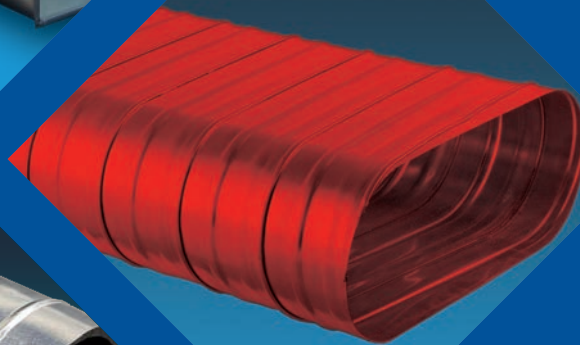
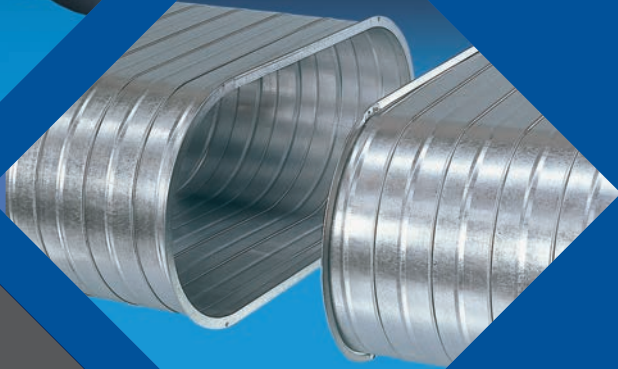
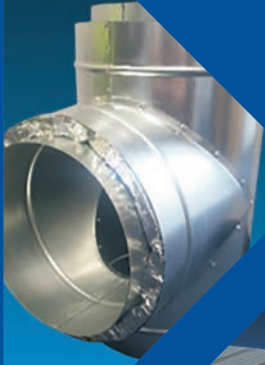




Engineered Air Solutions





HAS-VENT is the UK's leading independently owned provider of ventilation and air movement products to the construction industry, in particular the building services sector. Our Mission is to continually improve our products and services to meet our customer needs.

HAS-VENT has been established for over 40 years and we understand the needs and requirements of our customers and the industry we work in. With ten strategically located branches throughout the UK our business has been developed and tailored to meet the specific demands of the customer and we constantly strive to maintain and enhance our high standards of service, delivery and quality.

If you would like more information or would like to discuss our range of specialised ductwork solutions in detail please contact our sales team.



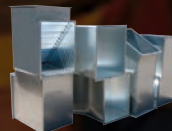
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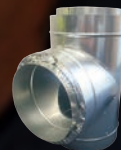
Colorduct
page 4



Flat Oval Duct
page 8



Rectangular Duct
page 14

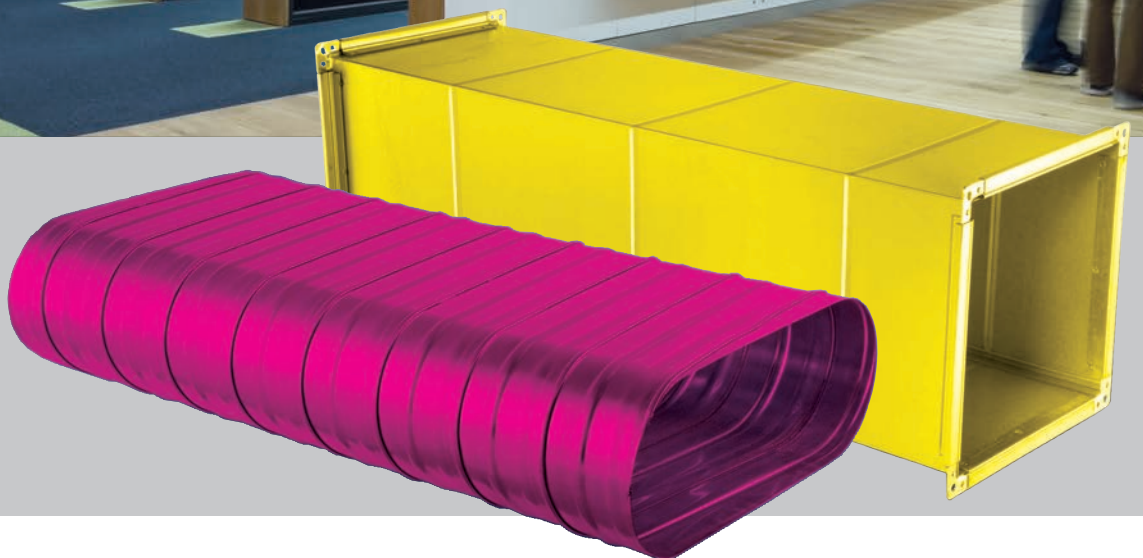


Twin Wall Duct
page 18



Pre-Insulated Ductwork
page 22

Colorduct II





Overview

At HAS-Vent we believe in developing every aspect of a building's potential. Flying in the face of the convention that states that air conditioning, ventilation and warm air heating systems are architectural and design no-go areas, we pioneered the concept of converting exposed ducts into pleasing aesthetic features. As a result ductwork came into the open.

Colorduct II was developed in the mid 80's by Hotchkiss Spiral Tubes now trading as HAS-Vent. HAS-Vent is now one of the leading suppliers of ventilation ductwork and accessories in the UK with a Midlands based head office and a national branch network. Our innovative ducting systems were quickly added to blueprints for all types of building where previously the idea of leaving building services exposed would have been considered unacceptable.

Colorduct II conforms to the DW/144 specification.

Within this range you will find the appropriate solution to your ducting requirements - and an opportunity to turn a hidden utility into a conspicuous asset.

Why hide it?

Colorduct II is a highly visible, highly versatile, low cost system of coloured ducting that will enhance its environment. Only available from HAS-Vent, this pre-coloured ductwork system is especially suitable for public places such as airports, banks, office developments, business parks, atria, schools, roof tops, cafeterias, leisure centres and swimming pools.

