

FLAMEBAR BW11 FIRE RATED DUCTWORK

Fire rated duct providing up to 4 hours fire resistance when tested to BS 476 Part 24 and ISO 6944

FLAMEBAR BW11 SYSTEM

Flamebar BW11 fire duct is constructed from galvanised sheet steel manufactured to either DW144 or SMACNA standard. It is then degreased and sprayed with Flamebar BW11, which is a specially formulated water based ablative coating.

Flamebar BW11 contains selected mineral fillers in a low permeability elastomeric binder to a thickness of nominal 0.7mm to give a light weight finish product which, has been successfully tested for international use under Cellulosic Fire Conditions in excess of 4 hours duration. The ductwork is produced in sections and is assembled on site utilising tested Flamebar sealant and gasket.

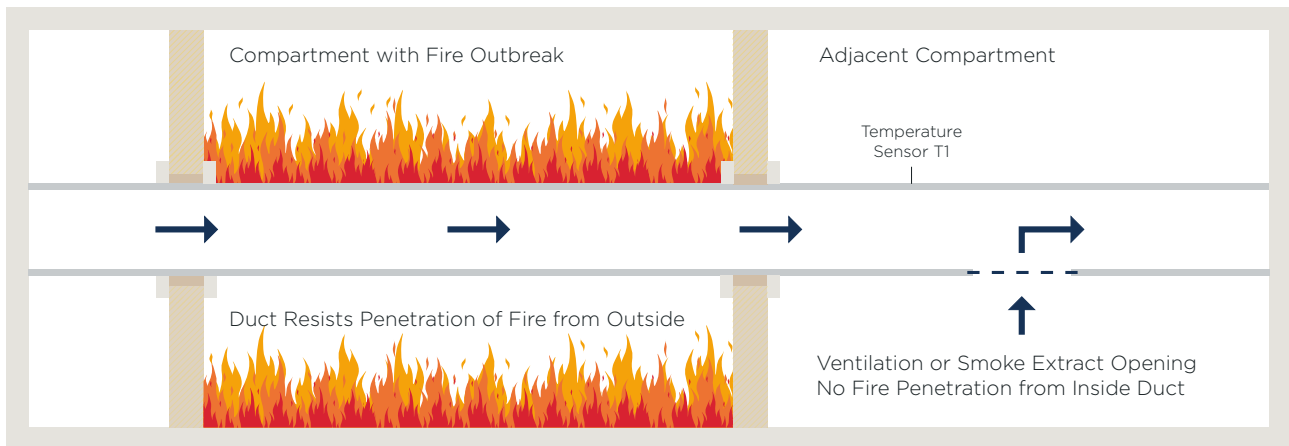


The unique properties of Flamebar BW11 has enabled us to design a low density, highly durable material which accommodates induced stress arising from extreme and varying conditions e.g. climatic moisture and structural loading variations and the effect of thermal shock during a fire.

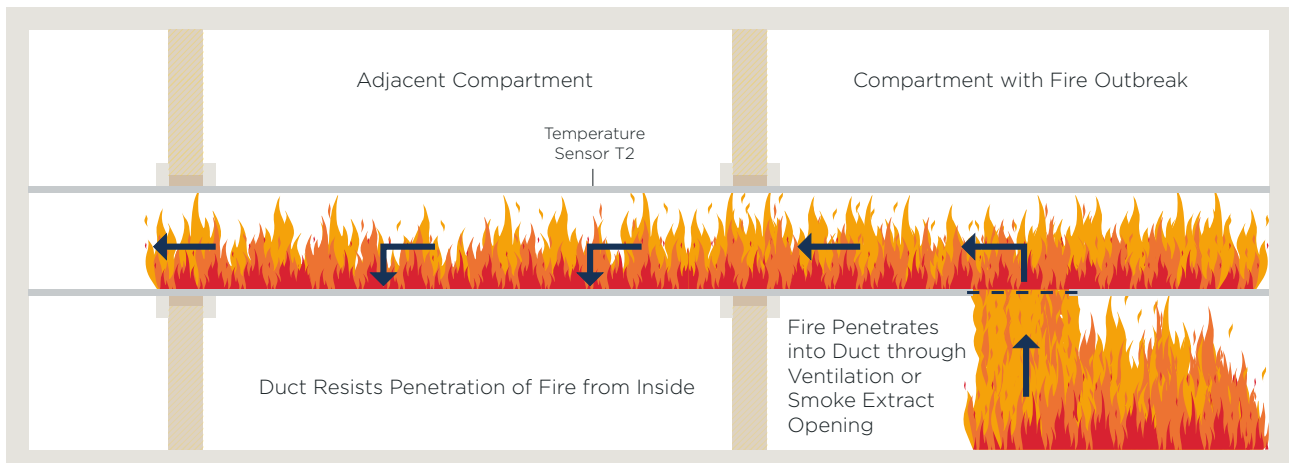
The completed system has been tested and accredited by the Building Research Establishment (BRE) Global UK to BS 476 Part 24 and classified by UL and ISO 6944 up to a temperature of 1133°C.



