

ACOUSTIC SPLITTER

SONIE BS+ / HIGH PERFORMANCE

SONIE BS+ acoustic splitters are designed to be installed in HVAC ductworks and enable to attenuate the noise generated by the ventilation system.

Acoustic performances tested in laboratory according to EN 7235 standard, it is up to 35% lighter than a standard splitter, **thanks to glass wool soundproofing**



CODIFICATION

X —————> **B** – Splitter
Y —————> **S** – Commercial buildings
Z —————> **+** – High performance insulation



DID YOU KNOW ? BS+ IT IS :

- **SAFEGUARDED CARBON BALANCE** : glass wool is produced with **60% recycled glass**. Its carbon footprint is much lower than that of rock wool
- **PERFORMANCES** : better low-frequency attenuation for several configurations
- **MORE RESISTANT** : more flexible insulation without the risk of tearing the fiberglass silk layer
- **EASY INSTALLATION** : easier to handle, 35% weight reduction compared to rockwool

CONSTRUCTION

Frame design include a rounded edges twchich reduce pressure losses by up to 30% compared to a straight edge on small thicknesses, as well as grooves that reinforce the frame's mechanical strength

Standard version can be supplied in 50, 100, 150, 200 or 300 mm thickness with a protection with anti-erosion glass silk layer which ensures the protection of the insulating panel.

		Characteristics	Options
Frame	Material	Rounded aerodynamic frame in DX51+Z275 Galvanized steel sheet with groove stiffening deformation.	Stainless steel 304L or 316L, DX51+Z450 (RAL standard) or aluminium
	Thickness	0.5 mm	0.8,1.0, 1.2, 1.5 mm
	Assembly	By plated steel rivets	Stainless steel rivets
	Width	50, 100, 150, 200 or 300 mm	Holes for water draining on frame's low part Support rails, V-shape inlet and outlet profiles supply
	Stiffener	Depending on the format	
Soundproofing	Material	Glass wool panel and water-repellant Fire classification A2-S1-D0 (M0)	
	Density	24 kg/m³, +/- 10%	
	Protection	Anti-erosion fiberglass silk layer on both faces (2 faces on request for 50 mm thick splitter)	

Sound-proofing material can be provided with other protections such as: perforated steel sheets, stretched metal, fiberglass fabric, polyane or Tedlar housing.

All these options are used in order to comply with most of the specifications according to applications.

NB : we recommend using a BD+ splitter with spread metal wool protection :

- for splitters exposed to the elements, and UV
- over 14 m/s in the airways

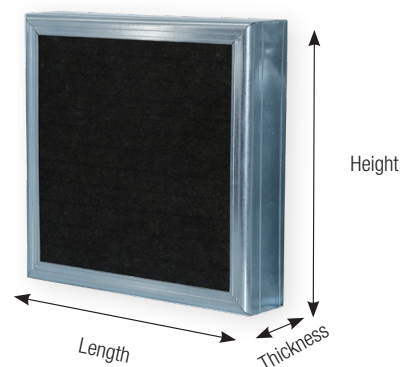
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DIMENSIONS

The splitters are made in one or several units depending on the dimensions.
A one unit construction shall respect the following criteria :

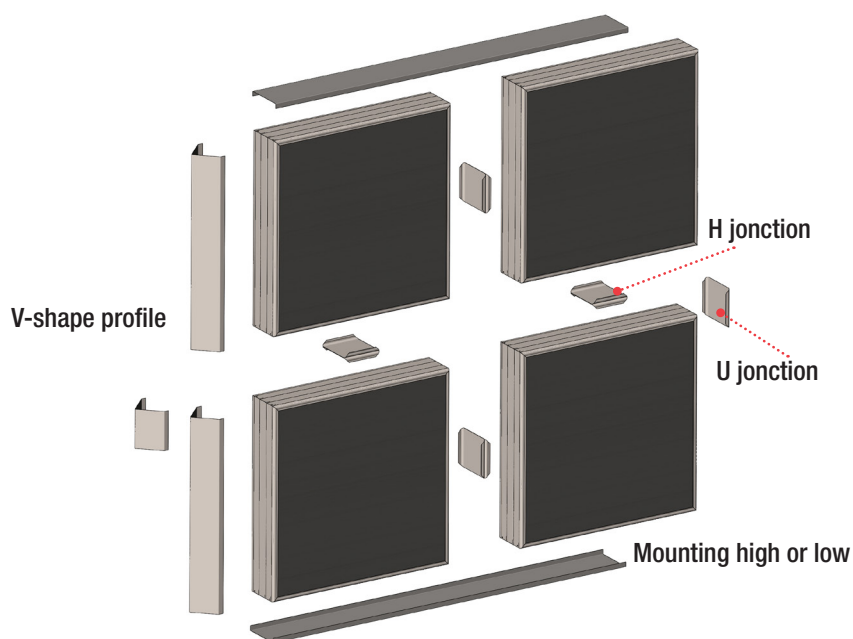
Lengh max. (mm)	2500
Height max. mm	2500
Thicknesses	50,100, 150, 200 or 300 mm
Surface max.	4 m ²
Weight max.	50 kg



Splitter L 1000 mm x H 1000 mm, thickness 200 mm, weight: 8,8 kg
For larger dimensions, acoustic splitters are provided in several units with mounting accessories.

