

FORMICA® LAMINATE BY FORMICA GROUP / FIRE-RATED LAMINATE TECHNICAL DATA



RECOMMENDED APPLICATION

Formica® Brand Fire-Rated Laminate grades are suited for interior surfaces where design, appearance, quality, durability, resistance to stain, resistance to heat from ordinary sources, and low flame spread and smoke development ratings are required. These grades are classified by Underwriters' Laboratories®, Inc., and carry labels specifying fire ratings in accordance with data developed by the UL723/ASTM E-84 Steiner tunnel test method. The Classification may be found in UL Building Materials Directory, Laminated Plastic (BSMV), File R4540.

Grade 50/HGF: Formica Brand Fire-Rated Laminate 50/HGF is intended for application to interior horizontal or vertical surfaces.

Grade 32/VGF: Formica Brand Fire-Rated Laminate 32/VGF is intended for application to interior vertical surfaces.

Grade 89/BGF: Formica Brand Fire-Rated backing sheet 89/BGF is intended for application to interior horizontal or vertical surfaces as a balancing sheet for applications where the decorative surface is Grade 50/HGF.

Grade 87/BLF: Formica Brand Fire-Rated Laminate 87/BLF is intended for application to interior vertical surfaces as a balancing sheet for applications where the decorative surface is Grade 32/VGF.

PRODUCT DESCRIPTION

Melamine-impregnated decorative surface papers are combined with special fire retardant phenolic-treated kraft paper and consolidated in a press at high pressures. The sheet back is sanded to maintain a uniform thickness and facilitate bonding.

FABRICATION AND ASSEMBLY

LIMITATIONS

Formica Brand Fire-Rated Laminate is designed for interior use only. Do not adhere directly to plaster, drywall (gypsum board), or concrete. Do not use in areas exposed to temperatures exceeding 275°F (135°C). Finished panel width for Grade 32/VGF should not exceed 24" (60.9cm) maximum or 16" (40.6cm) maximum in areas of prolonged exposure to dry conditions. Contact adhesives are not recommended for use with Grade 32/VGF. Grade 50/HGF can be bonded to metal substrates using contact adhesive; finished panel widths should not exceed 24" (60.9cm) maximum or 16" (40.6cm) maximum where relative humidity is expected to be less than 35% for sustained periods.

STORAGE

Fire-Rated Laminate should be stored horizontally with a caul board or other protective sheet placed on top to protect the material from possible damage. The material should be protected from moisture, and should never be stored in contact with the floor or an outside wall. Optimum conditions for storage are approximately 75°F (24°C), and 45% to 55% relative humidity.

PRECONDITIONING

Prior to fabrication, allow both the Fire-Rated Laminate and substrate to acclimate for at least 48 hours at the same ambient conditions. Optimum conditions are approximately 75°F (24°C), and relative humidity of 45% to 55%. Provisions should be made for the circulation of air around the materials.

SUBSTRATES

In order to maintain the UL Classifications listed in File R4540, Fire-Rated Laminate must be bonded to an appropriate substrate such as Fire-Rated Particleboard (FRPB) or Inorganic Reinforced Cement Board (IRCB), bearing the Classification mark I(A) of Underwriters' Laboratories, Inc. for flame spread and smoke development. The substrate should be sanded smooth, clean, free of oil or grease, and uniform in thickness.

Grade 50/HGF laminate can be bonded to metal substrates using contact adhesive (see recommendations below, under Adhesives). Edge-restraining moldings are recommended around the perimeter of the panel assemblies. A trim molding or cover plate is also recommended at all cutouts to prevent "peaking." The molding should cover the perimeter of the cutout by at least 3/4" (19.1mm).

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TECHNICAL DATA CONTINUED



ADHESIVES

In order to maintain the UL® Classifications listed in File R4540, Fire-Rated Laminate must be bonded with Hexion Cascophen® G1149A/G1131B resorcinol adhesive. Maximum hot press temperature is 180°F (82°C).

