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Extended application of test results for smoke control for doorsets and shutter assemblies - Part 20: Timber and steel hinged and pivoted doorsets

Erweiterter Anwendungsbereich von Prüfergebnissen zur Feuerwiderstandsfähigkeit und Rauchdichte von Türen, Toren und Verblendverschlüssen - Teil 20: Rauchdichte von Drehtüren aus Holz und Stahl sowie Verblendverschlüssen

Application élargie des résultats d'essai en matiere d'étanchéité a la fumée des blocs-portes et des blocs-fermetures - Partie 20: Blocs-portes pivotants ou battants en bois et en acier

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ICS:

13.220.50	Požarna odpornost gradbenih materialov in elementov	Fire-resistance of building materials and elements
91.060.50	Vrata in okna	Doors and windows

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ICS

English Version

Extended application of test results for smoke control for doorsets and shutter assemblies - Part 20: Timber and steel hinged and pivoted doorsets

Application élargie des résultats d'essai en matière d'étanchéité à la fumée des blocs-portes et des blocs-fermetures - Partie 20: Blocs-portes pivotants ou battants en bois et en acier

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (prEN 15269-20:2006) has been prepared by Technical Committee CEN/TC 127 “Fire safety in buildings”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

This document is one of a series of Standards intended to be used by experts or competent bodies for the purpose of producing an extended application report (EXAP). It is not intended to be used for the interpretation of test results by non-fire experts.

NOTE Clarification is needed to establish if such experts are Bodies Notified for either testing and/or Certification

— *Part 1: General requirements for fire resistance;*

— *Part 2: Fire resistance of steel hinged and pivoted doorsets;*

— *Part 3: Fire resistance of timber hinged and pivoted doorsets;*

— *Part 4: Fire resistance of glass hinged and pivoted doorsets;*

— *Part 5: Fire resistance of metal framed glazed hinged and pivoted doorsets and openable windows;*

— *Part 6: Fire resistance of timber sliding doorsets;*

— *Part 7: Fire resistance of steel sliding doorsets;*

— *Part 8: Fire resistance of timber horizontally folding;*

— *Part 9: Fire resistance of steel horizontally folding doorsets;*

— *Part 10: Fire resistance of Steel rolling shutter assemblies;*

— *Part 20: Smoke control for all types of doorsets and shutter assemblies*

1 Scope

prEN 15269-20 covers hinged or pivoted, timber or steel based doorsets of single or double-leaf and shutter assemblies. It prescribes the methodology for extending the application of test results obtained from test(s) conducted in accordance with EN 1634-3.

Subject to the completion of the appropriate test or tests, the extended application may cover Ambient Temperature Smoke Control (S_a) and Medium Temperature Smoke Control (S_m) classifications and all or some of the following :

a) glazed elements, louvres and/or vents;

b) side, transom or overpanels;

c) items of building hardware;

d) decorative finishes;

e) intumescent, smoke, draught or acoustic seals;

f) alternative supporting construction(s).

NOTE When considering a change in a parameter of building hardware, the effect on the durability of self-closing shall be considered in accordance with EN 14600.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1634-3, *Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware' Part 3: Smoke control test for door and shutter assemblies*

EN 13501-2, *Fire classification of construction products and building elements — Part 2: Classification using data from fire resistance tests excluding ventilation services*

prEN 15269-1, *Extended application of test results for fire resisting and smoke control doorsets and shutter assemblies — Part 1, General requirements for fire resistance*

prEN 14351-3, *Windows and pedestrian doorsets – Product Standard – Part 3: Products with resistance to fire and external fire characteristics*

EN ISO 13943, Fire safety — Vocabulary

EN 14600, *Doorsets and openable windows with fire resisting and/or smoke control characteristics - Requirements and classification*

3 Definitions

For the purposes of this part, the definitions given in EN1363-1, EN ISO 13943, EN 1634-1, EN 1634-3 and prEN 15269-1 together with the following apply :

3.1
core
material fitted centrally within the thickness of a door leaf. It may consist of a single sheet of material or a combination either of sheets of the same material or layers of different materials

4 Determination of the field of extended application

4.1 General

4.1.1 Before there can be any consideration for extended application the doorset shall have been tested and classified in accordance with EN 1634-3 and EN 13501-2 respectively in order to establish a classification for the doorset.

