

# **EchoPanel® 12mm**

## **Application Guide**

Updated February 2010

# What is EchoPanel®?

## Please Read This Application Guide before Beginning Installation

This application guide is presented in good faith to help in the use of **EchoPanel®** products. Woven Image accepts no responsibility for installation actions taken or not taken. This guide is not intended as an all encompassing guide, your knowledge as an experienced tradesman needs to be applied. This application guide contains only recommendations; if you have any questions about installation techniques please contact your distributor or Woven Image sales representative.

**EchoPanel®** is a decorative panel substrate offering improved acoustic performance with a fabric like finish. It is a direct response to ecological sustainability and environmental quality requirements facing contemporary interior design and fit out.

## Environmental Thinking

**EchoPanel®** 12mm is made from 100% PET (Polyethylene Terephthalate) which, depending on colour contains up to 60% post consumer content. This is recyclable. **EchoPanel®** is centred on the concept of dematerialisation. The base fibre is certified to Oeko-tex Standard 100 for meeting human-ecological requirements and is certified by TESTex, Zurich, Swiss Textile Institute, a leading body in environmental textile accreditations. There are no harmful effects in the colouration of **EchoPanel®**, as this fibre is coloured whilst it is still a solution. All the dyes used stay in the solution and effectively become fibre so there is no waste.

Woven Image offers a full stewardship program and will take back product at the end of its life as well as recycle uncontaminated **EchoPanel®** off cuts. It has been designed for recycling into another generation of product in collaboration with industry partners. Woven Image is committed to sustainable design and completing the loop in the **EchoPanel®** environmental story.

## Cost/Savings

**EchoPanel®** 12mm is a finished surface in itself therefore reduces costs in labour and materials in many applications, including workstations and wall panelling. Many workstations and wall panel solutions are currently clad using a substrate such as MDF board, which is in turn wrapped in foam backed fabric or complicated again to include pin-able materials. The process is repeated again on the reverse side.

This results in not only time consuming and costly construction, but an overall workstation size that needs to be unnecessarily thick to cater for the selected finishes. Wall panels are similarly costly and bulky in their production, as substrates need to be wrapped in multiple layers and fixed in methods capable of holding their weight.

**EchoPanel®** 12mm can be used as a two-sided vertical division in a workstation system, so effectively the divider width need not be more than the extrusion supporting it. Or alternatively as a single sided wall panel solution

## Non Hazardous Materials

With regards to many furniture assemblies, substrates containing formaldehyde are still being actively used. These materials emit dangerous off gasses over a period of years. Some zero emission products are used in certain parts of assembly but not exclusively, causing a potentially hazardous working environment.

**EchoPanel®** only emits a total VOC emission rate of <0.02 mg/m<sup>2</sup>/hr (over 7 days).. When used as a vertical screen divider in conjunction with a formaldehyde-free desk system it is a solution to a safe working environment and will contribute towards a GECA or EcoSpecifier certified workstation.

## Size/Weight Ratio

At a weight of 2400 grams per square metre (12mm thick panel), **EchoPanel®** 12mm is about one third the weight of MDF or plasterboard in equivalent sizes. It is a face finished product, pin-able, slim and can be used as double sided or single sided panel, giving it the desirable benefits of fitting into slim-line framing systems and requiring less bulk in coping with its light weight.

## Performance

**Acoustics:** **EchoPanel®** 12mm meets the acoustic demands of today's open plan office; it has been tested to AS ISO 354-2006 and received an NRC (noise reduction co-efficient) result of 0.7 (with a 50mm air gap), 0.45 (with a 20mm air gap) and .25 (with no air gap). This is a better than average absorption of sound particularly useful in open and reverberating spaces evident in today's office environments. The NRC is a number index for rating how absorptive a material is. In **EchoPanel®** 12mm it means that 45% of sound that comes into contact with it is absorbed and 55% of the sound is

reflected back into the space (with a 20mm air gap), unlike many hard plastics or metals that would have little absorption.

