

CLASSIFICATION OF FIRE RESISTANCE ACCORDING TO EN 13501-2: 2016

| | |
|--------------------|--|
| Classification no. | 2020-Efectis-R000946[Rev.1] |
| Sponsor | Metaalwarenfabriek Metacon B.V. Zuidbaan 450 2841 MD MOORDRECHT The Netherlands |
| Product name | OHD-C |
| Prepared by | Efectis Nederland BV |
| Notified body no. | 1234 |
| Authors | S. Lutz P.W.M. Kortekaas |
| Project number | ENL-19-001321 |
| Issue | 2 |
| Date of issue | July 2020 |
| Number of pages | 10 |

CONTENTS

| | | |
|-----|--|----|
| 1. | Introduction | 3 |
| 1.1 | Revision information | 3 |
| 2. | Details of classified product | 3 |
| 2.1 | General | 3 |
| 2.2 | Description | 3 |
| 2.3 | Test specimen | 3 |
| 3. | Test reports and test results in support of the classification | 3 |
| 3.1 | Test reports | 3 |
| 3.2 | Test Results | 4 |
| 4. | Classification and field of application | 5 |
| 4.1 | Reference of classification | 5 |
| 4.2 | Classification | 5 |
| 4.3 | Field of application | 5 |
| 4.4 | General | 5 |
| 4.5 | Materials and construction | 5 |
| 4.6 | Permissible size variations | 6 |
| 4.7 | Asymmetrical assemblies | 8 |
| 4.8 | Supporting constructions | 9 |
| 5. | Limitations | 9 |
| | APPENDIX: Figures | 10 |

1. INTRODUCTION

This classification report defines the resistance to fire classification assigned to a composite door type OHD-C in accordance with the procedures given in EN 13501-2:2016.

1.1 REVISION INFORMATION

This is the second issue of the report.

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL

The element, OHD-C, is defined as a sectional door set.

2.2 DESCRIPTION

The element, OHD-C, is fully described in the test reports in support of classification listed in 3.1.

2.3 TEST SPECIMEN

The test specimen was a sectional door set manufactured by Metaalwarenbedrijf Metacon B.V. type OHD-C.

3. TEST REPORTS AND TEST RESULTS IN SUPPORT OF THE CLASSIFICATION

3.1 TEST REPORTS

Table 3.1: Details test report

| Name of laboratory | Name of sponsor | Report ref. no | Test standard |
|---|------------------------------------|--------------------------|----------------------------|
| Efectis Nederland BV the Netherlands | Metaalwarenbedrijf Metacon B.V. | 2019-Efectis- R002300 | EN 1634-1:2014+ A1:2018 |
| Efectis Nederland BV the Netherlands | Metaalwarenbedrijf Metacon B.V. | 2020-Efectis- R000619 | EN 1634-1:2014+ A1:2018 |

3.2 TEST RESULTS

3.2.1 19000730 - 2019-Efectis-R002300 – Non-exposed side

| Time of reaching a criterion measured from the start of the test in accordance with EN 1634-1:2014 + A1:2018 | | |
|---|--------------------------------|--|
| Criterion | Time [min] | Result |
| Integrity (E) -Cotton pad -Gap gauge Ø 6 mm -Gap gauge Ø 25 mm -Sustained flaming > 10 seconds | | Not determined Not determined Not determined No Failure |
| Insulation (I) -Average temperature -Maximum temperature T extra -Maximum temperature I1 -Maximum temperature I2 -Roving thermocouple | 118 112 138 133 93 | Failure, TC 1 – 5 Failure, TC Tex4 Failure, TC 11 Failure, TC 26 Failure |
| Heat Radiation (W) | | No failure, max. 2.15 kW/m ² at 139 min. |
| The heating was terminated after 140 minutes after consulting the client. | | |