MOUNTING ACCESSORIES

Example for a 4 unit splitter :



Find an mounting tutorial by [clicking HERE](#)

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WEIGHT (KG)

Height (mm)	Thickness (mm)	Length (mm)						
		600	900	1200	1500	1800	2100	2400
600	100	2	3	4	5	6	6	7
	200	4	6	7	9	10	11	13
	300	6	8	10	12	14	17	19
900	100	3	4	5	6	7	8	9
	200	6	7	9	11	13	15	17
	300	8	11	14	16	19	22	25
1200	100	4	5	6	8	9	10	11
	200	7	9	12	14	16	19	21
	300	10	14	17	20	24	27	31
1500	100	5	6	8	9	11	12	13
	200	9	11	14	17	20	22	25
	300	12	16	20	25	29	33	37
1800	100	6	7	9	11	12	14	16
	200	10	13	16	20	23	26	29
	300	14	19	24	29	33	38	43

RECOMMANDATIONS

The acoustic performances of a splitter silencer depend on the following parameters:

- **Air velocity**

The dynamic sound regeneration of a splitter is proportional to the air velocity in the airways. Dynamic regeneration sound level must not be higher than 10 dB of the residual global sound level

- **Width**

For a same air velocity in an airway, a wider splitter is more efficient at low frequencies.

- **Length**

To improve acoustic performances, we recommend to mount two splitters sections in series (with a discharge plenum) rather than using very long splitters section. Attenuation of the two splitters can be added while the insertion losses of a long section reach their limits over 2500mm length.

- **Spacing between the splitters**

Air velocity depends on space between splitters. If the reduction of the spacing between the splitters improves the attenuation of the silencer, make sure that the dynamic sound regeneration will not reduce the global sound attenuation. In some cases, it is possible to mount two silencers in series with different splitters spacing to improve insertion loss at different frequency bands afin d'atténuer sur des bandes de fréquences différentes.

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PERFORMANCES

SONIE BS+ acoustic performances have been tested by an independent laboratory following the EN ISO 7235 standard, in date of July 1995 and July 2004.

Many configurations have been considered and tested (length, airways, width,...) and permit to optimize our acoustic solutions.

The BS+ splitters offers **low-frequency attenuation gains of up to 15dB*** compared with standard splitters.
(* Depending on splitters width, spacing and depth)

INSERTION LOSSES (dB)

Thickness 100 mm

Length of splitter (mm)	Airway spacing (mm)	Frequency (Hz)							
		63	125	250	500	1000	2000	4000	8000
600	50	2	4	10	18	34	39	28	21
	100	1	1	5	11	24	22	13	9
	150	1	1	3	9	19	14	8	6
	200	1	1	3	8	17	11	7	5
1200	50	3	7	20	29	49	47	43	24
	100	1	3	11	20	41	41	23	16
	150	1	3	8	16	35	25	15	10
	200	1	2	6	14	30	17	10	7
1800	50	4	10	20	37	54	49	50	26
	100	2	4	14	36	52	48	30	20
	150	1	3	12	26	46	34	19	12
	200	1	3	9	20	41	23	12	9
2400	50	5	13	32	46	59	55	53	26
	100	3	6	17	41	60	57	40	24
	150	1	4	13	31	55	42	23	14
	200	2	3	10	28	51	29	15	11

Find all our entire acoustic data for all your configurations in
our free online software :

e•sonie
DIMENSIONNEMENT ACOUSTIQUE EN LIGNE

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Thickness 200 mm

Length of splitter (mm)	Airway spacing (mm)	Frequency (Hz)							
		63	125	250	500	1000	2000	4000	8000
600	50	4	11	19	30	44	43	29	24
	100	2	5	12	21	28	27	17	12
	150	2	4	11	18	22	20	12	8
	200	1	4	9	13	17	14	7	6
1200	50	6	17	27	40	51	52	36	34
	100	4	10	29	33	49	45	26	18
	150	2	9	22	31	42	34	18	12
	200	2	7	17	25	32	24	12	8
1800	50	10	26	42	49	53	54	38	42
	100	6	14	39	46	52	50	34	22
	150	4	12	30	44	54	47	25	15
	200	4	10	24	36	45	31	16	9
2400	50	13	31	47	52	54	55	39	45
	100	6	17	44	50	55	53	37	29
	150	5	15	40	50	56	54	29	19
	200	4	12	32	45	56	37	19	11

