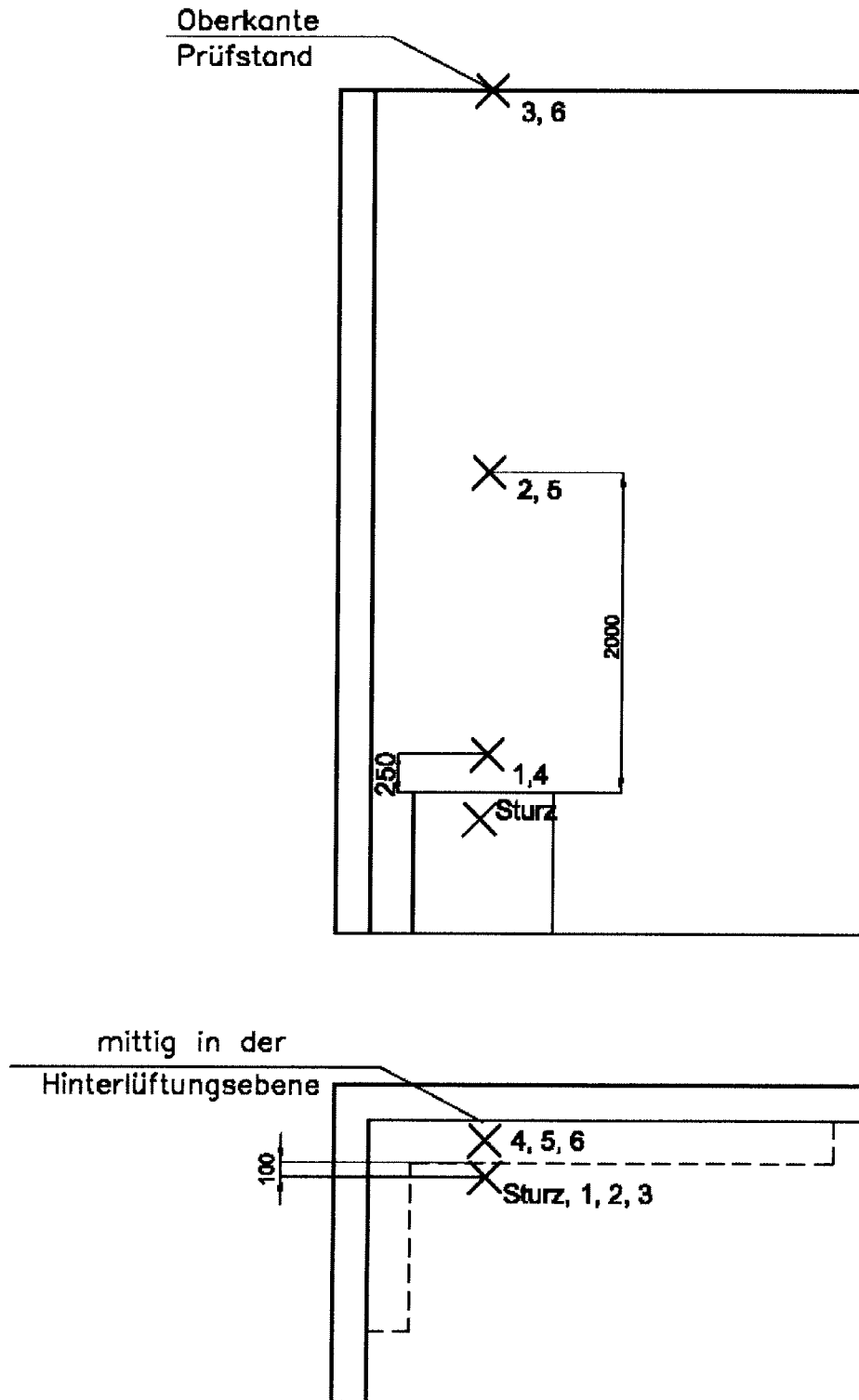
Test rig view in original state



Fire chamber
Fan opening
Aerated concreted wall (min. thickness 15 cm)