Colorduct II enables ducting to become an essential design factor in air conditioning, ventilation and warm air heating applications. Resilient, long-lasting with low maintenance costs, it is available in circular, flat oval and rectangular formats, contributing a unique design flavour to any building where ductwork is on view.

The Colorduct II palette

Colorduct II special polyester powdered colour ducting is suitable for ductwork conforming to DW/144 specification, and is therefore highly flexible in application across a wide array of sizes. It's smooth, yet very tough non-inflammable coating offers a film thickness of no less than 50 and no more than 120 microns in standard circular and oval formats (rectangular also available) - and is the obvious choice for interior applications.

Colorduct II is available in a range of colours. Accent colours are brighter, more heavily pigmented and for that reason are more expensive. Colorduct II has the advantage of being available in any British Standard colour in both gloss and matt finishes.

Specifiers are asked to remember that when Colorduct II is included in tender documents, we are unable to accept responsibility for the matching of colours if the total system of tubes and fittings is not purchased from HAS-Vent. If tonal consistency is critical a single contract should be sourced at the same time from the one production batch. If at the time of tendering the final colour has not been agreed, we reserve the right to quote for supply based on white or our nearest stock colour.



A word to the designer

It is worth making a note of the following:

- Colorduct II can only be manufactured to fully dimensioned drawings. Site cut lengths should be avoided.
- Colorduct II can be manufactured in gauges up to 1.6mm, with a maximum component length of 3 metres.
- Branches, grille spigots and access doors should be factory fitted.

To complement your design

HAS-Vent also produce a range of complementary products:

Pre-insulated COLORDUCT II

Where insulated ductwork is specified, Colorduct II has the solution. By incorporating a layer of insulation material between the Colorduct outer skin and a galvanised inner skin, the thermal transfer properties of the ductwork can be maintained.

Quick Flange System

A fast jointing one bolt flange system ideally suited to the larger diameter circular Colorduct II installation. The flanges are colour matched to the ductwork and offer the advantage of faster installation times, as well as adding stiffness to the ductwork.

Accessories

A range of dampers, access doors, grilles and spigots that can be supplied to match any Colorduct II installation.

Supports and hangers

Colorduct II products have a unique finish which is part of their appeal. In consequence, supports have to be individually designed to suit the individual application. External support brackets should be avoided where possible as these can detract from the overall appearance. Special support frames located internally within the ductwork have been designed by HAS-Vent to overcome this problem, with the added advantage that they also serve to reinforce the ductwork. Please make the most of our valuable in-house experience by contacting our Technical Department who will be delighted to advise on types and applications of internal supports available.

Handling, storage and installation

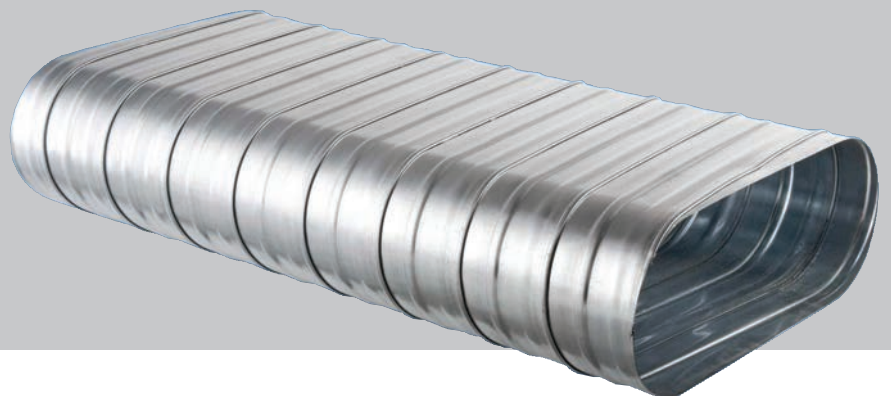
As a specific-to-the-purpose product, Colorduct II should be treated with respect on-site and has been designed and specified to be clearly visible. For your convenience and safety we have compiled the following notes of guidance to ease the process of installation.

- 1 After inspection by the HAS-Vent Quality Assurance Department, each Colorduct II component is individually wrapped in protective bubble wrap film.
- 2 To avoid the possibility of damage, delivery to site should be delayed until installation can proceed. If onsite storage is unavoidable take care to select a location that is clean, dry and provides protection from damage by other site users. Colorduct II must never be dragged across abrasive surfaces or floors and, ideally, should be covered.
- 3 The key to successful installation is an understanding of how the support system works, taking care to ensure that the erection works in tandem with the supporting arrangement. Supports should be located with more precision than a normal ductwork installation and time allocated to accurately measure support points. This will ensure that the ensuing installation is straightforward.
- 4 The conventional process of jointing the components together can be best achieved by pre-drilling the outer skin using a template to ensure even rivet pitches. Sealant should be applied to the inner skin of the large end before insertion of the male end, making sure the duct sections are pushed tightly together. Care should be taken when drilling through the outer skin to prevent the drill chuck from damaging the coating.
- 5 Once the ductwork is in place, a fine bead of sealant should be applied to the outside of the joint, smoothed over and dried.
- 6 The sealant around the joint and pop rivet heads can now be carefully painted using the touch up paint supplied to you at the time of delivery.
- 7 Handling marks on the ductwork can be simply removed using a moist cloth and mild detergent.
- 8 The wrapping should be re-used on the ductwork for protection until the work is complete.

Maintenance

Its specially developed polyester finish provides Colorduct II with excellent protection against fresh and salt water degradation, resistance against a variety of oils and many forms of mild chemical vapours. In consequence, routine maintenance can be achieved through

Flat Oval Duct





Overview

HAS Flat Oval Ductwork, is intended for both indoor and outdoor use, it is especially suitable for systems where space is an issue, it is also more aesthetically pleasing to the eye for those jobs that require an on-show finish.

Flat Oval is the term used to describe a duct of cross-section with flat opposed sides and semi-circular ends.