Fire Outside - Duct Type A



Fire Inside - Duct Type B



Flamebar BW11 system is tested for up to 4 hours Stability, Integrity and Insulation in accordance with BS 476: Part 24 and ISO 6944 for both Type A and B fires.

SYSTEM ADVANTAGES

TIME AND SPACE SAVING

As well as being used for Fire Rated Smoke Extract, Kitchen Exhaust and Pressurisation Systems, the Flamebar BW11 system can also be used instead of drywall fire rated shafts.

By eliminating drywall shafts, floor space can be maximised as the fire rated shaft can be constructed before the building is completely watertight, thereby reducing construction time and the need for additional site inspections.

EASY INSTALLATION

The Flamebar BW11 ducts can be coated on site or in a factory environment. The finished sections are ready for installation. As the Flamebar BW11 system can be based upon DW144 or SMACNA ductwork construction standards, the fire duct sections can be constructed using the TDF or slide-on flange system and joined together incorporating the Flamebar intumescent gasket. The installation can be carried out by competent duct erectors.

COMPLETE FIRE RATING DUCTING SYSTEM

Plant items such as in-line fans and silencers, subject to casing thickness and suitable construction, can be sprayed with Flamebar BW11 and thereby rated as part of the certified system eliminating the need for special enclosures.

A LIGHTWEIGHT CERTIFIED SYSTEM

The Flamebar BW11 system is the lightest weight certified system on the market. Therefore as well as the load on the structure being eased, handling, field inspection or quality check on ground and site erection are made easier.

APPLICATION

Flamebar BW11 is available in two types of coating, spray and brush on application. The system shall be installed as per Firespray application manual and as fire tested and certified by authorities.

FLEXIBILITY IN DESIGN

Flamebar BW11 offers complete flexibility in design - rectangular, flat oval and circular ducts are available: If it can be made, it can be sprayed being fully tested and certified.

The construction of the initial galvanised sheet steel duct means that all Flamebar BW11 fire ducts have normal standards of air tightness, so are therefore easily capable of being successfully pressure tested.

EXTRACT FROM TYPICAL CONSTRUCTION STANDARD - UP TO 4 HOURS STABILITY, INTEGRITY & INSULATION

A series of Construction Standards are produced that directly relate to the requirements of each individual project. These Standards represent varying periods of fire resistance, ductwork profile and operational requirement of the duct system (i.e. smoke extract, ventilation duct or kitchen extract).

