



# CCI Notes

10/10

## Backing Boards for Paintings on Canvas

### Introduction

All paintings should have backing boards as a preventive conservation measure. Installing a backing board on an auxiliary support (stretcher or strainer) will

- protect the painting from mechanical damage from behind;
- prevent dirt and debris from falling between the lower stretcher/strainer bar and the canvas;
- buffer fluctuations in relative humidity (RH) by enclosing the reverse of the painting;
- reduce vibration of the canvas in transit;
- decrease the painting's sensitivity to shock; and
- discourage the practice of attaching labels to, or writing on, the back of the canvas.

In order to fulfil these functions, the board must be strong and rigid, and it must be sealed against the reverse of the auxiliary support to reduce air circulation. It should have low permeability to moisture, although ideally it should be used in combination with a hygroscopic material capable of absorbing and releasing moisture. It should also be lightweight (Figure 1).

The humidity protection afforded by the backing board is greatly enhanced if the painting is framed

behind glass or an acrylic sheet (Plexiglas). The glazing will provide additional protection against day-night environmental cycles, and can provide long-term protection over many weeks. Vibration of the canvas under normal handling conditions will also be reduced.

### Materials

Some synthetic boards and hardboards are recommended materials for backing boards. Each has advantages and disadvantages.

**Synthetic boards**, such as corrugated or fluted plastic (Coroplast or

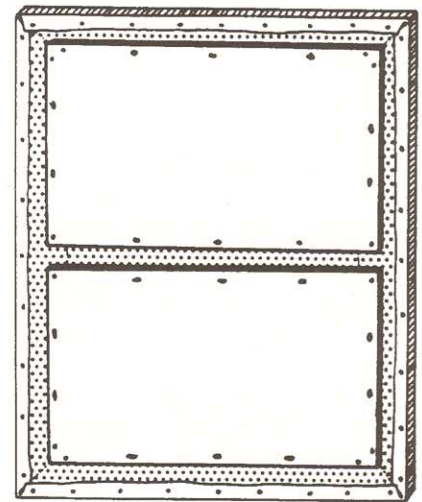


Figure 1  
Backing board (in two sections) secured to reverse of stretcher.

Hi-Core), are lightweight, moderately strong and rigid, and allow minimal moisture diffusion. These boards seal against short-term environmental changes (e.g., day-night environmental cycles). They are not hygroscopic, however, and therefore will not absorb or release moisture in response to environmental conditions. Tests have indicated that synthetic boards combined with a hygroscopic material such as a sheet of 4-ply matboard will provide additional control of the relative humidity (RH) within the space enclosed by the painting and the backing board. This hygroscopic layer will release moisture as required in response to environmental conditions, thereby helping to prevent the low RH conditions that are detrimental to the paint, ground, and size layers of the painting.

**Hardboard (tempered; at least 3 mm thick)**, such as Masonite, is strong, rigid, and hygroscopic. If hardboard with only one smooth side is used, place the smooth side away from the canvas. A sheet of Mylar could be adhered to the inside of the hardboard to help minimize the moisture loss or gain in the space between the canvas and the backing board.

The disadvantages of using hardboard are its weight, which precludes its use on large paintings, and its tendency to expand and contract with changes in humidity. With the use of hardboard rather than corrugated plastic sheeting, the RH conditions in the enclosed space will tend to follow changes in ambient conditions more quickly.

Other boards are available, but most have major disadvantages. For example, chipboard or plywood should not be used because their adhesive content may emit degradative vapours.

With or without glazing, the best board materials in order of their performance in buffering RH fluctuations are

- corrugated (fluted) plastic (e.g., Coroplast or Hi-Core) with a

- 4-ply matboard liner;
- corrugated plastic alone (e.g., Coroplast or Hi-Core); and
- hardboard (tempered; at least 3 mm thick) (e.g., Masonite).

There are other alternatives and methods to improve the performance of some boards. For further guidance on suitable boards and their use, contact the Fine Arts Section at the Canadian Conservation Institute.

Using **foam stripping** as a seal between the backing board and the stretcher is an important step in the backing procedure, especially in the Canadian climate (Figure 2). The seal provided by foam stripping reduces air leakage and creates a beneficial micro-environment between the canvas back and the backing board.