4.1.2 Evaluation to a higher classification is not possible.

4.1.3 All evaluations shall be made on the basis of retaining the classification obtained from testing to EN1634-3.

4.1.4 If, by following the ensuing procedure, any part of the classification cannot be achieved by extended application theory, that element of classification shall be omitted from the subsequent extended application report and classification report.

4.2 Procedure for evaluation

4.2.1 Identify the variations from the original test specimen(s) which are required to be covered by an extended application report.

4.2.2 Locate the variations in the appropriate parameter variation by reference to columns (1) and (2) of Table A.1.

4.2.3 Review the type of classification to be retained from column (3) of Table A.1 and establish from the contents of column (4) of Table A.1 whether any extended application is available without the need for further testing.

4.2.4 Where this is possible this can be recorded in the extended application report together with any appropriate restrictions and the stated rules from column (4) in Table A.1.

4.2.5 Where the variations required can only be achieved from additional testing, the additional test can be made on another door from the same product family including the required variation against which the extended application is sought. Alternatively, column (5) in Table A.1 identifies an option for alternative testing and relevant test parameters.

4.2.6 It is a requirement of this document that all items of building hardware are in accordance with the relevant product standard and that the door assembly onto which the building hardware will be fitted is appropriate to that class of use.

4.3 Procedure for maximum field of extended application

4.3.1 It is possible to provide an extended field of application from a single test. However, where a manufacturer envisages to manufacture a range of doors incorporating single doors and also double doors with or without side, transom or over panels, with or without glazing, louvres or ventilation grilles, with alternative element of building hardware, etc., it is recommended that careful consideration is given to the complete range of doorset designs and options in order to minimise the testing required before testing commences.

4.3.2 Establish all the parameter variations which are required to be part of the product 'family', and in particular for single leaf hinged or pivoted timber based doorsets into rebated frames.

4.3.3 Determine which are the most important specification requirements and incorporate as many as possible into the specimen(s) for the first tests in the series.

4.3.4 Complete the first test or a series of tests and prepare a field of direct application and a classification report from the results of the test(s).

4.3.5 Establish which of the original desired parameter variations have not been covered by the direct application classification report.

4.3.6 Identify these parameter variations using Table A.1 and establish where an extended application is possible with the available test evidence.

4.3.7 Record this for the extended application report together with any restrictions and rules given in column (5) in Table A.1.

4.3.8 Evaluate which, if any, of the desired parameter variations have not been covered by the field of direct application or the initial field of extended application derived from 4.3.6.

4.3.9 Select the required outstanding parameter variations from column (1) and column (2) of Table A.1 and observe from column (5) in Table A.1 which are the most appropriate weakest specimen options for further testing.

4.3.10 If the complete selection of required parameter variations have not been covered by the tests completed in accordance with 4.3.8 and 4.3.9, then an appropriate test or tests may be carried out with the additional product variations incorporated.

4.4 Interpretation of Test Results

4.4.1 In order to maximise the field of extended application, it is important that the test reports shall record details of any failure throughout the duration of the test.

4.4.2 Where a series of tests have been conducted, the field of extended application shall be based on the lowest performance achieved from the complete series of tests unless excessive leakage has been attributed to one or more specific construction parameter variation.

4.4.3 Where it has been possible, to identify leakage due to a specific parameter, the extended application for all other construction parameter variations can be based on the performance achieved after isolating the parameter with excessive leakage.

5 Extended application report

Prepare an extended application report in accordance with the requirements of Clause 5 of EXAP prEN 15269-1, based on the results of evaluations in accordance with the above.

6 Classification report

The classification report shall be determined from the results of the extended application report and presented in accordance with EN 13501-2.

Annex A
(normative)

Construction Parameter Variations

A.1 General

Table A.1 is designed to be used by competent experts in the field of smoke control testing of hinged or pivoted doorsets and shutter assemblies.

