

AUDIT RECORD No. FID/03904B01/KCO/25-032/A – 2025.12.22

Applicant

COBAD BV ZEVENEKEN-DORP 93 B- 9080 LOCHRISTI gert-jan@cobad.be	<u>ANPI Ref.</u> : S2510263 - Warringtonfire - INS - X <u>Order No</u> : BE02100332PO DD 05/12/25 <u>Contact person</u> : Dhr Biebaut Gert-Jan <u>Tel.</u> : +32 9 328 90 99 <u>Fax.</u> : /
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Assignment

<u>Object</u> : Audit general fire safety and determination of fire class	
<u>Interested party</u> Warringtonfire Ottergemsesteenweg Zuid 117 B-9000 Ghent	<u>Contact person</u> : Dhr. LiewelynJones Dafydd <u>Tel.</u> : / <u>Email</u> : L
	<u>Inspected building / Zone(s)</u> Laboratory - Conditioning - Offices

Regulations

<u>Basic rules</u> KB Basisnormen Brandpreventie 01/03/2009 Appendix 6: Industrial Buildings ARAB Art. 52 Codex Wellbeing at Work book III, title 3 - Fire prevention
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Date of inspection: 21.11.2025

Results

- At the time of the inspection, the following results were obtained, taking into account the nature of the inspection, within the limits of the order given by the applicant, in accordance with the requirements set out in this report.
- The result of this inspection only remains valid insofar as the purpose of the building is not changed or no structural modifications are carried out.

Kris Collier
Auditor
0474/91.40.92

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EVALUATION

1. DESCRIPTION

1.1 Assignment

Our assignment was to assess the general fire safety in the Warringtonfire building in Ghent in function of the legal framework and on the basis of the determination of the normative fire load in the industrial hall.

1.2 Legal framework

The following regulations are required by law:

-  General Regulations for Employment Protection; Art. 52: Fire prevention and fighting;
-  Title 3 of Book III of the Code on fire prevention at the workplace.

Indicative:

-  Royal Decree of 01 March 2009, amending the Royal Decree of 7 July 1994 laying down the basic standards for the prevention of fire and explosion with which new buildings must comply, more specifically Annex 6: Industrial Buildings.

The calculation of the normative fire load in the room was carried out in accordance with the method described in NBN EN 1991-1-2, Appendix E.

Findings:

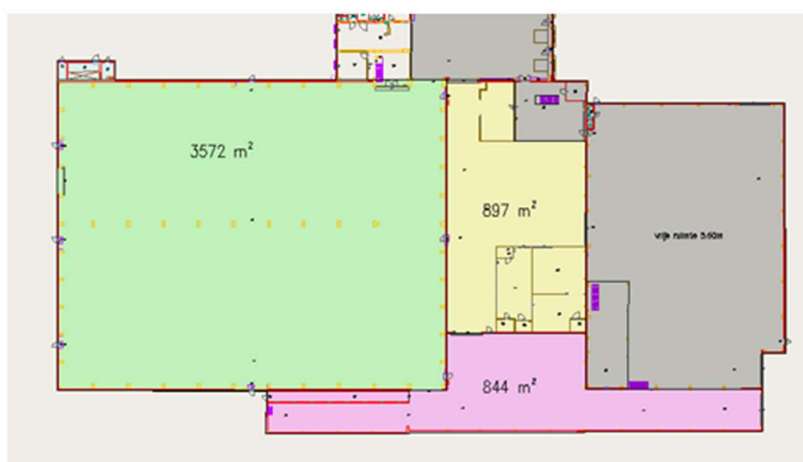
Industrial building where tests of reaction to fire and fire resistance of building materials are carried out.

Since this is a workplace, the requirements of the Codex Book III, Title 3 – Fire Prevention apply.

1.3 Building description

It is an industrial building: existing building, made up of a concrete wall.

The project laboratory green zone (surface area 3572m²) consists of a test zone with ovens for testing the reaction to fire and temporary spaces for testing fire resistance and storage of material. In the yellow zone Conditioning (surface 897m²) the tests are prepared and storage of material. In the red zone Offices (surface area 897m²) there is room for the clients to carry out their administrative work linked to the tests and storage of material to be carried out.



Access is not open to the public.

The building is located in an industrial zone.

2. EVALUATION

2.1 Fire cargo

The table below shows the meaning of the symbols and units used in Appendix 6 - Industrial Buildings.

