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COMMISSION DECISION

of 8 February 2000

implementing Council Directive 89/106/EEC as regards the classification of the reaction to fire performance of construction products

(notified under document number C(2000) 133)

(Text with EEA relevance)

(2000/147/EC)

(OJ L 50, 23.2.2000, p. 14)

Amended by:

		Official Journal		
		No	page	date
►**M1**	Commission Decision 2003/632/EC of 26 August 2003	L 220	5	3.9.2003
►**M2**	Commission Decision 2006/751/EC of 27 October 2006	L 305	8	4.11.2006

Corrected by:

►**C1** Corrigendum, OJ L 85, 24.3.2001, p. 43 (2000/147)

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COMMISSION DECISION

of 27 October 2006

amending Decision 2000/147/EC implementing Council Directive 89/106/EEC as regards the classification of the reaction-to-fire performance of construction products

(notified under document number C(2006) 5063)

(Text with EEA relevance)

(2006/751/EC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products ([1]), as amended by Directive 93/68/EEC ([2]), and in particular Articles 3, 6 and 20 thereof,

Whereas:

(1) Article 3(2) and (3) of Directive 89/106/EEC state that in order to take account of different levels of protection for the construction works that may prevail at national, regional or local levels, each essential requirement may give rise to the establishment of classes in the interpretative documents. These documents have been published as the

'Communication of the Commission with regard to the interpretative documents of Council Directive 89/106/EEC ([3])'.

(2) Paragraph 4.2.1 of interpretative document No 2 justifies the need for different levels of the essential requirement as function of the type, use and location of the construction work, its layout and the availability of the emergency facilities.

(3) Paragraph 2.2 of interpretative document No 2 lists a number of interrelated measures for the satisfaction of the essential requirement, 'Safety in case of fire' that together contribute to define the fire safety strategy that can be developed in different ways in Member States.

(4) Paragraph 4.2.3.3 of interpretative document No 2 identifies one of these measures prevailing in Member States that consists in the limitation of the generation and spread of fire and smoke within the room of origin (or in a given area) by limiting the contribution of construction products to the full development of a fire.

(5) The definition of classes of the essential requirement partially depends on the level of such a limitation.

(6) The level of this limitation may be expressed only by different levels of reaction to fire performance of the products in their end-use application.

(7) Paragraph 4.3.1.1 of the interpretative document No 2 specifies that to enable the reaction to fire performance of products to be evaluated, a harmonised solution will be developed which may utilise full or bench scale tests that are correlated to relevant real fire scenarios.

([1]) OJ L 40, 11.2.1989, p. 12.
([2]) OJ L 220, 30.8.1993, p. 1.
([3]) OJ C 62, 28.2.1994, p. 1.

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(8) The harmonised solution lies in a system of classes that are not included in the interpretative document.

(9) The system of classes identified for this purpose refers to a number of test methods already known to the European standardisation bodies.

(10) Commission Decision 94/611/EC of 9 September 1994 on the application of Article 20 of Directive 89/106/EEC relating to construction products ([1]), which describes the system of classes, does not indicate the thresholds of classes B, C and D, as the single burning item test was not sufficiently well developed at that time.

(11) The relevant data are now available and Decision 94/611/EC should therefore be replaced by a new decision which includes the thresholds of the classes and some adaptations to technical progress. Alternative test procedures should be fully described in a future European standard, or Commission decision, on the basis of an agreement between the Commission and the Member States, in consultation with CEN/CENELEC and EOTA.

(12) The measures provided for in this Decision are in accordance with the opinion of the Standing Committee on Construction,

HAS ADOPTED THIS DECISION:

Article 1

1. When the end-use application of a construction product is such that it may contribute to the generation and spread of fire and smoke within the room (or area) of origin or beyond, the product shall be classified on the basis of its reaction to fire performance, having regard to the classification system set out in Tables 1 and 2 of the Annex.

2. Products shall be considered in relation to their end-use application.

If the classification based on the standardised tests and criteria listed in Tables 1 and 2 of the Annex is not appropriate, one or more reference scenarios (representative scale test(s) typifying agreed hazard scenario (s)) may be called on, within the context of a procedure providing for alternative tests.

Article 2

Decision 94/611/EC is hereby repealed.

References to the repealed Decision shall be construed as references to this Decision.

Article 3

This Decision is addressed to the Member States.

([1]) OJ L 241, 16.9.1994, p. 25.

