

## Big Paper, Big Problems: Rigid Support Options for the Mounting and Display of Large Format Works on Paper

### ABSTRACT

A research project in the paper conservation laboratory of the Fine Arts Museums of San Francisco involved issues surrounding storage and exhibition of large format works of art on paper. This study yielded a multitude of solutions regarding innovative display methods and materials.

Current exhibition aesthetics, as well as size-related problems of handling, often dictate the use of non-traditional framing or mounting methods for works on paper. Lightweight rigid panels, including those developed for use in architectural and signage industries, have found practical application in the field of paper conservation. These composite materials provide versatile solutions for the preservation of large format works of art.

This poster was designed to supplement the AIC conference presentation by Michelle Facini and Debra Evans, "Big Paper, Big Problems: Preservation Issues of Large Format Works on Paper." It provided conservators with hands-on access to specific materials discussed in the presentation. Product samples were accompanied by information on manufacture and composition, weight, maximum dimensions, cost, availability, and industry-related technical data.

### INTRODUCTION

The paper conservation laboratory of the Fine Arts Museums of San Francisco was involved in a year-long research project exploring the exhibition and storage of large format works on paper. Made possible by the Samuel H. Kress Foundation, this study provided the opportunity to survey conservators and other keepers of collections about current storage and display methods. Materials used in the signage and architectural industries were investigat-

This paper was presented as a poster at the AIC 31st Annual Meeting, June 5–10, 2003, Arlington, Virginia. Received for publication Fall 2003.

ed. Portions of the rigid support panels highlighted in this research have not been created specifically for the preservation market. However, these products are constructed of materials commonly used in conservation.

### SAMPLES

The samples displayed on this poster (fig. 1) range from traditional paper supports to more modern polycarbonate plastics and aluminum honeycomb products. Each of these panel materials can be useful for both storage and exhibition of large format works on paper.

#### Archival Paper Supports:

Foam-X®, Gatorfoam®, Gatorplast®, Foam-X®, Tycore®, Honeycomb Core

- High quality, acid-free materials
- Lightweight
- Cost effective
- Easily manipulated using sharp blades
- Available in large panel sizes

#### Plastic and Polycarbonate Supports:

Coroplast®, Macrolux®

- High quality, rigid materials
- Lightweight
- Cost effective
- Easily manipulated using sharp blades or woodworking tools
- Available in large panel sizes
- Polycarbonate panels can be seamed or fitted together
- Available in a wide range of thicknesses

#### Aluminum Supports:

Alucobond®, Alupalite™, Aluminum Honeycomb Panels, Dibond®, D-Lite™, Econolite™, Max-Corr™, Teklam

- High quality, rigid materials
- Lightweight

## BIG PAPER, BIG PROBLEMS:

An ongoing research project at the paper conservation laboratory of the Fine Arts Museums of San Francisco involves issues surrounding storage and exhibition of large format works of art on paper. This study has yielded a multitude of information regarding innovative display methods and materials.

Current exhibition aesthetics, as well as size-related problems of handling, often dictate the use of non-traditional framing or mounting methods for works on paper. Lightweight, rigid panels, including those developed for use in architectural and signage industries, have practical application in the field of paper conservation. These composite materials provide versatile solutions for the preservation of large format works of art.

The samples displayed on this poster range from traditional paper supports to more modern polycarbonate plastics and aluminum honeycomb materials. These support materials can be helpful for both exhibition and storage of large format works on paper. The accompanying handout further describes each material and may be helpful in choosing an appropriate panel for oversized paper works.

Industry related technical data such as composition, cost, thickness, weight and maximum panel dimensions are described in table form. The information presented is subject to manufacturer's changes. Costs have been determined using local California distributors and conservation catalogues.

## RIGID SUPPORT OPTIONS FOR THE MOUNTING & DISPLAY OF LARGE FORMAT WORKS ON PAPER

**Gatorboard® 1/2" inch**  
Lightweight honeycomb with a polystyrene core and patented venetian laminate base.

**Gatorplast®**  
High impact polycarbonate beams laminated to a strong extruded polystyrene center.

**Form-A®**  
Extruded polystyrene center with acrylic paper inner. 2 1/2" nominal culture California buffer.

**Complast® 7mm**  
Extruded wall panels featuring 100% virgin acrylic grade high impact polycarbonate construction.

**Complast® 6mm**  
Extruded wall panels featuring 100% virgin acrylic grade high impact polycarbonate construction.

**Complast® 10mm**  
Extruded wall panels featuring 100% virgin acrylic grade high impact polycarbonate construction.

**Tyvek® mounting panel 1/2" inch**  
Paper honeycomb core with paper facing on two sides. Made with acid free, buffered paper.