LONGEST SIDE	GAUGE	STABILITY, INTEGRITY AND INSULATION RATING											
		STANDARD FLANGE STRAIGHT			LONGITUDINAL JOINTS		RADIUS BENDS		MAXIMUM SIZE	HORIZONTAL DUCT 1500 BEARER CENTRES		HORIZONTAL DUCT 1500 BEARER CENTRES	
		LENGTH	BEADING	CROSS JOINT	CORNER	SHEET	THROAT RADIUS	NUMBER OF SPLITTERS		HANGER SIZE mm	BEARER MEMBER MINIMUM SIZE	HANGER SIZE mm	BEARER MEMBER MINIMUM SIZE
UP TO 400	0.6	1260 or 1510	BEADING @ 300 CRS	20mm SLIP ON FLANGE or T22 CLASS E	GROOVED SEAM FIG. L-6 or PITTSBURGH LOCK FIG. L-1	GROOVED SEAM FIG. L-3	150	UP TO 300mm NONE OVER 300mm 1	400 x 200	8	40 x 40 x 5 R.S.A	8	40 x 40 x 5 R.S.A
									400 x 400	8	40 x 40 x 5 R.S.A	8	40 x 40 x 5 R.S.A
401 UP TO 600	0.8	1260 or 1510	BEADING @ 300 CRS	20mm SLIP ON FLANGE or T22 CLASS E	GROOVED SEAM FIG. L-6 or PITTSBURGH LOCK FIG. L-1	GROOVED SEAM FIG. L-3	150	UP TO 500mm NONE OVER 500mm 2	600 x 300	8	40 x 40 x 5 R.S.A	8	50 x 50 x 5 R.S.A
									600 x 600	8	40 x 40 x 5 R.S.A	8	50 x 50 x 5 R.S.A
601 UP TO 800	0.8	1260 or 1510	BEADING @ 300 CRS	30mm SLIP ON FLANGE or T22 CLASS F	GROOVED SEAM FIG. L-6 or PITTSBURGH LOCK FIG. L-1	GROOVED SEAM FIG. L-3	150	2	800 x 400	8	50 x 50 x 5 R.S.A	8	60 x 60 x 6 R.S.A
									800 x 800	8	50 x 50 x 5 R.S.A	8	60 x 60 x 6 R.S.A
801 UP TO 1000	0.8	1260 or 1510	BEADING @ 300 CRS	40mm SLIP ON FLANGE or T22 CLASS G	GROOVED SEAM FIG. L-6 or PITTSBURGH LOCK FIG. L-1	GROOVED SEAM FIG. L-3	150	2	1000 x 500	8	50 x 50 x 5 R.S.A	8	75 x 75 x 6 R.S.A
									1000 x 1000	8	60 x 60 x 6 R.S.A	10	75 x 75 x 6 R.S.A
1001 UP TO 1500	1.0	1260 or 1510	BEADING @ 300 CRS	40mm SLIP ON FLANGE or T22 CLASS G	GROOVED SEAM FIG. L-6 or PITTSBURGH LOCK FIG. L-1	GROOVED SEAM FIG. L-3	150	3	1500 x 750	10	75 x 75 x 6 R.S.A	10	76 x 38 CHANNEL
									1500 x 1500	10	75 x 75 x 6 R.S.A	12	76 x 38 CHANNEL
1501 UP TO 2000	1.0	1260 or 1510	BEADING @ 300 CRS	40mm SLIP ON FLANGE WITH TIE ROD or T22 CLASS H	GROOVED SEAM FIG. L-6 or PITTSBURGH LOCK FIG. L-1	GROOVED SEAM FIG. L-3	150	3	2000 x 1000	12	76 x 38 CHANNEL	12	76 x 38 CHANNEL
									2000 x 2000	12	76 x 38 CHANNEL	16	76 x 38 CHANNEL
2001 UP TO 2500	1.2	1260 or 1510	BEADING @ 300 CRS	40mm SLIP ON FLANGE WITH 2 TIE RODS or T22 CLASS I	GROOVED SEAM FIG. L-6 or PITTSBURGH LOCK FIG. L-1	GROOVED SEAM FIG. L-3	150	3	2500 x 1250	16	102 x 51 CHANNEL	16	102 x 51 CHANNEL
									2500 x 2500	16	102 x 51 CHANNEL	20	102 x 51 CHANNEL

This table is used for illustrative purposes only, and shall not be used for any other purposes.

FLAMEBAR SOLUTION WHEN LOWER FIRE INSULATION TEMPERATURE IS REQUIRED

All Flamebar BW11 fire ducting has been fully tested to BS 476 Part 24 and ISO 6944 for Stability, Integrity and Insulation up to 4 hours. However, where lower fire insulation temperatures are required, due to ducting temperature being rated the same as the smoke extract fan or a fire-engineering consultant having determined a fire engineering solution, we are able to offer our Flamebar BW11 product. This can be either on its own or with the addition of various thicknesses of insulation, depending upon the insulation fire rating specified.

