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SLOVENSKI STANDARD
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Razširjena uporaba rezultatov preskusov požarne odpornosti in/ali dimotesnosti za vrata, zaporne elemente in okna, ki se odpirajo, vključno z njihovim okovjem - 10. del: Požarna odpornost jeklenih valjanih zapiral

Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies including their elements of building hardware - Part 10: Fire resistance of steel rolling shutter assemblies

Erweiterter Anwendungsbereich von Prüfergebnissen zur Feuerwiderstandsfähigkeit und/oder Rauchdichtigkeit von Türen, Toren und Fenstern einschließlich ihrer Baubeschläge - Teil 10: Feuerwiderstandsfähigkeit von Rolltoren aus Stahl

Application élargie des résultats d'essais en matière de résistance au feu et/ou d'étanchéité à la fumée des blocs-portes, blocs-fermetures et ouvrants de fenêtres, y compris leurs éléments de quincaillerie de bâtiment intégrés - Partie 10 : Résistance au feu des rideaux à enroulement en acier

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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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Contents

Page

Foreword

This document (EN 15269-10:2011) has been prepared by Technical Committee CEN/TC 127 “Fire safety in buildings”, the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2011, and conflicting national standards shall be withdrawn at the latest by October 2011.

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Introduction

This document is one of a series of standards listed below and intended to be used for the purpose of producing an extended application report based on the evaluation of one or more fire resistance and/or smoke control tests. These standards may also be used to identify the best selection of test specimens required to cover a wide range of product variations.

The (pr)EN 15269 series currently consists of:

(pr)EN 15269 Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware

Part 1: General requirements

Part 2: Fire resistance of hinged and pivoted steel doorsets

Part 3: Fire resistance of hinged and pivoted timber doorsets and openable timber framed windows

Part 4: Fire resistance of hinged and pivoted glass doorsets

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

Part 6: Fire resistance of sliding timber doorsets

Part 7: Fire resistance for steel sliding doorsets

Part 8: Fire resistance of horizontally folding timber doorsets

Part 9: Fire resistance of horizontally folding steel doorsets

Part 10: Fire resistance of steel rolling shutter assemblies

Part 11: Fire resistance of operable fabric curtains

Part 20: Smoke control for hinged and pivoted steel, timber and metal framed glazed doorsets

Before there can be any consideration for extended application the doorset should have been tested in accordance with EN 1634-1 to achieve a test result which could generate a classification in accordance with EN 13501-2 at least equal to the classification subsequently required from extended application considerations.

A review of the doorset construction parameters can indicate that one or more characteristics may be improved by a particular parameter variation. All evaluations should be made on the basis of retaining the fire resistance classifications obtainable from testing to EN 1634-1, including those lower than the test duration. However, this should never lead to an increased classification for any specific fire or smoke performance parameter beyond that achieved during any one test unless specifically identified in the relevant Construction Parameter Variation tables within this series of standards.

The effect on the durability of self closing of the doorsets following an extended application process is not addressed in this series of standards.

1 Scope

This Part of prEN 15269, which should be read in conjunction with EN 15269-1, covers the following types of steel rolling shutter assemblies: un-insulated manually operated rolling shutters, un-insulated powered rolling shutters, insulated manually operated rolling shutters and insulated powered rolling shutters.

This document prescribes the methodology for extending the application of test results obtained from test(s) conducted in accordance with EN 1634-1.

Subject to the completion of the appropriate test or tests selected from those identified in Clause 4 the extended application may cover all or some of the following non-exhaustive list:

- Integrity only (E), radiation (EW) or insulated (EI_1 or EI_2) classifications;
- shutter curtain;
- wall/ceiling fixed elements (frame/suspension system);
- decorative finishes;
- intumescent, smoke, draught or acoustic seals;
- alternative supporting construction(s).

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 1363-1:1999, *Fire resistance tests — Part 1: General requirements*

EN 1363-2:1999, *Fire resistance tests — Part 2: Alternative and additional procedures*

EN 1634-1:2008, *Fire resistance and smoke control tests for door, shutter and openable window assemblies and elements of building hardware — Part 1: Fire resistance tests for doors, shutters and openable windows*

EN 1993-1-2, *Eurocode 3: Design of steel structures — Part 1-2: General rules — Structural fire design*

EN 13501-2:2007+A1:2009, *Fire classification of construction products and building elements — Part 2: Classification using data from fire resistance tests, excluding ventilation services*

EN 15269-1:2010, *Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware — Part 1: General requirements*

EN ISO 13943:2010, *Fire safety — Vocabulary (ISO 13943:2008)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1363-1:1999, EN 1363-2:1999, EN 1634-1:2008, EN 15269-1:2010 and EN ISO 13943:2010 and the following apply.

