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# ACOUSTEEL

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Sound Deadened Steel

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[www.acousteel.com](http://www.acousteel.com)

Acousteel is a leading sound deadened steel which can reduce unwanted noise and vibration by over 1000%. An effective and easy to implement solution, it can attenuate unwanted noise and vibration from any steel or aluminium sheets, panels or pressings where structure-borne noise exists.

An invisible solution to noise and vibration, Acousteel is a constructed laminate with an energy absorbing viscoelastic polymer situated between two metal skins, the result of which is an audibly dead steel. It works using constrained layer damping which absorbs sound and/or vibration energy by the two metal skins moving relatively to one another. This movement creates shear strain, which in turn is dissipated as negligible heat which creates up to a 30dB(A) reduction in sound.

Acousteel can be utilised in a variety of applications and can benefit a wide range of industries including rail, automotive, renewable energy, construction, food processing, hi-fi, ship building, and the full spectrum of manufacturing from food processing, door manufacturing to wind turbines.

# Who we are

A noise reduction specialist, Acousteel is an ISO 9001 registered firm and forms part of NIS Group Services Ltd, a leading provider of thermal insulation to the building services industry.

## Reduce unwanted noise and vibration

Acousteel is a very elegant and invisible solution to noise and vibration. As Acousteel is in every respect like a traditional metal panel (except in noise and vibration) it has none of the problems that are associated with acoustic foams and add-on pads such as hygiene, maintenance, damage, access and expense.

Acousteel is supplied in sheet form, which means that we have the capacity to deliver a range of quantities from a single sheet right through to 1,000 tonnes. Acousteel is a hybrid sound deadened steel which is now easier to fabricate owing to advances in manufacturing.

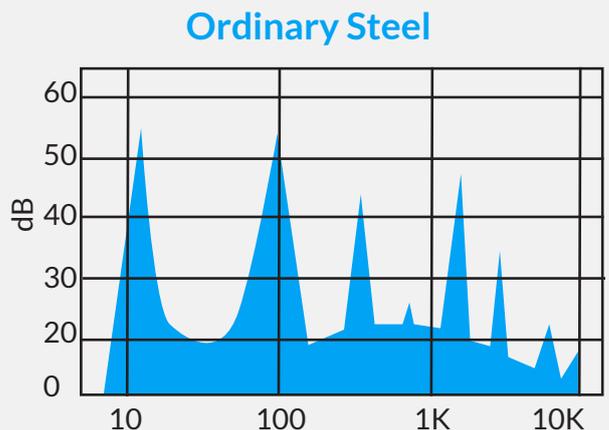
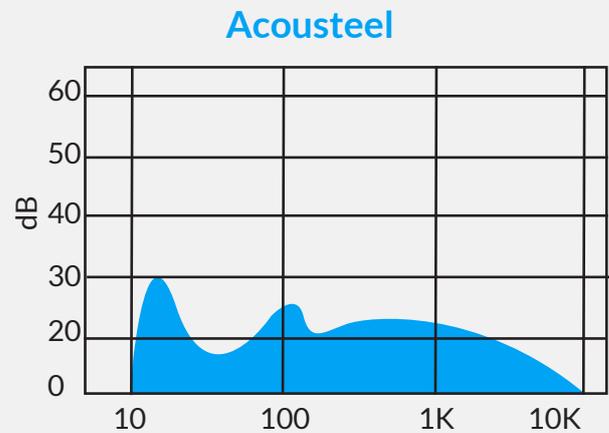


## Sectors we work in

- Automotive
- Construction
- Food Processing
- Hi-Fi
- Manufacturing
- Rail
- Renewable Energy
- Ship Building

## Acousteel the facts

- Acousteel can reduce unwanted noise and vibration by over 1000%
- Acousteel is cost effective compared to traditional solutions
- Acousteel is invisible simply by replacing existing parts
- The HSE lists sound damping as one of its top ten noise control techniques.



# Acousteel Properties

## Energy Absorbing Viscoelastic Polymer

A flexible, cross linked highly engineered modified acrylic polymer with a high initial tack. It has excellent resistance to plasticisers, solvents, chemicals, moisture, temperature and UV light; and a high shear resistance.

	Standard Temperature	High Temperature
Minimum Application Temperature	10°C	10°C
Continuous Operating Temperature	120°C	200°C
Intermittent Operating Temperature	140°C	235°C

## Metal Skin

The raw metal sheets in the below table are used as standard, other grades are available subject to availability. Other dry metals can also be used including copper, brass, plastisol and painted steel.

The thicknesses detailed are available with a lead time of 5 working days, depending on quantity and availability of raw materials. Some items are available from stock for next day delivery.

Acousteel is available in both symmetrical and asymmetrical formats, for example 2mm + 2mm (symmetrical) or 1mm + 3mm (asymmetrical) which is useful when the panel is folded. The two metal skins can be the same or different, a split laminate can consist of 2.0mm zintec and 0.7mm plastisol.

