
CERTIFICATE OF APPROVAL
No. ME0154

This is to certify that the referenced products of

PROMAT MIDDLE EAST

Suite 1805, 18th Floor, Dubai Festival City Tower, PO Box 123945
Dubai, UAE

Tel: 00 971 4 232 9780

Fax:00 971 4 232 9781

have been assessed against the requirements of the *warringtonfire – mideast certification scheme* and are approved for use within the scope of the test and/or assessment report(s) referenced.

**Promatect L500 Steel and Self-Supporting
Ductwork Systems**

Certificate Reference	Valid Until
CERTIFIRE Certificate CF423	12 th April 2011

CERTIFICATE OF APPROVAL

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Promat UK Ltd – Promatect L500 Steel Systems

Horizontal ducts

120-minute ducts up to 1500mm wide x 1500mm high internally

The general arrangement of the Promatect L500 steel duct system consists of a steel duct protected on the outside with Promatect L500 board. The steel duct must be constructed in accordance with the requirements of DW/144 – Specification for sheet metal duct work – low, medium and high pressure/velocity air systems (published by the Heating and Ventilating Contractors' Association), or equivalent specification. The steel ducts are constructed with rolled steel angle-flanged cross joints and the longitudinal seams are formed using the Pittsburgh lock seam or the grooved corner seam. This specification gives details and minimum sizes of the steel sheet, stiffeners and sizes of angle-sections to be used at various duct sizes.

Steel collars are fitted around the duct at maximum 610mm centres. The collars are steel channels, 50mm x 50mm x 0.9mm thick, which are folded and fastened together at the corners with minimum M4 steel rivets or self-tapping screws. The channels are filled with rock wool of 100kg/m³ nominal density. The channels are not directly fastened to the steel duct.

The steel duct is supported by steel hangers, which consist of a pair of threaded rods and an angle rail under the steel duct. The maximum spacing of the hangers is 2.4m. The sizes of the rods and angles and the spacing of the hangers must be adjusted so that the tensile stress in the rods and the bending stress in the angles do not exceed 10N/mm². The fixings used to fasten the threaded rod hangers to concrete soffits must be all-steel expanding anchors with a penetration in the concrete of at least 60mm. The anchors must match the size of the threaded rods, be of sufficient strength to support the weight of the duct and be fitted in accordance with the manufacturer's instructions. When the hangers are suspended from protected structural steel beams it is advisable that the hanger rods be protected for at least 300mm from the beams with the same level of protection as the structural beams.

Rock wool mineral wool, 50mm thick x 100kg/m³ density, is placed around the steel duct and 20mm thick Promatect L500 boards are screwed to the channel collars with steel self-tapping screws at 200mm maximum centres. Transverse board joints must coincide with the collars. The boards at the longitudinal corner joints are also fastened using steel angle, minimum 30mm x 30mm x 0.6mm thick, with steel self-tapping screws at 200mm maximum centres. Alternatively the boards are fastened together with M4 steel self-tapping screws at 200mm maximum centres. The transverse board joints are covered with a fillet of Supalux board, 100mm wide x 9mm thick, which are fastened with steel self-tapping screws at 200mm maximum centres on both sides of the board joint. All the screws must be minimum M4 (no.8). At board-to-board joints the length of the screws must be at least twice the board thickness.

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At wall penetrations L-shaped collars of Promatect L500, made of strips at least 80mm wide x at least 20mm thick, are fitted around the duct on both sides of the wall. They are fastened to the duct with self-tapping screws. The space between the duct walls and the reveals of the opening must be filled with rock wool of minimum density 100kg/m³. An intermediate layer of the same rock wool, 30mm thick, is fitted between the wall and the collars. In order to prevent any slumping of the top of the duct at compartment wall penetrations, either a duct joint or a steel angle stiffener must be located within 100mm of the wall.

120-minute ducts up to 3000mm wide x 1500mm high internally

The details of the construction of the duct are the same as for ducts up to 1500mm x 1500mm except that intermediate steel angle stiffeners (as specified in DW/144) are fitted to the steel duct to ensure that the cross-sectional area of the duct is maintained and to limit the slumping of the duct. Any longitudinal board joints in the Promatect L500 (other than the corner joints) must be backed by a steel channel (the same size as the collars) and fitted with a Supalux cover strip. Where the stiffening angles or the hanger angle rails are required to be greater than 50mm in size, the channel collars must be increased in size and the mineral wool increased in thickness to accommodate them.

240-minute ducts up to 1000mm wide x 1000mm high internally

The details of the construction of the duct are the same as for the 120-minute ducts except for the following factors:

- a) The Promatect L500 board is 50mm thick.
- b) The mineral wool is 75mm thick x 100kg/m³ and the steel channel collars are increased in depth to 75mm x 50mm wide.
- c) The tensile stress in the hanger rods and the bending stress in the hanger angles must not exceed 6N/mm².
- d) The L-shaped collars of Promatect L500 at wall penetrations must be made of 50mm-thick board or two layers of 20mm-thick board.