**Tyvek® mounting panel 3/4" inch**  
Paper honeycomb core with paper facing on two sides. Made with acid free, buffered paper.

**Archival® honeycomb panel**  
Core consists of acid free, buffered paper. Made from acid free, lignin free chemical pulp. Neutral pH.

**Muroplast® 6mm**  
Thin wall polycarbonate sheet, clear.

**Muroplast® 8mm**  
Thin wall polycarbonate sheet, clear.

**Muroplast® 16mm**  
Thin wall polycarbonate sheet, bronze.

**Museum Services Extraglass 1/2" inch**  
Phenolic facing for aluminum honeycomb panels.

**Museum Services aluminum honeycomb**  
Honeycomb aluminum core based on 1/2" inch with topcoat skin. Beveled edge available.

**Archival® aluminum honeycomb**  
Aluminum honeycomb core based on 1/2" inch with aluminum extruded edge available.

**E-Lite™**  
Designed polycarbonate core with 1/2" inch extruded aluminum on both sides.

**Alucobond® material 6mm**  
The core of 1/2" inch aluminum with a solid polycarbonate core.

**Totem Corporation sandwich panel**  
Aluminum honeycomb core with 1/2" inch aluminum facing on both sides.

**Alucobond® material 3mm**  
The core of 1/2" inch aluminum with a solid polycarbonate core. Based on polycarbonate panel finishes.

**Alucobond® material 4mm**  
The core of 1/2" inch aluminum with a solid polycarbonate core. Based on polycarbonate panel finishes.

**Alucobond® material 1/2" inch**  
Composite polycarbonate core with 1/2" inch extruded aluminum surface on both sides.

**Econobond™ 6mm**  
Composite polycarbonate core with 1/2" inch extruded aluminum base and 1/2" inch virgin polycarbonate cap.

**Max-Corr™ 6mm**  
Panel features 1/2" inch foam on both sides. Composite polycarbonate core.

**Alucobond® material 3mm**  
The core of 1/2" inch aluminum with a solid polycarbonate core. Based on polycarbonate panel finishes.

**Alucobond® material 4mm**  
The core of 1/2" inch aluminum with a solid polycarbonate core. Based on polycarbonate panel finishes.

**Alucobond® material 1/2" inch**  
Composite polycarbonate core with 1/2" inch extruded aluminum surface on both sides.

**Econobond™ 16mm**  
Composite polycarbonate core with 1/2" inch extruded aluminum base and 1/2" inch virgin polycarbonate cap.

**Max-Corr™ 16mm**  
Panel features 1/2" inch foam on one side with a 1/2" inch virgin polycarbonate cap. Composite polycarbonate core.

**Alucobond® material 3mm**  
The core of 1/2" inch aluminum with a solid polycarbonate core. Based on polycarbonate panel finishes.

**Alucobond® material 4mm**  
The core of 1/2" inch aluminum with a solid polycarbonate core. Based on polycarbonate panel finishes.

**REINFORCEABLE**

**Archival Paper Supports**  
Form-A®, Complast®, Gatorplast®, Tyvek®, Honeycomb-Core™

High quality acid-free materials  
Lightweight  
Economic  
Easily cut with a sharp blade  
Available in large sizes

**Elastic and Polycarbonate Supports**  
Complast®, Muroplast®, Tyvek®

High quality, rigid materials  
Lightweight  
Economic  
Easily cut with sharp blades or woodworking tools  
Available in large sizes  
Polycarbonate panels can be seamed or fitted together  
Available in a wide range of thickness

**Aluminum Supports**  
Alucobond®, Alucobond™, Aluminum Honeycomb Panels, Extraglass®, 1/2" inch, Extraglass™, Alum-Corr™, Totem

High quality, rigid materials  
Lightweight  
Economic  
Easily manufactured using woodworking tools  
Available in large sizes  
Panels can be seamed or fitted together  
Free panels are designed to be extremely rigid  
Extruded aluminum reinforcement can be applied to the verso for installation purposes

