

## **Technical Data**

# Rectangular sound attenuator



*Clima Construct makes in its own production the silencers you request. The box will be standard made out of sendzimir galvanised steel. Inside mineral absorption wool will be applied.*

### **Structure**

The box will be standard made out of sendzimir galvanised steel. The splitters are made of a frame of galvanised steel within mineral wool. This mineral wool, with a high acoustic absorption within a broad frequency range, is germ-free, free from rot and also inflammable according to NEN 6064, class 1. Previous mentioned absorption material is covered with a black, acoustic transparent, plastic fleece as an anti-erosion layer. (type Cleantec)

The splitters are standard of 200 mm (other sizes f.e. 100, 150 and 300 mm on request).

The silencers are equipped with 20 or 30mm frame flanges with a hole-bolt size M8 at the corners. On request, the dampers can be delivered with different flanges or without flanges.

### **Selection**

A silencer will be selected according to:

- the volume flow
- the flow sound
- the permissible flow resistance over the damper
- the required damping value per octave band

Splitters have their highest damping value in the area of 500 till 4000 Hz.

When a higher attenuation is required in the octave bands 125 and 250 Hz, the splitters can be additionally be provided with resonance panels and for half of the splitter.

Hereby the required attenuation characteristics will be obtained with a shorter damper.

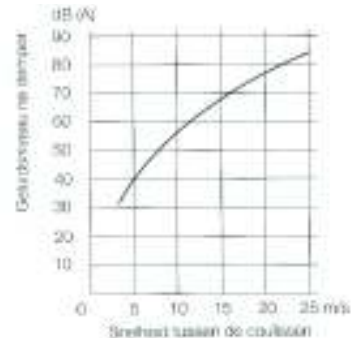
# Rectangular sound attenuator

## Maximum air speed

The standard splitters are suitable for flow velocities between the splitters of 15 m/s. If higher flow velocities or strong turbulence can be expected, the mineral wool will be covered with perforated plate. In this selection the splitters are suitable for speeds up to 20 m/s.

The flow sound generated in the damper must be taken into account. This noise level must be at least 10 dB lower than the sound level desired behind the damper.

In the graph the noise level in dB (A) after the damper is shown as a function of the flow velocity between the splitters.



The corresponding frequency spectrum can be accessed with the aid of the following correction table. The noise level per octave band mid frequency is found by correcting the dB (A) value from the graph with the values from the table below. With the frequency spectrum found in this way, the values to be measured in practice are reasonably approximated. Deviations of 4 dB can occur since the composition of the medium is of influence at the level of the generated sound.

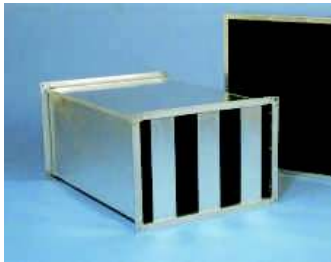
	Oktaafbandmiddenfrequentie								
	63	125	250	500	1000	2000	4000	8000	Hz
Correctie	0	-1	-1	-4	-5	-6	-10	-14	dB

## Characteristics

- Cleantec, rigid glass wool sheet coated on both sides with a reinforced black glass fleece.
- Moisture behavior: not hygroscopic, non-capillary, moisture resistance number:  $\mu \approx 1,2$

## Application

- Cleantec is suitable for sound absorption in (splitters) dampers, soundproof boxes, devices and internal acoustic isolation of air ducts.



## Product advantages

- high acoustic absorption
- low weight, form-retaining but flexible
- high air speeds possible because of the black glass fleece
- fireproof: class 1 according to NEN 6065

# Rectangular sound attenuator

## Technical features

- Application temperature maximum 125°C (continuous).
- Heat conduction coefficient  $\lambda$  [W/(m.K)] at different average temperatures (°C).

Temperature (°C)	10	30	50
$\lambda$ at W/(mK)	0,033	0,034	0,037

## Fire safety

- Meets EN 6065, class 1.

