

## Sectional door set type Metacon OHD EI(1)-60 Classification of the fire resistance according to EN 13501-2:2007+A1:2009

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## TABLE OF CONTENTS

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1. Subject	3
2. Details of classified product	3
2.1 General	3
2.2 Test frame	3
2.3 Supporting construction	3
2.4 Sectional door set	3
2.5 Plaster board lining supporting construction	4
2.6 Side Guides	4
2.7 Flame barrier	4
2.8 Intumescent strips	4
2.9 Fixings	5
2.10 Method of assembly	5
3. Sampling and manufacturing of the construction	5
4. Test report & test results in support of classification	5
4.1 Test report	5
4.2 Test results	5
5. Classification and direct field of application	6
5.1 Reference of classification	6
5.2 Classification	6
5.3 Field of application	6
5.4 Specific restrictions on materials and constructions	6
5.5 Decorative finishes	6
5.6 Fixings	6
5.7 Permissible size variations	7
5.8 Supporting construction	7
6. Limitations	7
APPENDIX: Figures	8

## 1. SUBJECT

This report defines the resistance to fire classification in accordance with the procedures given in EN 13501-2:2007+A1:2009 of a sectional door set type Metacon OHD EI(1)-60.

## 2. DETAILS OF CLASSIFIED PRODUCT

### 2.1 GENERAL

For the dimensions and specifications of the materials and components of the examined construction also see the figures in the Appendix. Significant details of the construction are given in the paragraphs below.

### 2.2 TEST FRAME

The test frame was constructed of steel beams with a fire resistant concrete lining with internal dimensions of 4m x 5mm (w x h). The width of the test frame was 250mm. The floor underneath the door set consisted of a sheet of calcium silicate board, 20mm thick.

### 2.3 SUPPORTING CONSTRUCTION

The test specimen was built on the direct heated side of a standard low density rigid supporting construction according to EN 1363-1:2012 being an aerated concrete wall with a thickness 150mm and a density of  $650 \pm 200\text{kg/m}^3$ . The dimensions of the wall aperture: 3400mm x 4450mm (w x h).

### 2.4 SECTIONAL DOOR SET

The door set comprised metal covered plasterboard tubular door sections. The steel covers were glued to the plasterboard. On the top and bottom edge of each section a fire resistant MDF plate was applied and at the sides edges Permoxx board. Each shutter section was attached to another section with four steel hinges.

Overall dimensions of the door set	
Width	3640mm
Height	4747mm
Thickness	81.6mm
Specifications of the door sections	
Height:	550mm
Steel frame	Welded, tubular rectangle (see fig. 6 and 7)
Dimensions of the outer vertical tubes	50mm x 50mm x 2mm (w x h x t)
Dimensions of the inner vertical tubes	80mm x 50mm x 2mm (w x h x t)
Dimensions of the horizontal tubes	50mm x 50mm x 2mm (w x h x t)
On top and bottom of panel	Fire resistant MDF strip
Thickness	18mm
Plasterboard cover	FR Gyproc

Thickness	15mm x 1mm
Location	At both faces of the section
Side covers of the sections	Permoxx board (magnesium oxide board)
Thickness	15mm
Metal / Alu cover	Zinc electroplated / aluminium sheet
Thickness	0.63mm
Location	At both faces of the section
Glue	Ankerweld 2514 R
<b>Specifications steel hinges</b>	
Manufacturer	ConDoor
Material	Zinc electroplated steel
Dimensions	60mm x 155mm x 2mm (w x h x t)
Locations at guiding system	A pair far at each edge
Locations at top of the section	Four with c.t.c. distance 700mm

## 2.5 PLASTER BOARD LINING SUPPORTING CONSTRUCTION

On the supporting construction following the edges of the aperture a strip of plaster board, dimensions 160mm x 12.5mm (w x t), was fixed with phosphated plasterboard screws, Ø 3.5mm x 55mm, the edge of the strip against the guiding system. The pair of intumescent strips were stuck to the plasterboard, one aligning the edge of the plasterboard strip. Another plasterboard strips was fixed to the flange of the ConDoor bracket with the edge against the earlier mentioned strip in de corner, dimensions 800mm x 12.5mm (w x t). One Palusol strip was stuck in the corner edge. (See FIGURES: detail 2)

## 2.6 SIDE GUIDES

The ConDoor side guide mounting bracket was made of zinc electroplated steel with a thickness of 2mm and guided the two inch steel wheel on a 11mm steel shaft. The wheels were connected to the ConDoor steel hinges described in 2.3. (See FIGURES: detail 2)

## 2.7 FLAME BARRIER

On the lintel of the supporting construction and on the top section a flange, length 50mm, of zinc electroplated steel, thickness 1.5mm, labyrinth like flame barrier was placed. (See FIGURES: detail 2)

## 2.8 INTUMESCENT STRIPS

Between the two MDF plates in the shutter sections a 20mm x 2mm Palusol fire seal was applied. Two strips of Palusol 45mm x 4mm were applied between the door and the wall on the vertical sides.