3.1
full scale test
a test of a full size doorset or rolling shutter in accordance with EN 1634-1

4 Determination of the field of extended application

4.1 General

4.1.1 Before there can be any consideration for extended application the steel rolling shutter assemblies shall have been tested and classified in accordance with EN 1634-1 and EN 13501-2 respectively in order to establish a classification for the doorset.

4.1.2 A review of the construction parameters can indicate that one or more characteristics may be improved by a particular parameter variation. All evaluations shall be made on the basis of retaining the classifications obtainable from testing to EN 1634-1, including those lower than the test duration. However, this shall never lead to an increased classification for any specific parameter beyond that achieved during any one test unless specifically identified in the relevant Construction Parameter Variation tables.

4.1.3 All evaluations shall be made on the basis of retaining the classification obtained from testing to EN 1634-1.

4.1.4 If, by following the ensuing procedure, any part of the classification cannot be achieved by extended application rules that part 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 deemed to be 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 according to column (5), the additional test can be made on a similar specimen type to the original test against which the extended application is sought. Alternatively, column (5) identifies an option for alternative testing and relevant test parameters.

4.3 Procedure for maximum field of extended application

4.3.1 It is possible to provide a limited field of extended application from the results of a single test. However, where a manufacturer intends to produce a range of steel rolling shutters assemblies

incorporating manual and power drives, insulated and uninsulated version, with alternative elements of construction etc. it is recommended that careful consideration is given to the complete range of 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 range.

4.3.3 Select specimen(s) for the first test(s) in the series to ensure that the most important parameter variations for the manufactured products are covered.

4.3.4 Complete the first test or a series of tests and prepare a field of direct application and possibly 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 and classification report.

4.3.6 Identify these parameter variations in Annex A and establish if any extended application is possible without further testing.

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 4.3.7 above.

4.3.9 Select the required outstanding parameter variations from column (1) and column (2) of Table A.1 and observe from column (5) of 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 has not been covered by the tests completed in accordance with 4.3.9 above, then an appropriate test or tests may be repeated 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 integrity and/or insulation failures throughout the test duration.

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 premature failure has been attributed to one or more specific construction parameter variation.

4.4.3 Where it has been possible, to identify specific parameter failures, the extended application for all other construction parameter variations can be based on the performance achieved after isolating the premature failure(s).

5 Extended application report

Prepare an extended application report in accordance with the requirements of EN 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 Annex A of EN 13501-2:2007+A1:2009.

Annex A
(normative)

Construction parameter variations for insulated and uninsulated steel rolling shutter assemblies

Table A.1 is designed to provide rules for the creation of extended application reports by experts in the field of fire resistance testing of the following sliding steel rolling shutter assemblies.

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

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

The type of classification achieved from the test can be identified from the 'Performance characteristic' section of Table A.1 column 3 as insulation, radiation control or integrity only.

The effect of the change in each parameter is evaluated for each characteristic in column 3 under E for effects on integrity, I for effects on insulation (whether an I_1 or I_2) and W for the effects on radiation control for EW steel rolling shutter assemblies.

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 no significant difference;

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

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

f) >=< - 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. In certain cases, in Column 4, it is a requirement to achieve Category B, the details for which are given in EN 1634-1.

Where additional tests are deemed to be necessary the type of specimen approved for incorporation of the changed parameter is defined in column 5.

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. The rules given for size increase (width, height, area) of the shutter curtain are applicable for steel rolling shutter assemblies tested in size equal or bigger than the maximum size which can be tested in a standard size furnace (normally 3 m x 3 m). These rules are not applicable to steel rolling shutter assemblies doors tested only with horizontal joints. All size variations based on the results of more than one test with specimens of different sizes can be combined.

In addition to Annex A, where construction parameter variations result in an increase in the weight of the curtain, the requirements given in Annex B shall be satisfied as defined in the relevant parameter of Annex A.

Column 5 defines the side of the steel rolling shutter assembly which has to be tested. Inwards means a test with the loadbearing components such as the runners/hanging mechanism, etc. on the fire side. Outwards means the opposite side. If a special type (e.g. single, double and telescopic) is not specified, the additional test can be carried out with all types of steel rolling shutter assemblies, therefore, if more than one additional test is not specified, only one test is required.