Suitable foam products are available in sheets or in strips. Non-adhesive foam sheets (approximately 6 mm thick, cut into strips) can be affixed by means of double-sided adhesive tape. Self-adhesive foam products, such as weather stripping, can also be used.

The foam products listed in this Note conform well to irregular surfaces

and provide an efficient seal. When analyzed by CCI, these foams were found to be composed of chemically stable compounds. Other foams may deteriorate and lose some of their sealing ability. Deterioration may also cause them to emit volatile products harmful to the materials in paintings.

**Screws and washers** should be non-corrosive. Brass, stainless steel, or bright-plated screws and washers are suitable for use with wood. A No. 5 screw is recommended for most paintings. Even though the length depends on the thickness of materials used, it is generally not necessary to penetrate the stretcher more than 0.5 cm.

For attaching hardboard backings, use a flat fender-washer with an outside diameter of at least 1.8 cm (3/4") and an inner diameter to fit the screw being used. Use cup-washers for synthetic boards. The necessity for the fender-washer will be described later.

### Attaching Synthetic Backing Boards

Cut the board to the required size, allowing sufficient room for the

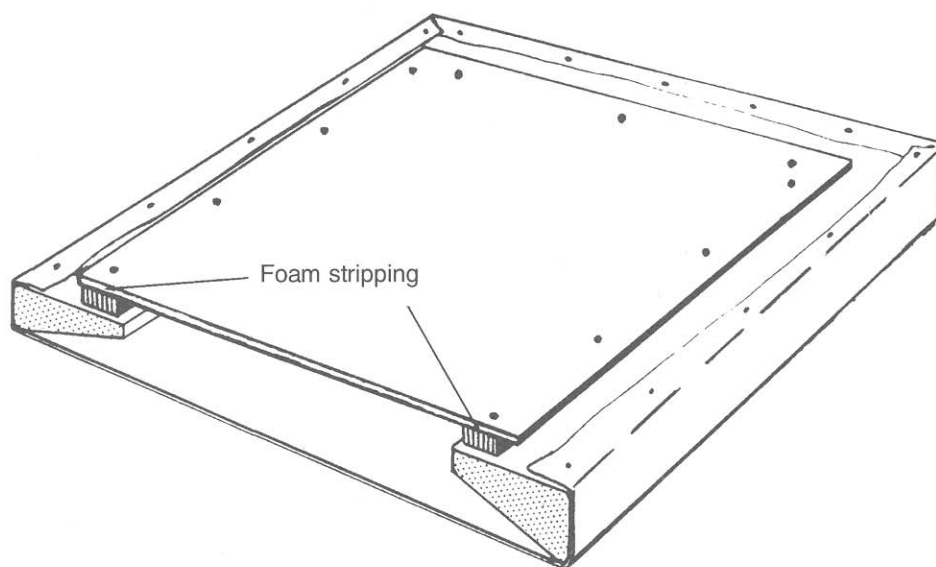


Figure 2  
Foam stripping adhered to the backing board forms a seal between the backing board and the stretcher (cross-section view).

weather stripping and attachment screws. (In most cases, the backing board overlaps the inner stretcher edges by at least 2 cm to 4 cm.)

Large pieces of corrugated plastic sheeting (Coroplast, Hi-Core) — for example, pieces larger than 120 cm x 120 cm — tend to be slightly floppy. For large paintings, cut the board into sections that correspond to the partitions created by the crossbar(s) of the stretcher (Figure 1). Smaller sections are stiffer; they are less likely to warp or bow and will better reduce damage due to vibration and shock.

On the backing board, mark the position of the screws at a distance of 1 cm to 2 cm from the edge of the board. To avoid splitting the wood of the stretcher, do not place screws closer than 1 cm to the stretcher's edges. The screws should be positioned at intervals of 10 cm to 25 cm. Avoid placing screws directly over the corner joints of the stretcher.

Apply the foam stripping to the backing board under the markings for the holes. If possible, when the board is in place, the foam stripping should contact the wood stretcher and not the canvas folded over the back. Using an awl, make holes for the screws through both the board and the stripping. Attach the board to the stretcher with No. 5 screws of appropriate length and with cup-washers, ensuring that there is firm and continuous contact between the foam and the auxiliary support (Figure 3). The foam should not be tightly compressed.