When bonding Grade 50/HGF laminate to metal substrates using contact adhesive, use Formica® Brand #155 (flammable solvent-base) or #125 (non-flammable solvent-base) contact adhesives. *Do not use water-based or SBR types of contact adhesive.*

ASSEMBLY

Material, equipment, and workmanship should conform to the industry standard practices, conditions, procedures, and recommendations as specified by ANSI/NEMA LD3-2005, Annex A, Architectural Woodwork Quality Standards, DLPA (Decorative Laminate Products Association) and ANSI 161.2-1979 standards.

Fire-Rated Laminate can be sawed, drilled, routed, and fabricated similarly to standard HPL. Carbide-tipped cutting tools are recommended.

Fire-rated panel assemblies should be laminated with the appropriate fire-rated backing sheet to minimize warpage.

All inside corners of cutouts must be radiused as large as possible, 1/8" (3.18mm) minimum, to avoid stress cracking. The edges and corners should be routed, sanded, or filed smooth and free of chips or nicks. Panels fabricated using metal substrates, which are more dimensionally stable than wood-based materials, should be installed in a framing system which captures the perimeter of the panel yet allows for the normal dimensional movement of the laminate. This is to protect the panel edge and prevent edge lifting or separation from the substrate, which can occur under dry conditions. This is particularly important for mineral-based substrates, which have a low internal bond strength. Fire-Rated Laminate must be bonded to mineral-based substrates with Hexion Cascophen® G1149A/G1131B resorcinol adhesive. Maximum hot press temperature is 180°F (82°C).

Panels installed in a framing system which may trap water at the edge of the panel should be edge-sealed, prior to installation, with a suitable sealer as recommended by the substrate manufacturer.

TECHNICAL DATA

Performance compliance of Formica Brand Fire-Rated Laminate:

ANSI/NEMA STANDARDS PUBLICATION — LD3-2005

PHYSICAL PROPERTIES	LD3 TEST	FORMICA® BRAND FIRE-RATED LAMINATE	
		50/HGF	32/VGF
Appearance	3.1	No ABC Defects	No ABC Defects
Light Resistance	3.3	Slight	Slight
Cleanability	3.4	20 (max.)	20 (max.)
Stain Resistance	3.4		
Reagents 1-10		No Effect	No Effect
Reagents 11-15		Moderate	Moderate
Boiling Water Resistance	3.5	No Effect	No Effect
High Temperature Resistance	3.6	Slight	Slight
Ball Impact Resistance – in	3.8	45 (min.)	20 (min.)
– mm		1143 (min.)	508 (min.)
Radiant Heat Resistance – sec	3.10	75 (min.)	50 (min.)
Dimensional Change	3.11		
Machine Direction – %		0.50 (max.)	0.70 (max.)
Cross Direction – %		0.90 (max.)	1.2 (max.)
Wear Resistance – cycles	3.13	400 (min.)	400 (min.)

CODES AND SPECIFICATIONS

FORMICA® BRAND HORIZONTAL FIRE-RATED, GRADE 50/HGF

- U.S. Coast Guard Certificate of Approval No. 164.112/139/0
- Canadian Coast Guard Board of Steamship Inspection Certificate of Approval No. T.C.281.G1.121
- NEMA LD3-2005
- U.S. Military Specification, MIL-P-17171E(SH), Type IV, Grade 1
- U.S. Military Standard, MIL-STD-1623D(SH), Bulkhead Sheathing
- U.S. Federal Mobile Home Construction and Safety Standard, Part II, 3280.203(a)
- U.S. Federal Motor Vehicle Safety Standard, No. 302
- Federal Aviation Administration (FAA), Part 25.853 (a & b) non-commercial aircraft
- Approved for surfacing of UL-labeled fire doors, rated 1-1/2 hour, 1 hour, 3/4 hour, and 20 minutes
- NSF Standard 35 for work contact surfaces, non-work contact surfaces, and splash zones
- International Organization of Standardization, ISO 4586-2
- City of New York, Board of Standards and Appeals, MEA No. 331-86M