Apart from stiffening requirements mentioned below flat oval ducts have the same constructional requirements throughout the pressure ranges covered in DW144.

There are 2 finishes available for this product.

- Standard Galvanised Finish Z275
- Coloduct II – Painted to any RAL colour specified (data sheet available upon request)

Construction

The ductwork is made from Hot Dipped Galvanised Steel DX51D Z275, all raw material is supplied and certified to the latest version of BS EN IS 9001.

Straight Ducts

The straight duct is manufactured from a spirally-wound circular duct, it is then stretched using a special former to the required radius and length required.

Additional stiffening is required in the form of tie bars which are fitted in line with DW144 – the tables below shows what is required for low and medium pressure (left) and high pressure (right).

Tie rods	Depth of duct (minor axis - 'D') - nominal										
	75	100	125	150	200	250	300	350	400	450	500
Not required	mm mm mm mm mm mm mm mm mm mm mm										
	320										
	360	350	330	320							
	400	390	370	360							
	440	430	410	400							
	480	470	450	440							
	520	505	490	480							
	545	530	520								
					555	525					
					635	605	580				
Fig 120 1000 mm centres					715	690	660	630			
					800	770	740	710	685	655	
					880	845	825	790	765	735	705
Fig 121 750 mm centres					960	930	900	875	845	815	785
					1040	1010	985	955	925	895	865
					1120	1090	1065	1035	1005	975	945
Fig 122 500 mm centres					1200	1170	1145	1115	1085	1055	1025
						1335	1305	1275	1245	1215	1190
							1465	1435	1405	1375	1350
								1625	1595	1570	1540
									1785	1760	1730
										1700	1670
											1640

Tie rods	Depth of duct (minor axis - 'D') - nominal										
	75	100	125	150	200	250	300	350	400	450	500
Not required	mm mm mm mm mm mm mm mm mm mm mm										
	320										
	360	350	330	320							
	400	390	370	360							
	440	430	410	400							
	480	470	450	440							
	520	505	490	480							
	545	530	520								
					555	525					
					635	605	580				
Fig 123 1000 mm centres					715	690	660	630			
					800	770	740	710	685	655	
					880	845	825	790	765	735	705
Fig 124 750 mm centres					960	930	900	875	845	815	785
					1040	1010	985	955	925	895	865
					1120	1090	1065	1035	1005	975	945
Fig 125 500 mm centres					1200	1170	1145	1115	1085	1055	1025
						1335	1305	1275	1245	1215	1190
							1465	1435	1405	1375	1350
Fig 126 500 mm centres								1625	1595	1570	1540
									1785	1760	1730
										1700	1670
											1640

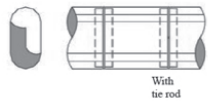
Sheet Steel Thickness

The below table shows the sheet thickness for both spirally wound duct and handmade fittings for flat oval ducts, this is applicable to all 3 pressure classes.

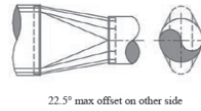
Nominal sheet thickness	Surface area per metre length	Depth of duct (minor axis – 'D') – nominal											
		75	100	125	150	200	250	300	350	400	450	500	
1	2	3											
mm	Sq.metres	(Width of duct (major axis – 'W')-nominal-mm)	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
0.8	0.178		320										
	0.798		360	350	330	320							
	0.878		400	390	370	360							
	0.958		440	430	410	400							
	1.037		480	470	450	440							
	1.117		520	505	490	480							
	1.197			545	530	520							
	1.277					555	525						
	1.436					635	605	580					
	1.596					715	690	660	630				
	1.756					800	770	740	710	685	655		
	1.915					880	845	825	790	765	735	705	680
1.0	2.075					960	930	900	875	845	815	785	755
	2.238					1040	1010	985	955	925	895	865	835
	2.394					1120	1090	1065	1035	1005	975	945	915
	2.553					1200	1170	1145	1115	1085	1055	1025	1000
	2.873						1335	1305	1275	1245	1215	1190	1160
	3.192							1465	1435	1405	1375	1350	1320
	3.511							1625	1595	1570	1540	1510	1480
	3.830							1785	1760	1730	1700	1670	1640

Flat Oval Fittings

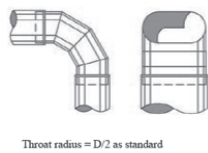
There are standard dimensional standards for flat oval fittings, these will always be adhered to unless specified by our customers to deviate from DW144 standard.



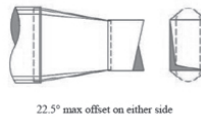
Straight Duct with connectors



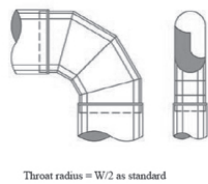
Flat Oval to Circular
Transformation piece
Can be concentric, eccentric or offset



Segmented bend (easy)
90° four section minimum as illustrated
i.e. middle two sections are full segments and two end sections are half segments
See Fig 42 in rectangular section for an explanation of 'easy' and 'hard'.



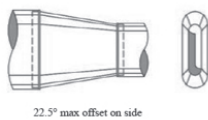
Flat Oval to Rectangular
Transformation piece
Can be concentric, eccentric or offset



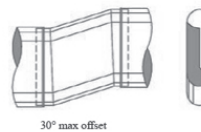
Segmented bend (hard)
90° four section minimum as illustrated
i.e. middle two sections are full segments and two end sections are half segments
See Fig 42 in rectangular section for an explanation of 'hard' and 'easy'.



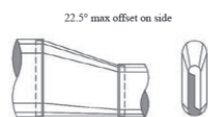
Offset - easy



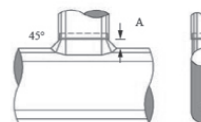
Taper - Concentric



Offset - hard



Taper - Eccentric



Conical Branch

Branch duct width mm	Dimension (A) mm
Up to 200	75
" 300	100
" 400	125
" 600	150
Over 600	200

Joining Options

The standard jointing method for straight flat oval duct is with an oval coupling.

Fittings are made small end as standard to fit into straight duct but can be made female if required.

