Fabricating Procedures for Decorative Micarta®

- Fire-retardant wall paneling and other special products
- Fabricating and postforming information
- Grades, sizes, finishes
- NEMA test values

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WITH WESTINGHOUSE MICARTA® LAMINATED PLASTIC

best results.

2. Resorcinol and Phenol-resorcinol Adhesives—These are recommended for use when high water resistance is required. They may be used in either hot-pressing or room-temperature bonding. These types are sometimes used as a preimpregnated adhesive sheet in a hot-pressing operation.

3. Casein Adhesives—These are generally satisfactory for room-temperature bonding. Some caseins have poor resistance to fungus growth and should be used only where relatively dry conditions prevail.

4. Epoxy Adhesives—These are liquids with no volatile components and, therefore, have good gap-filling and low-shrinkage properties. They are used mainly for bonding to impervious cores (such as steel) and may be catalyzed for use in either hot- or room-temperature bonding operations.

B. Polyvinyl Types

Polyvinyl acetate (PVA) emulsion adhesives may be used for bonding where relatively low water and low heat resistance are not detrimental to the application, such as furniture, kitchen cabinets and office partitions. They are cold-setting adhesives, requiring only that the core absorb the water from the glue line, and therefore require shorter press times than the thermosetting types.

C. Contact Types

This type of adhesive may be used for bonding decorative laminates to a variety of cores. They are particularly desirable for application to metal or other impervious surfaces. There are two primary types—solvent- and water-based (water-based adhesive is not usable on ordinary steel or iron surfaces). The solvent or the water must be lost before satisfactory bonding can be accomplished.

The adhesive should be uniformly applied to both surfaces to be bonded by brushing, spraying, rolling on, or using a notched spreader. Brushing is the least acceptable method because of the difficulty in obtaining uniform application.

These adhesives have high immediate bonding strength, and care must be taken when bringing together the two surfaces to be bonded.

This type of adhesive does not restrict the movement of the laminate caused by varying humidity conditions to the same extent as does the thermosetting types. This characteristic should be kept in mind when selecting the adhesive for the application.

Experience has indicated that failure in bonded assemblies generally results from one or a combination of reasons. These faults and recommendations for their prevention are as follows:

1. An Improperly Prepared or Dirty Gluing Surface—The surfaces must be clean, dry and free of oils or other contamination, such as dust, loose paint particles, etc. The adhesive film must have full contact with the surface to which it is applied in order to give maximum adherence to that surface.

2. The Adhesive Not Agitated or Stirred Thoroughly—Unless otherwise indicated by the manufacturer, always stir or otherwise agitate the container of adhesive before using. This is particularly necessary as the size of the container increases.

3. Insufficient Amount of Adhesive on Either or Both of the Surfaces to be Bonded—When ready for bonding, the spread film of most contact adhesives will exhibit a uniformly dull to semi-gloss appearance over the entire surface of the area to be bonded. Marked variation in the appearance will generally indicate an improper or non-uniform adhesive spread. The substrate can generally be seen more readily through those areas where insufficient adhesive has been applied.

4. Bonding of Surfaces Under 70 F—Unless otherwise indicated by the manufacturer, the temperature of the gluing area and all materials should be 70 F or above.

5. Bonding of Surfaces When Humidity Is Too High*—Experience has shown that at relative humidities above 80 percent at temperatures of 70 F or higher, moisture may condense on the surface during drying which will prevent achieving a good bond. Under these conditions, bonding should not be attempted unless special slow-drying solvents are used. Water-based adhesives are not recommended for use under these conditions.

6. Bonding When Surfaces Are Over-dry or Under-dry—Care should be taken to follow the manufacturer's recommendations concerning the usable tack range of the adhesive. If assembly is made before the adhesive is dry or after the allowable open time is exceeded, an unsatisfactory bond will result.