FORMICA® LAMINATE BY FORMICA GROUP / FIRE-RATED LAMINATE

TECHNICAL DATA CONTINUED



FORMICA® BRAND VERTICAL FIRE-RATED, GRADE 32/VGF

- U.S. Coast Guard Certificate of Approval No. 164.112/139/0
- Canadian Coast Guard Board of Steamship Inspection Certificate of Approval No. T.C.281.G1.121
- NEMA LD3-2005
- U.S. Federal Motor Vehicle Safety Standard, No. 302
- Federal Aviation Administration (FAA), Part 25.853 (a & b) for non-commercial aircraft
- NSF Standard 35 for splash zones and non-work contact surfaces
- International Organization of Standardization, ISO 4586-2
- City of New York, Board of Standards and Appeals, MEA No. 329-86M

FORMICA® BRAND HORIZONTAL FIRE-RATED BACKING SHEET,

GRADE 89/BGF

- U.S. Coast Guard Certificate of Approval No. 164.112/25/0
- NEMA LD3-2005
- International Organization of Standardization, ISO 4586-2
- City of New York, Board of Standards and Appeals, MEA No. 334-86M

FORMICA® BRAND HORIZONTAL FIRE-RATED BACKING SHEET,

GRADE 87/BLF

- U.S. Coast Guard Certificate of Approval No. 164.112/26/0
- NEMA LD3-2005
- International Organization of Standardization, ISO 4586-2
- City of New York, Board of Standards and Appeals, MEA No. 333-86M

FIRE TEST DATA — ASTM E-84

UL® CLASSIFIED LAMINATED PLASTIC — FILE R4540

TESTED IN ACCORDANCE WITH UL723/ASTM E-84

GRADE	FLAME SPREAD	SMOKE DEVELOPED
50/HGF		
IRCB*	0-15	10
FRPB*	15	95
32/VGF		
IRCB*	0	10
FRPB*	10	80
89/BGF		
IRCB*	10	0
FRPB*	15	5
87/BLF		
IRCB*	10	5
FRPB*	20	0-25

*Bonded with Hexion Cascophen® G1149A/G1131B adhesive.
IRCB = Inorganic Reinforced Cement Board
FRPB = Fire-Rated Particleboard

TESTED IN ACCORDANCE WITH CAN/ULC-S102

GRADE	FLAME SPREAD	SMOKE DEVELOPED
50/HGF		
IRCB*	0-15	10
FRPB*	15	95
32/VGF		
IRCB*	0	10
FRPB*	10	80
89/BGF		
IRCB*	15	0
FRPB*	15	5
87/BLF		
IRCB*	15	5
FRPB*	20	0-25

*Bonded with Hexion Cascophen® G1149A/G1131B adhesive.
IRCB = Inorganic Reinforced Cement Board
FRPB = Fire-Rated Particleboard

SIZES

ALL GRADES FIRE-RATED LAMINATE

Sheet widths: 48" (121.9cm), 60" (152.4cm)

Sheet lengths: 96" (243.8cm), 120" (304.8cm),
144" (365.8cm)

NOMINAL THICKNESS

Grade 50/HGF — 0.045" ± 0.005" (1.3mm ± 0.12mm)

Grade 32/VGF — 0.032" ± 0.005" (0.8mm ± 0.12mm)

Grade 89/BGF — 0.048" ± 0.005" (1.2mm ± 0.12mm)

Grade 87/BLF — 0.028" ± 0.004" (0.7mm ± 0.10mm)

COLORS, PATTERNS, AND FINISH

Fire-Rated Laminate is available in a broad selection of designs and colors in matte finish on a factory order basis.

Samples are available from Formica Corporation specification representatives or directly from Formica Corporation. Call 1-800-FORMICA™ for ZIP-CHIP™ service.