## Acoustic features

- The sound absorption coefficients ( $\alpha$ ) measured in accordance with NEN-ISO 354:
- Specific airflow resistance: approx. 13 kPa.s / m<sup>2</sup>

Noise control: due to the excellent sound absorption, the application of Cleantec will lead to a significant reduction of the noise level in air ducts.

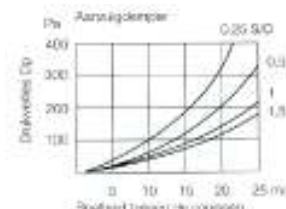
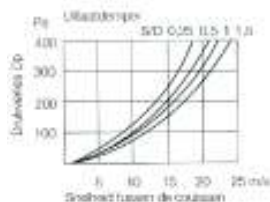
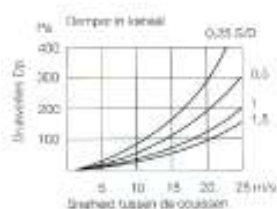
Thickness (mm)	Frequency (Hz)					
	125	250	500	1000	2000	4000
25	0,18	0,34	0,63	0,89	0,96	1,20
50	0,32	0,70	1,09	1,07	0,99	1,25
100	0,84	1,25	1,21	1,04	1,00	1,29

## Pressure loss

The pressure loss over a damper is mainly determined by the gap width  $S$  between the wings, the flow velocity between the wings and the way in which the damper is installed.

In the graphs below, the pressure loss over a silencer damper can be read at three different damper arrangements in a channel.

The graphs apply to an even, undisturbed flow at baffle lengths between 500 and 3.000 mm.



$S$  = spleetbreedte in mm.  
 $D$  = oogluisdikte in mm.

# Rectangular sound attenuator

## Silencer damper - standard version

### Application

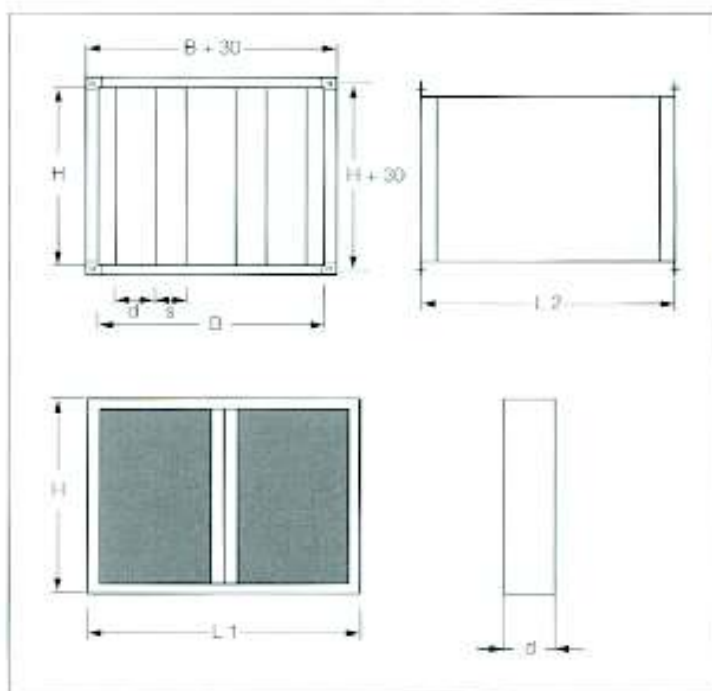
- Reducing the sound that continues in a flowing medium
- Mounting as suction damper, duct damper or exhaust damper.
- Maximum speed between the dampers: 15 m/sec.