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ANNEX

Symbols ([1])

ΔT	temperature rise
Δm	mass loss
t_f	duration of flaming
PCS	gross calorific potential
FIGRA	fire growth rate
THR_{600s}	total heat release
LFS	lateral flame spread
SMOGRA	smoke growth rate
TSP_{600s}	total smoke production
Fs	flame spread

Definitions

‘Material’: a single basic substance or uniformly dispersed mixture of substances, for example metal, stone, timber, concrete, mineral wool with uniformly dispersed binder, polymers.

‘Homogeneous product’: a product consisting of a single material, having uniform density and composition throughout the product.

‘Non-homogeneous product’: a product that does not satisfy the requirements of a homogeneous product. It is a product composed of one or more components, substantial and/or non-substantial.

‘Substantial component’: a material that constitutes a significant part of a non-homogeneous product. A layer with a mass per unit area $\geq$ 1,0 kg/m^2 or a thickness $\geq$ 1,0 mm is considered to be a substantial component.

‘Non-substantial component’: a material that does not constitute a significant part of a non-homogeneous product. A layer with a mass per unit area $<$ 1,0 kg/m^2 and a thickness $<$ 1,0 mm is considered to be a non-substantial component.

Two or more non-substantial layers that are adjacent to each other (i.e. with no substantial component(s) in-between the layers) are regarded as one non-substantial component and, therefore, must altogether comply with the requirements for a layer being a non-substantial component.

For non-substantial components, distinction is made between internal non-substantial components and external non-substantial components, as follows.

‘Internal non-substantial component’: a non-substantial component that is covered on both sides by at least one substantial component.

‘External non-substantial component’: a non-substantial component that is not covered on one side by a substantial component.

([1]) The characteristics are defined with respect to the appropriate test method.

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Table 1

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CLASSES OF REACTION-TO-FIRE PERFORMANCE FOR CONSTRUCTION PRODUCTS EXCLUDING FLOORINGS, LINEAR PIPE THERMAL INSULATION PRODUCTS, AND ELECTRIC CABLES

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Class	Test method(s)	Classification criteria	Additional classification
A1	EN ISO 1182 (1) and	$\Delta T \leq 30$ °C; and $\Delta m \leq 50$ %; and $t_f = 0$ (i.e. no sustained flaming)	—
	EN ISO 1716	PCS ≤ 2,0 MJ.kg^{-1} (1) and PCS ≤ 2,0 MJ.kg^{-1} (2) (2a) and PCS ≤ 1,4 MJ.m^{-2} (3) and PCS ≤ 2,0 MJ.kg^{-1} (4)	—
A2	EN ISO 1182 (1) or	$\Delta T \leq 50$ °C and $\Delta m \leq 50$ % and $t_f \leq 20$s	—
	EN ISO 1716 and	PCS ≤ 3,0 MJ.kg^{-1} (1) and PCS ≤ 4,0 MJ.m^{-2} (2) and PCS ≤ 4,0 MJ.m^{-2} (3) and PCS ≤ 3,0 MJ.kg^{-1} (4)	—
	EN 13823 (SBI)	FIGRA ≤ 120 W.s^{-1} and LFS < edge of specimen and $THR_{600s} \leq 7,5$ MJ	Smoke production (5), and flaming droplets/particles (6)
B	EN 13823 (SBI) and	FIGRA ≤ 120 W.s^{-1} and LFS < edge of specimen and $THR_{600s} \leq 7,5$ MJ	Smoke production (5), and flaming droplets/particles (6)
	EN ISO 11925-2 (8) *Exposure = 30s*	Fs ≤ 150 mm within 60s	
C	EN 13823 (SBI) and	FIGRA ≤ 250 W.s^{-1} and LFS < edge of specimen and $THR_{600s} \leq 15$ MJ	Smoke production (5), and flaming droplets/particles (6)
	EN ISO 11925-2 (8): *Exposure = 30s*	Fs ≤ 150 mm within 60s	
D	EN 13823 (SBI) and	FIGRA ≤ 750 W.s^{-1}	Smoke production (5), and flaming droplets/particles (6)
	EN ISO 11925-2 (8): *Exposure = 30s*	Fs ≤ 150 mm within 60s	
E	EN ISO 11925-2 (8) *Exposure = 15s*	Fs ≤ 150 mm within 20s	Flaming droplets/particles (7)
F	No performance determined		

►M2 ——————— ◄

(1) For homogeneous products and substantial components of non-homogeneous products.