HOW TO SPECIFY

Surface (and appropriate backing sheet) shall be Formica Brand Fire-Rated Laminate from Formica Corporation, Cincinnati, Ohio.

COLOR NUMBER

COLOR NAME

GRADE

FINISH

SIZE

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TECHNICAL DATA CONTINUED



USE AND CARE

Formica Brand Fire-Rated Laminate may be cleaned with a damp cloth and mild detergent.

If in doubt about the suitability of a particular cleaner or detergent, check with its manufacturer. Use of abrasive cleaners, powders, scouring pads, steel wool, sandpaper, etc., can damage the finish of the decorative surface.

Acid or alkaline-based cleaners, compounds, etc., will mar, etch, corrode, and permanently discolor the decorative surface of Fire-Rated Laminate. Never use these materials on Fire-Rated Laminate, nor allow bottles, rags, etc., contaminated with them to contact the surface. Accidental spills or splatters from these harsh materials should be wiped off immediately, and the area cleaned thoroughly with a damp cloth.

EXAMPLES OF THESE MATERIALS ARE:

drain cleaners	rust removers
coffeepot cleaners	metal cleaners
ceramic cooktop cleaners	tub and tile cleaners
chlorine bleach	oven cleaners
some countertop cleaners	toilet bowl cleaners

LIMITED WARRANTY

Formica Corporation expressly warrants that, for a period of one (1) year from the date of first sale, Fire-Rated Laminate will be reasonably free of defects in materials and workmanship, and that when properly handled and fabricated, will conform, within accepted tolerances, to applicable manufacturing specifications. This limited warranty only applies to Fire-Rated Laminate which is stored, handled, fabricated and installed in the manner recommended by Formica Corporation. Due to the variety of uses and applications to which Fire-Rated Laminate may be put, **FORMICA CORPORATION CAN MAKE NO WARRANTY THAT THIS PRODUCT IS SUITABLE FOR ANY PARTICULAR PURPOSE AND CAN MAKE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, OTHER THAN THOSE SET FORTH ABOVE.**

Buyer's exclusive remedy for any loss or claim resulting from the use or inability to use this product shall be replacement of the defective Fire-Rated Laminate, or at the option of Formica Corporation, return of the product and refund of the purchase price. **IN NO EVENT SHALL FORMICA CORPORATION BE LIABLE IN EITHER TORT OR CONTRACT FOR ANY LOSS OR DIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES.**

This limited warranty gives the purchaser of Fire-Rated Laminate specific legal rights. Other rights may be available which vary from state to state.

Any information or suggestion concerning applications, specifications or compliances with codes and standards is provided solely for your convenient reference and without any representation as to accuracy or suitability. Formica Corporation disclaims any legal responsibility. The user must verify and test the suitability of any information or products for the specific application.

IMPORTANT NOTICE

The information and statements herein are believed to be reliable but are not to be construed as a warranty or representation for which Formica Corporation assumes legal responsibility. Users should undertake sufficient verification and testing to determine the suitability for their own particular purpose of any information or products referred to herein. **NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS MADE.**

MANUFACTURER

Formica Corporation
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Cincinnati, Ohio 45241-5279

TECHNICAL SERVICES

Technical assistance may be obtained through your local Formica® Brand Products Distributor or from Formica Corporation trained representatives in sales offices throughout the country. To assist these representatives, Formica Corporation maintains a sales technical services staff in Cincinnati, Ohio. For technical assistance, contact your distributor or sales representative; write the company directly at Formica Corporation Technical Services Department, 10155 Reading Road, Cincinnati, OH, 45241; call (513) 786-3048 or 1-800-FORMICA™; or fax (513) 786-3195. In Canada, call 1-800-363-1405. In Mexico, call (525) 530-3135.

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For warranty information, please visit www.formica.com or call 1-800-FORMICA™.



GreenGuard Environmental Institute
Formica® high-pressure laminate (HPL) is GreenGuard Indoor Air Quality Certified under the GreenGuard Standard for Low-Emitting Products.

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