### Options

- Damper housing and baffle frame made of sendzimir galvanized steel, stainless steel or aluminum
- Surface of dampers: Cleantec plate 25 mm
- Internal damper mineral wool
- Flanges : framework 20 or 30 mm

### Dimensions

Length damper L1	Length housing L2
490 mm	500 mm
735 mm	750 mm
980 mm	1000 mm
1225 mm	1250 mm
1470 mm	1500 mm
1715 mm	1750 mm
960 mm	2000 mm
2205 mm	2250 mm
2450 mm	2500 mm



- B** = breedte kast.  
**B+30** = uitw. flensmaat.  
**d** = dikte coulis.  
**H** = hoogte huis.  
**H+30** = uitw. flensmaat.  
**L1** = coulissenlengte.  
**L2** = huislengte.  
**S** = spleetbreedte tussen coulissen.

# Rect. sound attenuator-thickness 100mm

Thickness damper = 100 mm

Attenuation values in dB per octave band center frequency:

Coulissenlengte 490 mm

Afstand S mm	Freq in Hz							
	63	125	250	500	1000	2000	4000	8000
50	5	6	8	15	34	42	30	20
75	4	5	7	11	25	30	19	14
100	4	5	6	10	21	23	16	12
125	3	4	5	8	17	19	13	9
150	3	3	4	7	13	15	10	6

Coulissenlengte 1715 mm

Afstand S mm	Freq in Hz							
	63	125	250	500	1000	2000	4000	8000
50	8	11	21	45	50	50	50	50
75	7	9	16	30	50	50	50	44
100	6	7	13	23	50	50	48	34
125	5	6	11	19	44	52	44	31
150	5	6	10	17	38	46	39	28

Coulissenlengte 735 mm

Afstand S mm	Freq in Hz							
	63	125	250	500	1000	2000	4000	8000
50	5	7	11	21	50	50	43	30
75	5	6	9	15	34	43	28	20
100	5	5	8	13	26	33	23	16
125	4	4	7	10	23	28	20	14
150	3	4	6	8	19	25	18	12

Coulissenlengte 1960 mm

Afstand S mm	Freq in Hz							
	63	125	250	500	1000	2000	4000	8000
50	8	12	24	50	50	50	50	50
75	7	9	18	33	50	50	50	49
100	6	8	14	26	50	50	50	38
125	5	7	12	23	49	50	50	34
150	5	7	11	20	41	49	43	32

Coulissenlengte 980 mm

Afstand S mm	Freq in Hz							
	63	125	250	500	1000	2000	4000	8000
50	6	8	13	26	50	50	50	38
75	5	7	10	19	46	50	37	25
100	5	5	9	15	35	43	30	19
125	4	5	8	12	29	37	28	16
150	3	4	7	10	25	33	26	14

Coulissenlengte 2205 mm

Afstand S mm	Freq in Hz							
	63	125	250	500	1000	2000	4000	8000
50	9	13	28	50	50	50	50	50
75	8	10	21	38	50	50	50	50
100	6	8	16	29	50	50	50	43
125	6	7	14	26	50	50	50	37
150	5	7	12	22	43	50	46	35

Coulissenlengte 1225 mm

Afstand S mm	Freq in Hz							
	63	125	250	500	1000	2000	4000	8000
50	7	9	16	31	50	50	50	48
75	6	8	12	22	50	50	46	33
100	6	6	10	18	42	50	36	26
125	5	6	9	15	34	43	33	24
150	4	5	8	13	31	39	31	22

Coulissenlengte 2450 mm

Afstand S mm	Freq in Hz							
	63	125	250	500	1000	2000	4000	8000
50	10	14	30	50	50	50	50	50
75	8	11	24	43	50	50	50	50
100	7	10	18	32	50	50	50	47
125	6	8	16	28	50	50	50	42
150	6	7	13	24	45	50	48	40

Coulissenlengte 1470 mm

Afstand S mm	Freq in Hz							
	63	125	250	500	1000	2000	4000	8000
50	7	10	19	38	50	50	50	50
75	6	8	13	27	50	50	50	39
100	6	7	12	20	49	50	42	30
125	5	6	10	17	39	48	39	27
150	5	6	9	15	34	43	36	25

