



THE EUROPEAN FEDERATION OF ASSOCIATIONS OF LOCK AND BUILDERS HARDWARE MANUFACTURERS
ARBEITSGEMEINSCHAFT DER VERBANDE DER EUROPAISCHEN SCHLOSS - UND BESCHLAGINDUSTRIE
FEDERATION EUROPEENE DES ASSOCIATIONS DE FABRICANTS DE SERRURES ET FERRURES

BUILDING HARDWARE FOR FIRE DOORS

How to handle a burning matter without getting burnt

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Contents

- The presentation deals with the following subjects:
 1. Building hardware items falling within the scope of the CPD when intended for use on fire doors.
 2. Criteria for the classification of the suitability of building hardware items for use on fire doors.
 3. Criteria for the determination of the interchangeability of building hardware items intended for use on fire doors.
 4. Conclusions and possible actions
 5. Normative references



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1-Building hardware items falling within the scope of the CPD when intended for use on fire doors

1-Building hardware items intended for use on fire doors

- Table 1 lists the building hardware falling within the scope of the CPD when intended for use on fire doors.
- Table 1 advises also the starting and the ending dates of the co-existence period of each building hardware item.
- The co-existence period relative to a product is a period, of normally twelve months, starting at the date at which is published the harmonized standard covering the product.
- The starting and ending dates of the co-existence period are published in the Official Journal of the European Community and are in connection with the CE marking application time scale as it follows:
 - before the beginning of the co-existence period, manufacturers are not allowed to CE mark their products
 - during the co-existence period, manufacturers can decide whether to CE mark their products or not
 - after the co-existence period, manufacturers shall CE mark their products

Table 1

ITEM	HARMONIZED STANDARD	CO-EXISTENCE PERIOD	
		STARTING DATE	ENDING DATE
EMERGENCY EXIT DEVICES	EN 179:1997	01-04-2002	01-04-2003
PANIC EXIT DEVICES	EN 1125:1997	01-04-2002	01-04-2003
SINGLE AXIS HINGES	EN 1935:2002	01-10-2002	01-12-2003
CONTROLLED DOOR CLOSERS	EN 1154:1997	01-10-2003	01-10-2004
ELECTRICALLY POWERED HOLD-OPEN DEVICES	EN 1155:1997	01-10-2003	01-10-2004
DOOR COORDINATORS	EN 1158:1997	01-10-2003	01-10-2004
MECHANICAL LOCKS	EN 12209:2003	01-12-2004	01-12-2005



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2-Criteria for the classification of the suitability of building hardware items for use on fire doors.

Fire door suitability & classification

- According to the standards covering products, a building hardware item is suitable for the use on fire doors if, incorporated in a fire door, the complete fire door assembly passes a fire test to EN 1634-1.
- In the standards covering building hardware, the classification of suitability for use on fire/smoke doors is made:
 - either with a system foreseeing two grades:
 - not suitable for fire/smoke doors
 - suitable for fire/smoke doors, without defining a minimum fire resistance time for the fire test to EN 1634-1
 - or with a system foreseeing several grades:
 - not suitable for fire/smoke doors
 - suitable for smoke doors
 - suitable for fire/smoke doors with a minimum fire resistance time, for the fire test to EN 1634-1, of n minutes, where n may be = 15, 20, 30, 45, 60, 90, 120, 180 and 240 minutes
- NOTE: The building hardware classification of fire door suitability is not a classification of fire resistance as the classification of fire resistance applies to the complete door assembly and not to the elements incorporated in the door assembly.