**Rita and Steve**  
Rita and Steve, Kress Foundation Fellow in Paper Conservation and Stephanie Luber, Graduate Intern in Paper Conservation  
Fine Arts Museums of San Francisco

Fig. 1. "Big Paper, Big Problems" poster with samples of paper supports

- Cost effective
  - Easily manipulated using woodworking tools
  - Available in large standard and custom panel sizes
  - Panels can be seamed or fitted together
  - Maximum rigidity can be achieved using relatively thin panels
- Extruded aluminum reinforcement can be applied directly to the verso so panels may be installed directly to wall surfaces

**TABLE**

The accompanying table further describes each rigid support panel and is a useful guide for choosing an appropriate product. Industry-related technical data such as composition, cost, thickness, weight, and maximum panel dimensions are characterized. The information presented is subject to manufacturers' changes. Cost estimates are based on local California distributors and conservation catalogues.

## CONCLUSIONS

Cost effective and versatile, rigid support panels have many potential uses in the storage and display of large format works on paper. Panels have been successfully used to safely handle oversized works, in custom housing constructions, as secondary supports for temporary exhibits, in the design of storage furniture, and as backing materials for framing. In order to guide appropriate panel choices, the individual needs of each object must be identified on a case-by-case basis. Since manufacturers often change product compositions without notice, contacting suppliers for up-to-date materials information is recommended. In-house testing of materials should always be considered to evaluate the appropriate nature of materials for specific projects.

## REFERENCE

Hatchfield, Pamela B. 2002. *Pollutants in the museum environment*. London: Archetype Publications Ltd.

## ACKNOWLEDGEMENTS

The authors would like to thank the Samuel H. Kress Foundation for making this research possible. Special thanks to Debra Evans and Janice Schopfer for their contributions and support on this project. We would also like to acknowledge and thank Daria Keynan for sharing her expertise and enthusiasm for big art. Thanks to Brian Isobe, Scott Homolka, and Walter Ploskon for their contributions and technical assistance.

## MICHELLE S. FACINI

Samuel H. Kress Foundation Paper Conservation Fellow  
Fine Arts Museums of San Francisco  
California Palace of the Legion of Honor  
mfacini@att.net

## STEPHANIE LUSSIER

Graduate Intern in Paper Conservation  
Fine Arts Museums of San Francisco  
California Palace of the Legion of Honor  
lussier\_homolka@yahoo.com

Supplier	Product Name	Price per Sq. Foot /USD		Thickness		Weight Pounds/Sq. Ft.	Largest Panel Available	
		mm	inch	mm	inch			
<b>Alcan Composites USA Inc.</b> <b>Aluisse Composites, Inc.</b> P.O. Box 507 208 W. 5 <sup>th</sup> Street Benton, KY 42025 Phone: 800-626-3365 Fax: 502-527-1552 www.alcancompositusa.com	<b>Alucobond® Material</b> Two skins of coil aluminum .020", with a polyethylene core. All material supplied with mill edge.	6.14		3	1/8	.92	5 x 16 ft 1.5 x 4.8 m	
		6.75		4	3/16	1.12		
		7.40		6	1/4	1.49		
	<b>Dibond® Material</b> Two skins of 0.012" coil aluminum with a polyethylene core. Finished with a baked-on polyester paint. Bendable	2.59		2	1/16	.60	4 x 10 ft 1.2 x 3 m	
		2.96		3	1/8	.79	5 x 10 ft 1.5 x 3 m	
		3.46		4	3/16	.98	Standard size 5 x 10 ft 1.5 x 3 m Widths up to 5 ft are available. Length determined by handling and shipping limitations.	
	<b>Amerimax Building Products, Inc.</b> 1140 All Pro Drive Elkhart, IN 46514 Phone: 888-325-1180 Fax: 219-266-9880 Email: inquiries@amerimaxbp.com www.amerimaxbp.com	<b>Max-Corr™</b> Corrugated polypropylene core with .015 painted aluminum faced on two sides. <b>Max-Corr Lite™</b> Corrugated polypropylene core with .015 painted aluminum faced on one side and a light gauge, aluminum-mill finish backer.	3.75		6	1/4	.82	
			5.00		10	3/8	1.18	
			3.00		6	1/4	.63	
			4.75		10	3/8	1.00	
<b>Archivart®</b> A Division of Heller & Usdan, Inc. 7 Caesar Place Moonachie, NJ 07074 Phone: 800-804-8428 Fax: 201-935-5964 Email: sales@archivart.com	<b>Aluminum/Aluminum Honeycomb Panel</b> Aluminum honeycomb, aluminum face material with polyurethane adhesive. Basswood edges. <b>Fiberglass/Aluminum Honeycomb Panel</b> Aluminum honeycomb, fiberglass face material with polyurethane adhesive. Basswood edges.	35.00		14.2	9/16	.8	Supplier will customize panels to size.	
		40.00		12.7	1/2	~1.2		
		41.00		15.8	5/8	~1.2		
	<b>Tycore® Mounting Panel</b> Acid-free, buffered paper Item #7-1404: 48" x 96" x 1/2" Item #7-1405: 40" x 60" x 3/4"	42.00		25.4	1	~1.2		
		3.17		12.7	1/2	.19	4 x 8 ft 1.2 x 2.4 m	
		4.39		19.0	3/4	.33	3.3 x 5 ft 1 x 1.5 m	
	<b>Honeycomb Core</b> Core structure without covering skins made from acid-free, lignin-free chemical pulp. Neutral pH. (Unexpanded: 60 x 12 in / 5 x 1 ft / 1.5 x .3 m Expanded: 48 x 192 in / 4 x 16 ft / 1.2 x 4.8 m)	.06		11	7/16	.06	4 x 16 ft 1.2 x 4.8 m	

