

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

Classification no.	2020-Efectis-R000841[Rev.5]
Sponsor	Metaalwarenfabriek Metacon B.V. Zuidbaan 450 2841 MD MOORDRECHT THE NETHERLANDS
Product name	RGC
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1. INTRODUCTION

This classification report defines the resistance to fire classification assigned to a steel rolling shutter type RGC in accordance with the procedures given in EN 13501-2:2016.

1.1 ACCREDITATION

Due to Dutch regulations, classification based on the Exap report 2020-Efectis-R000881[Rev.1] cannot be part of the accredited section of this document. Based on common practise agreed by the group of Notified Bodies EXAP reports and following classification will be judged based on 2 criteria:

- 1) Is the EXAP performed by a laboratory that performed at least one of the supported tests
- 2) Is the laboratory who performed the EXAP accredited for the respective test standard.

For this report Efectis Netherlands fulfills both requirements mentioned above.

1.2 REVISION INFORMATION

This is the sixth issue of the report. The classification tables in § 4.2.1 and § 4.4 have been amended.

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL

The element, RGC (Rolling Gate Composite), is defined as a rolling shutter assembly.

The rolling shutter assembly has been tested mounted on a standard low rigid supporting construction at the exposed and non-exposed side.

2.2 DESCRIPTION

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

2.3 TEST SPECIMEN

The test specimen was a steel rolling shutter assembly comprising composite panels from Metaalwarenfabriek Metacon B.V. type RGC.

3. TEST REPORTS / EXTENDED APPLICATION REPORTS AND TEST RESULTS IN SUPPORT OF 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	Metaalwarenfabriek Metacon B.V.	2019-Efectis- R001778[Rev.1]	EN 1634-1:2014+ A1:2018
Efectis Nederland BV the Netherlands	Metaalwarenfabriek Metacon B.V.	2019-Efectis- R002010[Rev.2]	EN 1634-1:2014+ A1:2018
Efectis Nederland BV the Netherlands	Metaalwarenfabriek Metacon B.V.	2020-Efectis- R001432	EN 12604:2017 EN 1191:2012

3.2 EXTENDED APPLICATION REPORTS

Name of laboratory	Name of sponsor	Report No.	Standard
Efectis Nederland BV the Netherlands	Metaalwarenbedrijf Metacon B.V.	2020-Efectis- R000881[Rev.1]	EN 15269-10:2011

3.3 TEST RESULTS RESISTANCE TO FIRE

3.3.1 19000934 - 2019-Efectis-R001778[Rev.1] – Exposed side

Time of reaching a criterion measured from the start of the test in accordance with EN 1634-1		
Criterion	Time (min.)	Result
Integrity (E) - Cotton pad - Gap gauge Ø 6 mm - Gap gauge Ø 25 mm - Sustained flaming > 10 seconds	74	Not determined Not determined Not determined Failure
Insulation (I) - Average temperature - Maximum temperature I ₁ - Maximum temperature I ₂		No Failure No Failure No Failure
Heat Radiation (W)		No failure, max. 0.49 kW/m ² at 75 min.
The heating was terminated after 75 minutes after consulting the client.		

3.3.2 19000345 - 2019-Efectis-R002010[Rev.2] – Non-exposed side

Time of reaching a criterion measured from the start of the test in accordance with EN 1634-1		
Criterion	Time [min]	Result
Integrity (E) -Cotton pad -Gap gauge Ø 6 mm -Gap gauge Ø 25 mm -Sustained flaming > 10 seconds	159	Not determined Not determined Not determined Failure
Insulation (I) -Average temperature -Maximum temperature I ₁ -Maximum temperature I ₂	116 130 130	Failure, TC 1 - 5 Failure due to failure of I ₂ Failure, TC 23
Heat Radiation (W)		No failure, max. 1.73 kW/m ² at 159 min.
The heating was terminated after 164 minutes after consulting the client.		

