

Tecsonic 400 Acoustic Flexible Ducting

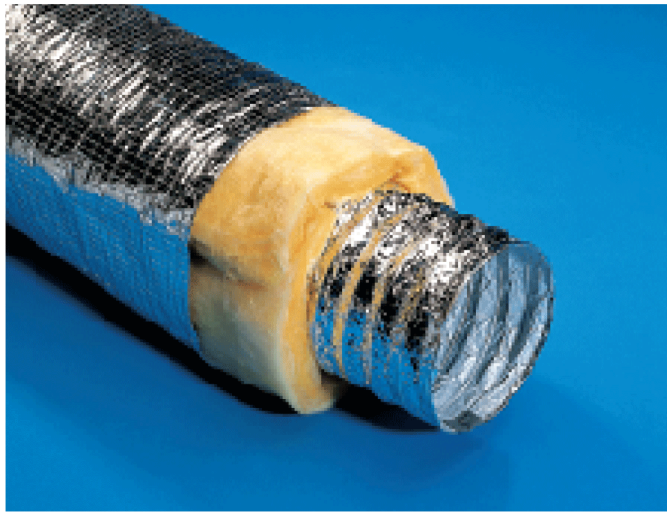


- Fire resistant - Tested to and complies with BS476.
- Certified acoustic performance - independently tested.
- “S” type includes acoustically transparent interliner.
- Suitable for medium and low pressure applications.
- Individually cartoned 10 metre lengths.
- Complies with HVCA specification DW144.

Tecsonic 400

Description

Tecsonic 400 is a high quality fully flexible acoustic ducting. It is ideal for use in low and medium pressure ventilation and air conditioning systems where attenuation of duct borne noise is required.



Construction

Tecsonic 400 acoustic flexible ducting is manufactured with an inner core constructed from a multi-ply aluminium and polyester laminate to provide a tough yet highly flexible core. This fabric is supported by an encapsulated high tensile steel wire helix at 35mm pitch. The core is continuously perforated with micro perforations to enhance the acoustic performance of Tecsonic 400 whilst virtually eliminating the possibility of fibre migration. This core is wrapped in a 25mm thick high density fibreglass blanket which is overlapped to ensure continuity of thermal and acoustic performance. This insulation material is then covered by a tough scuff resistant, reinforced aluminium fabric acting as the outer jacket and air containing membrane.

This construction results in a highly flexible duct in which bends of 1/2D radius can be produced.

Specification

Acoustic flexible ducting for joints or connections shall be TECSONIC 400. It shall be manufactured with an aluminium/polyester inner core continuously perforated and wrapped with an overlapped fibreglass blanket covered by a tough aluminium fabric jacket.

Packaging

Tecsonic 400 is supplied, as standard, in 10 metre lengths. Each length is individually cartoned and labelled. Storage space required is kept to a minimum with a 10 metre length being compressed to 1150mm.

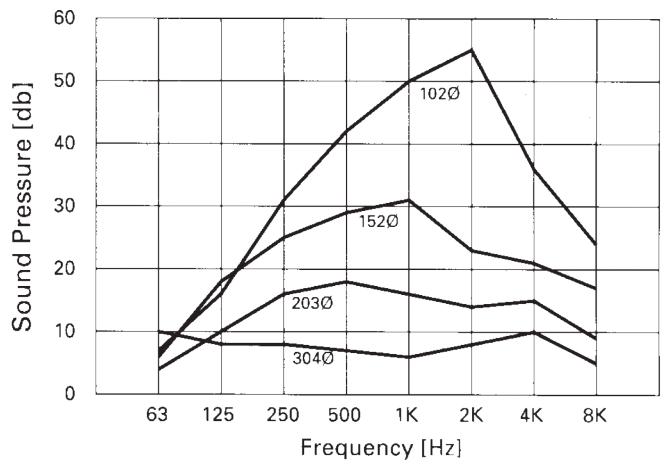
Technical Data

Diameter Range	: 100mm to 500mm
Temperature Range	: From -30°C to +120°C
Air Velocity	: 15 m/s maximum
Working Pressure	: 1000 Pa maximum
Fibreglass	: 25mm thk. 16Kg/m ³ density
Outer Jacket	: Scuff resistant reinforced aluminium laminate fabric
Colour	: Metallic silver
Standard Length	: 10 metres