Examples of classification of fire door suitability

- The standard EN 1125 and its revision may be good examples of the two classification systems.
- EN 1125 foresees two grades of fire resistance:
 - grade 0: not approved for use on fire/smoke door assemblies
 - grade 1: suitable for use on fire/smoke door assemblies
- The revision of EN 1125 foresees seven grades of classification:
 - grade 0: not approved for use on fire/smoke doors
 - grade A: suitable for use on smoke doors
 - grade B: suitable for use on fire/smoke doors based on a test to EN 1634-1 with a minimum fire resistance time of 15 min
 - grade C: suitable for use on fire/smoke doors based on a test to EN 1634-1 with a minimum fire resistance time of 30 min
 - grade D: suitable for use on fire/smoke doors based on a test to EN 1634-1 with a minimum fire resistance time of 45 min
 - grade E: suitable for use on fire/smoke doors based on a test to EN 1634-1 with a minimum fire resistance time of 60 min
 - grade F: suitable for use on fire/smoke doors based on a test to EN 1634-1 with a minimum fire resistance time of 90 min



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3-Criteria for the determination of the interchangeability of building hardware items intended for use on fire doors

Classification of the fire resistance of a complete door assembly

- The classification of the fire resistance of a complete door assembly is made according to EN 13501-2 on the basis of the results of a fire test conducted according to EN 1634-1.
- The fire resistance classification is relative to the complete door assembly and doesn't apply to the elements, such as the building hardware items, incorporated in the door assembly.
- The fire resistance classification of a door assembly consists of:
 - one or more letters indicating the door characteristics (E=Integrity, I1 and I2=Insulation, W= Radiation) assessed in the fire test conducted in accordance with EN 1634-1 and
 - a number indicating for how many minutes the test door has maintained the characteristic(s) (E, I1,I2, W) assessed in the fire test conducted in accordance with EN 1634-1

Example of fire resistance classification

- An example of fire resistance classification is the following:
 - A door assembly having a fire resistance classification EI2 60 is a door which has maintained its integrity (E) and its insulation (I2) for 60 minutes in a fire test to EN 1634-1.

Interchangeability of building hardware items intended for use on fire doors

- Given:
 - a building hardware item A incorporated in a door assembly X which has passed a fire test to EN 1634-1, and
 - a building hardware item B incorporated in a door assembly Y which has passed a fire test to EN 1634-1
- If we replace item A with item B there are variations from the original test door assembly which may impair the fire resistance of the proposed door assembly.
- The replacement of item A with item B is possible only if the variations generated by the change don't impair the fire resistance of the proposed door assembly.

Fields of direct and extended application

- To evaluate the effects that variations may have on door fire performance, CEN/TC 127 has identified two fields of possible variations :
 - the field of direct application of fire test results
 - the field of extended application (EXAP) of fire test results

Field of direct application

- The field of direct application is the field of variations which, not impairing the door fire resistance, don't require further fire tests to EN 1634-1.
- On the basis of the experience gained over years of fire tests, CEN/TC 127 has defined a series of rules, called rules of direct application, which can be used by “non-fire experts” to determine which variations are possible without further fire tests.
 - NOTE: A clarification is needed from CEN/TC 127 to establish who are meant to be such non-fire experts.
- The rules of direct application, which can be used by “non-fire experts”, are given in the documents:
 - EN 1634-1, Fire resistance tests for door and shutter assemblies - Part 1: Fire doors and shutters
 - prEN 1634-2, Fire resistance tests for door and shutter assemblies - Part 2: Fire door hardware

Field of direct application – EN 1634-1

- The standard EN 1634-1 applies to the following products:
 - hinged and pivoted doors
 - horizontally sliding and vertically sliding doors including sectional doors
 - steel single skin folding shutters (uninsulated)
 - other sliding folding doors
 - tilting doors
 - rolling shutter doors
 - openable windows
 - and foresees fire tests conducted using full size test specimens having at least the size of the proposed door assembly.

Field of direct application – EN 1634-1

- Status of the standard EN 1634-1
- The standard EN 1634-1, published on January 2000, is now being revised by CEN/TC127.
- EN 1634-1 at clause 13 “Field of direct application” defines the variations permitted for:
 - materials and construction
 - decorative finishes
 - frames
 - hardware
 - door size

Field of direct application – EN 1634-1

- For hardware in general, clause 13.2.5 states that:
 - Changes in hardware are permitted provided the alternative hardware has been demonstrated in another doorset of similar configuration. The number of any movement restrictors such locks, latches and hinges may be increased but shall not be decreased.
- For hardware intended for use on hinged and pivoted doors, clause 13.3.3.2 defines the permitted relative positioning of movement restrictors (hinges, latches, locks etc.) for smaller door sizes and larger door sizes.