Two strips of Palusol 45mm x 4mm were applied between the door set and the wall at the top horizontal side.

One stripe of Palusol 45mm x 4mm was applied in the edge of the inner side of the guiding system. (See FIGURES: detail 2)

## 2.9 FIXINGS

The side guides were fixed by bolting M6 threaded rods at 1000mm c.t.c. distance through the wall.

## 2.10 METHOD OF ASSEMBLY

The shutter was built in the following order:

- Assembly of the aerated concrete wall
- Mounting of the side guides
- Mounting of the sections
- Connecting the sections.

## 3. SAMPLING AND MANUFACTURING OF THE CONSTRUCTION

Efectis Nederland BV Centre for Fire Safety	Test frame Supporting construction
Metacon BV	Producing sectional door set Assembly of construction

## 4. TEST REPORT & TET RESULTS IN SUPPORT OF CLASSIFICATION

### 4.1 TEST REPORT

Name of laboratory	Name of sponsor	Test report no.	Test method
Efectis Nederland BV, Centre for Fire Safety	Metacon BV	2013-Efectis-R0347a	EN 1634-1:2008

### 4.2 TEST RESULTS

Criteria	Minutes reached from start of test	
<b>Integrity, (E)</b>		
- Cotton pad		Not determined
- Gap Gauge Ø 6 mm	86	Failure
- Gap Gauge Ø 25 mm	86	Failure
- Sustained flaming for more than 10 sec.	86	Failure
<b>Insulation, (I)</b>		
- Average temperature rise	86*	No failure
- Max. temperature rise I <sub>1</sub>	86	Failure, TC10
- Max. temperature rise I <sub>2</sub>	86*	No failure
<b>Heat radiation (W)</b>	86*	No failure, 1.6 kW/m <sup>2</sup>
* The criterion was reached by sustained flaming for more than 10 seconds = end of E		
The heating was terminated after 86 minutes in concurrence with the sponsor		

## 5. CLASSIFICATION AND DIRECT FIELD OF APPLICATION

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### 5.1 REFERENCE OF CLASSIFICATION

The door set has been classified in accordance with clause 7 of EN 13501-2:2007+A1:2009.

### 5.2 CLASSIFICATION

The door set will be classified as follows:

**E60**  
**EI<sub>1</sub>60**  
**EI<sub>2</sub>60**  
**EW60**

### 5.3 FIELD OF APPLICATION

This report details the method of construction, the test conditions and the results obtained when the specific element of construction described herein was tested following the procedure outlined in EN 1634-1:2008. Any significant deviation with respect to size, constructional details, load stresses, 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.

The conclusions in chapter 5.2 apply exclusively to sectional door set types mounted on an aerated concrete wall which are equivalent in detail, including fittings/furniture and materials used, to the structure described in this report and that also comply with the following conditions:

### 5.4 SPECIFIC RESTRICTIONS ON MATERIALS AND CONSTRUCTIONS

- The dimensions of metal wrap around frames may be increased to accommodate increased supporting construction thickness. The thickness of the metal may also be increased by up to 25 %.
- The type of metal shall not be changed from that tested.

### 5.5 DECORATIVE FINISHES

- If a paint finishing layer does not contribute to the fire behaviour, applying a paint coating to the door surface is allowed.
- Decorative laminates and wood veneers with a maximum thickness of 1.5mm may be added to the surfaces, but not the edges.

### 5.6 FIXINGS

The number of fixings to attach the frame to the supporting construction may be increased but not decreased. The centre to centre distance between the fixings may be reduced but not increased.

## 5.7 PERMISSABLE SIZE VARIATIONS

For EI<sub>1</sub>60 and EI<sub>2</sub>60

- Unlimited size reduction is permitted.
- Size increase is permitted up to 50% in height, 50% in width and 50% in total area.

