

# Acoustic Panel Systems PAC 40 & PAC 30

## Usage

EMTEC PAC 40 and PAC 30 Acoustic Panel systems have been specifically designed to meet the increasing requirements to shield personnel from high noise levels emitted from plant and machinery. When considering The Control of Noise at Work Regulations, EMTEC PAC 40 and PAC 30 Acoustic Panel systems will attenuate most noise emissions to below the lower exposure action value.



Acoustic Panels have a plain exterior surface and a perforated inner surface with an acoustically absorbent media being contained between the two skins. The inner perforated surface allows exposure of the acoustically absorbent media to the noise source in order to reduce reverberation within the area around the enclosed machinery. If necessary, the external surface of the panel can be acoustically damped to eliminate local resonances.

EMTEC PAC 40 and PAC 30 Acoustic Panels can be used as barriers between quiet and noisy areas or in the form of housings around noisy plant. The panels are supplied complete with floor, roof and intermediate vertical joiners to allow fast and simple site erection. As part of an individual enclosure design, ventilation systems, complete with suitable silencers, can be provided in order to dissipate the heat emissions from the enclosed machinery. Access doors, inspection windows and acoustically sealed openings for the passage of piping, cables etc. can also be provided with no reduction in the acoustic performance of the final design.

Typical applications of EMTEC PAC 40 and PAC 30 Acoustic Panels are the enclosure of Turbo-compressors, Diesel-driven Generators, Pumps, Fans and Presses. Audiometric Rooms and Quiet Booths for personnel within noisy factory environments can also be constructed from EMTEC Acoustic Panels.

For further information or to discuss your particular requirements it is advisable to consult an EMTEC engineer who will assist in the development of a cost effective design that meets the acoustic criteria

## Construction & Physical Properties

EMTEC PAC 40 and PAC 30 Acoustic Panels are formed from a 1.2mm plain galvanised steel outer sheet and a 32% free-area 0.7mm punched perforated galvanised steel inner sheet. The panels are suitably stiffened to prevent deformation during site erection. The acoustic media contained in the panels is inert, water repellent, no-hygroscopic and non-combustible. The acoustic media is protected with a non-woven mineral tissue behind the perforated inner face to prevent particle migration occurring.

If a higher sound reduction is required, EMTEC PAC 40HD acoustic panels can be specified. These are formed from a 1.6mm plain galvanised steel outer sheet and a 32% free-area 0.7mm punched perforated galvanised steel inner sheet, and incorporate an internal layer of 9mm plasterboard.

EMTEC PAC 40 and PAC 30 Acoustic Panels can be supplied with external surfaces finished in pre-coated steel or panels can be polyester powder coated to a standard RAL colour.

Hatches, doors, windows and sealed openings are normally fitted on site, and all the necessary fittings and fixings are supplied with the panels. Cellular rubber seals are incorporated into floor and roof channels as well as around the periphery of doors and windows. Wall and roof joiners are mastic sealed during installation to maintain the acoustic integrity of the system.

Structural steelwork or internal supports for ducting, silencers or other equipment can be incorporated into individual enclosure designs and details of all aspects of the acoustic enclosure would be provided by EMTEC to the client for approval prior to manufacture.

EMTEC PAC 30 & PAC 40 Acoustic Panel properties:

PAC.40 standard depth (thickness)	- 100mm
PAC.30 standard depth (thickness)	- 50mm
Maximum height PAC 30 & PAC 40	- 2450mm
Maximum panel width PAC 30	- 1100mm
Maximum panel width PAC 40	- 1000mm
PAC 40 typical system mass per unit area	- 25 kg/m <sup>2</sup>
PAC 40HD typical system mass per unit area	- 36 kg/m <sup>2</sup>
PAC 30 typical mass per unit area	- 21 kg/m <sup>2</sup>

## Typical Specification Examples

The Diesel-driven Generator Set shall be enclosed in a self-contained EMTEC PAC 40 Acoustic Panel enclosure to maintain the noise level prescribed in the specification. The enclosure will be complete with two double-leaf access doors, sealed openings around the electrical cables and exhaust piping, an inspection window and an adequate ventilation system to dissipate the heat emission from the generator set. The outside surfaces of the enclosure shall be polyester powder coated to RAL9010 (white).

## Acoustic Performance – Sound Reduction

Emtec's type PAC Acoustic Panels have been tested in accordance with EN10140-2:2010 at SRL Technical Services Ltd. The test report is available on request. The Rw(C;Ctr) rating provided below is according to EN 717-1:2013.

Acoustic Panel Type	Sound Reduction Index in dB at Octave Band Centre Frequencies (Hz)								
	63*	125	250	500	1k	2k	4k	8k*	Rw
PAC 40	15	17	25	35	39	45	47	46	37 (-2;-7)
PAC 40HD	19	22	27	37	44	50	53	52	40 (-2;-6)
PAC 30	13	17	23	30	34	41	42	41	33 (-1;-5)

\*indicates frequency beyond standard and not UKAS accredited

## Acoustic Performance – Acoustic Absorption

Emtec's type PAC Acoustic Panels incorporate 45kg/m<sup>3</sup> mineral fibre slabs manufactured from long stranded mineral fibres that are bonded into slabs. Emtec do not manufacture this acoustic media, but use products from reputable manufacturers of mineral wool products. The following figures have been extrapolated from manufacturers' published literature and are issued for design guidance.

Acoustic Panel Type	Absorption Coefficient of Panel's Internal Surface at Octave Band Centre Frequencies (Hz)								
	63	125	250	500	1k	2k	4k	8k	SAA
PAC 40	0.25	0.55	0.90	0.95	0.95	0.95	0.85	0.80	0.97
PAC 40HD	0.20	0.40	0.85	0.90	0.95	0.95	0.85	0.80	0.97
PAC 30	0.15	0.20	0.55	0.85	0.90	0.90	0.80	0.70	0.87

## Design, Manufacture and Installation

Emtec Products Ltd. offer a comprehensive design service and it is advisable to contact us at an early stage in the Plan of Work so we can collaborate in the development of a design that meets your particular acoustic criteria. Attention to detail is paramount and complete enclosure systems that include silencers, ventilations systems, filtration, fire protection and detection systems, lighting and structural supports can be designed, manufactured and installed by Emtec Products Ltd. Our site management and installation teams are experienced in delivering projects in all sectors, working on developments that include tall buildings, airports, railway systems, hotels, hospitals and schools, as well as domestic projects for private clients.



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