Supplier	Product Name	Price per Sq. Foot / USD		Thickness		Weight Pounds/Sq. Ft.	Largest Panel Available
		mm	inch	mm	inch		
<b>Coroplast®, Inc.</b> 4501 Spring Valley Road Dallas, TX 75244 Phone: 800-666-2241 Fax: 972-392-2242 www.coroplast.com	<b>Coroplast®</b> Extruded twinwall plastic sheet products based on a high impact polypropylene copolymer. (Archival Grade) Available thickness 2, 3, 4, 5, 6, 7, 8, 10 mm.	.31	3/16	4	3/16	.16	Standard size 4 x 8 ft 1.2 x 2.4 m Widths up to 8.5 ft are available. Length determined by handling and shipping limitations.
		.63	3/8	10	3/8	.41	
<b>Foam-X®</b> Alcan Composites 55 West Port Plaza, Ste. 625 St. Louis, MO 63146 Phone: 800-382-6445 Fax: 314-878-7596 www.aluisse-comp.com	<b>Foam-X®</b> Sandwich board with extruded polystyrene center. Acid-free paper liners, 2% reserve calcium carbonate buffer. Acid-free paper ranges in pH from 7.5-8.5.	.81	1/8	3	1/8	.145	4 x 8 ft 1.2 x 2.4 m Custom widths and lengths available.
		1.10	3/16	4	3/16	.149	
<b>Laminators Incorporated</b> 3255 Souderton Pike Hatfield, PA 19440-1731 Phone: 800-523-2347 Fax 215-721-4669 www.signboards.com	<b>Alumalite™</b> Aluminum composite panel with a high density corrugated plastic core (polyallomer). Both sides are faced with .016 inch finished aluminum. <b>Econolite™</b> Aluminum composite panel with a high density corrugated plastic core (polyallomer) faced with .016 inch finished aluminum and a lighter gauge backer. <b>D-Lite™ 1</b> Aluminum composite panel with a high density corrugated plastic core (polyallomer) faced with .012 inch finished aluminum and a lighter gauge backer. <b>D-Lite™ 2</b> Aluminum composite panel with a high density corrugated plastic core (polyallomer) faced with .012 inch finished aluminum and a lighter gauge backer. Stronger material compared to D-Lite 1.	2.96	1/4	6	1/4	.78	5 x 12 ft 1.5 x 3.6 m
		5.18	3/8	10	3/8	.99	
		2.56	1/4	6	1/4	.64	
		3.75	3/8	10	3/8	.84	
		2.12	1/8	3	1/8	.42	4 x 10 ft 1.2 x 3 m
		2.30	1/8	3	1/8	.53	