Thermoelectric element positions

Thermoelementlagen



Temperatures during testing (11 May 2012)

Temperaturen während der Fassadenprüfung
als Übertemperaturen in [K]

Temperatur bei Versuchsbeginn 23 °C

Versuchsdauer [min]	Thermoelement Nr.						
	Sturz	1	2	3	4	5	6
2	24	191	36	14	31	11	0
4	540	638	298	139	126	71	0
6	617	616	411	221	158	108	0
8	639	695	447	244	174	114	0
10	661	713	416	238	163	110	0
12	878	717	386	245	144	115	0
14	716	569	391	235	143	108	0
16	732	598	405	249	151	111	3
18	709	650	372	229	124	99	6
20	663	354	253	177	82	79	9
22	535	343	211	148	82	71	11
24	337	250	144	124	64	62	14
26	253	193	114	97	53	51	18
28	211	180	103	85	50	46	23
30	191	155	94	77	43	43	28

Temperaturen, Prüfung am 11. Mai 2012

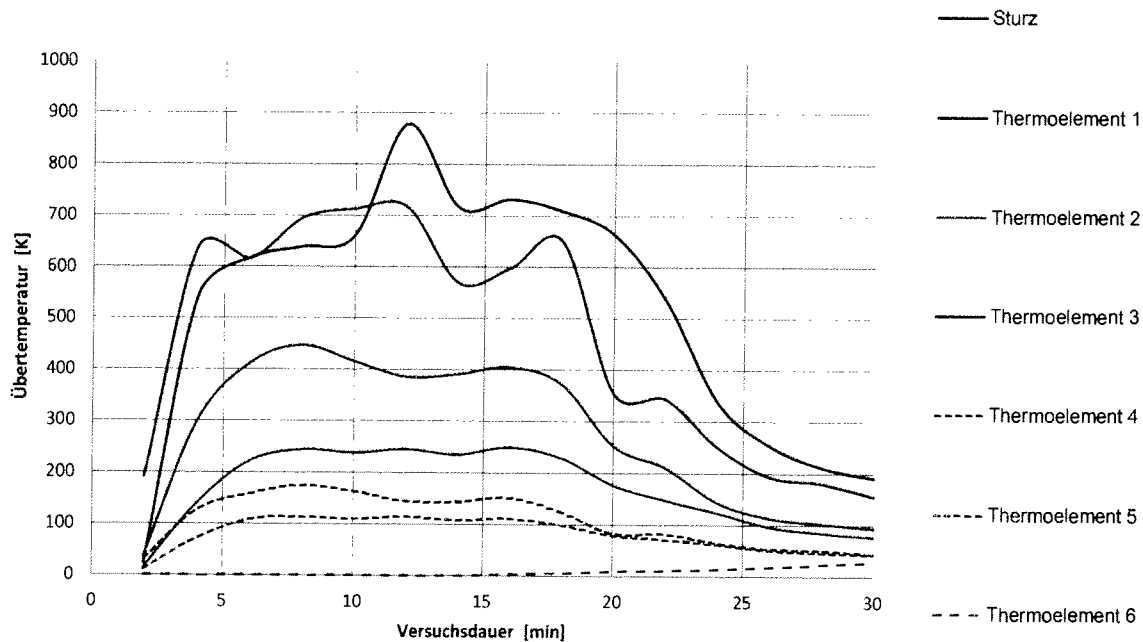


Photo documentation

Picture 1 (P1010487): Specification of the insulation material used in the façade system tested