7. Bonding Without Sufficient Pressure—To insure the intimate contact necessary for bonding, sufficient pressure must be applied over the entire area. Pinch rollers (rotary press) and heavy weighted rollers are ideal, but hand pressure rolling is adequate provided the operator exerts maximum pressure by means of a two-handled or a single long-handled roller. The rollers should be of steel or hard solid rubber (50-80 durometer) not over 2 inches wide. Hand rolling should be done from the center to the edges to insure the removal of all air bubbles. The edges should be double rolled. Use as much pressure as is possible without damage to the assembly.

Authorized Engineering Information 1-21-1964.

LD 1-7.03 CORES

There are a variety of core materials which are satisfactory for use under decorative laminates. Some acceptable materials include plywood, flakeboard, wood composition board, inorganic fiber board and metal. These have a wide variation in physical properties and every precaution should be taken to insure proper selection for the intended use. *Plaster board, gypsum board, plaster and similar materials are not recommended because their internal bond strength is not sufficient for this service.*

When plywood is used, it should have a face of close-grained wood to avoid the reproduction (telegraphing) of a pronounced wood grain effect on the surface of the laminate. Urea-bonded plywood is sufficiently water resistant for ordinary service. Exterior-grade plywood should be used for applications where moisture may be prevalent (drainboards, etc.). All wood-type core materials should have the optimum moisture content (depending upon local conditions) in order to minimize telegraphing and warping tendencies.

Authorized Engineering Information 1-21-1964.

LD 1-7.04 WATERPROOFING

In constructions where the core material is exposed and water is encountered (e.g., around sinks), it is recommended that the matching surfaces and edges of the decorative laminate and core be given a waterproofing treatment prior to installation of the trim.

Authorized Engineering Information 1-21-1964.

LD 1-7.05 FABRICATION TOOLING

The proper type of tools for use in fabricating decorative laminates can be obtained from many reputable tool manufacturers. The following information is intended only as a supplement to their recommendations. *(continued next page)*

*Micarta recommends that all component parts, including laminate, be conditioned and acclimated and then bonded at relative humidity of 50-55% and temperature of 70F