Field of direct application- prEN 1634-2

- The draft standard prEN 1634-2 applies to hardware for incorporation into timber and steel hinged and pivoted fire doors with one or two leaves.
- The fire tests foreseen in the draft are conducted using small size test specimens having a reduced size in place of the full size of the proposed door assembly.
- Status of the draft standard prEN 1634-2
 - The document has been sent to public CEN inquiry and now CEN/TC 127 has completed the exam of the comments received in the enquiry.

Field of direct application- prEN 1634-2

- prEN 1634- 2 at clause 14 “Field of direct application” defines the variations permitted for the following building hardware types:
 - single action unsprung hinges (support hinges)
 - securing devices (cylinders, locks, latches, panic and emergency exit devices)
 - surface mounted overhead controlled door closing devices
 - non edge-mounted items of building hardware (letter plates, air transfer grilles, door viewers, push plates and pull handles, lever handles and knobs etc.)
- The variations permitted are such when the factors affecting the fire resistance of the assembly (frames, door leaf constructions, configuration of the door assembly, fixings, gaps etc.) remain within the limits defined by clause 14 for each building hardware type.

Field of extended application (EXAP)

- The field of extended application is the field of variations which are beyond the limits of the field of direct application.
- For the analysis of these variations, CEN/TC 127 has defined a series of rules, called rules of extended application which can be used by experts or competent bodies for establishing which variations are permitted, without or with further tests, for the purpose of producing an extended application report which will be used to gain the fire classification in accordance with the relevant part of EN 13501-2.
- NOTE A clarification is needed to establish if such experts are Bodies Notified for either testing and/or certification.

Field of extended application (EXAP)

- The rules of extended application, which can be used by experts or competent bodies, are given by the document:
 - prEN 15269 Extended application of test results for fire resistance for doorsets and shutter assemblies – For doors and shutters –
- The document consists of ten parts:
 - Part 1 General requirements
 - Part 2 Steel hinged and pivoted doorsets
 - Part 3 Timber hinged and pivoted doorsets

Field of extended application (EXAP)

- Part 4 Glass hinged and pivoted doorsets
 - Part 5 Aluminium hinged and pivoted doorsets
 - Part 6 Timber sliding doorsets
 - Part 7 Steel sliding doorsets
 - Part 8 Timber horizontally folding doorsets
 - Part 9 Steel horizontally folding doorsets
 - Part 10 Steel rolling shutters
- Part 1, Part 2 and Part 3 are ready to be sent to CEN Inquiry. For the other parts, so far no documents are available outside CEN/TC 127.

Example of field of extended application

- Each part of prEN 15269 contains a table to use 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.
- An example, taken from the table of Annex A of prEN 15269-3, covering timber hinged and pivoted doorsets, is the following:
 - Annex A - Construction Parameter
 - Variations C.1.4
 - Construction parameter: number of latches/locks and strike plates
 - Variation: decrease
 - Influence of variation on E : = <
 - Influence of variation on I : > =
 - Influence of variation on W: > =
- Possibility of extension: Not possible without an additional full size test unless originally tested with the latch bolt(s) withdrawn Additional evidence required: test to include the minimum number of locks



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4- Conclusions and possible actions

Conclusions and possible actions

- CEN/TC 127 has created the task group:
 - CEN/TC 127/WG 3/TG1– prEN 1634-2 – Building Hardware which deals specifically with building hardware for use on fire doors.
- ARGE should evaluate if it is the case of having the activity of CEN/TC 127/WG3/TG1 followed by an ARGE working group for the purpose of:
 - monitoring the status of the CEN/TC127 documents in progress
 - participating in the solution of problems, relative to building hardware, which may arise during the preparation of the CEN/TC 127 documents (see the EDSF proposal for a new building hardware classification system)
 - liaising with CEN/TC 127