Sheet Metal flanges are also available if required.

Duct Supports

Supports are an essential part of the ductwork system, and their installation is normally the responsibility of the ductwork contractor.

The standard supports that HAS-Vent supply are stirrups which support the ductwork – these are sold singly but can be made in pairs to wrap around the ductwork.

HAS-Vent can also manufacture a patented fully fitted internal support system if required, which negates the requirement for external supports and enhances the aesthetics of the installation.





The below table shows the support information regarding to the supports mentioned.

Major Axis	Screw Rod	Flat Strap	Stirrups
Up to 400	6	25 x 0.8 Plain or Perf	25 x 3 flat
401 - 605	8	25 x 3 flat	30 x 3 flat
606 - 1040	8	30 x 3 flat	30 x 3 flat
1041 - 1510	10	N/A	40 x 5 flat
1511 - 1785	10	N/A	40 x 5 flat

Below is a table showing the circular design equivalent of each flat oval size that we produce in mm.

320 x 76	163	582 x 254	404	655 x 406	538
361 x 76	170	663 x 254	432	737 x 406	572
401 x 76	178	742 x 254	455	818 x 406	605
442 x 76	188	823 x 254	478	897 x 406	632
480 x 76	193	902 x 254	498	978 x 406	663
521 x 76	201	983 x 254	518	1057 x 406	688
		1064 x 254	538	1138 x 406	714
345 x 102	196	1143 x 254	556	1219 x 406	737
386 x 102	206	1224 x 254	574	1298 x 406	759
427 x 102	216	1303 x 254	589	1379 x 406	782
467 x 102	224	1384 x 254	607	1539 x 406	823
508 x 102	234	1466 x 254	622	1699 x 406	861
546 x 102	241	1626 x 254	650	1941 x 406	915
		1786 x 254	678		
333 x 127	216	1950 x 254	736	709 x 457	592
371 x 127	226			787 x 457	627
411 x 127	239	632 x 305	460	869 x 457	660
452 x 127	249	714 x 305	490	950 x 457	691
493 x 127	259	792 x 305	516	1029 x 457	719
533 x 127	269	874 x 305	541	1110 x 457	747
		955 x 305	564	1189 x 457	775
318 x 152	231	1034 x 305	587	1270 x 457	800
358 x 152	246	1115 x 305	607	1351 x 457	823
399 x 152	259	1196 x 305	627	1511 x 457	869
437 x 152	269	1275 x 305	645	1671 x 457	909
478 x 152	282	1356 x 305	663	1913 x 457	968
518 x 152	292	1435 x 305	681		
559 x 152	305	1598 x 305	714	678 x 508	605
638 x 152	323	1758 x 305	744	759 x 508	645
719 x 152	340	1920 x 305	762	841 x 508	681
800 x 152	358			919 x 508	714
879 x 152	373	686 x 356	518	1001 x 508	747
960 x 152	389	765 x 356	546	1080 x 508	777
1039 x 152	410	846 x 356	577	1161 x 508	805
1120 x 152	414	925 x 356	602	1242 x 508	833
1201 x 152	427	1006 x 356	627	1321 x 508	859
		1087 x 356	650	1483 x 508	909
531 x 203	345	1166 x 356	673	1643 x 508	957
610 x 203	368	1247 x 356	693	1800 x 508	980
691 x 203	391	1326 x 356	714	1885 x 508	1019
770 x 203	411	1407 x 356	734		
851 x 203	429	1567 x 356	772		
932 x 203	450	1727 x 356	805		
1011x 203	465	1969 x 356	853		
1092 x 203	483				
1171 x 203	498				
1335 x 203	509				

Rectangular Duct





Overview

HAS Rectangular Ductwork, is intended for both indoor and outdoor use, the constructional requirements for rectangular ductwork depend on the pressure classification as set out in the tables below.

There are 2 finishes available for this product which are listed below.

- Standard Galvanised Finish Z275
- Colorduct II – Painted to any RAL colour specified (data sheet available upon request)

Construction & Sheet Steel Thickness

The ductwork is made from Hot Dipped Galvanised Steel DX51D Z275, all raw material is supplied and certified to the latest version of BS EN IS 9001.

The below specifications cover duct sizes up to a maximum longer side of 3000mm. Duct sizes with an aspect ratio greater than 4:1 are not recommended. Although they offer no problems of construction, they increase frictional resistance and the possibility of noise.

Low Pressure Ductwork

TABLE 2.2 FLANGED JOINTS						Dimensions in mm				
1	2	3	4	5	6	7	8	9	10	11
MINIMUM SHEET THICKNESS		0.6		0.8			1.0			1.2
DUCT LONGEST SIDE		400	600	800	1000	1250	1600	2000	2500	3000
RATING	SHEET	MAXIMUM SPACINGS BETWEEN FLANGES AND/OR STIFFENERS								
J1/S1	PS	3000	1600	1250	625					
	SS	3000	3000	1250	625					
J2/S2	PS	3000	2000	1600	1250	625				
	SS	3000	3000	1600	1250	625				
J3/S3	PS	3000	2000	1600	1250	1000	800			
	SS	3000	3000	2000	1600	1250	800			
J4/S4	PS	3000	2000	1600	1250	1000	800	800		
	SS	3000	3000	2000	1600	1250	1000	800		
J5/S5	PS	3000	2000	1600	1250	1000	800	800	800	625
	SS	3000	3000	2000	1600	1250	1000	800	800	800
J6/S6	PS	3000	2000	1600	1250	1000	800	800	800	800
	SS	3000	3000	2000	1600	1250	1000	800	800	800