Specifications

Grade Name	Thickness	Thickness Tolerance	Widths Available	Lengths Available	Finishes[2]	Special Notes	Applications
General Purpose	1/16"	±.005	24", 30", 36", 48", 60"	60", 72", 96", 120", 144"	Oil Rub, Lo-Glare*, Velvet*, Satin*, Furniture, Gloss		Horizontal surfacing and commercial wall
Post-forming	.051"	±.004"	24", 30", 36", 48", 60"	60", 72", 96", 120", 144"	Oil Rub, Lo-Glare*, Velvet*, Satin*, Furniture, Gloss	Should be bonded to a solid base such as plywood, Novoply, or other smooth surface. Can be formed to inside radii as small as 5/16" under suitable temperatures, using specially designed equipment. Minimum radius of outside bend, most grades, ½". Recommended forming temperature, 325°F (throughout laminate). Heating time depends upon type of heat source, but should reach 325°F within 60 seconds.	Postforming of sink decks, countertops, tabletops, bar and table railings, etc.
Vertical Surfacing	1/32"	±.004"	24", 30", 36", 48", 60"	60", 72", 96", 120", 144"	Oil Rub, Lo-Glare*, Velvet*, Satin, Furniture	Should be bonded to a solid base such as plywood, Novoply, or other smooth surface. Minimum radius of outside and inside bend, most grades, ½". Recommended forming temperature, 325°F (throughout laminate). Heating time depends upon type of heat source, but should reach 325°F within 60 seconds.	Vertical surfacing, postforming, edge-banding
Microform	.025"	±.004"	24", 48"	96", 120"	Lo-Glare*, Velvet*	Surface properties similar to Postforming grade. Minimum outside design radius is 3/16". Minimum radius when forming hot, inside ⅛". Recommended forming temperature, 325°F (throughout laminate). Heating time depends on heat source, but should reach 325°F within 60 seconds, preferably 22 to 27 seconds.	Furniture, kitchen cabinets, picture and door framing, and other vertical applications requiring ultra-small radii. Edge banding.
Fire Retardant	.050"	±.004"	24", 30", 36", 48", 60"	60", 72", 96", 120", 144"	Oil Rub, Lo-Glare*, Velvet*, Satin, Furniture, Gloss	Carries the Underwriters Laboratories, Inc., label. The Underwriters Laboratories, Inc., established fire hazard rating for this product when bonded to a representative incombustible core (¾" Marinite-36 or cement asbestos board) is: Flame Spread 15, Fuel Contributed 15, Smoke Developed 5.	Interior surfacing and paneling in public buildings, buses, railroad cars, ships, etc.
Fire-retardant Wall Paneling[1]	.050"	±.004"	4' x 8', 5' x 10'	—	Oil Rub, Lo-Glare*, Velvet*, Satin, Furniture	Available with Marinite core or with treated chipboard core. All panels have .050" fire-retardant Micarta faces and fire-retardant backing sheets. Micarta Fire-retardant Wall Paneling is part of an integrated system of fire-retardant components. Panels, joinery, trim, and fire-retardant doors are available as parts of the interlocking system.[3]	Interior paneling in public buildings, hospitals, schools, etc.
Cigarette-proof	1/16"	±.005"	24", 30", 36", 48", 60"	60", 72", 96", 120", 144"	Oil Rub, Lo-Glare*, Velvet*, Satin*, Furniture	Guaranteed to withstand lighted cigars and cigarettes. Made in the same way as General Purpose 1/16" except for an inner ply of aluminum which dissipates heat applied to the surface. Meets military standards Mil-T-17171B (ships) Type II. Resistance to high temperatures and cigarette burns, which involves heating a spot on the surface to 550°F for 10 minutes without blistering.	Tables, counters, bar tops, etc.
General Purpose, good one or two sides	1/32", 1/10", ⅛"-3/32", ¼"	±.010" except ⅛" = ±.008"	24", 30", 36", 48", 60"	60", 72", 96", 120", 144"	Oil Rub, Lo-Glare*, Velvet*, Satin*, Furniture, Gloss	Solid laminate throughout; either good two sides or good one side with balanced construction. If minimum warpage is required, the good two sides material is recommended.	Interior paneling of buses, trains, ships; wall partitions. The 1/32" material is commonly used for kickplates on doors.
Aluminum	.040", .098"	±.005"	24", 30", 36", 48", 60"	60", 72", 96", 120", 144"	Oil Rub, Lo-Glare*, Velvet*, Satin*, Furniture, Gloss	Micarta surface bonded to aluminum core with special adhesive. Plastic-to-metal bond is made simultaneously with curing of the Micarta.	Heavy-duty application such as panels for car wash equipment, industrial storage, walls and ceilings in buses, railroad cars, ships.
Doublewear	⅛"	±.004"	24"	[illegible]	Lo-Glare	Provides three times the wear resistance capability required by NEMA for high-pressure laminates. Tough, flint-like surface doesn't trap dirt, wax particles and other contaminants. Slipperiness coefficient (James Testing Machine) is 0.70. Impact resistance (NEMA LD-1-1964) of better than 30 inches.	Flooring in computer rooms, clean rooms and other raised-flooring applications.
Micarta-bord	⅛"	±.008"	24", 30", 36", 48"	60", 72", 96", 120", 144"	Oil Rub, Lo-Glare*, Velvet*, Satin*, Furniture		Inexpensive furniture, wall-boards, panels, walls, partitions, and other vertical applications where it can be glued to frame or core by cold or hot press.
Backing Sheets	.020", .031", .045", .062"	±.005"	24", 30", 36", 48", 60"	60", 72", 96", 120", 144"			For use as backing on underside of core panels to increase stability and resistance to moisture. Recommended for use with any construction.