Symbolen	Eenheden	Terminologie N	Terminologie F
Q	MJ	Brandlast	Charge calorifique totale
Q_{var}	MJ	Variabele brandlast	Charge calorifique variable
Q_{perm}	MJ	Permanente brandlast	Charge calorifique permanente
$q_{f,k}$	MJ/m ²	Karakteristieke brandbelasting	Densité de charge calorifique caractéristique
$q_{f,cl}$	MJ/m ²	Maatgevende brandbelasting	Densité de charge calorifique déterminante
$q_{f,d}$	MJ/m ²	Ontwerpbrandbelasting	Densité de charge calorifique de calcul

Tabel 1

To calculate the characteristic fire load ($q_{f,k}$), one must take into account the entire content of the building or compartment, called the variable fire load, and all construction elements, called the permanent fire load. The characteristic fire load is a measure of the maximum energy released in the event of a fire per unit area and is expressed in MJ/m².

$$q_{f,k} = \frac{\sum_i M_i \cdot H_{ui} \cdot \Psi_i}{A}$$

Where:

A , the area of the compartment is [m²]

$\sum_i$, the sum is of the contributions of each combustible material i

M_i , the mass [kg] is of the material i that is present for 80% of the time

H_{ui} , the net heat of combustion [MJ/kg] is of the material i , determined according to (NBN EN ISO 1716:2002)

Ψ_i , is the protection factor, which allows to take into account the protection of the material i against fire.

2.1.1 The variable fire load

The mass of the material will vary constantly, so it is impossible to calculate the exact amount of combustible materials. Then the correspondence with Mr. Biebaut Gert-Jan, we determined the variable fire load in function of a conversion factor with regard to the net combustion heat. The net heat of combustion is the maximum amount of energy (MJ/kg) that is released in the event of combustion (excl. latent energy in water vapour) and which is determined by the calorimetric bomb method according to standard NBN EN ISO 1716:2002. The values for the different materials and substances used in Appendix 2 of this report are known values that can be found in the literature. For our calculation, average net calorific values were taken as a function of comparable product groups.

The protection factor Ψ_i allows the protection of the material i against fire to be taken into account. It is a value that lies between 0 (complete protection during the course of a fire) and 1 (no protection at all). For example, flammable materials that are stored in closed spaces, containers, metal cabinets, etc. can be taken into account. and therefore enjoy a certain protection in the event of fire. According to the rules of good workmanship, the DIN 18230-1 standard was used for this purpose.

2.1.2 The permanent fire load

The permanent fire load takes into account all combustible construction elements, including coverings and finishing. The construction elements that do not contribute to a fire are not taken into account. With

regard to the calculation of the characteristic fire blast at WaringtonFire in Ghent, the permanent fire load was not taken into account as its share is negligible compared to the variable fire load.

2.1.3 The normative fire load

This is the burning load per unit area that takes into account the partial or total combustion of the materials. It corresponds to the fire load that forms the basis of the classification of industrial buildings (A, B or C) in accordance with Annex 6.

$$q_{f,cl} = m \cdot q_{f,k}$$

Where:

m: is a combustion coefficient,

$q_{f,k}$: characteristic fire load (permanent and variable fire load).

The coefficient 'm' takes into account a total or partial combustion of the materials present, depending on their shape, arrangement, density and moisture. We can assume that in the case of most cellulosic fires, 'm' is equal to 0.8. According to the rules of good workmanship, the DIN 18230-3 standard was used for this purpose.

2.1.4 Calculated fire load hall Laboratory (green zone) – Appendix

The result of our calculations led to a normative fire load:

$$\begin{aligned} q_{f,cl} &= 1 \times 65 \text{ MJ/m}^2 \\ &= 65 \text{ MJ/m}^2 \\ &= \text{CLASS A.} \end{aligned}$$

2.1.5 Calculated fire load hall Conditioning (zone yellow) – Appendix

The result of our calculations led to a normative fire load:

$$\begin{aligned} q_{f,cl} &= 1 \times 210 \text{ MJ/m}^2 \\ &= 210 \text{ MJ/m}^2 \\ &= \text{CLASS A.} \end{aligned}$$

2.1.6 Calculated fire load hall Offices (zone red) – Appendix

The result of our calculations led to a normative fire load:

$$\begin{aligned} q_{f,cl} &= 1 \times 182 \text{ MJ/m}^2 \\ &= 182 \text{ MJ/m}^2 \\ &= \text{CLASS A.} \end{aligned}$$

CONCLUSIONS

The industrial building and all parts thereof can be classified in the following class depending on the normative fire load $q_{f,cl}$: Class A $q_{f,cl} \leq 350 \text{ MJ/m}^2$

The minimum fire resistance of the structural elements type I for a building or part of a class A building is: R 60; The roofing of the industrial building belongs to class BROOF (t1).

The compartment walls, both horizontal and vertical, have a fire resistance that is at least equal to the fire resistance EI 120

The openings in the compartment walls necessary for the passage of users and vehicles are closed with self-closing doors or self-closing doors with a fire resistance EI1 60.

Industrial buildings are equipped with a suitable automatic fire detection system in accordance with the NBN S21-100 of the general surveillance type.

The operation and operation of the various active fire protection systems of the building are supervised from a central control and control station.

Since this is a workplace, the requirements of the Codex book III, title 3 – fire prevention do apply.

The operator of the industrial building must make the necessary information available to the fire brigade for the preparation of an intervention plan for the industrial building.

Attachments:

RCO 25-032A COBAD BV - Warrington Fire Gent FIRE CLASS GEB 1_AN_1_KCO
