

Goodear Acoustic Shield Specifications Sheet

Patent Number 2012201459

Description and Use

The Goodear Acoustic Shield is a health and safety product developed by the National Acoustic Laboratories (Australia) together with the University of Technology Sydney and Symphony Services International and is intended for use by music performers. It is designed to absorb sound waves coming from behind the user without compromising their perception of ambient sound. When the shield is positioned directly behind the user's head, the decibel level of sound emanating from behind is significantly attenuated. Used in conjunction with other health and safety measures, the Goodear Acoustic Shield can help to protect the hearing of music performers by ensuring they are exposed to safe or acceptable decibel levels during rehearsals and performances.

Construction and Features

The Goodear Acoustic Shield is made from a lightweight plywood core encased in a double layer of closed cell EVA foam and is finished with a matt black fabric. Tests conducted on the shield have shown that it can reduce noise by up to 84% when used as recommended. Multiple units can be nested into each other for compact and easy transportation. The black fabric finishing of the shield is resistant to scratches and complements the concert hall aesthetic by blending seamlessly with black clothing.

A plastic brace socket on the underside of the shield and a toggle screw allows the shield to be mounted on most stands, including the Goodear Tripod Stand or Goodear Plate Stand, which each comes as an optional extra. The fixed-angle design of the shield's curvature has been optimised for maximum sound reduction, reducing the possibility of user adjustment and error while preserving clear forward and lateral sight lines.

Use

It is recommended that the shield be mounted parallel to the ground and set at a height appropriate to the individual user. When viewed from the front, the user's head should be centred in the middle of the shield and the distance between the user's head and the inside of the shield between 100 to 200 mm. For a temporary increase in noise reduction, the user can simply lean their head further back into the shield.

Cleaning, Storage and Transport

Keep the Goodear Acoustic Shield dry at all times. If required, the shield's fabric surface can be cleaned with a lint brush. When the shield is being transported, it is recommended that some kind of packaging or padding be used to prevent damage especially to the toggle and brace socket.

Limited Warranty and Product Disclaimer

The Goodear Acoustic Shield is guaranteed free of defects in materials and workmanship for two years from the date of purchase. See our website for the full terms and conditions of the warranty. Actual products may vary slightly from the specifications listed here due to variations in manufacture.



Figure 1
Goodear Acoustic Shield mounted on Goodear Tripod Stand (optional).



Figure 2
Optimal positioning of the Goodear Acoustic Shield.

Dimensions and Weight

Goodear Acoustic Shield	
Dimensions	585 x 285 x 250 mm / 23.0 x 11.2 x 9.8 in (W x H x D)
Thickness	50 mm / 2.0 in
Brace socket	25 x 25 x 125 mm / 1.0 x 1.0 x 4.9 in (L x W x D) Fits pole with diameter of 21–24 mm / 0.8–0.9 in
Weight	1.7 kg / 3.7 lb

Goodear Tripod Stand	
Dimensions (collapsed)	720 x 100 x 85 mm / 28.3 x 3.9 x 3.3 in (H x W x D)
Dimensions (fully extended)	Maximum height: 1,370 mm / 53.9 in Base (triangular area): 640 mm / 25.2 in per side <i>With Goodear Extension Pole (optional accessory):</i> Maximum height: 1,570 mm / 61.8 in
Weight	1.4 kg / 3.1 lb

Goodear Plate Stand	
Dimensions (dismantled)	<i>Base:</i> Diameter: 300 mm / 11.8 in Height: 15–30 mm / 0.6–1.2 in (outside edge to centre) Weight: 4.2 kg / 9.3 lb <i>Stand:</i> 855 x 50 x 50 mm / 33.7 x 2.0 x 2.0 in (H x W x D)
Dimensions (assembled and fully extended)	Height: 1,670 mm / 65.7 in
Weight	Weight: 5.0 kg / 11.0 lb

Goodear Acoustic Shield mounted on Goodear Tripod Stand	
Height	Maximum: 1,535 mm / 60.4 in Minimum: 1,130 mm / 44.5 in <i>With Goodear Extension Pole (optional accessory):</i> Maximum: 1,735 mm / 68.3 in Minimum: 1,155 mm / 45.5 in

Goodear Acoustic Shield mounted on Goodear Plate Stand	
Height	Maximum: 1,835 mm / 72.2 in Minimum: 1,235 mm / 48.6 in

Acoustical Performance*

Frequency (Hz)	Attenuation (dB) at 10 mm	Attenuation (dB) at 100 mm	Attenuation (dB) at 200 mm
12.5	1.43	3.92	2.24
16	0.54	5.55	1.08
20	1.65	4.17	-1.39
25	1.03	4.06	0.6
31.5	2.34	-0.34	0.92
40	1.48	1.07	0.22
50	0.98	1.18	0.82
63	2.03	0.35	0.21
80	1.72	0.76	-0.13
100	1.26	0.85	-0.02
125	1.61	0.65	0.41
160	0.89	0.52	-0.76
200	0.06	0.17	-0.48
250	-0.07	-0.34	-0.6
315	-0.17	-0.84	-1.58
400	0.1	-0.51	-1.8
500	2.44	1.57	-0.03
630	8.46	6.26	2.41
800	6.38	7.76	6.18
1,000	4.55	5.57	10.64
1,250	7.68	4.23	3.71
1,600	8.37	10.94	3.08
2,000	13.33	9.15	11.13
2,500	13.35	12.57	7.38
3,150	15.7	12.67	8.7
4,000	18.14	15.07	12.35
5,000	20.12	18.34	14.04
6,300	22.32	21.83	16.94

8,000	19.43	23.07	20.03
10,000	21.62	22.14	25.13
12,500	23.65	18.98	19.83
16,000	27.4	19.47	17.96
20,000	26.31	23.73	20.44
Overall A-weighted attenuation	8	8	6

*The values shown are taken from tests conducted by the National Acoustic Laboratories (Australia) in 2011 with a microphone located at three positions on the user side of the Goodear Acoustic Shield – 10 mm, 100 mm and 200 mm – to represent different possible locations of the ears and a noise source of about 80 dB located 1 metre on the opposite side of the shield to the microphone. Measurements were made of the decibel levels over a broad range of frequencies with and without the shield present, the attenuation provided by the shield being the difference between the two readings. The A-weighted data in the last row represents the hearing characteristics of the average human ear with regard to frequency. Because of the non-linear nature of the decibel scale, a 3 dB attenuation in sound level represents a 50% reduction in sound exposure and an attenuation of 8 dB results in an 84% reduction.