Voor tussenliggende afstanden S mag worden geïnterpoleerd



# Rect. sound attenuator-thickness 200mm

Thickness damper = 100 mm

Attenuation values in dB per octave band center frequency:

Coulissenlengte 490 mm

Afstand S	Freq in Hz							
mm	63	125	250	500	1000	2000	4000	8000
50	7	10	14	27	34	38	29	25
100	5	6	10	19	27	25	20	16
150	4	5	8	15	21	17	14	22
200	3,5	4	6	12	16	13	11	10
250	3	4	5	11	14	10	9	8
300	2,5	3,5	4	9	11	9	8	7

Coulissenlengte 1715 mm

Afstand S	Freq in Hz							
mm	63	125	250	500	1000	2000	4000	8000
50	13	25	41	50	50	50	50	49
100	9	14	29	50	50	50	49	36
150	8	12	23	40	46	50	34	23
200	6	9	20	35	40	35	22	18
250	5	7	17	29	33	26	19	17
300	4	6	14	25	26	18	16	15

Coulissenlengte 735 mm

Afstand S	Freq in Hz							
mm	63	125	250	500	1000	2000	4000	8000
50	9	13	20	36	43	49	36	30
100	6	8	14	27	31	29	27	21
150	5	6	11	20	28	25	18	14
200	4	5	9	17	22	18	13	11
250	3	4,5	7	13	18	14	12	10
300	2,5	3,5	6	9	15	12	10	9

Coulissenlengte 1960 mm

Afstand S	Freq in Hz							
mm	63	125	250	500	1000	2000	4000	8000
50	14	28	44	50	50	50	50	50
100	10	17	34	50	50	50	50	39
150	8	12	24	43	50	41	35	26
200	7	10	20	36	48	38	27	22
250	5,5	7	19	33	39	31	21	17
300	4	6	15	30	31	19	18	16

Coulissenlengte 980 mm

Afstand S	Freq in Hz							
mm	63	125	250	500	1000	2000	4000	8000
50	10	15	24	41	50	50	41	35
100	7	10	18	34	45	42	33	25
150	6	8	14	25	35	32	23	17
200	4,5	6	11	20	27	22	17	14
250	3	5	10	15	20	18	15	12
300	2,5	4	8	10	16	13	12	10

Coulissenlengte 2205 mm

Afstand S	Freq in Hz							
mm	63	125	250	500	1000	2000	4000	8000
50	16	33	50	50	50	50	50	50
100	11	18	37	90	50	50	50	43
150	8	14	28	48	50	47	41	24
200	7	11	23	42	50	40	24	23
250	6	8	21	37	44	35	23	17
300	5	7	16	31	34	24	18	16

Coulissenlengte 1225 mm

Afstand S	Freq in Hz							
mm	63	125	250	500	1000	2000	4000	8000
50	11	18	29	48	50	50	50	40
100	7	12	21	43	49	48	40	29
150	6,5	10	17	30	41	40	26	19
200	4,5	7	14	25	33	27	20	16
250	3,5	6	13	21	25	22	17	14
300	3	5	10	15	20	15	14	13

Coulissenlengte 2450 mm

Afstand S	Freq in Hz							
mm	63	125	250	500	1000	2000	4000	8000
50	17	36	50	50	50	50	50	50
100	11	20	41	50	50	50	50	50
150	9	15	30	50	50	50	44	30
200	8	12	25	44	50	48	32	24
250	7	9	22	41	49	37	26	17
300	6	8	16	32	36	25	19	16

Coulissenlengte 1470 mm

Afstand S	Freq in Hz							
mm	63	125	250	500	1000	2000	4000	8000
50	12	21	34	50	50	50	50	45
100	8	13	25	50	50	50	47	33
150	7	11	19	34	46	47	30	21
200	5	8	16	30	38	31	22	17
250	4	6	15	27	29	24	18	16
300	3	5	12	21	23	17	16	15

Voor tussenliggende afstanden S mag worden geïnterpoloerd