3.3.3 20000466 – 2020-Efectis-R001432

Resistance to repeated opening and closing	
Number of the cycles	≤ 1000
Distance of the cycles	3000/3500 mm

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

4.2.1 Fire resistance

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

FIRE RESISTANCE CLASSIFICATION:
E60-C1, EI₁60-C1, EI₂60-C1 and EW60-C1*
 mounted on the surface of a
 standard low rigid supporting construction

* C1 including ability to release according to EN 16034:2014, see reports mentioned in § 3.1.

4.3 FIELD OF APPLICATION

4.3.1 Field of direct application

4.3.1.1 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 are meant.

4.3.1.2 Materials and construction

4.3.1.2.1 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.

4.3.1.2.2 Decorative finishes

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.

Decorative laminates

Decorative laminates and timber veneers up to 1,5 mm thickness may be added to the faces (but not the edges) of doors that satisfy the insulation criteria (normal or supplementary procedure).

Decorative laminates and timber veneers applied to door leaves that do not satisfy the insulation criteria (normal or supplementary procedure) and/or those in excess of 1,5 mm thickness shall be tested as part of the test specimen. For all door sets tested with decorative laminate faces, the only variations possible shall be within similar types and thicknesses of material (e.g. for colour, pattern, supplier).

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.

4.3.1.3 Permissible size variations

4.3.1.3.1 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.

4.3.1.3.2 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 7.1 were fulfilled before the test was concluded.

For category 'B':

Table 7. 1: Category B overrun requirements for E and EI₁ and EI₂ only

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

4.3.1.4 Size variation related to product type

4.3.1.4.1 General

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

- a) rolling shutter door sets.

No increases in size are permitted for door sets which are required to satisfy radiation control levels unless the insulation criteria are also satisfied. This is because any increase in size will increase the radiation received at a fixed distance away from the door. There are calculation methods which can be used to determine acceptable size increases for such doors; however, these are beyond the scope of direct application. 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. 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.

4.3.1.4.2 Rolling shutter door sets

Rules for the direct field of application for rolling shutters are not applicable to water cooled rolling shutters. For size variations, see table 7.2 (Annex B of EN 1634-1). Unlimited size reduction is permitted.

Table 7. 2: Permitted size variations with overrun time 'B' (for E60, EI₁60, EI₂60)

Permitted size variations with overrun time 'B'			
Tested dimensions		Permitted size increase	
Width (mm)	3587	Width 10% (mm)	3946
Height (mm)	2670	Height 30% (mm)	3471

For insulated rolling shutters the material thickness shall not be varied beyond the tolerances on thickness accepted by the metal industry.

The material thickness of side guides and barrel carrying end plates may be increased by up to 50% but it shall not be reduced beyond acceptable metal industry tolerances.

The clearance between the end of the shutter laths and the inside faces of the guides shall be increased in proportion to the increase in width of the laths (see Figure 33 EN 1634-1). The tightness between the shutter curtain and the vertical guides and the overlap between the guides and the wall shall not be reduced for size decreases, but shall be increased at least proportionally for the increase in width (the measured distance between the inside of the vertical guide rail and the outside of the panel was 30 mm).

4.3.2 Asymmetrical assemblies

4.3.2.1 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.

4.3.2.1.1 Specific rules

The rules governing the applicability of tests carried out in one direction to other directions are given in Table 7.3 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 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 7.3 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
Rolling shutter	Barrel and supporting components fixed on the face of the supporting wall on the fire side	Yes	No	No

4.3.3 Supporting constructions

4.3.3.1 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 EN 1634-1.

4.3.3.1.1 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 1634-1 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.