3.2.2 19001321 - R000619 – Exposed side

| Time of reaching a criterion measured from the start of the test in accordance with EN 1634-1:2014 + A1:2018 | | |
|---|-------------------|--|
| Criterion | Time [min] | Result |
| Integrity (E) -Cotton pad -Gap gauge Ø 6 mm -Gap gauge Ø 25 mm -Sustained flaming > 10 seconds | 105 119 | Failure Not determined Not determined Failure |
| Insulation (I) -Average temperature -Maximum temperature I ₁ -Maximum temperature I ₂ | 107 75 100 | Failure, TC 1 – 5 Failure TC 12 Failure TC 1 |
| Heat Radiation (W) | | No failure, max. 4.5 kW/m ² at 145 min. |
| The heating was terminated after 145 minutes after consulting the client. | | |

4. CLASSIFICATION AND FIELD OF APPLICATION

4.1 REFERENCE OF CLASSIFICATION

This classification has been carried out in accordance with Clause 7 of EN 13501-2:2016.

4.2 CLASSIFICATION

The element, OHD-C is classified according to combinations of performance parameters and classes as described in Clause 6.7 of EN 13501-2:2016.

4.2.1 2019-Efectis-R002300 – Non-exposed side

E120-C0, EI₁₉₀-C0, EI₂₉₀-C0 and EW120-C0

4.2.2 2020-Efectis-R000619 – Exposed side

E90-C0, EI₁₆₀-C0, EI₂₉₀-C0 and EW90-C0

4.2.1 Exposed and non-exposed side

E90-C0, EI₁₆₀-C0, EI₂₉₀-C0 and EW90-C0

C0 including ability to release according to EN 16034:2014, see report mentioned in § 3.1.

4.3 FIELD OF APPLICATION

4.4 GENERAL

The field of direct application defines the allowable changes to the test specimen following a successful fire resistance test. These variations can be applied automatically without the need for the sponsor to seek additional evaluation, calculation or approval.

NOTE When extended product size requirements are envisaged, the dimensions of certain components within the test specimen can be less than those intended to be used at full size in order to maximize the extrapolation of the test results by modelling the interaction between components at the same scale.

Where referred to annex B or annex C in this paragraph, the annexes in EN 1634-1+A1 are meant.

4.5 MATERIALS AND CONSTRUCTION

4.5.1 General

Unless otherwise stated in the following text, the materials and construction of the door set or openable window shall be the same as that tested. The number of leaves and the mode of operation (e.g. sliding, single action or double action) shall not be changed.

4.5.2 Specific restrictions on materials and construction

4.5.2.1 Metal construction

The type of metal shall not be changed from that tested.

4.5.3 Decorative finishes

4.5.3.1 Paint

Where the paint finish is not expected to contribute to the fire resistance of the door, alternative paints are acceptable and may be added to door leaves or frames for which unfinished test specimens were tested. Where the paint finish contributes to the fire resistance of the door (e.g. intumescent paints) then no change shall be permitted.

4.5.4 Fixings

The number of fixings per unit length used to attach door sets to supporting constructions may be increased but shall not be decreased and the distance between fixings may be reduced but shall not be increased.

4.5.5 Building hardware

The number of hinges and dog bolts may be increased but shall not be decreased.

NOTE 1 The number of movement restrictors such as locks and latches is not covered by direct application.

NOTE 2 Interchange of building hardware is not covered by the field of direct application.

4.6 PERMISSIBLE SIZE VARIATIONS

4.6.1 General

Door sets of sizes different from those of tested specimens are permitted within certain limitations, but the variations are dependent on product type and the length of time that the performance criteria are fulfilled.

The increase and decrease of dimensions permitted by the field of direct application are applicable to the overall size and to each door leaf, each side panel and each over panel independently.

4.6.2 Test periods

The amount of variation of size permitted is dependent on whether the classification time was just reached (Category 'A') or whether an extended time (Category 'B') in accordance with the values shown in Table 1 were fulfilled before the test was concluded.