(2) For any external non-substantial component of non-homogeneous products.

(2a) Alternatively, any external non-substantial component having a PCS ≤ 2,0 MJ.m^{-2}, provided that the product satisfies the following criteria of EN 13823 (SBI): FIGRA ≤ 20 W.s^{-1}; and LFS < edge of specimen, and ►C1 THR_{600s} ◄ ≤ 4,0 MJ and s1 and d0.

(3) For any internal non-substantial component of non-homogeneous products.

(4) For the product as a whole.

(5) s1 = SMOGRA ≤ 30m^2.s^{-2} and ►C1 TSP_{600s} ◄ ≤ 50m^2; s2 = SMOGRA ≤ 180m^2.s^{-2} and $TSP_{600s} \leq 200$m^2; s3 = not s1 or s2.

(6) d0 = No flaming droplets/particles in EN 13823 (SBI) within 600s; d1 = no flaming droplets/particles persisting longer than 10s in EN 13823 (SBI) within 600s; d2 = not d0 not d1; ignition of the paper in EN ISO 11925-2 results in a d2 classification.

(7) Pass = no ignition of the paper (no classification); fail = ignition of the paper (d2 classification).

(8) Under conditions of surface flame attack and, if appropriate to the end-use application of the product, edge flame attack.

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Table 2

CLASSSES OF REACTION TO FIRE PERFORMANCE FOR FLOORINGS

Class	Test method(s)	Classification criteria	Additional classification
$A1_{FL}$	EN ISO 1182 (1) and	$\Delta T \leq 30$ °C and $\Delta m \leq 50$ % and $t_f = 0$ (i.e. no sustained flaming)	—
	EN ISO 1716	PCS ≤ 2,0 $MJ.kg^{-1}$ (1) and PCS ≤ 2,0 $MJ.kg^{-1}$ (2) and PCS ≤ 1,4 $MJ.m^{-2}$ (3) and PCS ≤ 2,0 $MJ.kg^{-1}$ (4)	—
$A2_{FL}$	EN ISO 1182 (1) or	$\Delta T \leq 50$ °C and $\Delta m \leq 50$ % and $t_f \leq 20s$	—
	EN ISO 1716 and	PCS ≤ 3,0 $MJ.kg^{-1}$ (1) and PCS ≤ 4,0 $MJ.m^{-2}$ (2) and PCS ≤ 4,0 $MJ.m^{-2}$ (3) and PCS ≤ 3,0 $MJ.kg^{-1}$ (4)	—
	EN ISO 9239-1 (5)	Critical flux (6) ≥ 8,0 $kW.m^{-2}$	Smoke production (7)
B_{FL}	EN ISO 9239-1 (5) and	Critical flux (6) ≥ 8,0 $kW.m^{-2}$	Smoke production (7)
	EN ISO 11925-2 (8) *Exposure = 15s*	►C1 Fs ≤ 150 mm within 20s ◄	
C_{FL}	EN ISO 9239-1 (5) and	Critical flux (6) ≥ 4,5 $kW.m^{-2}$	Smoke production (7)
	EN ISO 11925-2 (8) *Exposure = 15s*	Fs ≤ 150 mm within 20s	
D_{FL}	EN ISO 9239-1 (5) and	Critical flux (6) ≥ 3,0 $kW.m^{-2}$	Smoke production (7)
	EN ISO 11925-2 (8) *Exposure = 15s*	Fs ≤ 150 mm within 20s	
E_{FL}	EN ISO 11925-2 (8) *Exposure = 15s*	Fs ≤ 150 mm within 20s	
F_{FL}	No performance determined		

(1) For homogeneous products and substantial components of non-homogeneous products.
(2) For any external non-substantial component of non-homogeneous products.
(3) For any internal non-substantial component of non-homogeneous products.
(4) For the product as a whole.
(5) Test duration = 30 minutes.
(6) Critical flux is defined as the radiant flux at which the flame extinguishes or the radiant flux after a test period of 30 minutes, whichever is the lower (i.e. the flux corresponding with the furthest extent of spread of flame).
(7) s1 = Smoke ≤ 750 %.min; s2 = not s1.
(8) Under conditions of surface flame attack and, if appropriate to the end-use application of the product, edge flame attack.