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5- Normative references

Normative references

- The following referenced documents are cited, where appropriate, in the text of the presentation:
- EN 1634-1, Fire resistance tests for door and shutter assemblies – Part 1: Fire doors and shutters
- prEN 1634-2, Fire resistance tests for door and shutter assemblies – Part 2: Fire door hardware – Building hardware for fire resisting doorsets and openable windows
- EN 13501-2, Fire classification of construction products and building elements – Part 2: Classification using test data from fire resistance tests excluding ventilation services
- prEN 15269, Extended application of test results for fire resistance for doorsets and shutter assemblies – For doors and shutters-

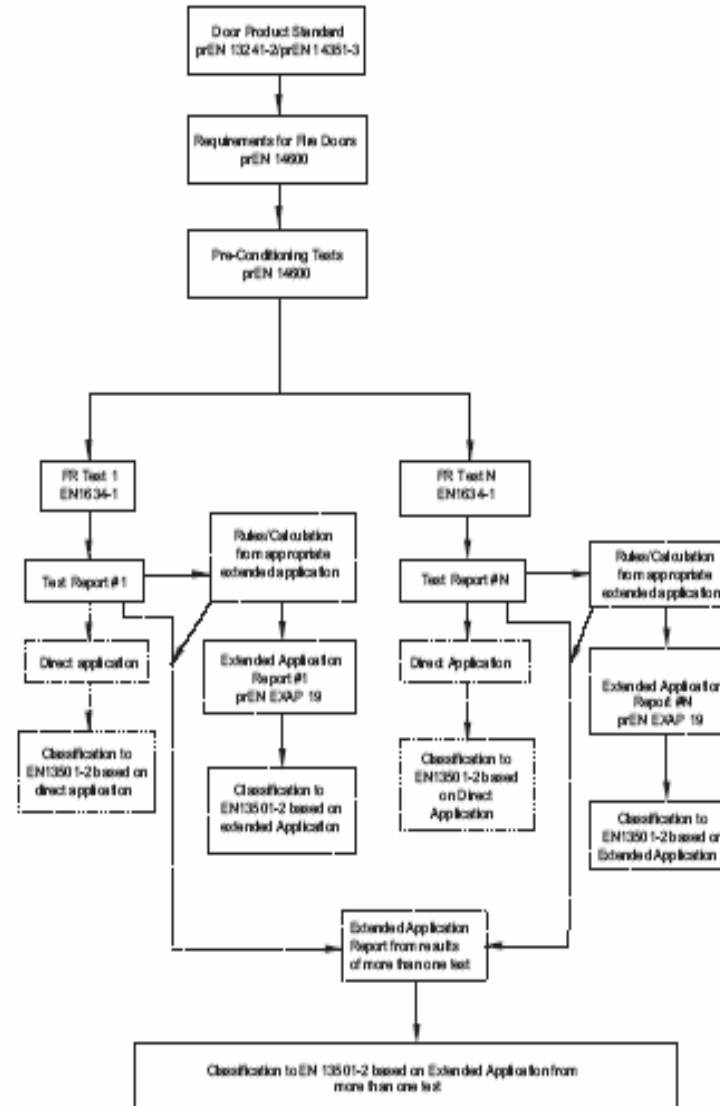
Normative references

- prEN 15269 consists of ten parts:
 - Part 1: General requirements
 - Part 2: Steel hinged and pivoted doorsets
 - Part 3 Timber hinged and pivoted doorsets
 - Part 4 Glass hinged and pivoted doorsets
 - Part 5 Aluminium hinged and pivoted doorsets
 - Part 6 Timber sliding doorsets
 - Part 7 Steel sliding doorsets
 - Part 8 Timber horizontally folding doorsets
 - Part 9 Steel horizontally folding doorsets
 - Part 10 Steel rolling shutters