**Fire:** **EchoPanel®** 12mm has been tested to the Fire Test AS1530.3 with a spread of flame index of 0 and a smoke developed index of 1. **EchoPanel®** 12mm has also been tested to the Fire Test AS 3837 with Classification 3 result. Technical results can be obtained from the specification sheet on the Woven Image website at [www.wovenimage.com](http://www.wovenimage.com)

### Ordering

**EchoPanel®** 12mm is ordered by the sheet. Different **EchoPanel®** products have different standard sheet sizes.

**EchoPanel®** 12mm (+/- 7%) is a nominal 2400mm (+/- 5mm) x 1200mm (+/- 10mm), however the 1200mm edges have a 5 mm “bull nose” edge which will need to be trimmed if a perfect square edge is required.

It is possible to order **EchoPanel®** 12mm in custom sizes. These sizes and minimum quantities are available on request through your local **EchoPanel®** distributor.

### Handling and Storing

**EchoPanel®** 12mm should be stored flat. Storage areas should be clean, dry, cool, and well ventilated.

Formed parts will continue to cool after they are removed from the mould. To prevent deformation, provide proper support during cooling. This is especially important with large parts.

NOTE: Upon receipt, check your order to verify that it matches the control sample provided by your specifier. If you have any doubt whether you have received the correct product, call your **EchoPanel®** distributor or Woven Image sales representative immediately.

At Woven Image all **EchoPanel®** products are inspected prior to shipment. Woven Image is not responsible for damage in shipment or in storage; customers should carefully inspect all items at time of delivery and note any obvious damage on the delivery receipt. For the customer's protection subsequently discovered concealed damage must be reported immediately to the carrier. Claims on Woven Image will not be considered if the sheet has been worked by the customer or others. No claims for labour charges will be allowed in any circumstances.

### Handling and Storage Guidelines

Do:

- Carefully inspect the sheet at time of delivery and note any obvious damage on the delivery receipt.
- Ascertain front and back of sheet before working.
- Store **EchoPanel®** sheet horizontally, with support under full sheet.
- Keep sheet as clean as possible during storage. Both sides of **EchoPanel®** should be kept free from grease, wax, dust, and chips that could leave impression.
- Store sheet indoors, in a dry, cool, well-ventilated area.
- Avoid exposure to heat 150°F (65 °C) or greater.
- Keep table tops clean to avoid scratching the sheet.
- Before cutting the sheet, remove and inspect the whole sheet for defects, then recover for protection during fabrication.
- Wear gloves when handling sheets.

Don't:

- Store **EchoPanel®** sheet near radiators, steam pipes, or in direct sunlight.

### Cleaning and Care

Remove dust and dirt with a soft cloth or sponge and a solution of carpet or upholstery shampoo. Always use a soft, damp cloth and blot dry.

### Applications

**EchoPanel® 12mm** is ideal for workstation panels, wall cladding and acoustic panelling. It has also been selected and used for ceiling tiles and soft floor applications. Designers are constantly challenging the uses of the product. Providing test regulations are met, the product has unlimited application possibilities.

### Cutting/Machining

**EchoPanel® 12mm** can be worked with most tools used for machining wood. Tool speeds should be such that the **EchoPanel® 12mm** sheet does not melt from frictional heat. In general, the highest speed at which overheating of the tool or sheet does not occur will give best results.

It is important to keep cutting tools sharp at all times. Hard, wear-resistant tools with greater cutting clearances than those used for cutting metal are suggested. High-speed or carbide-tipped tools are efficient for long runs and provide accuracy and uniformity of finish. Bring the blade to full speed before starting the cut. Secure the sheet during cutting operations to minimize vibration.

As **EchoPanel® 12mm** is 100% PET, it has characteristics similar to plastic and overheating may cause it to melt or fuse slightly on the heated contact points. A method of reducing heat is by making several passes while cutting or trimming the sheet rather than trimming "deep" through the sheet.

#### Cutting and Drilling Guidelines

Do:

- Practice on pieces of scrap before cutting parts.
- Use sharp, clean blades and bits.
- Use slow, consistent feed rate.
- Hold sheet firmly while cutting to minimize vibration; use just enough clamp pressure to prevent vibration.
- Feed against the rotation of the blade or tool.
- Wear proper safety equipment.

Don't:

- Cut or drill with a dull blade, cutter, or bit.
- Apply excessive clamping pressure.
- Use a blade with side-set teeth.
- Remove safety guards from equipment.

#### Sawing

Any of the following saw types, commonly used for wood or metal, should be satisfactory for cutting **EchoPanel® 12mm** sheet: circular saws, band saws, saber saws, jigsaws, hacksaws, or handsaws. However, some saw designs are better suited than others for sawing **EchoPanel® 12mm** because they produce smoother or faster cuts. Circular saws and band saws usually produce the best surfaces, and they can be used in most sawing operations.