For category 'B':

Table 7. 1: Category B overrun requirements for E and EI₂ and EW

| Classification time (min) | All performance criteria fulfilled for at least minutes |
|---------------------------|---|
| 15 | 18 |
| 20 | 24 |
| 30 | 36 |
| 45 | 52 |

| | |
|----|-----|
| 60 | 68 |
| 90 | 100 |

Table 7. 2: Category B overrun requirements for EI₁

| Classification time (min) | All performance criteria fulfilled for at least minutes |
|---------------------------|---|
| 15 | 18 |
| 20 | 24 |
| 30 | 36 |
| 45 | 52 |
| 60 | 68 |

4.6.3 Size variation related to product type

4.6.3.1 General

The rules to cover increase or decrease of size without additional considerations are applicable only to:

- a) horizontally sliding and vertically sliding door sets including sectional door sets

Doors that satisfy both the radiation control levels and insulation criteria may have their sizes increased as outlined in Annex B of EN 1634-1+A1. This is accepted because the increase in radiation resulting from a size increase allowed under this section, for an insulated door, will be such that it will still satisfy the required radiation control levels. Size decreases are permitted for both doors which satisfy radiation control levels and those which satisfy insulation criteria and radiation control levels.

Permissible variations for each product group are detailed in Annex B of EN 1634-1+A1.

4.6.3.2 Horizontally sliding and vertically sliding door sets including sectional doors

For size variations, see Annex B.

For Category 'A' tests (with no overrun of classification period) unlimited size reduction is permitted with the exception of insulated metal door sets where the size reduction is limited.

For Category 'B' tests (with specified overrun of classification period) all smaller sizes are permitted and increases in height and width are permitted as stated below:

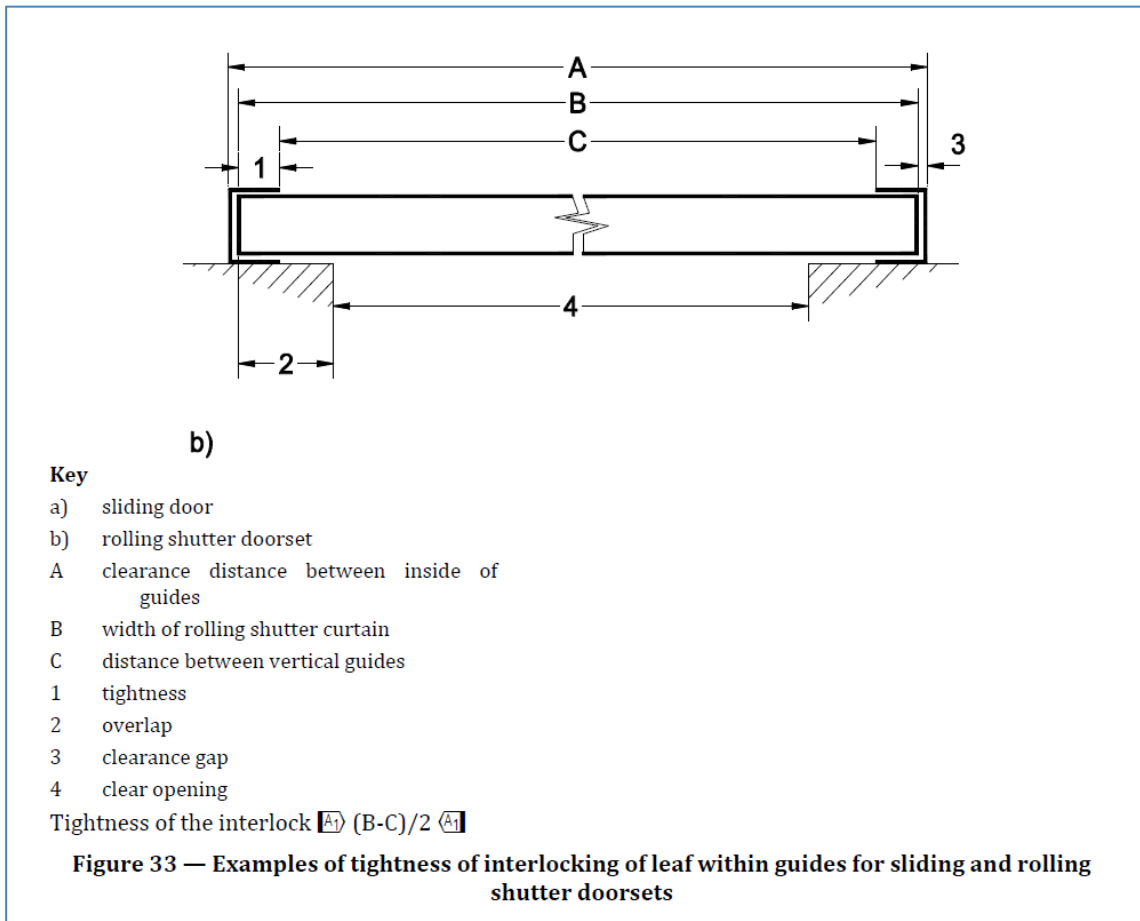
Category 'B' overrun is applicable for **E90, EI₁60, EI₁90 and EW90**