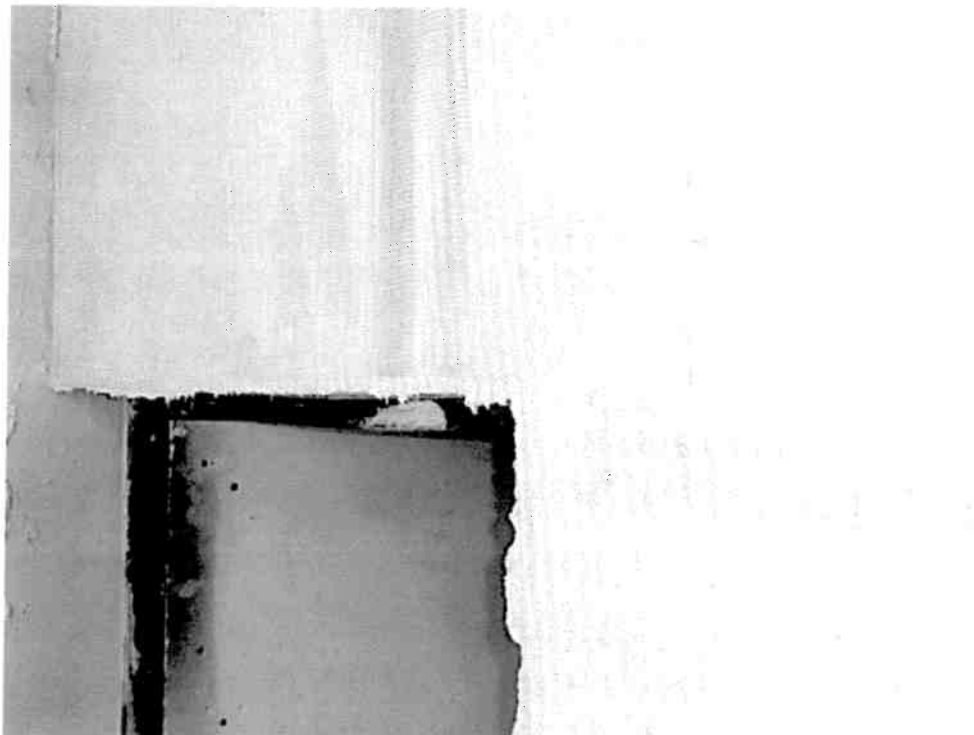
Picture 2 (P1010494): Application of adhesive to insulation board



Picture 3 (P1010501): Boards being mounted on test rig with adhesive



Picture 4 (P1010529): Textile glass mesh being applied



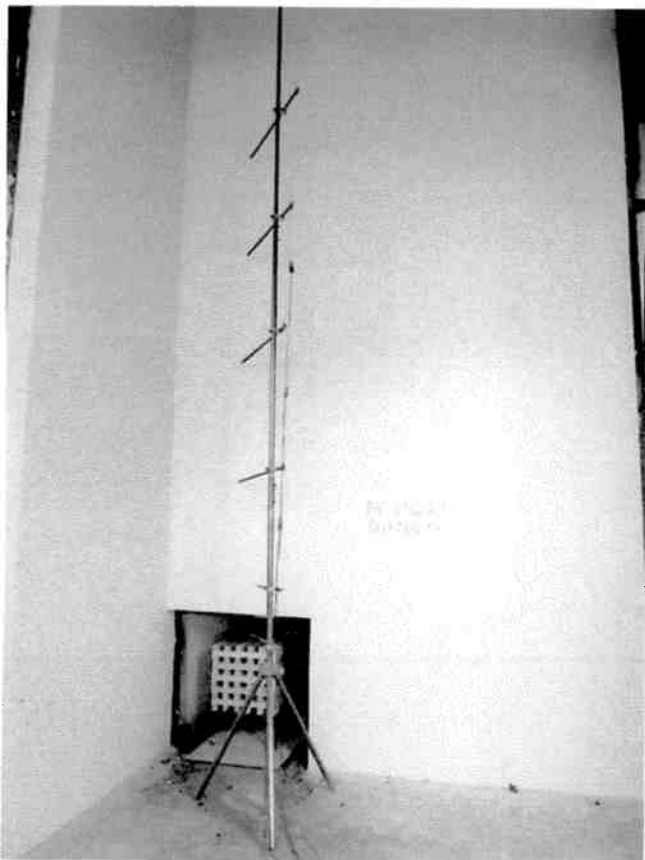
Picture 5 (P1010541): Rendering being applied on upper edge of opening