Supplier	Product Name	Thickness		Price per Sq. Foot /USD	Weight Pounds/Sq. Ft.	Largest Panel Available	
		mm	inch				
<b>Macrolux®</b> Co-Ex Corporation 5 Alexander Drive Wallingford, CT 06492 Phone: 800-888-5364 Fax: 203-679-0600 www.co-excorp.com	<b>Multiwall Polycarbonate Sheet</b> Twin, triple, four, five and M-wall Available thickness 6, 8, 10, 16, 20, 25, 32 mm	6	3/16	3.12	.16	4 x 39 ft 1.2 x 11.8 m	
		25	1	7.81	.80	6 x 39 ft 1.8 x 11.8 m	
	<b>Museum Services Corporation</b> 1107 E. Cliff Road Burnsville, MN 55337-1514 Phone: 800-672-1107 Fax: 952-895-5298 www.museumservicescorporation.com	<b>Aluminum Honeycomb Panel</b> Aluminum skin, aluminum core, basswood edges. (Product #: 0511, 0512, 0513)	12.7	1/2	28.00	1.12	Maximum size for single aluminum panel 4 x 8 ft 1.2 x 2.4 m  Supplier can seam panels to construct larger sizes.
			15.8	5/8	28.00	1.2	
			25.4	1	33.00	1.4	
		<b>Fiberglass Skin Honeycomb Panel</b> Fiberglass skin, aluminum core, basswood edges. (Product #: 0521, 0522, 0523)	12.7	1/2	40.00	1.0	
			15.8	5/8	40.00	1.1	
			25.4	1	42.00	1.2	
	<b>Dibond® Composite Panel</b> Faced with .010 gauge aluminum skin, polyethylene core. (Product #: 0531, 0532)  <b>Tycore™</b> Acid-free paper panels with acid-free paper honeycomb core. (Product #: 0570-1404)	2	1/8	15.00	1.12		
		4	1/4	21.00	1.12		
		12.7	1/2	3.17	.19	4 x 8 ft 1.2 x 2.4 m	

Supplier	Product Name	Price per Sq. Foot/USD		Thickness		Weight Pounds/Sq. Ft.	Largest Panel Available
		mm	inch	mm	inch		
<b>Small Corp</b> P.O. Box 948 Greenfield, MA 01302 Phone: 800-392-9500 Fax: 413-773-7386 www.smallcorp.com	<b>Aluminum Support Panels</b> Panels have a .016 aluminum skin with a sealed poplar frame and an aluminum honeycomb core. Panels over 48" x 96" have pieced aluminum skins joined to form a continuous flat surface. Supplier can provide panels faced with museum board or fabric.	25.00	1/2	12.7	1/2	~1.00	4 x 8 ft 1.2 x 2.4 m
	<b>Photo Mounting Panel</b> 2-ply conservation board surface laminated to a 1/2" aluminum honeycomb panel. Panel is set into a 7/8" black powder-coated outer frame. Panels include hanging cleat. Maximum seamless width for paper is 90".	28.00	9/16	14.2	9/16	~1.00	Maximum size for single aluminum panel 4 x 8 ft 1.2 x 2.4 m Supplier can seam panels to construct larger sizes.
	<b>Sandwich Panel</b> .025" aluminum facings with 3/8" aluminum honeycomb core.	11.50	1/2	12.7	1/2	.83	4 x 12 ft 1.2 x 3.6 m
<b>Uniwood / Fome-Cor®</b> <b>Graphic Arts Board</b> P.O. Box 1839 Statesville, NC 28687 Phone: 800-438-1701 Fax: 704-878-2708 www.gatorfoam.com	<b>Gatorfoam®</b> Lightweight foamboard with a polystyrene core and patented veneer laminate face. Available thickness 3/16, 3/8, 1/2, 3/4, 1, 1 1/2, 2 inches.	1.18 1.81	3/16 1/2	4.0 12.7	3/16 1/2	.247 .296	5 x 10 ft 1.5 x 3 m
	<b>Gatorplast®</b> High impact polystyrene facers laminated to a strong extruded polystyrene center. Available thickness 3/16, 1/2, 3/4, 1, 1 1/2, 2 inches.	2.06 2.21 3.25 3.93	3/4 1 1 1/2 2	19.0 25.4 38.1 50.8	3/4 1 1 1/2 2	.277 .370 .449 .513	4 x 8 ft 1.2 x 2.4 m
		1.00 1.40 1.71	3/16 1/2 3/4	4.0 12.7 19.0	3/16 1/2 3/4	.204 .257 .297	

\*Support panels listed in this chart are constructed of materials commonly used in conservation. Product information is subject to manufacturer's change. Prices per square foot are based on quotes from local California distributors or list prices posted in conservation catalogues. Contact manufacturers for authorized dealers in your area.