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Fire Resistance Assessment of:

Moralt Laminesse FireSound 44mm
Doorsets for:
30 Minutes Fire Resistance

WF Report No:

CNA/F14274 Revision B

WF Contract No:

WF421105

Prepared For:

Obere Tiefenbachstr.1,
83734 Hausham,
Germany

Valid From:

9th December 2019

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9th December 2024

13 Intumescent Materials

The intumescent materials tested and assessed for this doorset design are as follows.

Application	Location	Product/Manufacturer
Edge seals	Fitted in the frame jambs or leaf edges	1. PVC encased Type 617 – Lorient Polyproducts Ltd 2. Rigid Box Seals – Pyroplex Ltd 3. Odice S.A.S.
Hinges	Under both hinge blades	1. 1mm Interdens – Dufaylite Developments Ltd 2. 1mm MAP paper – Lorient Polyproducts Ltd 3. 1mm Pyrostrip 300 – Mann McGowan 4. 1mm Therm-A-Strip – Intumescent Seals Ltd 5. G30 – Intumescent Seals Ltd
Lock/latches	Under forend and keep	
	Encasing Latch Body	Not required
Top pivots & flush bolts	Lining all sides of the mortices	1. 2mm Interdens – Dufaylite Developments Ltd 2. 2mm MAP paper – Lorient Polyproducts Ltd 3. 2mm Pyrostrip 300 – Mann McGowan 4. 2mm Therm-A-Strip – Intumescent Seals Ltd 5. 2mm Therm-A-Flex – Intumescent Seals Ltd 6. 2mm Flexilodice Graphite – Odice S.A.S

The seal specification for each doorset configuration is contained in appendix C.

14 Adhesives

The following adhesives must be used in construction.

Element	Adhesive Type
Timber lippings	Details held on file, in confidence, at Warringtonfire
Inner Core to Outer Core	
Outer Core Layers	

15 Hardware

15.1 General

The following sections detail the scope and constraints for fitting hardware to the door design.

The following items of hardware must also bear the CE mark: locks and latches (EN 12209), electro mechanically operated locks (EN 14846), single axis hinges (EN 1935), controlled door closing devices (EN 1154), electrically powered hold open devices (EN 1155), door co-ordinators (EN 1158), emergency exit hardware (EN 179), panic exit hardware (EN 1125).

15.2 Tested Hardware

The following hardware has been successfully incorporated in the tests on this design.

Element	Product	Size (mm)	Location (mm)
Hinges	Enduro Max bearing butt type hinge Ref. DSH1103	36 x 100 (blade size)	-
	Cooke Brothers 7700CB range bearing butt hinge	101 x 30 x3 (blade size)	-
Closer	Rutland TS3204 overhead type closer	220 x 59 (footprint size)	Fitted on the exposed face
	Dorma (UK) Ltd TS72 overhead type closer	240 x 68 (footprint size)	
Latch – disengaged	Briton DS5440 mortice latch	235 x 20 (forend)	Latch -1000mm from the threshold of the leaf
		145 x 25 (keep)	
	Zoo Hardware KFV EP166/3470422	235 x 20 (forend)	Spindle fitted 1026mm from the threshold
		205 x 24 (keep)	
Threshold drop seal	Norsound NOR810dB+	35 high x 14 wide	Fitted in the leaf threshold
Flush Bolts	Zoo steel flush bolts Ref. DS03/200	205 x 20 (forend) 45 x 20 (keep)	Fitted at the head and threshold
	Zoo Hardware, product reference ZAS03RSS	205 high x 20 wide x 38 deep	Fitted at the head of leaf only
		42 x 18 (keep)	
Furniture	Eurospec aluminium lever type handle Ref. CSL1190	Ø52 (rose size)	Fitted appropriate to the latch
	Hoppe Paris FS-K138/353K lever type handle	165 x 45 (footprint size)	

15.3 Additional & Alternative Hardware

15.3.1 Certifire

The Certifire third party certification scheme approves various items of hardware for different door types and different fire ratings and has its own set of requirements relating to that item of hardware.
Where the alternative hardware sections in this report allow alternatives to the tested hardware, Certifire approved hardware may be used as an alternative, subject to the following provisos:

- In all cases, the requirements of this report must take precedence.
- The hardware must comply with the requirements of the relevant section e.g. hinges.
- The hardware must comply with the limitations specified in terms of design, materials and dimensions.

15.3.2 Latches & Locks

Latches and locks must either be as tested, or alternatively components with the following specification are acceptable.

Element	Specification
Maximum forend and strike plate dimensions	235mm high by 25mm wide by 4mm thick
Maximum body dimensions	18mm thick by 100mm wide by 165mm high.
Intumescent protection	See section 11
Materials	All parts essential to the locking/latching action (including the latch bolt, forend and strike) to be steel or brass (with melting point ≥ 800°C)
Location	1000 – 1200mm above threshold

15.3.3 Hinges

Door leaves must be hung on a minimum of 3 hinges. Hinges with the following specification are acceptable. Leaves over 2400mm high must fit 4 hinges.