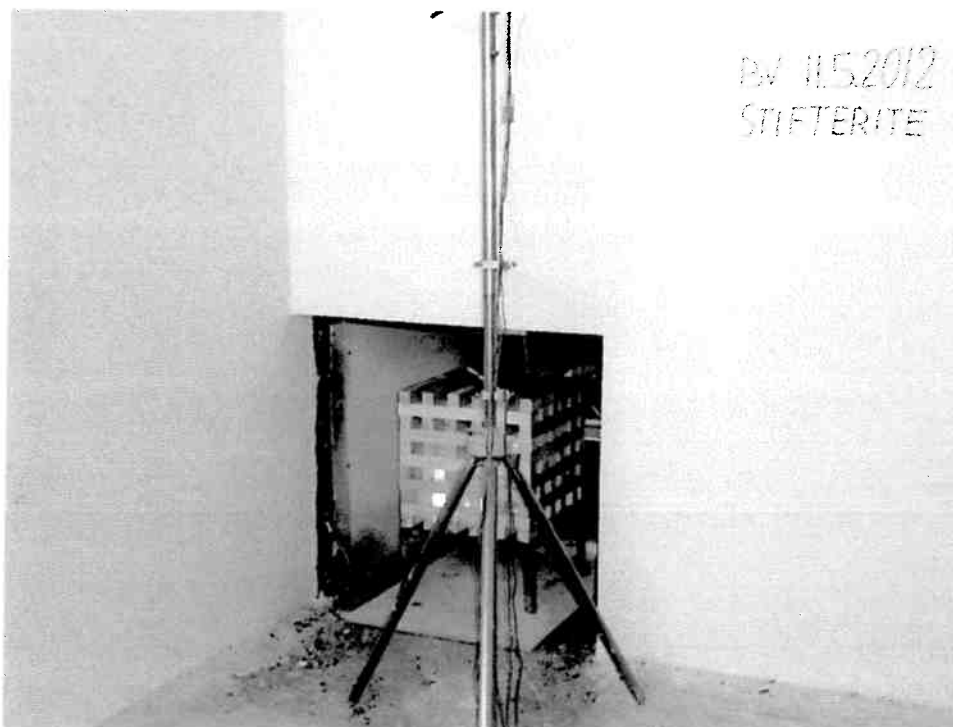
Picture 6 (P1010523): Upper edge and reveal



Picture 7 (P1060076): Test specimen shortly before testing



Picture 8 (P1060083): Test specimen during testing (1 minute into test)



Picture 9 (P1060086): Test specimen during testing (3 minutes into test)



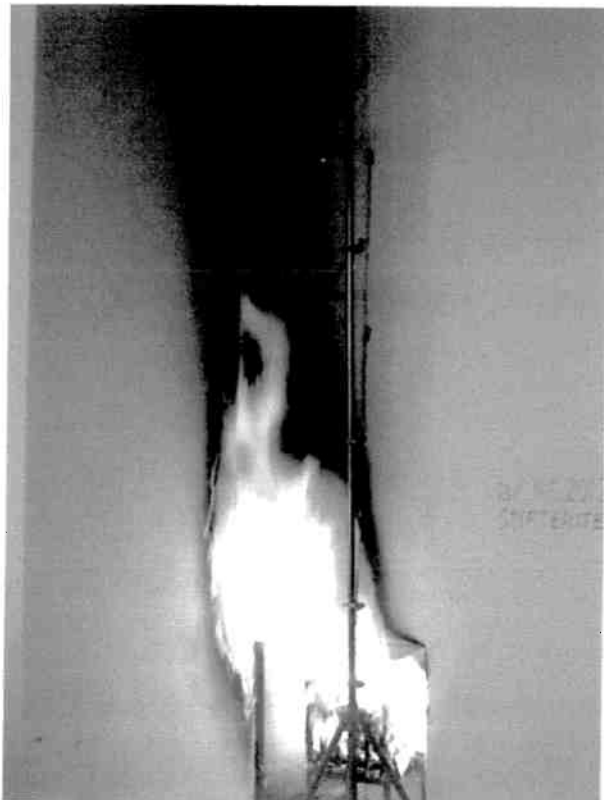
Picture 10 (P1060113): Test specimen during testing (5 minutes into test)