Table A.1 shall only be used to evaluate a field of extended application when at least one positive smoke control test to EN 1634-3 has resulted in a classification according to EN 13501-2.

The first two columns of Table A.1 identify possible variations to the construction details of the specimen tested.

The type of classification, referred to as performance characteristic in Column 3 of Table A.1, achieved from the test can be identified as the 'Type' section of Table A.1 column 3 as Ambient Smoke Control (S_a) and Medium Temperature Smoke Control (S_m).

The effect of the change in each parameter is evaluated for each characteristic in Table A.1 column 3 under S_a for Ambient temperature and S_m for Medium temperature.

Where symbols are used these relate to the following definitions :

a) < - forecast is a worse performance;

b) > - forecast is a better performance;

c) ≤ - forecast is a worse or equal performance;

d) ≥ - forecast is a better or equal performance;

e) >=< - forecast unknown

These evaluations lead to the judgement of the possibility of the extension of the field of application the results of which are given in column 4 of Table A.1.

Where additional tests are deemed to be necessary the type of specimen approved for incorporation of the changed parameter is defined in column 5 of Table A.1. Where it is possible to use information from tests performed on one configuration for evidence on a different configuration, this allowance has been made in order to reduce the overall number of tests required for extended application evaluation (e.g. single action doorsets to double action doorsets).

In all cases following the evaluation, the relationship between the leaf and the frame (e.g. gaps) shall remain the same as shall the relationship between smoke seals and the faces and/or edges of the leaf (i.e. the contact between the edges of the smoke seal and the leaf face) shall not decrease, nor shall the contact between the smoke seal and the leaf edge.

Solid timber can be replaced by other solid timber of the same or higher density. Glued timber with solid pieces of min. 10 mm thickness may be used as solid timber. Composite wood products (e.g. Medium Density Fibreboard) may not be replaced with other materials or composites.

Each construction parameter variation may only be applied in isolation from other variations. If after consideration of a specific variation, additional changes are required to be made to the specimen, these may be made providing the implications on other variations are also taken into account.

Table AA.1 — Construction parameter variations

Construction Parameter	Variation	Influence of variation on performance characteristic		Possibility of extension	Additional Evidence Required
(1)	(2)	(3)		(4)	(5)
		S_a	S_m		
A Door leaf NOTE In certain cases, the rules given in Section A are also appropriate to side and overpanels or the door frame; where this is the case it is clearly indicated in column (1). For double leaf doorsets, both leaves shall be of the same basic construction.					
A.1 General					
A.1.1 number of leaves	Single leaf from double leaf doorset	≥	≤	Possible for S_a if the seals are unchanged. Not possible for S_m without additional test	 Test shall be a single leaf doorset from the most onerous exposure direction.
A.1.2 number of leaves	Double leaf from single leaf doorset	≤	≤	Not possible without additional test	Test shall be a double leaf doorset.
A.1.3 smoke seals (fitted at leaf to frame interface) **– See Figure A1**	Location towards the frame rebate	≤	≤	Not possible without additional test	Test shall be of the required configuration
A.1.4 smoke seals (fitted at leaf to frame interface) **– See Figure A2**	Location away from the frame rebate	≤	≤	Not possible without additional test	Test shall be of the required configuration
A.1.5 smoke seals (fitted in meeting edges)	Location change	≤	≤	Not possible without additional test	Test shall be of the required configuration
A.1.6 smoke seals (fitted in leaf or frame)	Remove	<	<	Not possible without additional test	Test shall be of the required configuration
A.1.7 Louvres in door leaf or panel	Add	<	<	Not possible without additional test	Additional test to include louvre fitted in the required position. Test can be single leaf or double leaf
A.1.8 Louvres in door leaf or panel	Remove	≥	≥	Possible	
A.1.9 Louvres in door leaf or panel tested with louvre	Fitting higher or lower in the leaf	=	=	Possible	