A 4-ply **matboard liner** placed on the painting side of the synthetic board will provide additional buffering for the enclosed space. The matboard is cut to the same size as the synthetic board. The foam stripping should be applied to the matboard. Once again, use an awl to make holes through the plastic board, matboard, and foam stripping. The two boards are held together once they are screwed to the auxiliary support (Figure 4).

## Attaching Hardboard Backing Boards

**Never drill holes into the stretcher/strainer.**

In an area **isolated** from the painting, prepare the hardboard backing as follows.

Cut the board to the required size as outlined above. Do not use sheets larger than approximately 70 cm x 90 cm; otherwise, the forces set up by the board expanding and contracting could distort the stretcher to which the backing board is attached.

On the backing board, mark the position of the screws at a 2 cm to 3 cm distance from the edge of the board. As mentioned earlier, the screws should be positioned at least 1 cm from the edges of the auxiliary support when the board is put in place. The screws should be placed at intervals approximately 25 cm apart. Avoid placing them directly over the corner joints of the stretcher/strainer.

Drill holes in the backing board only, approximately 1.5 cm (1/2") in diameter, at the previously marked positions. A drill bit with a shank of reduced diameter will be necessary to fit the chuck on a hand drill.

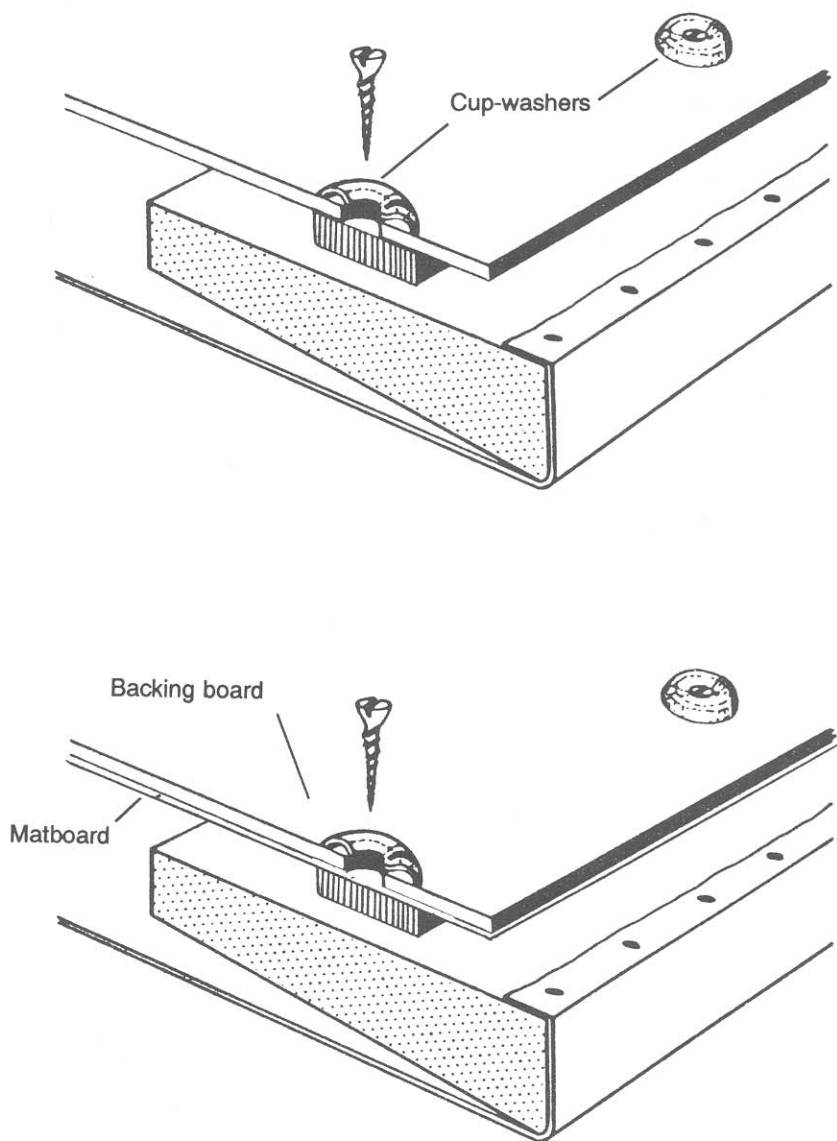


Figure 4  
Synthetic backing board with a matboard liner attached to the stretcher with a No. 5 screw and a cup-washer (cross-section view).