Picture 11 (P1060086): Test specimen during testing (7 minutes into test)



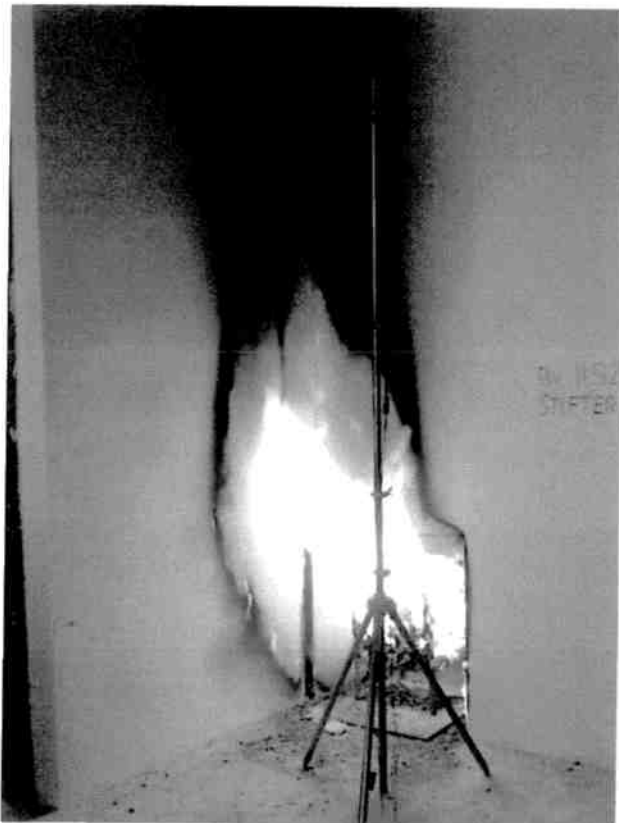
Picture 12 (P1060113): Test specimen during testing (9 minutes into test)



Picture 13 (P1060086): Test specimen during testing (12 minutes into test)



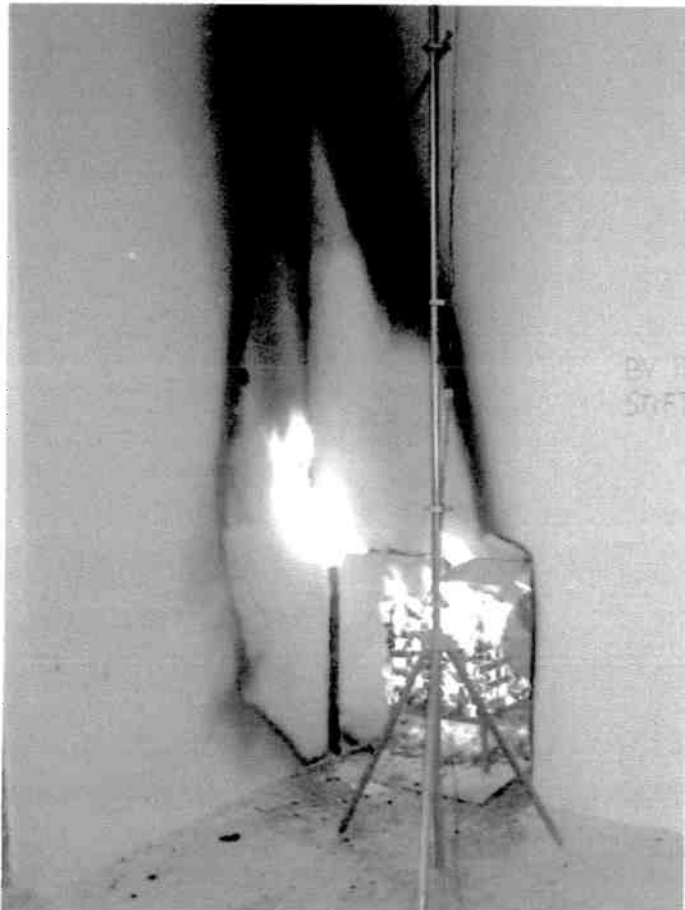
Picture 14 (P1060113): Test specimen during testing (16 minutes into test)