Medium Pressure Ductwork

TABLE 3.2 FLANGED JOINTS AND STIFFENERS						Dimensions in mm				
1	2	3	4	5	6	7	8	9	10	11
MINIMUM SHEET THICKNESS		0.6		0.8			1.0			1.2
DUCT LONGEST SIDE		400	600	800	1000	1250	1600	2000	2500	3000
RATING	SHEET	MAXIMUM SPACINGS BETWEEN FLANGES AND/OR STIFFENERS								
J1/S1	PS	3000	1250	625						
	SS	3000	1250	625						
J2/S2	PS	3000	1250	1250	625					
	SS	3000	1600	1250	625					
J3/S3	PS	3000	1600	1250	1000	800				
	SS	3000	3000	1600	1250	800				
J4/S4	PS	3000	1600	1250	1000	800	800			
	SS	3000	3000	1600	1250	1000	800			
J5/S5	PS	3000	1600	1250	1000	800	800	800	625	
	SS	3000	3000	1600	1250	1000	800	800	800	
J6/S6	PS	3000	1600	1250	1000	800	800	800	800	625
	SS	3000	3000	1600	1250	1000	800	800	800	625

High Pressure Ductwork (Class C)

TABLE 4.2 FLANGED JOINTS AND STIFFENERS						Dimensions in mm				
1	2	3	4	5	6	7	8	9	10	
MINIMUM SHEET THICKNESS	0.8					1.0		1.2		
DUCT LONGEST SIDE	400	600	800	1000	1250	1600	2000	2500		
RATING	SHEET	MAXIMUM SPACINGS BETWEEN FLANGES AND/OR STIFFENERS								
J1/S1	PS	3000	625							
	SS	3000	625							
J2/S2	PS	3000	1250	800						
	SS	3000	1250	800						
J3/S3	PS	3000	1250	1250	800					
	SS	3000	1250	1250	800					
J4/S4	PS	3000	1250	1250	1000	800				
	SS	3000	1250	1250	1000	800				
J5/S5	PS	3000	1250	1250	1000	800	800	625		
	SS	3000	1250	1250	1000	800	800	625		
J6/S6	PS	3000	1250	1250	1000	800	800	800	625	
	SS	3000	1250	1250	1000	800	800	800	625	

Rectangular Fittings

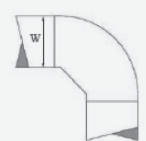
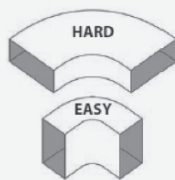

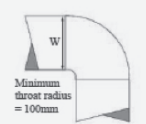

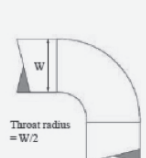

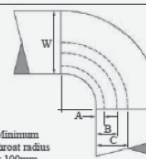





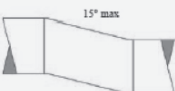
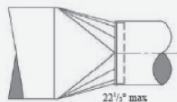
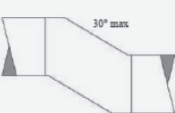
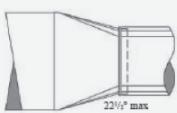




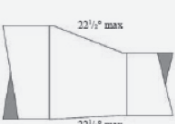


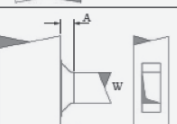
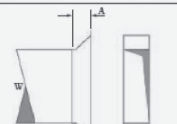
Fig. 39		Mitred Throat Bend For ducts up to 400mm wide	Fig. 42 - examples of 'hard' and 'easy' bends  Bends are designated as 'hard' or 'easy', and these terms as used herein have the following meanings: 'Hard' signifies rotation in the plane of the longer side of the cross section - as illustrated in top sketch. 'Easy' signifies rotation in the plane of the shorter side of the cross section - as illustrated in lower sketch. This configuration also applies to flat oval bends.	Fig. 46		Radiussed Twin Bend																								
Fig. 40		Short Radius Bend For ducts up to 400mm wide		Fig. 47		Swan Neck Bend - typically found on roof exhausts i.e. 135° angle																								
Fig. 41		Medium Radius Bend (as illustrated) Long Radius Bend Similar but radius = W Applies to any angle		Fig. 48		Swept Branch																								
Fig. 43		Short Radius Bend with splitters <table><tr><th>W mm</th><th>Splitters</th><th colspan="3">Splitter position</th></tr><tr><td></td><td></td><th>A</th><th>B</th><th>C</th></tr><tr><td>401 - 800</td><td>1</td><td>$W/3$</td><td>-</td><td>-</td></tr><tr><td>801 - 1600</td><td>2</td><td>$W/4$</td><td>$W/2$</td><td>-</td></tr><tr><td>1601 - 2000</td><td>3</td><td>$W/8$</td><td>$W/3$</td><td>$W/2$</td></tr></table> Splitters not required in bends of 45° or less	W mm	Splitters	Splitter position					A	B	C	401 - 800	1	$W/3$	-	-	801 - 1600	2	$W/4$	$W/2$	-	1601 - 2000	3	$W/8$	$W/3$	$W/2$	Fig. 49		Square Tee with turning vanes
W mm	Splitters	Splitter position																												
		A	B	C																										
401 - 800	1	$W/3$	-	-																										
801 - 1600	2	$W/4$	$W/2$	-																										
1601 - 2000	3	$W/8$	$W/3$	$W/2$																										
Fig. 44		Square Bend - with turning vanes Mitred elbow - 30° max	Fig. 50		Breeches Piece																									
Fig. 45		Radius Tee - with 'radiussed back plates' and, if required, splitters as Fig 43	Fig. 51		'Y' Piece																									

Fig. 52		Angled Offset	Fig. 58		Rectangular to Round Transformation
Fig. 53		Mitred Offset	Fig. 59		Rectangular to Flat Oval Transformation
Fig. 54		Radiussed Offset	Fig. 60		Square Branch
Fig. 55		Concentric Taper 22.5° max in either plane Splitters are required for angles greater than 22.5° and should bisect the angle between any side and the duct centreline.	Fig. 61		Angled Branch
Fig. 56		Eccentric Taper 22.5° max in either plane Splitters are required for angles greater than 22.5° and should bisect the angle between any side and the duct centreline.	Fig. 62		Shoe Branch
Fig. 57		Offset Taper Splitters are required for angles greater than 22.5° and should bisect the angle between any side and the duct centreline.	Fig. 63		Bell Mouth Branch
			Fig. 64		Bell Mouth