Blade design plays an important part in successful sawing of **EchoPanel® 12mm** sheet. A skiptooth band saw blade is preferred because the wide gullet provides ample space for the plastic chips to be carried out of the kerf (the cut made by the saw). For best results, the teeth should have zero rake and some set. For a curved cut, the blade should be narrower and have more set than for a straight cut. The blade must be kept sharp to prevent melting or chipping of the sheet, and the blade guide should be placed very near the cut to minimize vibration.

A circular saw is preferred to a band saw for straight cuts even though it tends to generate more heat.

A perforated saw blade will run cooler than a solid blade. It is essential that the spindle bearing be tight so that the saw will run true.

**EchoPanel® 12mm** can also be cut in other ways including traditional workshop tools such as a jig saw, router, die cutter or even using manual techniques such as guillotining or cutting with an art knife.

NOTE: Installers should trial cutting or machining techniques on areas of scrap to ensure the highest possible finish.

## Drilling

Drills designed especially for plastics are available and their use is suggested on **EchoPanel® 12mm**. Standard twist drills for wood or metal can be used; however, they require slower speeds and feed rates to produce a clean, non-gummed hole. Optimum bit speed, feed rate, and applied pressure will depend on hole size and sheet thickness. Drill speeds up to 1,750 rpm are best for smaller holes, while speeds as low as 350 rpm can work for larger holes.

Twist drills used for plastics are suited to working **EchoPanel® 12mm** —they should have two flutes, a point with an included angle of 60 to 90 degrees, and a lip clearance of 12 to 18 degrees.

Wide, highly polished flutes are desirable since they expel the chips with low friction and thus tend to avoid overheating and consequent gumming. Drills with substantial clearance on the cutting edge of the flutes make smoother holes than those with less clearance. Drills should be backed out often to free chips.

**NOTE:** When drilling be sure to hold or clamp the sheet securely to prevent it from cracking or slipping and presenting a safety hazard to the operator.

## Routing

Routing with sharp two-flute straight cutters can produce a smooth edge. Routers are useful for trimming the edges of flat or formed parts, particularly when the part is too large or irregular in shape for a band saw. Routing can also be used to cut intricate designs and patterns inside the then sheet. Portable, overarm, and under-the-table routers work equally well. The **EchoPanel® 12mm** sheet should be fed to the router slowly to avoid excessive frictional heating. The router or sheet, whichever is moving, must be guided with a suitable template. Compressed air can be used during the routing operation to cool the bit and aid in chip removal.

**NOTE:** Installers should trial drilling or routing techniques on areas of scrap to ensure the highest possible finish.

## Fixing

**EchoPanel® 12mm** can be fixed by nail, screw, glue or using heavy duty double sided tape.

### Mechanical Fastening Guidelines

#### Do:

- Drill holes minimum 15mm centre offset from each corner and slightly oversized to allow for thermal expansion and contraction.
- Insure drilled holes have smooth edges.
- Use washers for better load distribution and to prevent pull through.
- Use metal inserts if frequent assembly/reassembly is required.

Nails or screws should be fastened into battens or suitable substrates.

#### Don't:

- Over tighten fasteners.
- Use self-tapping screws to hang large panels.

The benefit of using mechanical fixings is that they can be removed completely without leaving residue in order to allow the **EchoPanel® 12mm** to be recycled fully.

There are many options with using adhesives; however these leave some residue on the **EchoPanel® 12mm** that must be removed when recycling the panels.

Recommended adhesives include Selleys Liquid Nails, or for a low VOC application we recommend Selleys Liquid Nails or Max Bond – Fast Grip.

When using glue, Velcro or double sided tape we recommend a test panel be used on the substrate to determine the most suitable fixing method and process.

**EchoPanel® 12 mm** like most sheet panel products has a tendency to flex over large spans. Although there is no set formula for fixing spans, it is reasonable to expect that fixing between 450mm to 600mm centres both vertically and horizontally would cause the panel to remain rigid in most circumstances.