| Limits of permitted size increase ANNEX B | | | |
|---|-------|----------------------|--------|
| Width (mm) | 3586 | Increase width 50% | 5379 |
| Height (mm) | 4775 | Increase height 50% | 7162.5 |
| Total surface (m ²) | 17.12 | Increase surface 50% | 25.68 |

For test specimen with door leaves manufactured to the maximum size allowable in a standard 3.0 m by 3.0 m furnace, the height and/or the width can be increased provided that the area is not increased by more than 50%. Additionally, test specimens comprising joined panels shall

incorporate at least one full size panel with at least one example of each jointing technique for height and width as applicable.

Both of the above extensions to width and height are only permissible if the overlaps at the rear and head of the door are adjusted to increase the tightness of the interlock (shown in Figure 33 of EN 1634-1+A1) by 10 mm per metre of increase in size.



The maximum gap at the bottom of the door may be decreased from the maximum tested but shall not be increased above the maximum tested.

4.7 ASYMMETRICAL ASSEMBLIES

4.7.1 General

EN 1363-1 states that for separating elements required to be fire resisting from both sides, two test specimens shall be tested (one from each direction) unless the element is fully symmetrical, i.e. the construction of the door set is identical on both sides of the centre line when viewed in plan (from above). However, in some cases it is possible to develop rules whereby the fire resistance of an asymmetrical door assembly tested in one direction can apply when the fire exposure is from the other direction. The possibility to develop such rules increases if the consideration is limited to certain types of door assembly and on the criteria being applicable (e.g. integrity only doors). The following rules represent the minimum level of common agreement which shall be followed. The rationale behind the rules is given in Annex C of EN 1634-1+A1.

4.7.2 Specific rules

The rules governing the applicability of tests carried out in one direction to other directions are given in Table 2 and are based on the following premises:

- that each of the door leaves are themselves of symmetrical construction with the exception of the edges (e.g. lock/leading edge and hinge edge or double rebated doors);
- that any restraining/supporting elements of building hardware has been included in a test to EN 1634-1+A1 when exposed in both directions so that they will retain their function when exposed to the heat of the test;
- that there is no change in the number of leaves or the mode of operation (e.g. sliding, swinging, single action or double action);
- that side, over and transom panels are excluded from Table 2 unless they are fully symmetrical.

Table 7.3 lists the type of door assembly for which rules can be generated and gives the direction in which it should be tested to cover the opposite direction. The separate columns for the integrity and insulation criteria reflect the different ability to make rules for integrity only doors as opposed to those which satisfy both criteria. A 'Yes' means that it is possible to identify the direction of test which covers the opposite direction. A 'No' indicates that it is not possible to identify the direction which will cover the opposite direction.

Table 7.3: — Type of door set and direction to be tested to cover the opposite direction

| Type of door set | Direction to be tested to cover opposite direction | Integrity | Insulation | Radiation |
|------------------|---|-----------|------------|-----------|
| Sliding/folding | Sliding/folding supporting components fixed on the face of the supporting wall on the fire side | Yes | No | No |

4.8 SUPPORTING CONSTRUCTIONS

4.8.1 General

The fire resistance of a door assembly tested in one form of standard supporting construction may or may not apply when it is mounted in other types of construction. Generally, the rigid and flexible types are not interchangeable and rules governing the direct application within each group are given in 13.5.2 to 13.5.4 of EN 1634-1+A1.

4.8.2 Rigid standard supporting constructions (high or low density)

The fire resistance of a door set tested in a high or low density rigid standard supporting construction as specified in EN 1363-1:2020 can be applied to a door set mounted in the same manner in a wall provided the density and the thickness of the wall are equal to or greater than that in which the door set was tested.