Duct Supports

Table 16 Supports for rectangular horizontal ductwork					
Longest Side	HANGERS		BEARERS		Maximum Spacing's
	Screwed Rod	Flat Straps Fig 156/164	Stirrups	"Z" cm ³ x - x (see Table 19) Fig 155/163	
Up to 400	6	25 x 0.8 Plain or Perforated	N/A	0.40	3000
401 - 600	8	30 x 3 flat	N/A	0.70	3000
601 - 1000	8	N/A	N/A	1.50	3000
1001 - 1500	10	N/A	N/A	2.10	2500
1501 - 2000	10	N/A	N/A	3.05	2500
2001 - 3000	12	N/A	N/A	4.45	2500

Twin Wall Duct





Overview

HAS Twin Wall, pre insulated duct system is intended for both indoor and outdoor use, it is especially suitable when there is a risk of condensation in the system. The system is based around an inner and outer skin with intermediate mineral wool insulation.

There are 2 finishes available for this product which are listed below.

- Standard Galvanised Finish Z275
- Colorduct II – Painted to any RAL colour specified (data sheet available upon request)
- Cutting ductwork on site is not recommended.
- Fully dimensioned drawings are required prior to commencement of manufacture.

Construction

Inner Wall

The inner wall is made from Hot Dipped Galvanised Steel DX51D Z275, it is spirally wound and can be produced at any length required.

The inner wall is also fitted with Z bars which ensure the distance is uniform between the inner and outer skin of the ductwork – these are fitted both to straight duct and fittings. Rivets are used to secure the bars in place to ensure both walls are joined together during installation.

All parts are produced in line with DW144 specifications.

All material is supplied and certified to the latest version of BS EN IS 9001

Outer Wall

The outer wall is made from Hot Dipped Galvanised Steel DX51D Z275, it is spirally wound and can be produced at any length required.

This is where the Colorduct II system paint is applied when required.

All parts are produced in line with DW144 specifications.

All material is supplied and certified to the latest version of BS EN IS 9001.



Joining Options

There are a number of joining options available for double skinned ductwork, the preferred standard is detailed below.

Inner Wall

The standard connection for the internal skin is with a male gasket coupler. The coupler comes as standard with a rolled safety edge on both sides. The gasket is made from EPDM rubber and can achieve class D air tightness. In addition, gasket connection couplers can speed up installation time.

Outer Wall

The standard connection for the outer skin is also with a gasket coupler as detailed for the inner skin. An option for the outside skin is to replace the gasket coupler with a slide on flange which will speed up installation time further.

Duct Fixing

HAS Twin Wall ductwork can be mounted in the same way as standard ductwork such as suspension rings or Zip Clip wire system.

Thermal Insulation

The thermal insulation is available in 2 thicknesses, 25mm and 50mm.

The product is ODE Starflex which has a Fire Resistance Class of A1 and has a maximum service temperature of 250°C

Material Safety Data Sheet available on request.





DECLARATION OF PERFORMANCE
Performans Beyanı

EU 305/2011

No: 102

1. Identification code of the product type / <i>Ürün tipi kimlik kodu</i>	ODE STARFLEX / LUNAFLEX BLANKET / ŞİLTE ODE STARFLEX / LUNAFLEX BOARD / LEVHA
2. Intended use/es / <i>Kullanım amacı / amaçları</i>	Thermal insulation products for building equipment and industrial installations - Factory made mineral wool (MW) products <i>İnşaat ekipmanları ve endüstriyel tesisatlar için ısı yalıtım ürünleri - Fabrika yapımı mineral yün (MW) ürünler</i>
3. Manufacturer / <i>İmalatçı</i>	ODE YALITIM SANAYİ VE TİCARET A.Ş. <i>Physle Paşa Bulvarı Ortadoğu Plaza Kat:12 34384 Okmeydanı - Şişli / İstanbul / Türkiye</i>
4. Authorised representative / <i>Yetkili Temsilci</i>	Not Applicable / Yok
5. System/s of AVCP / <i>Performans Değerlendirmesi ve Doğrulama Sistemi/Sistemleri</i>	System 1, System 3 <i>Sistem 1, Sistem 3</i>
6a. Harmonized standard / <i>Uyumlaştırılmış Standart</i>	EN 14303:2009+A1:2013
Notified body/ies / <i>Onaylanmış Kuruluş(lar)</i>	Technická a Zkušební Ústav Stavební Praha, s. p. - TZÚS HB - 1020

7. Declared Performance/s / *Beyan Edilen Performanslar*

BLANKETS / ŞİLTE

Essential Characteristics / <i>Temel Karakteristikler</i>		Performance / <i>Performans</i>					
		ODE Starflex / Lunaflex 044	ODE Starflex / Lunaflex 042	ODE Starflex / Lunaflex 040	ODE Starflex / Lunaflex 037	ODE Starflex / Lunaflex 035	ODE Starflex / Lunaflex 032
Thermal Conductivity / <i>İzıl iletkenlik</i> °C (EN 12067)	10 °C	0,044	0,042	0,040	0,037	0,035	0,032
	50 °C	0,054	0,045	0,043	0,040	0,038	0,035
	100 °C	0,093	0,089	0,086	0,056	0,052	0,043
	150 °C	0,126	0,110	0,084	0,077	0,063	0,051
	200 °C	0,152	0,133	0,089	0,080	0,068	0,060
	250 °C	0,187	0,157	0,110	0,098	0,084	0,064
Length / <i>Uzunluk</i> (EN 822)		+ excess/-0 mm					
Width / <i>Genişlik</i> (EN 822)		±10 mm					
Thickness / <i>Kalınlık</i> (EN 823)		T1					
Squareness / <i>Göğüden Sapma</i> (EN 824)		± 5 mm/m					
Flatness / <i>Düzlemsellik</i> (EN 825)		< 6 mm					
Dimensional Stability / <i>Boyutsal Kararlılık</i> (EN 1004)		NPD					
Reaction to Fire / <i>Jalingına Tepki</i> (EN 13501-1)		Unfaced and Glass Tissue (Yellow/Black) / <i>Kaplanmaz ve Gentielli (SCT, SuCT)</i> , Woven Glass Textile, Alu Foil faced / <i>Cam Dokuma (BGT)</i> , Yarnuz Alu Foilya (ARF) kaplı" >> A1 "Alu Foil Kraft faced / <i>Alüminyum Foilya (ARF) kaplı</i> " >> C-s1,d0					