Element		Specification	
Blade height		90 - 120mm	
Blade width (excluding knuckle)		30 - 35mm	
Blade thickness		2.5 - 4mm	
Fixings		Minimum of 4No. 30 long No. 8 or No. 10 steel wood screws per blade	
Materials		Steel or stainless steel or brass (melting point = or >800°C)	
Hinge positions (to top of hinge blade)	Leaf dimensions <2400mm	Top	180 - 220mm from the head of the leaf to the centreline of the hinge
		2nd	Minimum 200mm from centreline of top hinge to centreline of second hinge OR equally spaced between top and bottom hinge
		Bottom	280 - 320mm from the foot of the leaf to the centreline of the hinge
	Leaf dimensions >2400mm	Top	180 - 220mm from the head of the leaf to the centreline of the hinge
		2nd	Minimum 200mm from centreline of top hinge to centreline of second hinge
		3rd	Equally spaced between 2nd hinge and bottom hinge
		Bottom	280 - 320mm from the foot of the leaf to the centreline of the hinge
Intumescent protection		See section 13	

15.3.4 Automatic Closing

Automatic closing devices, must either be as tested or components of equal specification that have demonstrated contribution to the required performance of this type of 30 minute doorset design, when tested to BS 476: Part 22: 1987 or BS EN 1634-1.

Notes: The top pivots to floorspring assemblies must be protected with 2mm thick intumescent gasket (see section 13) or alternatively the manufacturers tested intumescent gaskets.

15.3.5 Pull Handles

These may be surface-fixed or bolted through the door providing they are steel, stainless steel or brass and the length is limited to 1200mm between the fixing points. No additional intumescent protection is required provided that the hole for the bolt through the leaf is tight.

15.3.6 Push Plates/Kick Plates

Steel, stainless steel or aluminium face-fixed hardware such as push plates and kick plates may be fitted to the doorsets provided that their fitting requires the removal of no part of the door leaf. These items of hardware must not amount to more than 20% of the door leaf area if mechanically fixed and a maximum of 30% if bonded with a contact or other thermally softening adhesive. Plates must not return around the door edges.

15.3.7 Door Security Viewers

Door security viewers with brass or steel bodies of a diameter less than or equal to 15mm may be used provided that the through-hole is bored tight to the case of the viewer (maximum tolerance +1mm). Lenses must be glass and the item must be bedded into a tested intumescent mastic.

15.3.8 Panic Hardware

Panic hardware, manufactured from steel or non-combustible materials, may be fitted, provided that its installation does not require the removal of any timber from the leaf, stop or frame reveal and it in no way interferes with the self-closing action of the door leaf.

15.3.9 Air Transfer Grilles

Air transfer grilles may be fitted providing the product has suitable test evidence to BS 476: Part 22: 1987 or BS EN 1634-1 that demonstrates a minimum 30 minutes integrity performance when installed within a timber based doorset of comparable thickness. Margins to the leaf edges will remain as detailed for glazing and the position of the unit will be dictated by the pressure regime tested in the proving evidence (normally below mid-height). The area occupied by the air transfer grille must not exceed 0.1m^2 and must be deducted from the area of glazing, if both elements are fitted.

15.3.9.1 Cold Smoke Control

Doorsets fitted with an air transfer grille cannot be identified as smoke control doorsets as defined in section 18; unless the transfer grille is connected to a smoke/alarm system such that it will be mechanically closed in the event of smoke being detected.

15.3.10 Environmental Seals

Silicon based flame retardant acoustic, weather and dust seals (e.g. Lorient IS1212, IS1511, IS7025 or IS7060) may be fitted to this doorset design without compromising the performance, providing their fitting does not interfere with the activation of the intumescent seals or hinder the self closing function of the leaves.

15.3.11 Threshold Seals

The following types of automatic threshold drop seals may be recessed in to the bottom rail of leaves to this design without compromising the performance.

Manufacturer	Product Reference
Lorient Polyproducts Ltd.	IS8010si
	LAS8005si
Raven	RP8Si
Athmer	Schall-Ex Duo L-15
Norsound Ltd.	810 range
STS Ltd	ST422

15.3.12 Letter Boxes/Plates

Letter boxes/plates may be fitted providing the product can demonstrate contribution to the required performance of this type of 30 minute doorset design, when tested to BS 476: Part 22: 1987 or BS EN 1634-1 and installed at the proposed location, within a timber based doorset of comparable thickness. Margins to the leaf edges must remain as specified for glazing.

15.3.13 Flush Bolts

Flush bolts may be incorporated centrally into the top and bottom of one meeting edge, providing the following maximum dimensions are not exceeded and the components are fitted opposite the edge fitted with intumescent strips:

- 210mm long x 20mm deep x 20mm wide

Flush bolts must be steel or brass and the mortice must be as tight to the mechanism as is compatible with its operation. All edges of the mortice must be protected with intumescent gaskets as specified in section 11. Alternatively the hardware manufacturers tested gaskets may be used. See diagram below for example of intumescent protection to flush bolt.