Acoustic Performance

Static Insertion Loss measurements – 1 metre length

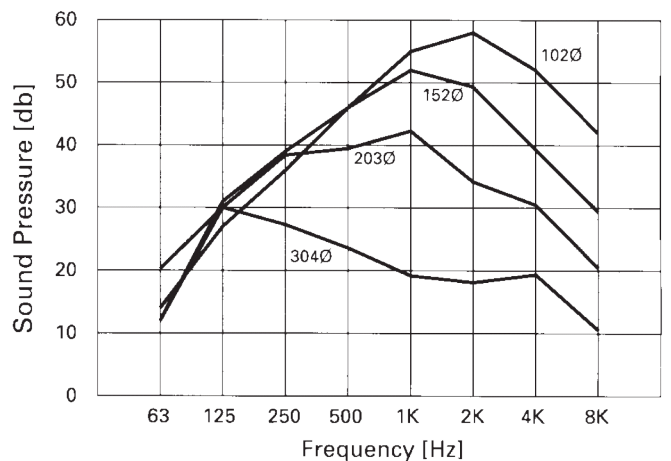
DIA	FREQUENCY (Hz)							
	63	125	250	500	1K	2K	4K	8K
102	7.2	15.8	31.3	41.9	50.0	54.9	35.7	24.7
152	6.2	18.2	25.1	28.7	30.9	23.4	21.5	17.3
203	4.1	10.4	16.0	17.5	15.6	14.0	14.8	9.0
304	10.0	9.5	9.5	8.3	7.6	8.9	10.9	5.7



Static Insertion Loss measurements – 3 metre length

DIA	FREQUENCY (Hz)							
	63	125	250	500	1K	2K	4K	8K
102	14.2	27.6	36.6	46.2	55.1	56.8	52.6*	41.5*
152	12.3	31.2	39.1	46.1	52.1	49.7	39.3	29.5
203	12.0	30.4	38.7	39.5	42.1	34.3	30.6	20.5
304	20.1	30.0	27.1	23.9	19.4	18.3	19.6	10.9

* denotes figures affected by background



Note: Care should be taken when estimating the attenuation of ducts of different lengths; the results are not linear. The possibility of noise 'break-out' should also be taken into consideration at the design stage since there may be some noise emission into the surrounding air space. Wherever possible acoustic ducting should be installed in a part of the building where noise break-out is not of concern or above an acoustic/insulated ceiling to prevent noise reaching the occupied areas.

Installation

Fully extend ducting, then cut to exact length required using a sharp knife and pliers. Pull back fibreglass insulation and tape the inner core to the spigot. Then tape and clamp the outer jacket and inner core to the spigot.

Tecsonic 400S

Description

Tecsonic 400S is a high quality fully flexible acoustic ducting with an acoustically transparent interliner between the inner core and fibreglass layers. It is ideal for use in low and medium pressure ventilation and air conditioning systems where attenuation of duct borne noise is required.



Construction

Tecsonic 400S is constructed in a similar manner to Tecsonic 400 (left) but with the addition of an acoustically transparent interliner between the inner core and fibreglass layers. This interliner allows for a good acoustical performance yet shields the airstream from the fibreglass and prevents the possibility of fibre migration into the airstream.

This feature makes Tecsonic 400S especially suitable for specialist applications e.g. Food preparation, clean rooms etc. Like Tecsonic 400 this construction still provides a highly flexible duct in which bends of $1/2D$ radius can be produced.

Specification

Acoustic flexible ducting for joints or connections shall be TECSONIC 400S. It shall be manufactured with an aluminium/polyester inner core continuously perforated and wrapped with an acoustically transparent interliner. The interliner shall be covered by an overlapped fibreglass blanket with an outer jacket constructed from a reinforced aluminium fabric.

Packaging

Tecsonic 400S is supplied, as standard, in 10 metre lengths. Each length is individually cartoned and labelled. Storage space required is kept to a minimum with a 10 metre length being compressed to 1150mm.