▼M1

Table 3

CLASSES OF REACTION-TO-FIRE PERFORMANCE FOR LINEAR PIPE THERMAL INSULATION PRODUCTS

Class	Test method(s)	Classification criteria	Additional classification
$A1_L$	EN ISO 1182 (1); and	$\Delta T \leq 30$ °C; and $\Delta m \leq 50$ %; and $t_f = 0$ (i.e. no sustained flaming)	—
	EN ISO 1716	PCS ≤ 2,0 MJ.kg^{-1} (1); and PCS ≤ 2,0 MJ.kg^{-1} (2); and PCS ≤ 1,4 MJ.m^{-2} (3); and PCS ≤ 2,0 MJ.kg^{-1} (4)	—
$A2_L$	EN ISO 1182 (1); or	$\Delta T \leq 50$ °C; and $\Delta m \leq 50$ %; and $t_f \leq 20$s	—
	EN ISO 1716; and	PCS ≤ 3,0 MJ.kg^{-1} (1); and PCS ≤ 4,0 MJ.m^{-2} (2); and PCS ≤ 4,0 MJ.m^{-2} (3); and PCS ≤ 3,0 MJ.kg^{-1} (4)	—
	EN 13823 (SBI)	FIGRA ≤ 270 W.s^{-1}; and LFS < edge of specimen; and $THR_{600s} \leq 7,5$ MJ	Smoke production (5); and Flaming droplets/particles (6)
B_L	EN 13823 (SBI); and	FIGRA ≤ 270 W.s^{-1}; and LFS < edge of specimen; and THR600s ≤ 7,5 MJ	Smoke production (5); and Flaming droplets/particles (6)
	EN ISO 11925-2 (8): Exposure = 30s	Fs ≤ 150mm within 60s	
C_L	EN 13823 (SBI); and	FIGRA ≤ 460 W.s^{-1}; and LFS < edge of specimen; and $THR_{600s} \leq 15$ MJ	Smoke production (5); and Flaming droplets/particles (6)
	EN ISO 11925-2 (8): Exposure = 30s	Fs ≤ 150mm within 60s	
D_L	EN 13823 (SBI); and	FIGRA ≤ 2100 W.s^{-1} $THR_{600s} \leq 100$ MJ	Smoke production (5); and Flaming droplets/particles (6)
	EN ISO 11925-2 (8): Exposure = 30s	Fs ≤ 150mm within 60s	
E_L	EN ISO 11925-2(8): Exposure = 15s	Fs ≤ 150mm within 20s	Flaming droplets/particles (7)
F_L	No performance determined		

(1) For homogeneous products and substantial components of non-homogeneous products.
(2) For any external non-substantial component of non-homogeneous products.
(3) For any internal non-substantial component of non-homogeneous products.
(4) For the product as a whole.
(5) s1 = SMOGRA ≤ 105 m^2.s^{-2} and $TSP_{600s} \leq 250$ m^2; s2 = SMOGRA ≤ 580 m^2.s^{-2} and $TSP_{600s} \leq 1600$ m^2; s3 = not s1 or s2.
(6) d0 = No flaming droplets/particles in EN13823 (SBI) within 600s; d1 = No flaming droplets/particles persisting longer than 10s in EN13823 (SBI) within 600s; d2 = not d0 or d1; ignition of the paper in EN ISO 11925-2 results in a d2 classification.
(7) Pass = no ignition of the paper (no classification); fail = ignition of the paper (d2 classification).
(8) Under conditions of surface flame attack and, if appropriate to end-use application of product, edge flame attack.