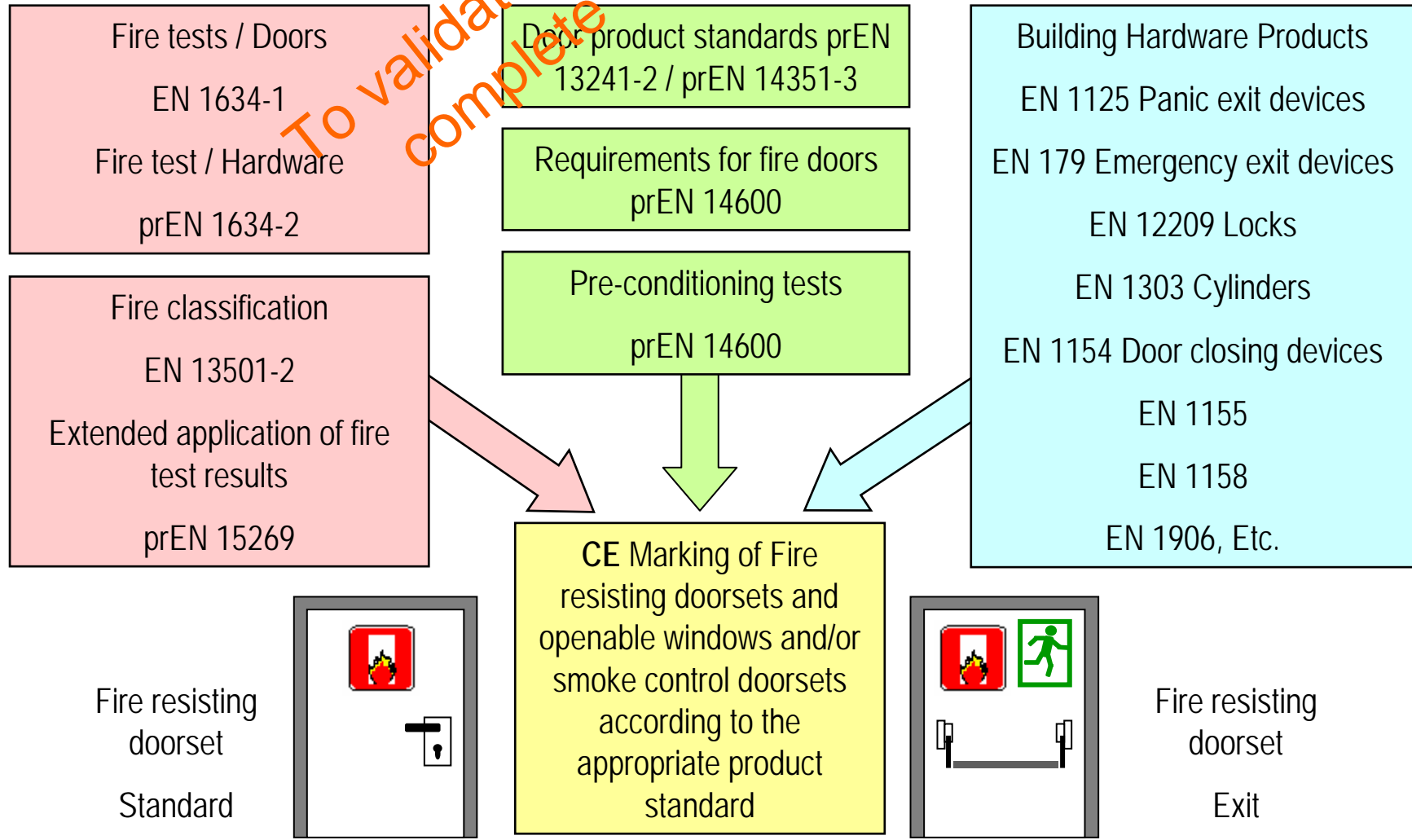
Normative references

- prEN 13241-2 Industrial commercial and garage doors and gates – Product standard – Part 2 – Products with fire resistance or smoke control characteristics
- prEN14351-3 Windows and external pedestrian doorsets - Product standard – Part 3 – Products with fire and smoke related characteristics
- prEN 14600 Fire resisting and/or smoke control doorsets and operable windows – Requirements and classification

Routes for fire resistance classification using either direct or extended application



Principle





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Thank you