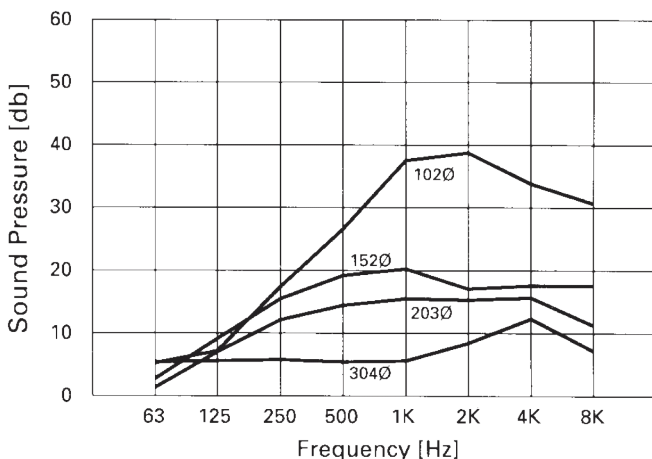
Technical Data

Diameter Range	: 100mm to 500mm
Temperature Range	: From -30°C to +120°C
Air Velocity	: 15 m/s maximum
Working Pressure	: 1000 Pa maximum
Fibreglass	: 25mm thk. 16Kg/m ³ density
Outer Jacket	: Scuff resistant reinforced aluminium laminate fabric
Colour	: Metallic silver
Standard Length	: 10 metres

Acoustic Performance

Static Insertion Loss measurements – 1 metre length

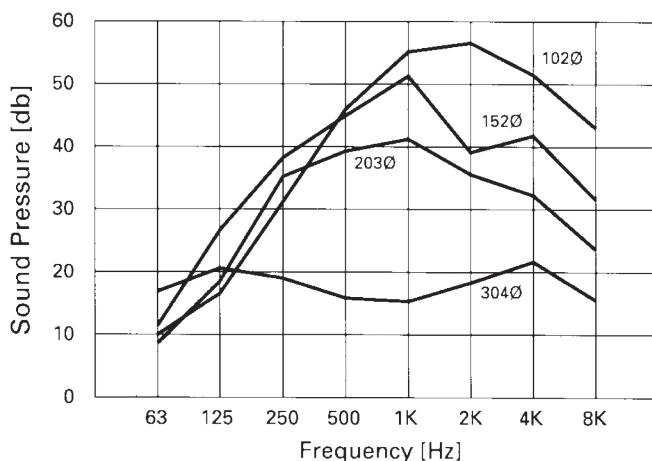
DIA	FREQUENCY (Hz)							
	63	125	250	500	1K	2K	4K	8K
102	5.1	7.1	17.7	26.9	37.9	38.9	34.0	30.9
152	2.9	9.3	15.5	19.2	20.1	17.2	17.8	17.8
203	1.1	7.1	12.1	14.5	15.6	15.2	15.8	11.3
304	5.5	5.5	5.9	5.4	5.7	8.6	12.3	7.1



Static Insertion Loss measurements – 3 metre length

DIA	FREQUENCY (Hz)							
	63	125	250	500	1K	2K	4K	8K
102	10.0	16.5	31.4	46.3	55.2	56.9	51.9*	43.1*
152	11.2	26.9	38.1	45.2	51.4	39.3	41.8	31.9
203	8.8	18.4	36.1	39.4	41.1	35.9	32.7	23.8
304	17.0	20.7	19.0	16.8	15.4	18.1	21.9	15.6

* denotes figures affected by background



Note: Care should be taken when estimating the attenuation of ducts of different lengths; the results are not linear. The possibility of noise 'break-out' should also be taken into consideration at the design stage since there may be some noise emission into the surrounding air space. Wherever possible acoustic ducting should be installed in a part of the building where noise break-out is not of concern or above an acoustic/insulated ceiling to prevent noise reaching the occupied areas.

Installation

Fully extend ducting, then cut to exact length required using a sharp knife and pliers. Pull back fibreglass insulation and tape the inner core to the spigot. Then tape and clamp the outer jacket and inner core to the spigot.