Construction Parameter		Variation	Influence of variation on performance characteristic		Possibility of extension				Additional Evidence Required
(1)		(2)	(3)		(4)				(5)
			S_a	S_m					
A.1.10	Louvres in door leaf or panel tested with louvre	Fitting to the side of the tested position	=	=	Possible				
A.1.11	Louvres in door leaf or panel tested with louvre **– See Figure A3**	smaller size (total area)	≥	≥	Possible				
A.1.12	Louvres in door leaf or panel tested with louvre	larger size (for area or dimensions)	<	<	Not possible without additional test				Further test required with maximum louvre required. Test can be single or double leaf
A.1.13	Louvre tested in double leaf doorset	Change position of louvre from one leaf to the opposite leaf	>=<	>=<	Possible providing that both door leaves are active or the louvre is tested in active leaves only.				
A.1.14	Leaf edge rebate (to door leaf or panel – not at the meeting edges. See section A2 for meeting edge parameters) **- See Figure A4**	Add (added rebate shown shaded in drawings)	≥	≥	Possible providing the rebate does not lead to reduced compression on the seals.				
A.1.15	Leaf edge rebate (to door leaf or panel – not at the meeting edges. See section A2 for meeting edge parameters)	Remove	≤	≤	Not possible without additional test				The required detail shall be tested. Test can be single or double leaf
A.1.16	Change in mode of operation (single/double action)	Alternative	>=<	≤	Possible for S_a to provide a double action doorset from a single action doorset providing the sealing system, including the area around the hinges/pivots, is unchanged, otherwise not possible				Test to be on the required mode of operation.
A.1.17	Latched condition for single leaf or double leaf doorsets **- see Figure A5**	Change in latching condition	>=<	<	Possible in line with the following relationship otherwise not possible without an additional test:				Additional test to include the required latching condition.
						tested without a latch/lock/ bolt	tested with a latch/lock/ bolt but unlatched	tested with a latch/lock/ bolt, latched	
					extension to: without a lock/latch/bolt		possible	not possible	
					extension to: with lock/latch/bolt but unlatched	not possible		not possible	

Construction Parameter		Variation	Influence of variation on performance characteristic		Possibility of extension	Additional Evidence Required
(1)		(2)	(3)		(4)	(5)
			S_a	S_m		
					extension to: with a lock/latch/bolt, latched: not possible / possible	
					Additional latch/lock may be fitted providing there is specific evidence on the latch/lock showing it will not affect the leakage	
A.2	**Meeting edge detail**					
A2.1	meeting edge detail – **see Figure A6**	Change in edge detail	≤	≤	Not possible without additional test	Test shall be double leaf
A2. 2	astragal – **see Figure A6.4**	Add	≥	≥	Possible	
A2. 3	astragal – **see Figure A6.4**	Remove	≤	≤	Not possible without additional test	Test shall be double leaf
A.3	**Size variations**					
A3. 1	Size of leaf or panel (area, width, height)	Decrease	≥	≥	Possible	
A3. 2	Height/width/area of leaf or panel	Increase	>=<	>=<	The doorset shall normally be tested at full size, however, where this is not possible and for latched Sa doorsets, the increase in dimension is possible without limitation providing the sealing system is unchanged and any interruptions for hardware is in equal or less proportion to the tested specimen. For other doorsets, the maximum required clear opening size shall be tested.	For configuration/sizes above that allowed by the adjacent column, the specific size shall be tested.
A3. 3	thickness of the door leaf or panel	Increase	≥	≥	Possible	
A3. 4	thickness of the door leaf or panel	Decrease	≤	≤	Not possible without an additional test	Required thickness of leaf or panel shall be tested
A.4	**Materials and constructions**					
A.4.1	density of core material of leaf or panel	Increase/decrease	≥	>=<	Possible for timber and steel based Sa doorsets and possible for Sm timber based doorsets	
					For Sm steel based doorsets, possible providing the increase/decrease is not greater than 50% otherwise not possible without an additional test	Test on required density of core material
A.4.2	pattern of core material of leaf or	increase number of pieces	=	>=<	Possible for Sa.	