BOARDS / LEVHA

Essential Characteristics / <i>Temel Karakteristikler</i>		Performance / <i>Performans</i>			
		ODE Starflex / Lunaflex 037	ODE Starflex / Lunaflex 035	ODE Starflex / Lunaflex 032	ODE Starflex / Lunaflex 031
Thermal Conductivity / <i>İzıl iletkenlik</i> °C (EN 12067)	10 °C	0,037	0,035	0,032	0,031
	50 °C	0,040	0,038	0,035	0,033
	100 °C	0,056	0,052	0,043	0,041
	150 °C	0,077	0,063	0,051	0,049
	200 °C	0,080	0,068	0,060	0,057
	250 °C	0,096	0,084	0,064	0,062
Length / <i>Uzunluk</i> (EN 822)		± % 2 mm			
Width / <i>Genişlik</i> (EN 822)		± % 1,5 mm			
Thickness / <i>Kalınlık</i> (EN 822)		T3			
Squareness / <i>Göğüden Sapma</i> (EN 824)		± 5 mm/m			
Flatness / <i>Düzlemsellik</i> (EN 825)		< 6 mm			
Dimensional Stability / <i>Boyutsal Kararlılık</i> (EN 1004)		NPD			
Reaction to Fire / <i>Jalingına Tepki</i> (EN 13501-1)		Unfaced and Glass Tissue (Yellow/Black) / <i>Kaplanmaz ve Gentielli (SCT, SuCT)</i> , Woven Glass Textile, Alu Foil faced / <i>Cam Dokuma (BGT)</i> , Yarnuz Alu Foilya (ARF) kaplı" >> A1 "Alu Foil Kraft faced / <i>Alüminyum Foilya (ARF) kaplı</i> " >> C-s1,d0			

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above. / *Tokarda tanımlanan yapı malzemesi beyan edilen performanslar grubuna sahiptir. Yapı Malzemeleri Yönetmeliği (305/2011/AB) uyarınca hazırlanan bu performans beyanı sadece yukarıda tanımlanan imalatçıının sorumluluğunda yapılmıştır.*

Signed for and on behalf of the manufacturer by / *İmalatçı / İmalatçı adına imzalayan*

Name and Function / *İsim ve Görevi*: Derya GÜRBÜZ İLGAZ / *Quality Assurance Manager*

Place and Date Of Issue / *Düzenlenen Yer ve Tarih*: 08.01.2018

Signature - *İmza*

ODE YALITIM SANAYİ VE TİCARET A.Ş.
Marmara Sanayi Bölgesi Organize Sanayi Bölgesi
No: 8-34384 / Şişli / İstanbul / Türkiye
E-Posta: info@ode.com.tr / Tel: +90 212 343 84 00
Bulgari: 00352 222 222 222 / Faks: +90 212 343 84 01

Pre-Insulated Ductwork





Overview

HAS Pre-Insulated Ductwork, is intended for both indoor and outdoor use, it is especially suitable when there is a need for noise reduction within the system due the self-adhesive foam insulation.

- 6mm
- 12mm
- 25mm

Due to the complexity of the lining process, there are some restrictions based on thickness of insulation required.

- 6mm is available on all diameters.
- 12mm is available on all diameters from 125mm upwards.
- 25mm is available on all diameters from 150mm upwards.

There are 2 finishes available for this product which are listed below.

- Standard Galvanised Finish Z275
- Colorduct II – Painted to any RAL colour specified (data sheet available upon request)

Construction

The ductwork is made from Hot Dipped Galvanised Steel DX51D Z275,

Straight ducts are spirally wound and can be produced at any length required. The maximum length for internally lined duct varies upon the diameter as stated below

- Up to 150mm Ø – 1m Long
- 150mm Ø – 1000Ø – 1.5m Long

All fittings can be lined both pressed and fabricated.

All parts are produced in line with DW144 specifications.

All material is supplied and certified to the latest version of BS EN IS 9001.

Joining Options

The standard connection that we produce on the insulated ductwork is where the foam is trimmed back 40mm on the spiral duct to allow the fitting or couplers slip joint to be pushed inside so there is no gaps in the foam.

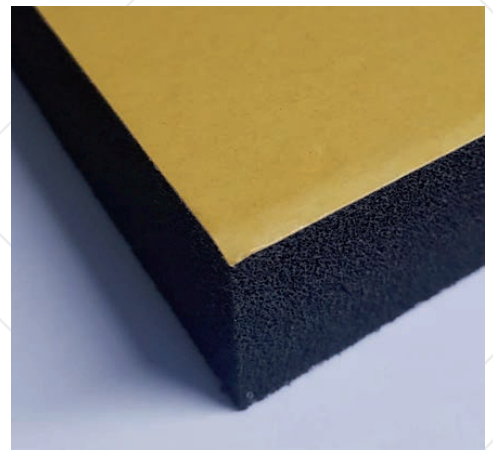
The second option is a flanged joint using METU flanges rather than standard couplings.

Duct Fixing

HAS Pre-Insulated Ductwork can be mounted in the same way as standard ductwork such as suspension rings or Zip Clip wire system.

Insulation

The insulation is an Akustifoam Akusticell foam which is a black high density acoustic insulation material, it is made of polyurethane foam. Due to its non-flammability features it does not melt, form liquid drops or change its mineral structure. It does not contain halogen or heavy metals and does not become mouldy when exposed to humidity or moisture.