240-minute ducts up to 3000mm wide x 1500mm high internally

The details of the construction of the duct are the same as for the smaller ducts except that intermediate angle stiffeners are fitted to the steel duct (as specified in DW/144). Also the soffit channel collar members must be fastened to either the soffit angle stiffeners or to the soffit duct joint angles in order to provide greater support for the Promatect L500 boards and the mineral wool. Any longitudinal board joints in the Promatect L500 (other than corner joints) must be backed by a steel channel (the same size as the collars) and fitted with a Supalux cover strip.

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Vertical ducts

The construction of vertical ducts is the same as for the horizontal ducts. The maximum size of duct is 1500mm x 1500mm internal dimensions. Where the duct passes through a compartment floor the penetration is sealed with Promaseal cement. The thickness of Promaseal cement must be at least that required to provide the same fire rating as the floor. On the upper side of the floor a Promatect L500 collar must be fitted around the outside of the duct and fastened with steel screws. The L-shaped collar is made of strips of board at least 80mm x 20mm thick. Where a vertical duct is located adjacent to a wall, the duct may be restrained by the wall with steel threaded rods and support sections. The weight of the duct assembly must be taken by the steel duct and not the Promatect L500 board. Steel angles may be fitted to the steel duct at the floor penetrations, which bear on the floor slab in order to support the weight of the duct.

Smoke outlet ducts

The ducts may be used as smoke outlet ducts.

Kitchen extract ducts

The ducts may only be used as kitchen extract ducts for installations where the internal wall temperature recommendations of the non-mandatory annex to BS 476: Part 24: 1987 are not required.

Promat UK Ltd – Promatect L500 Self-Supporting Ductwork Systems

Horizontal ducts

The sections of Promatect L500 self-supporting duct are constructed with panels of Promatect L500 board fastened together at the corners with steel wire staples or screws (as given in Table 1) and with Vicubond WR adhesive. The joints between duct sections are formed by means of a sleeve construction. At one end of each duct section a Supalux strip, 100mm wide x 9mm thick, is fastened all around the duct with Vicubond WR adhesive and staples or screws. The adhesive is applied to all contact surfaces of the resulting sleeve connection and the next duct section is inserted into the sleeve and secured with staples or screws. The maximum length of duct section is 3000mm.

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Table 1 Screw and staple fixings

Board thickness	Screws at 200mm centres	Staples at 100mm centres
9mm	25mm x no.6	28/10/1.0
25mm	50mm x no.6	63/11/1.5
30mm	63mm x no.8	63/11/1.5
35mm	63mm x no.8	70/12/2
40mm	75mm x no.8	80/12/2
52mm	100mm x no.10	90/12.2/2.3

Screws are a deep threaded drywall type.

The duct is supported at 1250mm maximum centres with steel hangers. Each hanger consists of two threaded drop rods and an angle or channel-section bearer. The hangers are unprotected provided that the rods are not more than 50mm from the duct side walls and provided that the tensile stress in the rods and the bending stress in the bearers do not exceed 10N/mm² for fire ratings up to 120 minutes and 6N/mm² for fire ratings up to 240 minutes. Where the drop rods are more than 50mm from the duct side walls the bearers are clad with Promatect L500 of the same thickness as the duct walls. Each duct section joint has a hanger located either to coincide with the joint or to be within 250mm of the joint.

The centres of the joints between duct sections are dependent on duct size in relation to board sizes, but in general are at 1250mm, 2500mm or 3000mm centres. If the joints are at 1250mm centres then there is one hanger per duct section, with the hanger located within 50mm of the joint. If the joints are at 2500mm or 3000mm centres then three hangers per duct section are fitted, one central and one at each end within 250mm of the joint. When fixing into concrete or masonry, the rod fixings are all-steel expanding anchors with a penetration of at least 60mm.

When the hangers are suspended from protected structural steel beams it is advisable that the hanger rods be protected for at least 300mm from the beams with the same level of protection as the structural beams.

When hangers exceed 1.5m in length the hangers are clad with a fire protection material of similar thickness to the duct to prevent excessive thermal expansion.

The maximum size of hatch is 600mm x 600mm. The hatches are fastened with steel screws into threaded inserts at 150mm maximum centres.

At wall penetrations L-shaped collars of Promatect L500, made of strips at least 80mm wide x at least 20mm thick, are fitted around the duct on both sides of the wall. They are fastened to the duct with staples or screws (Table 1) and Vicubond WR adhesive. The space between the duct walls and the reveals of the opening must be filled with rock wool of minimum density 60kg/m³. An intermediate layer of the same rock wool, 30mm thick, is fitted between the wall and the collars.