[1]Each width is available in all lengths, except where otherwise indicated. (Maximum allowable overage for fabrication is ¼" to ½" each on the length and width of Micarta sheets.)

[2]Satin and Furniture finishes cost slightly less than the others.

*Particularly recommended finishes for solid colors and for patterns.

Contact Micarta sales engineer for sample chips of the hundreds of colors, patterns, and wood grains available. Pattern, wood grain, and black Micarta are less expensive than white or solid colors.

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Architectural Specifications

Materials

Plastic Surfacing—
All decorative surfaces shall be Westinghouse Micarta, conforming to the National Electrical Manufacturers Association (NEMA) Standard LD-1-1964. Specify Grade #(   ), Grade Name (   ), Thickness (   ), Finish (   ), or equal to be approved by architect.

Fire-retardant Micarta—
Fire-retardant decorative surfaces shall be Westinghouse Micarta, Grade #(   ), Grade Name (Fire-retardant), Thickness (.005"), Finish (   ), or approved equal, bonded to a (   ) core in accordance with manufacturers' recommendations, and have Flame Spread of (   ) max., and Smoke Developed of (   ) max., in conformance with local building and fire codes.

Fabrication

Insofar as possible, all fabrication shall be done in the shop in accordance with instructions given in the National Electrical Manufacturers Association (NEMA) publication—"Recommended Practices for Fabrication and Applying Laminated Thermosetting Decorative Sheets." (See Pages 2, 3 and 4.)

Westinghouse movable partitions with Micarta facing are available through Architectural Systems Division, 4300—36th Street, S.E., Grand Rapids, Michigan 49508. Phone: 616 949-1050.

Additional information and assistance is available through Westinghouse Sales Engineers at these locations:

Orange, Calif. 92667
1435 W. Collins Avenue
714 997-0881

San Francisco, Calif. 94111
No. 1 Maritime Plaza
415 392-5353

Jacksonville, Fla. 32207
4151 Woodcock Drive
904 356-5811

Miami, Fla. 33162
3400 N.W. 31st Street
305 634-5361

Atlanta, Ga. 30318
1299 Northside Drive, N.W.
404 351-5200

Chicago, Ill. 60606
10 S. Riverside Plaza
312 461-7314

Louisville, Ky. 40218
1941 Bishop Lane
502 459-5440

Southfield, Mich. 48076
24700 Eleven Mile Road
313 352-9000

St. Louis, Mo. 63101
411 N. 7th Street
314 421-6911

Charlotte, N.C. 28201
2001 W. Morehead Street
704 377-3471

Greensboro, N.C. 27408
1020 E. Wendover Drive
919 273-3722

Edison, N.J. 08817
Box 337
Route 27 and Vineyard Road

Columbus, O. 43212
940 Williams Avenue
614 294-5261

Portland, Ore. 97208
815 N.W. 12th Avenue
503 224-4200

Philadelphia, Pa. 19004
One Decker Square
Bala Cynwyd, Pa.
215 667-7600

Pittsburgh, Pa. 15219
Chatham Center Office Bldg.
412 255-3800

Memphis, Tenn. 38103
1520 First National Bank Bldg.
901 526-8546

Dallas, Tex. 75247
8400 John Carpenter Freeway
214 631-2811

Roanoke, Va. 24010
417 W. Campbell Avenue
703 342-8925

Milwaukee, Wis. 53201
731 N. Jackson Street
414 276-1800

Hampton, S.C. 29924
Westinghouse Electric Corporation
Micarta Division
803 943-2311

In Canada:
Etobicoke, Ont.
(Toronto)
Micarta Laminates, Ltd.
1 Westside Drive
416 621-8920

Micarta is available internationally through
Westinghouse Electric International Company, 200 Park Ave., New York, N.Y. 10017

Westinghouse Electric International, S.A., 31 Rue du Rhone, Geneva, Switzerland

Westinghouse Electric Company, S.A., P.O. Box 10004, Santurce, Puerto Rico