### Shaping

**EchoPanel® 12mm** can be cut for use in to form logos or specific shapes. Intricate and detailed graphics can be cut out using digital imagery and computer processed sand-blasting, laser cutting or water-knifing tools. Mechanical shaping methods are knife cutting, die-cutting and guillotining. Caution should be used when laser cutting as this uses heat. A test sample should be performed prior to installation. It is also important to note that when water knifing, grey water is often used. Clean water should be specified to cut **EchoPanel® 12 mm** as discoloured water will seep into the board and discolour the **EchoPanel® 12 mm**.

### Forming

Being PET, **EchoPanel® 12 mm** has the characteristics of most plastic type products when thermoforming.

Heat can be applied to the panel whilst it is held in-form and then allowed to set.

Specialist thermo-formers should be consulted to work with **EchoPanel® 12mm**. These businesses would typically work in shaping plastics and foams. Please contact your local distributor or Woven Image sales representative for contacts.

Alternatively **EchoPanel® 12mm** can be fixed to a framework to take on an induced form. The flexibility in a large panel allows it to be handled in this way. It should be fixed to the backing material with the use of adhesives, pin, screw, nail fixing or supported within channels or angles.

Folded corners are achieved seamlessly by carving out an appropriate mitre to the back of the panel, leaving about 5mm thickness of panel to bend around the required angle. The mitres can be routed out or cut with a knife. The angle of the mitre should correlate to the angle required to wrap the panel around – e.g. a 90° corner would require a 90° mitre.

### Custom Sizes

Custom thickness and sizes are available in minimum quantities. These sizes and quantities are available on request through your local **EchoPanel®** distributor.

### Bracing Systems

**EchoPanel® 12mm** can be braced to walls or used as a freestanding panel by using proprietary aluminium extrusion systems. These are ideal for using with **EchoPanel® 12mm** as they create lightweight, easily assembled systems that avoid the use of non-recyclable glues and tapes.

Your local aluminium supplier should be able to provide you with a number of appropriate options.

### Digital Printing

**EchoPanel® 12mm** is an ideal base to print on utilising the latest in inkjet technology and specialised graphics programs. Ideal for signage and full colour images, **EchoPanel® 12mm** can be used both as individually printed panels and for multi-panel displays.

Specific repeat sizes are not required and anything can be printed from logos, photographic imagery and graphics. If it can be scanned and digitised, it can be printed onto **EchoPanel® 12mm**. As it is an inkjet printing process your colour choice and number is unlimited.

From a sustainability perspective **EchoPanel®** digital printing reduces material and energy inputs commonly required in traditional printing and you can specify ecologically friendly inks.

Contact your local **EchoPanel®** distributor for further printing information.

### Work Safety

In the interests of work safety, it is recommended that people working with **EchoPanel®** wear the appropriate safety equipment. Although the product emits zero off-gases, masks and gloves should be worn to ensure the maximum possible safety precautions.

Please refer to the Safety Data Sheet at the end of this section for its technical characteristics.

#### Safety Data

##### **Physical description/properties:**

Specific Gravity: 0.2

Vapour Pressure: Not applicable

Flash Point: Not applicable

Flammability Limits: Not applicable

Ignition Point: > 400 degrees Celsius

Solubility in Water: Insoluble

**Ingredients:** Polyester Fibres (Polyethylene Terephthalate) - 100 percent- including up to 60% post consumer recycled content.

**Physical Hazards:** Polyester fibre product is chemically stable and resistant to attack by oils, solvents, weak acids and weak alkalis. The product will burn if exposed to flame.

**Health Hazards:** Not normally a hazard to eyes, skin, if swallowed or inhaled, due to the physical form of a product. This product is non-irritant and does not present any health hazard during manufacture, normal handling or use.

**First Aid:** The ingredients have no poison. In the event of ingestion of a substantial ingredient quantity, give water and induce vomiting. Burns caused by molten ingredient require medical treatment.

**Precautions for use:** This product does not present any specific hazard.

**Safe Handling:** No special storage or transport requirements are necessary. Keep dry. Adoption of safe working practices is recommended.

**Disposal:** At end of life uncontaminated **EchoPanel®** will be taken back and recycled by Woven Image. Unless prohibited by state or local regulation, it can be disposed of in a municipal landfill or incinerated.

**Fire/Explosion:** Precautionary measures should be taken against static discharge. Products resulting from combustion of polyester will comprise of carbon, hydrogen and oxygen, the exact composition depending on the conditions of combustion.

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