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 A.1 — Construction parameters

Construction parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional evidence required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A General (See Figure C.1 for an example of a General Arrangement of rolling shutter construction)						
A.1 Size variations / construction						
A.1.1 Width between vertical guides (See Figure C.2)	Decrease	≥	≥	≥	Possible providing tightness and expansion clearances are not changed	
A.1.2 Distance between vertical guides (See Figure C.2)	Increase	>=<	>=<	>=<	E,EI,EW Possible providing the static requirements to fixings and load-bearing constructions are fulfilled and the requirements of Annex B are satisfied And for EI Possible, if the guides are insulated from one side with a hardware of at least the same classification as the door + increase depth guides 10 mm/m width increase + increase of width of intumescent sealing material in the same ratio as width increase And for EW Possible providing the radiation criteria 15 kW/m^2 as defined in EN 13501-2 is maintained following calculations in accordance with Annex B of EN 15254-4:2008	
A.1.3 Height from floor level to centre line of barrel (See Figure C.3)	Decrease	≥	≥	≥	Possible providing relation to opening height remains the same	

Construction parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional evidence required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A 1.4 Height from floor level to centre line of barrel (See Figure C.3)	Increase	>=<	>=<	>=<	E,EI,EW Possible providing the static requirements to fixings and load-bearing constructions are fulfilled and the requirements of Annex B are satisfied And for EW Possible providing the radiation criteria 15 kW/m^2 as defined in EN 13501-2 is maintained following calculations in accordance with Annex B of EN 15254-4:2008	
A 1.5 Expansion allowances between the end of the lath and guide	Decease	≤	≤	≤	Not possible	
A 1.6 Expansion allowances between the end of the lath and guide	Increase	>=<	>=<	>=<	Possible providing tightness/overlap of laths and guides is increased by the same amount	
A 1.7 Mounting	Face fixed on furnace side to within opening	>=<	≤	≤	E Possible only in accordance with permissible casing/hood details in F.1.8 EI, EW Not possible	
A 1.8 Mounting	Within opening to face fixed on furnace side	>=<	>=<	>=<	Possible only in accordance with permissible casing/hood details in F.1.8	
A.2 Materials and constructions						

Construction parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional evidence required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A.2.1 Insulation material whether intumescent or not	Change	>=<	>=<	>=<	Not possible	
A.2.2 Density of insulation material	Increase	≥	≥	≥	Possible up to 30 % for materials of Euroclass A1 and the requirements of Annex B are satisfied otherwise not possible without an additional test	
A.2.3 Density of insulation material	Decrease	≤	≤	≤	Not possible	
A.2.4 Intumescent material	Change of supplier and/or manufacturer	>=<	>=<	>=<	Possible but only for an identical composition otherwise Not possible without an additional test	Further test to include the required seal supplier/manufacturer's seal
A.2.5 Intumescent material	Alternative material	>=<	>=<	>=<	Not possible	
	Increase	≥	≥	≥	Possible	
A.2.7 Thickness of insulation material other than curtains	Decrease	≤	≤	≤	Not possible without new tests according to EN 1634-1	
B Curtain						
B.1 Laths						
B.1.1 Size (height of lath) (See Figure C.4)	Decrease	=	≤	≤	E: Possible providing interlock remains the same EI,EW: not possible	
B.1.2 Size (height of lath) (See Figure C.5)	Increase	=	≥	≥	Possible by 100 % providing interlock remains the same and providing the barrel is able to accommodate the higher laths	
B.1.3 Thickness of steel	Decrease	≤	≤	≤	Not possible beyond direct application	

Construction parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional evidence required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
B.1.4 Thickness of steel	Increase	≥	≥	≥	Possible by 50 % providing that the requirements of B.2 are satisfied otherwise not possible without an additional test	
B.1.5 Thickness of insulation material (See Figure C.6)	Decrease	>=<	≤	≤	E Possible assuming that the gap between the skins is full of insulating material and that the thickness of lath creates a corresponding decrease in the width of the guides EI & EW Not possible	
B.1.6 Thickness of insulation material (See Figure C.7)	Increase	>=<	≥	≥	Possible assuming that the gap between the skins is full of insulating material and that the thickness of lath creates a corresponding increase in the width of the guides	
B 1.7 Density of insulation material	Increase	>=<	>=<	>=<	Possible up to 30 % for materials of Euroclass A1 and the requirements of Annex B are satisfied otherwise not possible without an additional test	
B 1.8 Density of insulation material	Decrease	≥	≤	≤	Possible up to 10% (production tolerance)	
B 1.9 Material	Mild steel to stainless steel	>=<	>=<	>=<	Possible for single skin E doors providing that the acceptable 50 % increased expansion value is allowed for in the guide/lath configuration. For other doors not possible without additional test	