▼M2

Table 4

CLASSES OF REACTION-TO-FIRE PERFORMANCE FOR ELECTRIC CABLES

Class	Test method(s)	Classification criteria	Additional classification
A_{ca}	EN ISO 1716	PCS ≤ 2,0 MJ/kg (1)	
$B1_{ca}$	$FIPEC_{20}$ Scen 2 (5) *and*	FS ≤ 1,75 m *and* $THR_{1\ 200s}$ ≤ 10 MJ *and* Peak HRR ≤ 20 kW *and* FIGRA ≤ 120 Ws^{-1}	Smoke production (2) (6) and Flaming droplets/particles (3) and Acidity (4) (8)
	EN 60332-1-2	H ≤ 425 mm	
$B2_{ca}$	$FIPEC_{20}$ Scen 1 (5) *and*	FS ≤ 1,5 m *and* $THR_{1\ 200s}$ ≤ 15 MJ *and* Peak HRR ≤ 30 kW *and* FIGRA ≤ 150 Ws^{-1}	Smoke production (2) (7) and Flaming droplets/particles (3) and Acidity (4) (8)
	EN 60332-1-2	H ≤ 425 mm	
C_{ca}	$FIPEC_{20}$ Scen 1 (5) *and*	FS ≤ 2,0 m *and* $THR_{1\ 200s}$ ≤ 30 MJ *and* Peak HRR ≤ 60 kW *and* FIGRA ≤ 300 Ws^{-1}	Smoke production (2) (7) and Flaming droplets/particles (3) and Acidity (4) (8)
	EN 60332-1-2	H ≤ 425 mm	
D_{ca}	$FIPEC_{20}$ Scen 1 (5) *and*	$THR_{1\ 200s}$ ≤ 70 MJ *and* Peak HRR ≤ 400 kW *and* FIGRA ≤ 1 300 Ws^{-1}	Smoke production (2) (7) and Flaming droplets/particles (3) and Acidity (4) (8)
	EN 60332-1-2	H ≤ 425 mm	
E_{ca}	EN 60332-1-2	H ≤ 425 mm	
F_{ca}	No performance determined		

(1) For the product as a whole, excluding metallic materials, and for any external component (i.e. sheath) of the product.

(2) **s1**= $TSP_{1\ 200} \leq 50\ m^2$ *and* Peak SPR ≤ 0,25 m^2/s
s1a= **s1** and transmittance in accordance with EN 61034-2 ≥ 80 %
s1b= **s1** and transmittance in accordance with EN 61034-2 ≥ 60 % < 80 %
s2= $TSP_{1\ 200} \leq 400\ m^2$ *and* Peak SPR ≤ 1,5 m^2/s
s3= not s1 or s2

(3) For $FIPEC_{20}$ Scenarios 1 and 2: **d0** = No flaming droplets/particles within 1 200 s; **d1** = No flaming droplets/particles persisting longer than 10 s within 1 200 s; **d2** = not d0 or d1.

(4) EN 50267-2-3: **a1** = conductivity < 2,5 µS/mm *and* pH > 4,3; **a2** = conductivity < 10 µS/mm *and* pH > 4,3; **a3** = not a1 or a2. No declaration = No Performance Determined.

(5) Air flow into chamber shall be set to 8 000 ± 800 l/min.
$FIPEC_{20}$ Scenario 1 = prEN 50399-2-1 with mounting and fixing as below
$FIPEC_{20}$ Scenario 2 = prEN 50399-2-2 with mounting and fixing as below

(6) The smoke class declared for class $B1_{ca}$ cables must originate from the $FIPEC_{20}$ Scen 2 test.

(7) The smoke class declared for class $B2_{ca}$, C_{ca}, D_{ca} cables must originate from the $FIPEC_{20}$ Scen 1 test.

(8) Measuring the hazardous properties of gases developed in the event of fire, which compromise the ability of the persons exposed to them to take effective action to accomplish escape, and not describing the toxicity of these gases.

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MOUNTING AND FIXING CONDITIONS AND DEFINITIONS OF TEST PARAMETERS REGARDING ELECTRIC CABLES (AS MENTIONED IN FOOTNOTE ([5]) OF TABLE 4)

1. **Mounting and fixing conditions**

1.1. *Mounting of the test sample general for classes $B1_{ca}$, $B2_{ca}$, C_{ca} and D_{ca}*

The cables shall be mounted on the front of a standard ladder (EN 50266-1). Lengths of 3,5 m of cables shall be used. The lower part of the electric cables shall be 20 cm under the lower edge of the burner. The cables shall be positioned in the middle of the ladder (with respect to its width).

Each test piece or bundle shall be attached individually to each rung of the ladder by means of a metal wire (steel or copper). For electric cables up to and including 50 mm diameter, use wire between 0,5 mm and up to and including 1,0 mm in diameter. For cables above 50 mm diameter use wire between 1,0 mm and 1,5 mm in diameter.

When mounting the test pieces, the first test piece shall be positioned approximately in the centre of the ladder and further test pieces shall be added on either side so that the whole array of test pieces is approximately centred on the ladder.

The spacing and bundling is explained further below.

At each height of 25 cm a horizontal line shall be drawn in order to measure the flame spread as a function of time. The first line (i.e. zero line) shall be at the same height as the burner.