Maximum dimensions door leaf surface			
Width	3640mm	Increase width 50%	5460mm
Length	4747mm	Increase length 50%	7121mm
Total surface	17.28 m <sup>2</sup>	Increase surface 50%	25.92 m <sup>2</sup>

## 5.8 SUPPORTING CONSTRUCTION

The sectional door set built on to the direct heated side of a standard rigid supporting construction as specified in EN 1363-1 can be applied to a door set mounted in the same manner in a wall provided it has a density of at least 650 ± 200 kg/m<sup>3</sup> and a minimum wall thickness of 150mm.

## 6. LIMITATIONS

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This classification document does not represent type approval or certification of the product.



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## APPENDIX: FIGURES

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Figure 1: Front view test object  
Figure 2: Detail 2



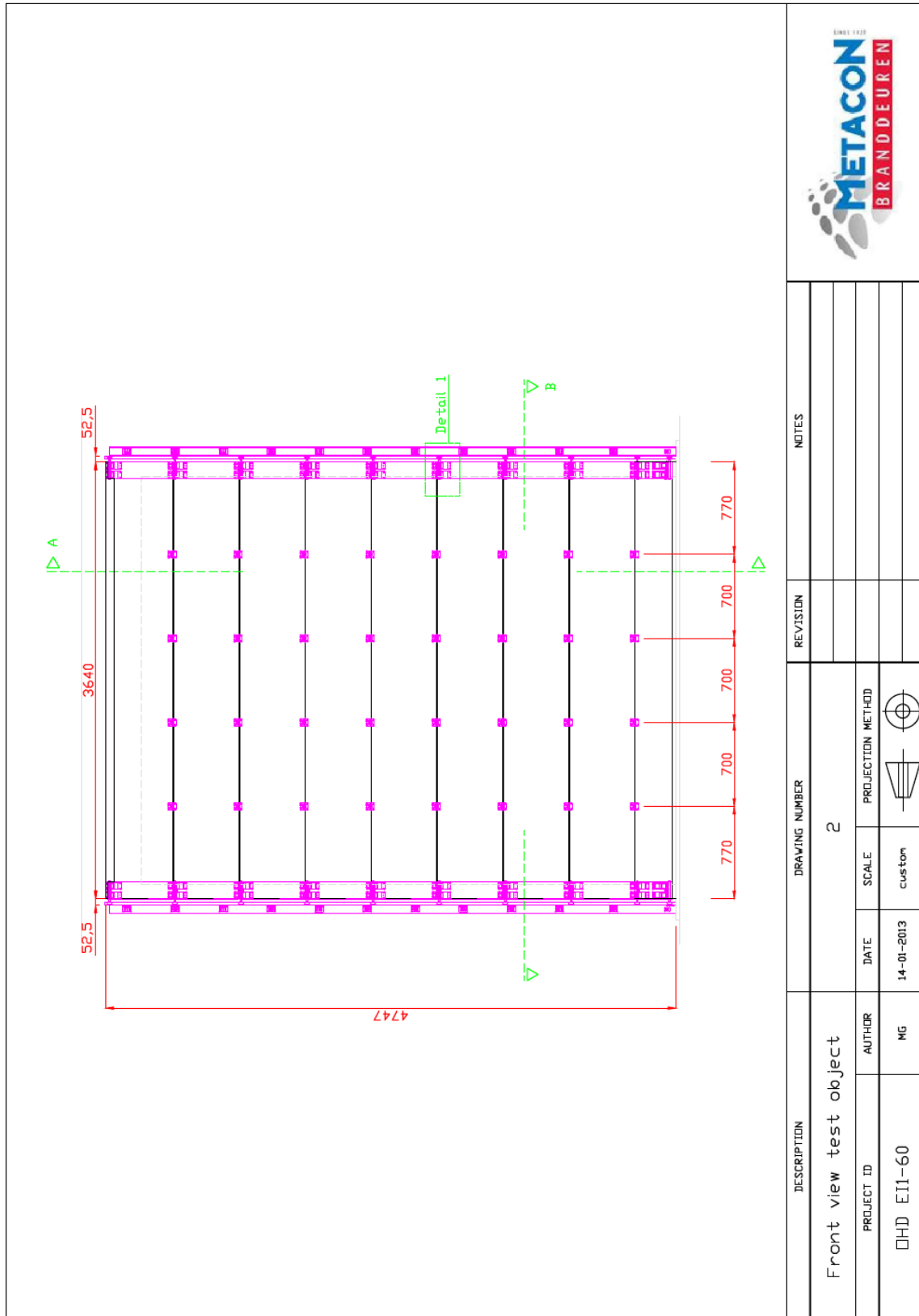
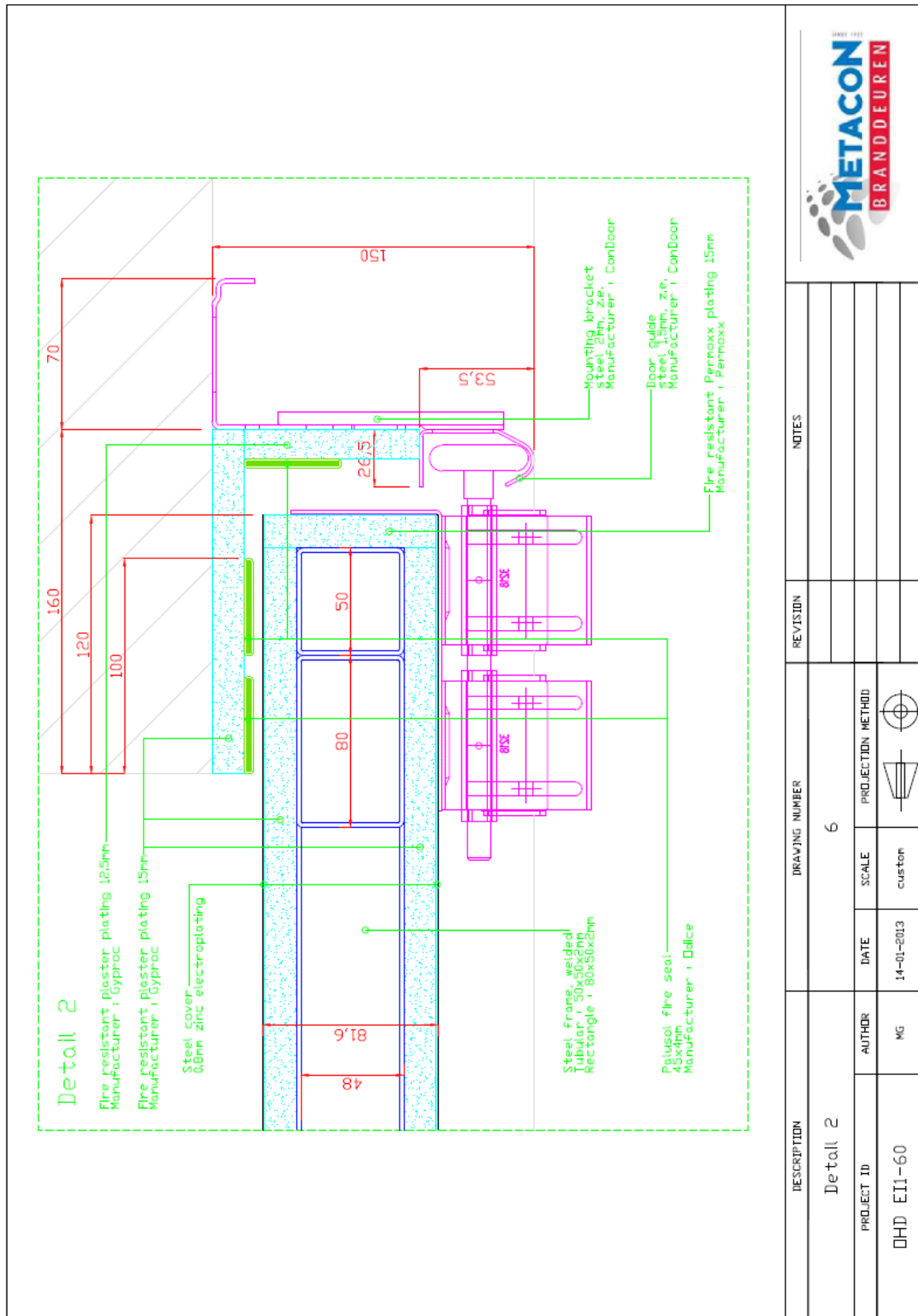


Figure 1: Front view test object




DESCRIPTION	DRAWING NUMBER	REVISION	NOTES
Detail 2	6		
PROJECT ID	SCALE	PROJECTION METHOD	
DHD EI1-60	custom		
AUTHOR	DATE		
MG	14-01-2013		

Figure 2: Detail 2