LOW TEMPERATURE SMOKE EXTRACT DUCT TEST IN ACCORDANCE WITH BS 476 PART 24 - FIRE INSIDE DUCT

Flamebar BW11 fire duct is capable of providing 120 minutes Stability, Integrity and Insulation performance to BS 476 part 24 criteria with only a nominal 0.7mm BW11 dry film thickness when tested to smoke temperature of up to 400°C. The system completely omits the need for the addition of insulation materials, for an extremely lightweight, space saving and cost effective solution.



Assessed to ISO 9001

STANDARDS

The range of Flamebar BW11 fire duct has been tested by the Loss Prevention Council. This is in accordance with BS 476 Part 24 and ISO 6944 Standard, for vertical and horizontal ductwork, with both fire inside and outside the duct, in excess of 4 hours Stability, Integrity and Insulation for ventilation ductwork, smoke extract ductwork or kitchen extract ductwork.

The Flamebar BW11 system has also been tested to EN 1366, EN 15882 and is classified in accordance with EN 13501 to temperatures of 1029°C.

Flamebar BW11 has been tested by UL in the USA to determine compliance with NFPA 90A (Installation of Air Conditioning and Ventilation Systems) for flame spread and smoke development with the following results:

NFPA STIPULATION	FLAMEBAR BW11 RESULTS
Flame spread not to exceed 25	9.4
Smoke Development no higher than 50	0.2

Test conducted in accordance with UL Standard 723 'Test for Surface Burning Characteristics of Building Materials' (ASTM E84)

Flamebar BW11 fire duct has also been tested by London Underground Limited (underground metro system) to BS 6853 and satisfied the Fire Safety Code of Practice requirements for smoke emission and toxic fume emission.

IMPACT TEST OF FLAMEBAR BW11 FIRE DUCT

Flamebar BW11 fire rated ductwork has undergone an impact test to BS EN 1128: 1996, in which a dart impacts 52.46J at maximum drop, resulting in a small indentation, which passes under the criteria of BS EN 1128: 1996. It has also undergone impact testing to the requirements of Appendix A BS 5588 Part 5 as referenced in BS 9999.

PROPERTIES

ENVIRONMENTAL FRIENDLY

Flamebar BW11 is a VOC free product. At Firespray International, we pride ourselves on being an environmentally responsible company, creating products that fulfil this vision and comply with LEED (Leadership in Energy and Environmental Design) and USGBC (U.S. Green Building Council) objectives. With this vision in mind, Firespray International endeavours to design products that maximise the use of recycled materials and reduce the use of natural resources.

EXPANSION

As all steel expands with temperature, there will naturally be an expansion of fire duct under fire conditions as follows:

- At 1100°C on expansion of 0.01562mm per mm (0.016 in per in)
- At 600°C on expansion of 0.00852mm per mm (0.008 in per in)
- At 430°C on expansion of 0.006106mm per mm (0.006 in per in)

THERMAL PROPERTIES

'U' value - thermal transmittance.

- Flamebar BW11 without insulation = 5.0 w/m²k (0.88 Btu/ft²/hr°F)
- Flamebar BW11 with 50mm insulation = 0.833 w/m²k (0.147 Btu/ft²/hr°F)
- Flamebar BW11 with 100mm insulation = 0.48 w/m²k (0.08 Btu/ft²/hr°F)

CHEMICAL RESISTANCE

- The coating has been tested in standard 10% solutions of the following acids: Hydrochloric, Nitric and Sulphuric.
- Standard 10% solutions of the following Alkalies: Sodium Hydroxide and Potassium Hydroxide.
- The following Solvents: Xylene and Acetone.

After 10 days immersion, all of the above chemicals failed to cause a breakdown of the product structure.

Flamebar BW11 fire rated ductwork is protected by design right. For further information please refer to our local licensee or to Firespray International Limited.

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