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The basic duct construction is suitable for duct sizes up to 1200mm x 1200mm internal dimensions. Where either dimension exceeds 1200mm, internal vertical stiffeners are fitted. The stiffeners are constructed either with strips of Promatect L500 board, 250mm long x minimum 40mm thick, fixed at maximum 600mm centres or with a continuous panel of Promatect L500 board, minimum 40mm thick, with holes cut within the panel of a size and quantity to ensure equal crossflow of air between the two halves. The holes must not be closer than 400mm to each other and to the board edges. The stiffeners are fastened with steel staples or screws (Table 1) and Vicubond WR adhesive. The thickness of the stiffeners is at least the same as the duct walls. A central row of stiffeners, using either of the above methods, is fitted to ducts up to 2000mm wide x 1250mm high internal dimensions. Two rows of stiffeners positioned equidistant within the duct are fitted to ducts wider than 2000mm. The maximum size of duct is 3000mm wide x 1250mm high internal dimensions.

Where a duct is located close to a wall or floor the 4-sided Promatect L500 duct system is used with a layer of rock wool between the duct and the wall or floor.

The duct constructed with 52mm-thick Promatect L500 board and minimum 50mm thick x 100kg/m³ density rock wool is designed to satisfy the stability, integrity and insulation criteria of BS 476: Part 24: 1987 for 240 minutes for duct B (internal fire). The duct may be constructed in two different ways. This consists of one layer of 25mm-thick Promatect L500 board on both sides of the rock wool. The second construction consists of 52mm-thick Promatect L500 board with 50mm thick x 160kg/m³ density rock wool (New Promalit) bonded to the outside of the duct with Vicubond WR adhesive. All other details are as previously described for the self-supporting duct assemblies.

Vertical ducts

The construction of vertical ducts is the same as for the horizontal ducts. The maximum size of duct is 1200mm x 1200mm internal dimensions. Where the duct passes through a compartment floor the penetration is sealed with Promaseal cement. The thickness of Promaseal cement must be at least that required to provide the same fire rating as the floor. On the upper side of the floor a Promatect L500 collar must be fitted around the outside of the duct and fastened with steel screws or staples (Table 1) and Vicubond WR adhesive. The L-shaped collar is made of strips of board at least 80mm x 20mm thick, and is designed to support the weight of the duct above the collar. Where a vertical duct is located adjacent to a wall, the duct may be restrained by the wall with steel threaded rods and support sections.

Smoke outlet ducts

The ducts may be used as smoke outlet ducts.

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Kitchen extract ducts

The ducts may only be used as kitchen extract ducts for installations where the internal wall temperature recommendations of the non-mandatory annex to BS 476: Part 24: 1987 are not required. The internal surfaces of the Promatect L500 board must be sealed with Promat-SR Impregnation, a silicate-based impregnating agent, or a steel lining fitted inside the duct.

The thickness of Promatect L500 board required for type B ducts (internal fire) to satisfy the stability, integrity and insulation performance criteria of BS 476: Part 24: 1987 are given in Table 2.

Table 2

Fire resistance – minutes	30	60	90	120	240
Thickness - mm	25	35	40	52	52 + 50mm x 100kg/m ³ or 160kg/m ³ rock wool

The thickness of Promatect L500 board required for types A and B ducts to satisfy the stability and integrity performance criteria of BS 476: Part 24: 1987 are given in Table 3.

Table 3

Fire resistance – minutes	30	60	90	120	240
Thickness - mm	25	25	25	25	25

Duct type B (internal fire) constructed with Promatect L500 board 25mm thick is also able to satisfy the insulation criterion for 30 minutes.

The thickness of Promatect L500 board required for type A ducts (external fire) to satisfy the stability, integrity and insulation performance criteria of BS 476: Part 24: 1987 are given in Table 4.

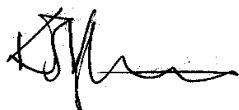
Table 4

Fire resistance – minutes	30	60	90	120	240
Thickness - mm	25	25	25	25	52

Table 5 Maximum loads for drop rods

Nominal rod diameter mm	Tensile stress area mm ² (BS 4190)	Load			
		kN – 2hr (10N/mm ²)	kg – 2hr	kN – 4hr (6N/mm ²)	kg – 4hr
6	20.1	0.20	20.49	0.12	12.29
8	36.6	0.37	37.31	0.22	22.39
10	58.0	0.58	59.12	0.35	35.47
12	84.3	0.84	85.93	0.51	51.56
16	157.0	1.57	160.04	0.94	96.02
20	245.0	2.45	249.75	1.47	149.85

Signed for and on behalf of Warrington Certification



Sir Ken Knight
Chairman - Management Council

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