5. LIMITATIONS

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



S. Lutz

Project leader smoke control & resistance to fire



P.W.M. Kortekaas

Senior project leader resistance to fire

APPENDIX: FIGURES

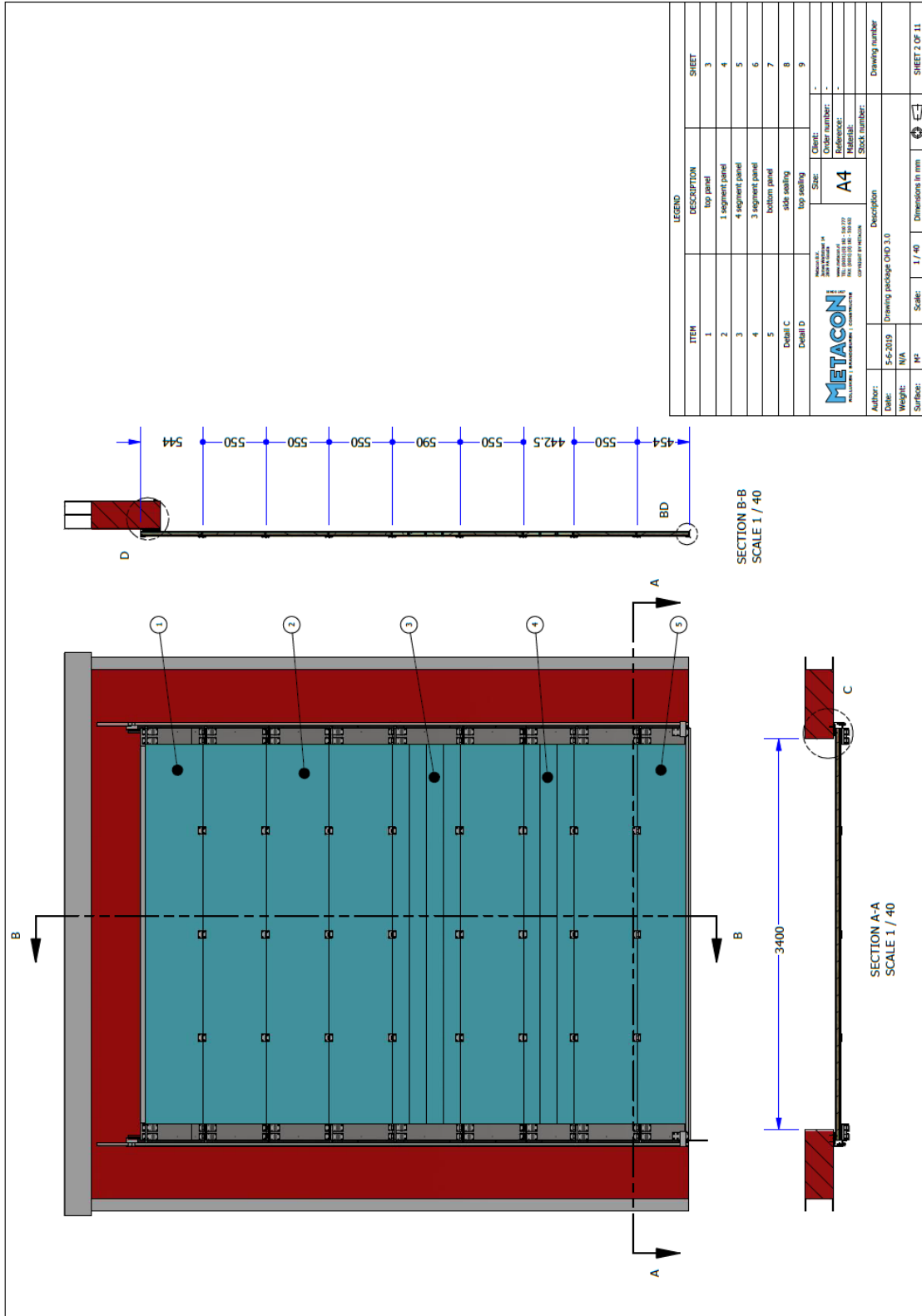


Figure 1 Overview test specimen