Tecsonic 400 and Tecsonic 400S

Fire Test Data

BSCP413: 1973 recommends that flexible joints (lengths not normally exceeding 300mm) and flexible connections (lengths not exceeding 3.7 metres) shall meet certain criteria. This is a generally accepted standard and is also acceptable in the London area. The requirements are:

1. BS476, Part 6 - Fire Propagation Test

The materials used in the construction of the duct be non-combustible or should have an index of performance not exceeding 12, of which not more than 6 should derive from the initial period of test.

Tecsonic 400 - Passed.

2. BS476, Part 7 - Surface spread of Flame

A Class 1 rating must be obtained.

Tecsonic 400 achieved a Class 1 rating.

3. BS476, Part 20 - Fire Resistance

A resistance to the penetration of fire of at least 15 minutes is required. (Part 20 supersedes Part 8).

Tecsonic 400 met this requirement.

4. Smoke and Toxic Fumes

Ducts should not give off excessive quantities of smoke when burnt.

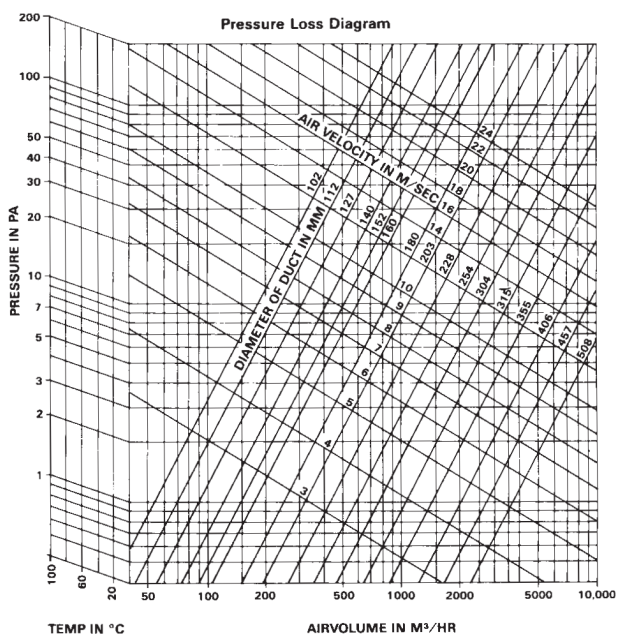
In the event of a fire Tecsonic 400 generates a negligible amount of smoke or toxic gases and contains no PVC (Tecsonic 400S generates a small quantity of smoke - it does not contain PVC).

Independent Test Data

The above results are based upon independent testing at Warrington Research Centre, report numbers 44873, 44871, 54841, 70103/B, copies of which are available on request. NB. Tests to BS476 Part 6 and 7 refer to Tectherm 400 (formerly Tecflex 435) and are valid since identical materials are used in the construction of Tecsonic 400. Tests to determine static insertion losses were carried out by Sound Research Laboratories. The results detailed were obtained under laboratory conditions; report numbers C/8947/4051/1 and C/915L/1014, copies of which are available on request. Tests were carried out in accordance with BS4718:1971.

Pressure Loss

Pressure drop in flexible duct varies significantly from the data given below if the duct is not fully extended when installed. Typically a duct which is 90% extended can result in an increased pressure drop of up to 80%. A duct which is 75% extended could result in a pressure drop variance of as much as 200%. This information applies to **all** types of flexible duct and illustrates the importance of careful installation. The pressure loss graph below is based on fully extended straight flexible ducting, per metre.



Mounting Instructions - Recommendations

- 1 Ducting must always be installed fully extended to produce the best results.
- 2 Hanging straps should be at least 25mm wide.
- 3 The distance between supports will vary according to the diameter of ducting. As a guide, on straight runs, supports should be at approx. 1 metre centres. Keep duct sag to a minimum.
- 4 Ensure that when making connections the flexible duct is not over stressed.
- 5 Ensure that duct is not in contact with sharp objects which may puncture the duct when the system is commissioned.
- 6 Ensure that ducting is not placed on un-insulated steam or hot process pipes.