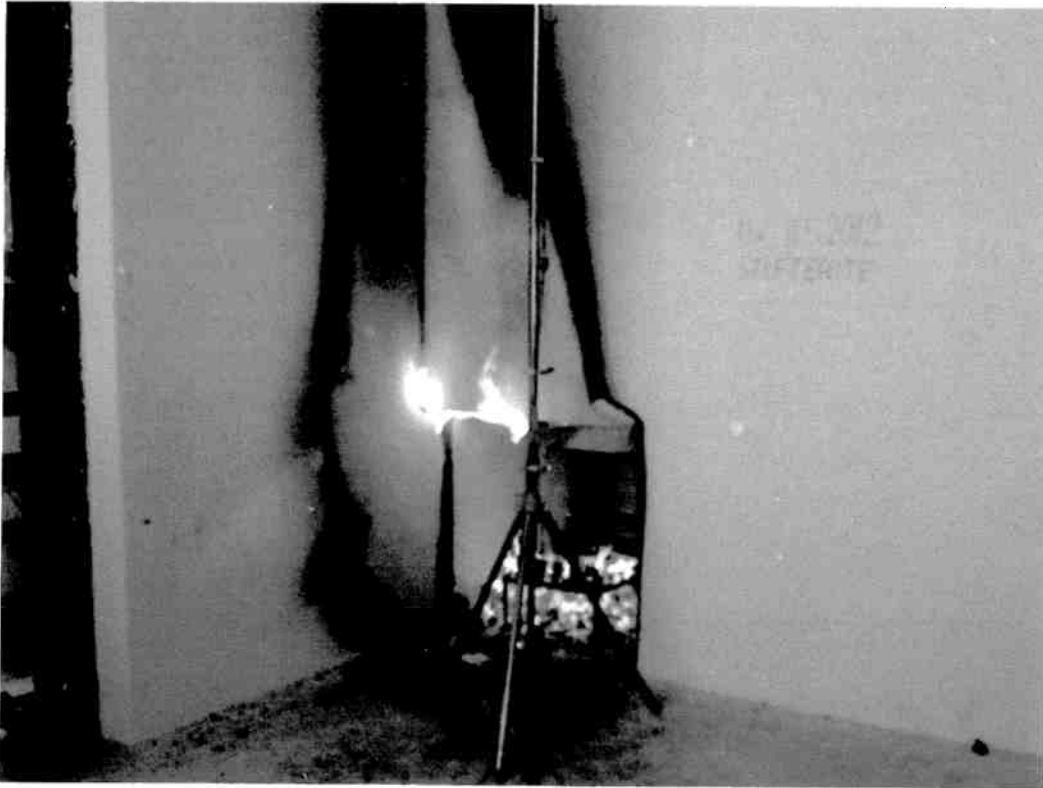
Picture 15 (P1060132): Test specimen during testing (18 minutes into test)



Picture 16 (P1060133): Test specimen during testing (22 minutes into test)



Picture 17 (P1060138): Test specimen during testing (24 minutes into test)



Picture 18 (P1060140): Test specimen directly after testing



Picture 19 (P1060141): Test specimen after testing, with rendering removed