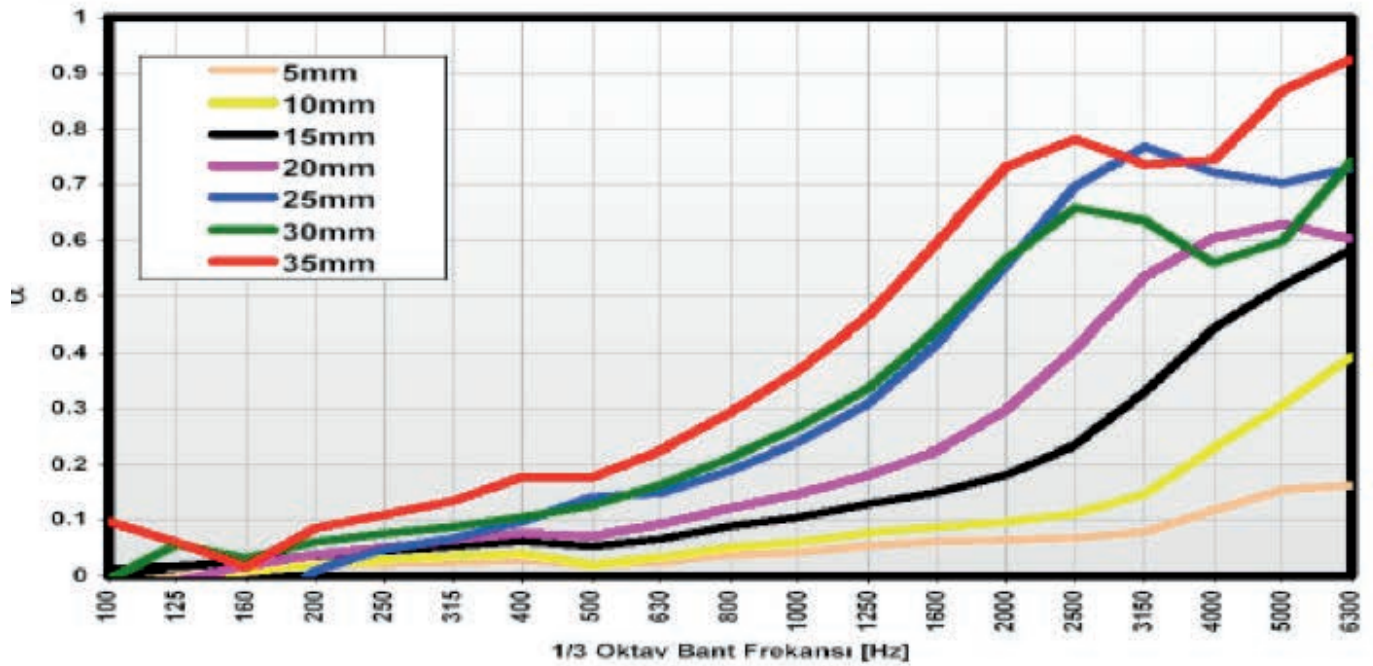
Akustifoam

Teknik Sünger San.Tic. Ltd. Şti.

AKUSTICELL

Akusticell, a high density acoustic insulation material, is made of polyurethane foam. Because of its non flammability feature, it does not allow melting, formation of liquid drops or changes in its mineral structure. It does not contain halogen, heavy metals and it does not get moldy when exposed to humidity.

SOUND ABSORPTION COEFFICIENT GRAPH



PHYSICAL CHARACTERISTICS

	Unit	Value	Standard
Color	-	Black	-
Density	kg/ m3	70-90	ISO 1855
Hardness	N	>300	ISO 2439 (ILD % 40)
Tensile Strength	kpa	>85	ISO 1798
Elongation at Break	%	>85	ISO1798
Flame Behavior	--	Class 0 Class 1	BS 476 Part 6 BS 476 Part 7



Our Branches



- **Head Office**
Wolverhampton Branch - West Midlands
Heath Mill Road, Wombourne
Wolverhampton, WV5 8AP
Tel: 01902 895161
sales@has-vent.co.uk
- **Hailsham Branch - East Sussex**
Unit 7, Diplocks Way
Hailsham, East Sussex, BN27 3JF
Tel: 01323 847910
hailsham@has-vent.co.uk
- **London Branch - North London**
Unit 1, Elm Lea Trading Estate
Leeside Road, Tottenham
London, N17 0XR
Tel: 020 8803 9622
london@has-vent.co.uk
- **Rochester Branch - Kent**
2 Stirling Park, Laker Road
Rochester, Kent, ME1 3QR
Tel: 01634 672730
rochester@has-vent.co.uk
- **Stoke Branch - Staffordshire**
Unit 2, Meadow Works, Sandbach Road
Cobridge, Stoke On Trent
Staffordshire, ST6 2DG
Tel: 01782 274000
stoke@has-vent.co.uk
- **Bury Branch - North West**
Pilsworth Way, Pilsworth Road
Bury, BL9 8RE
Tel: 0161 796 8226
bury@has-vent.co.uk
- **Liverpool Branch - North West**
Unit C1, Kingfisher Business Park
Hawthorne Road, Bootle, L20 6PF
Tel: 0151 922 8933
liverpool@has-vent.co.uk
- **Nottingham Branch - East Midlands**
Unit 7A, Blenheim Court
Blenheim Court Industrial Estate
Nottingham, NG6 8YP
Tel: 0115 979 4527
nottingham@has-vent.co.uk
- **Southampton Branch - Hampshire**
Unit C2 Deacon Trading Estate
Chickenhall Lane, Eastleigh
Southampton, SO50 6RS
Tel: 02380 612954
southampton@has-vent.co.uk
- **Leeds Branch - Yorkshire**
Unit 4C Olympia Trading Estate
Gelderd Lane, Leeds, LS12 6AL
Tel: 01132 341971
leeds@has-vent.co.uk



www.linkedin.com/company/has-vent



twitter.com/HasVent



www.has-vent.co.uk
sales@has-vent.co.uk