4.4 EXTENDED APPLICATION

The stress in the various loadbearing components including fixings of the tested rolling shutter assembly has been calculated using the methodology as stated in the EXAP standard EN 15269-10:2011. Based on this approach it is concluded that the rolling shutter assembly type RGC, as tested and described in Efectis Nederland test and Exap report mentioned in § 3.1 and § 3.2, will have a classification of:

FIRE RESISTANCE OF:
E60, EI₁60 and EI₂60 and EW60
Maximum dimensions 9283 x 8698 mm (width x height from floor level to centre line of barrel)

5. LIMITATIONS

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



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APPENDIX: FIGURES

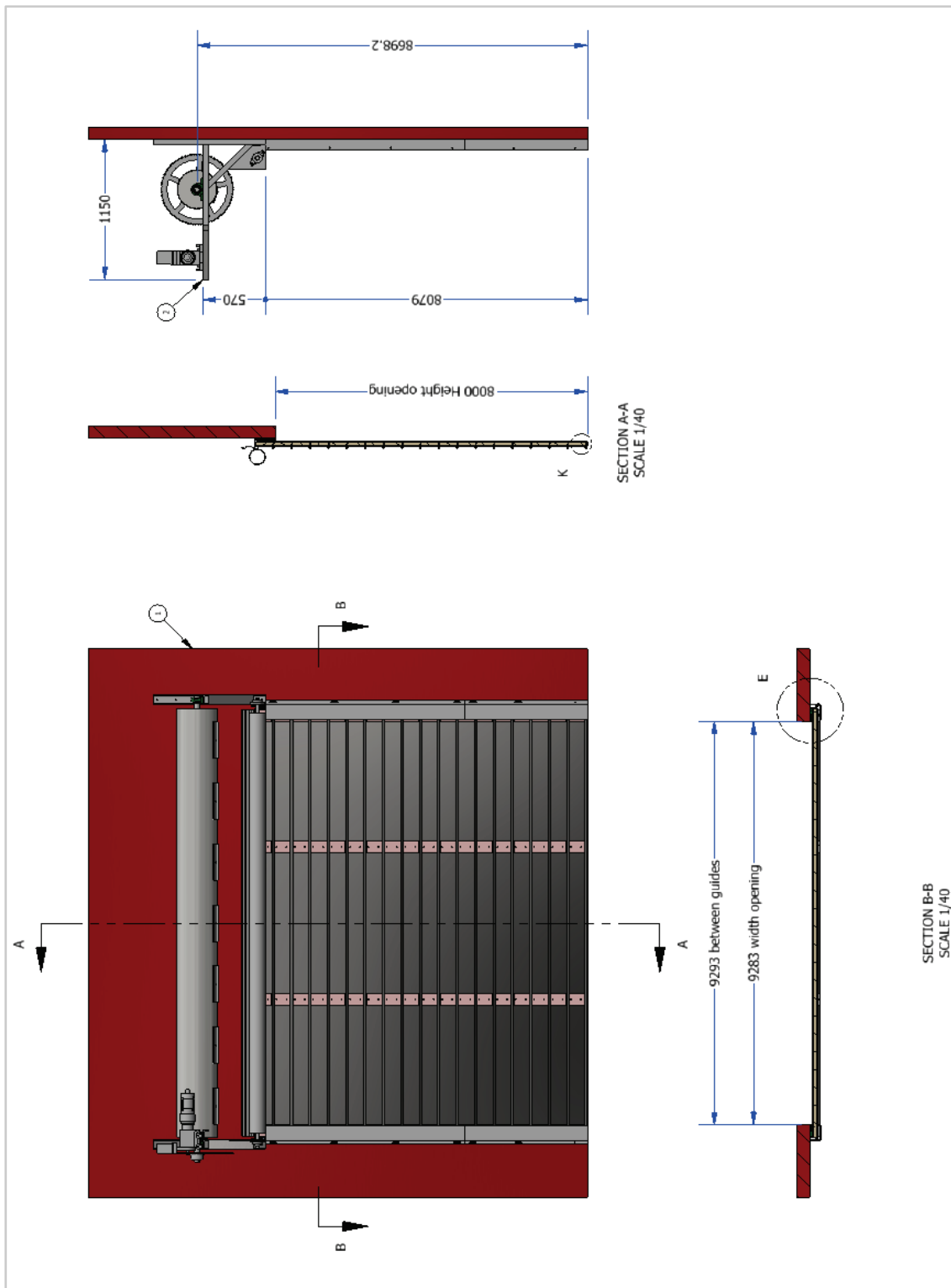


Figure 1 Overview of the rolling shutter assembly and the upscaled dimensions