Adhere the foam stripping to the inside of the backing board, preferably close to but inside the line of prepared holes.

If desired, a sheet of Mylar (e.g., 3 mil thick) could be adhered to the inside of the hardboard to provide a moisture barrier and dust seal between the painting and the board. Adhere the Mylar with double-sided tape along the inside edges of the board. Trim the Mylar to the size of the board, and cut holes with a knife or cork borer where the Mylar sheet extends over the drill holes. Attach the foam stripping to the Mylar. This step is not necessary, but will improve the performance of the hardboard.

Carry the clean, prepared board to the painting, and attach it to the stretcher with fender-washers and No. 5 screws of appropriate length (Figure 5). The screws should float in the centres of the 1.5 cm (1/2") holes, and should hold the washers firmly but not tightly. This technique allows the board to expand and contract with minimal effect on the stretcher.

## Suppliers

*Hardboard (tempered; at least 3 mm thick)* (e.g., Masonite):  
building supply stores

*Synthetic board* (e.g., Coroplast, Hi-Core):  
plastics distributors

For specific distributors, contact

Coroplast Ltd.  
700 Vadnais Street  
Granby, Quebec  
J2L 1A7  
(514) 378-3995

Matra Plast Inc. (Hi-Core)  
420 Notre-Dame, P.O. Box 600  
Berthierville, Quebec  
J0K 1A0  
(514) 836-7071

*Foam stripping* (self-adhesive weather stripping; foam strips adhered with double-sided tape):

- RCR Climoloc, heavy-duty, self-adhesive, waterproof, Cat. #12005 (white)
  - RCR Climoloc, general purpose, heavy-duty, self-adhesive foam tape, Cat. #13008 (black)
- hardware stores (quote catalogue number)

For specific RCR distributors, contact

RCR Inc.  
2295 Metropole Street  
Longueuil, Quebec  
J4G 1E5  
(514) 670-8100

- Eskimo Polyfoam Heavy Duty Door Weatherstrip, Code #64-2517-8 (non-adhesive)  
hardware stores (quote catalogue number)

- Ethafoam sheets (approximately 6 mm thick)  
Contact Dow Chemical Canada Inc. in Vancouver, Calgary, Regina, Winnipeg, Toronto, Montreal, Halifax, or St. John's.

*Double-sided tapes* (Scotch Brand 415 tape and 465 transfer tapes):  
stationery suppliers

*Screws and cup-washers*:  
hardware stores

*Flat fender-washers* (Paulin W-94 3/16" I.D./3/4" O.D., or a comparable bright-plated brand such as Spanor):  
Legere Industrial Supplies  
1120 Morrison Drive  
Ottawa, Ontario  
K2H 8M7  
(613) 829-8010

*Matboard* (4-ply):  
local art and drafting supply stores or framing shops

*Mylar*:  
plastics distributors

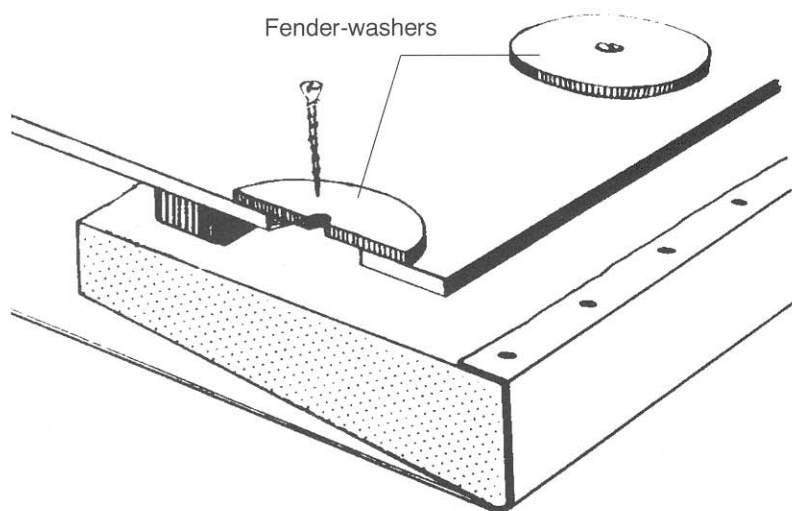


Figure 5

Hardboard backing board attached with a No. 5 screw and a fender-washer (cross-section view).

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by Fine Arts Section  
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