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DIMENSIONNEMENT ACOUSTIQUE EN LIGNE

Thickness 300 mm

Length of splitter (mm)	Airway spacing (mm)	Frequency (Hz)							
		63	125	250	500	1000	2000	4000	8000
600	50	7	15	23	36	45	43	29	27
	100	3	10	17	25	31	31	20	15
	150	2	7	13	17	21	20	11	9
	200	3	7	13	17	18	14	8	6
1200	50	11	20	26	45	47	40	32	34
	100	6	18	23	43	46	38	30	22
	150	4	14	19	33	38	31	18	11
	200	6	11	19	30	33	24	13	9
1800	50	15	31	39	49	54	51	36	43
	100	10	25	37	51	55	53	37	28
	150	7	20	29	43	51	42	23	14
	200	9	17	29	41	47	34	17	11
2400	50	21	32	41	51	54	54	37	46
	100	14	26	38	55	57	54	38	35
	150	8	25	34	49	54	48	27	17
	200	12	22	32	47	54	43	22	13

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DYNAMIC REGENERATIONS OF BS+ SPLITTERS

Dynamic regeneration data are the result of tests carried out by an independent laboratory.

The dynamic regeneration must be 10 dB under the residual sound power level. If this is not the case, you have to increase the spacing between the splitters or the section of the duct.

Sound power level of air-regenerated noise L_w in dB

Internal air velocity (m/s)	Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
2	10	5	1	0	0	0	0	0
3	19	14	11	10	9	9	7	6
4	29	23	21	19	18	17	14	11
5	34	28	26	24	23	22	19	15
6	40	33	32	31	29	27	24	19
7	44	38	37	35	34	32	29	24
8	48	43	41	39	38	37	33	28
9	50	45	42	41	40	39	35	30
10	52	46	45	43	42	41	37	31
11	55	49	48	47	45	45	39	33
12	57	52	50	49	47	47	41	35
13	61	56	54	53	51	51	45	38
14	64	59	58	57	54	55	48	41
15	73	68	67	68	64	66	56	46

The data applies to an front section $L \times H = 0,8 \text{ m}^2$.

A correcting coefficient must be applied for different sections (see table below) :

$L \times H \text{ (m}^2\text{)}$	0.1	0.2	0.4	0.8	1	2	4	8	10
Correction dB	-9	-6	-3	0	+1	+4	+7	+10	+11

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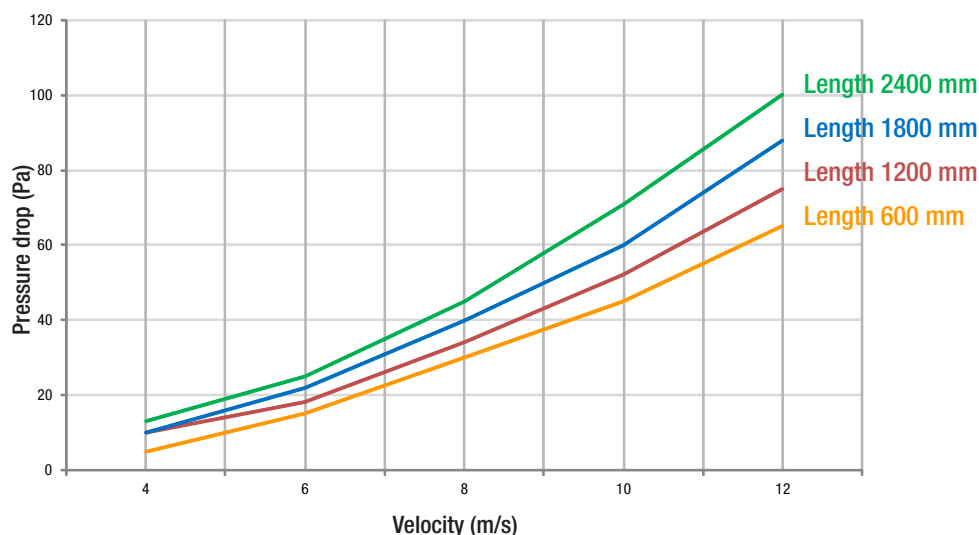
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PRESSURE LOSSES

The hereunder graph shows the pressure losses of a silencer equipped with SONIE BS+ splitters.

Thickness of each splitter : 200 mm

Airways spacing : 100 mm.



PRESCRIPTION

- Standard acoustic splitter BS+
- A rounded aerodynamic frame in galvanized steel, grooving reinforced.
- Soundproofing in one block rockwool panel with a medium-density of 24 kg/m³, inorganic, rot-proof and water-repellent.
- 2 faces protection with a glass silk's layer to reach 14 m/s in the airways