The cables shall be mounted as follows depending on the classification that is applied for.

1.1.1. Class $B2_{ca}$, C_{ca} and class D_{ca}

The selected mounting procedure depends on the electric cable diameter according to Table 4.1.

Table 4.1

MOUNTING AS A FUNCTION OF CABLE DIAMETER

Cable diameter	Mounting
Larger than or equal to 20 mm	20 mm spacing between cables
Between 5 and 20 mm	One cable diameter spacing between cables
Less than or equal to 5 mm	The cables shall be bundled in bundles of 10 mm diameter. The bundles shall not be twisted. The spacing between bundles shall be 10 mm.

The threshold values are determined with the diameter rounded to nearest mm, except for cables with a diameter of less than 5 mm, where the diameter shall **not** be rounded.

The following formulae are used for determination of the number of cable lengths per test.

1.1.1.1. For cables with diameter greater than or equal to 20 mm

The number of cables, *N*, is given by:

$N = \mathrm{int}\left(\frac{300+20}{d_c+20}\right)$ ..... equation 1

where:

d_c is the diameter of the cable (in mm and rounded to the nearest mm).

int function = the integer part of the result (i.e. the value rounded down).

1.1.1.2. For cables with a diameter greater than 5 mm but less than 20 mm

The number of cables, *N*, is given by:

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$N = \text{int}(\frac{300+d_c}{2d_c})$ ..... equation 2

where:

d_c is the diameter of the cable (in mm and rounded).

int function = the integer part of the result (i.e. the value rounded down).

1.1.1.3. For cables or wires with a diameter less than or equal to 5 mm

The number of 10 mm bundles, N_{bu}, of cables is given by:

$N_{bu} = \text{int}(\frac{300+10}{20}) = 15$..... equation 3

Thus 15 bundles with 10 mm distance between the bundles shall be mounted.

The number of cables in each bundle (n) is:

$n = \text{int}(\frac{100}{d_c^2})$..... equation 4

where:

d_c is the diameter of the cable (in mm and ***not*** rounded).

The number of cable lengths (CL) for wires or cables with a diameter less than 5 mm will hence be:

$CL = n \times 15$ ..... equation 5

1.1.1.4. Total length of cable per test

The total length L (m) per test is:

$L = n \times 15 \times 3{,}5$ for $d_c \leq 5$ mm

or

$L = N \times 3{,}5$ for $d_c > 5$ mm ..... equation 6

1.1.2. Class $B1_{ca}$

At the back of the cable tray a non-combustible calcium silicate board shall be mounted with a density 870 ± 50 kg/m^3 and a thickness of 11 ± 2 mm. This board can be mounted in two parts.

In all other aspects the mounting of the cables is identical to class $B2_{ca}$, C_{ca} and D_{ca}.

2. **Definitions of test parameters**

Table 4.2

DEFINITIONS OF TEST PARAMETERS IN $FIPEC_{20}$ SCENARIOS 1 AND 2

All calculated parameters are evaluated during 20 minutes from test start (ignition of burner).

Parameter	Explanation
Test start	Ignition of burner
End of test	20 minutes after ignition of burner (End of period for calculation of parameters)
HRR_{sm30}, kW	Heat Release Rate averaged by a 30-s sliding average
SPR_{sm60}, m^2/s	Smoke Production Rate averaged by a 60-s sliding average
Peak HRR, kW	Maximum of HRR_{sm30} between test start and end of test, excluded contribution from ignition source

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Parameter	Explanation
Peak SPR, m^2/s	Maximum of SPR_{sm60} between test start and end of test
$THR_{1\ 200}$, MJ	Total Heat Release (HRR_{sm30}) from test start until end of test, excluded contribution from ignition source
$TSP_{1\ 200}$, m^2	Total Smoke Production (HRR_{sm60}) from test start until end of test
FIGRA, W/s	FIre Growth RAte index defined as the highest value of the quotient between HRR_{sm30} excluding the contribution of ignition source and time. Threshold values HRR_{sm30} = 3 kW and THR = 0,4 MJ
SMOGRA, cm^2/s^2	SMOke Growth RAte index is defined as highest value of the quotient between SPR_{sm60} and time, multiplied by 10 000. Threshold value SPR_{sm60} 0,1 m^2/s and TSP = 6 m^2
PCS	Gross calorific potential
FS	Flame Spread (damaged length)
H	Flame spread
FIPEC	Fire Performance of Electric Cables