Thickness Range		
Raw Metal Sheet	Acoustick	Acousteel
Zintec DC01+ZE to EN10152:2009	0.5mm – 3.0mm	0.5mm – 6.0mm
Zintec DC04+ZE to EN10152:2009	0.5mm – 3.0mm	0.5mm – 6.0mm
Galvanised DX51D+Z to EN10142:2000	0.5mm – 3.0mm	0.5mm – 6.0mm
Aluminium 1050 H14 to EN485-2:2008	0.5mm – 3.0mm	0.5mm – 6.0mm
Aluminium 5251 H22 to EN485-2:2008	0.5mm – 3.0mm	0.5mm – 6.0mm
Stainless Steel 304/1.4301 to EN10088-2:2005	0.5mm – 3.0mm	0.5mm – 6.0mm
Stainless Steel 316/1.4401 to EN10088-2:2005	0.5mm – 3.0mm	0.5mm – 6.0mm



Lengths				
Width	Zintec	Galvanised	Aluminium	Stainless Steel
1000mm	≤ 3000mm	≤ 3000mm	2000mm	2000mm
1250mm	≤ 3000mm	≤ 3000mm	2500mm	2500mm
1500mm	≤ 3000mm	≤ 3000mm	3000mm	3000mm

Tolerance	Length	Width	Thickness
Sheet material	+12/-0mm	+12/-0mm	+/- 10%
Cut to size parts	+2/-5mm	+2/-5mm	+/- 10%

Due to our manufacturing process and raw material tolerances, there may be up to 15mm of untreated steel (no polymer) around the edges of the sheet.

Acoustick and Acousteel can be manufactured to meet your bespoke requirements and our team of experts can support you on all aspects of the ordering process and fabrication advice.



## Fabrication

Acousteel is a laminated product and uses a constrained layer dampening (CLD) process to reduce the vibration of steel. There are some fabrication limitations which are listed below.

### Cutting

Acousteel can be guillotined, blanked, CNC punched, drilled and there is almost no difference to standard steel.

### Folding/Forming

Due to the laminated construction when folding, the outside sheet will travel further than the inside sheet and this will cause displacement in the sheets, see figure 1. When multiple folds are required it is important to work from the middle of the sheet towards the outside to prevent the sheet being locked and allow the sheets to travel, see figure 2. Similar results are seen when rolled/formed.

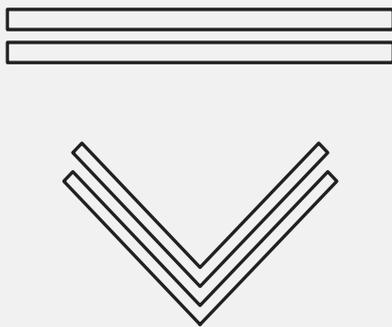


Figure 1: Displacement in sheet

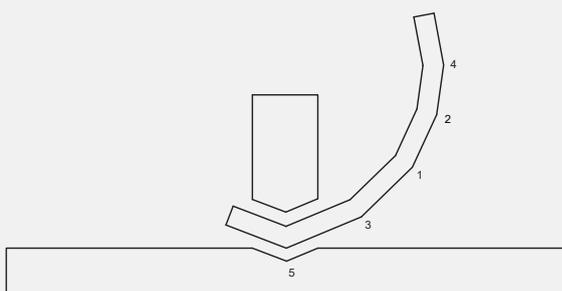


Figure 2: Order of folds

### Welding

Due to the core acting as an insulating layer, welding is more difficult than standard steel. The material can be fusion and resistance welded including spot, projection and seam welded but the process will take more time and the weld might not be as clean. Further to this, the polymer around the weld will be damaged; the affected area is determined by the type of welding.

### Temperature Behaviour

The temperature parameters of Acousteel is outlined in the table on page 3.

When fabricating/forming Acousteel the temperature must be above the Minimum Application Temperature.

When subjected to the temperature between the Continuous Operating Temperature and the Intermittent Operating Temperature the polymer adhesion and damping properties are temporarily reduced until cooled. Delamination is possible and additional fixing/securing may be required.

If the temperature exceeds the intermittent operating temperature there is a risk that the polymer may be permanently damaged, delamination may occur, and polymer may bleed from the edges.

### Mechanical Fixing/Joining

Acousteel can be mechanically fixed in the same way that normal steel can be, rivets, screws, bolts etc. Extra care should be taken if a specific torque is required, polymer may seep out due to high pressures. Adhesive bonding and clinching are also acceptable methods of fixing.



## Flexural Stiffness

A slightly thicker Acousteel sheet will be needed for the same performance as normal steel.

## Deep-drawing and Stretch Forming

Acousteel can be deep-drawn and stretch-formed, extra care and advice should be taken beforehand.

## Powder Coating

Acousteel can be powder coated, care must be taken not to exceed the temperature limits as outlined in the table on page 3.

## Laser Cutting

Acousteel can be laser cut using Thermal and Fiber Lasers, independent tests should be carried out by the laser cutter, some laser cutters, especially Fiber Lasers are reluctant to cut Acousteel due to the potential of splatter damaging the laser head.

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