



Fire Rated

HIGH PRESSURE LAMINATES

Technical Bulletin

Nevamar® Fire Rated laminate is designed for interior horizontal and vertical applications where a decorative surface must resist combustion and inhibit smoke production. Fire Rated laminate, Type NK, retains the durability, ease of cleaning and appearance (including color) of standard Nevamar® laminate. (Nevamar® Fire Rated laminate is classified in the U.S. and Canada by Underwriters Laboratory, Inc. under File R4642 and has the U.S. Coast Guard approval for Marine Applications for Interior Finishes.)

Product Composition

Nevamar® Fire Rated laminate is manufactured in a flat press by combining decorative papers saturated in melamine resin with phenolic-impregnated kraft layers at pressures exceeding 1000 psi (6.9 MPa) and temperatures approaching 300°F (150 °C). Special additives are incorporated into the laminate to impart fire-retardant properties. The panels are trimmed to size and the backs are sanded to facilitate bonding. The thickness of the laminate is determined by the number of kraft layers used. The laminating process combines the durability of melamine resins with the aesthetics of decorative papers creating a surfacing material that has been the standard for many years.

Typical Uses

Fire Rated laminate is suited for hospitals, schools, airports, hotels, and any other public building where strict fire codes apply.

Product Description

Please note postforming is not available in Fire Rated Grades. Fire Rated Grades are only made with brown core.

Type	Standard Nominal Sizes			Colors
	Thickness	Width	Length	
NK61 (in.) (mm)	0.056 1.5	36, 48, 60 914, 1219, 1524	96, 120, 144 2438, 3048, 3658	All Solids, Patterns and Woodgrains
NK51 (in.) (mm)	0.049 1.2	36, 48, 60 914, 1219, 1524	96, 120, 144 2438, 3048, 3658	All Colors & Patterns and Woodgrains
NK32 (in.) (mm)	0.031 0.8762	36, 48, 60 914, 1219, 1524	96, 120, 144 2438, 3048, 3658	All Solids, Patterns and Woodgrains
NKD (in.) (mm)	0.125-1.0 3.175-25.40	36, 48, 60 914, 1219, 1524	96, 120, 144 2438, 3048, 3658	All Solids, Patterns and Woodgrains
NKB8 (in.) (mm)	0.049 1.2	36, 48, 60 914, 1219, 1524	96, 120, 144 2438, 3048, 3658	Brown Backer
NKB0 (in.) (mm)	0.031 0.8762	36, 48, 60 914, 1219, 1524	96, 120, 144 2438, 3048, 3658	Brown Backer

Nevamar® Fire Rated laminate is offered standard in brown core (black core is available with specific minimum quantities).

Other widths and thicknesses of Fire Rated Laminate are available upon request.

Finish Options

Code	Finish	Description
B	Embossed Leather	Deeply embossed leather finish, 14 ± 1 gloss units. Manufactured in limited sizes.
BB	Barnboard	A linear woodgrain with a slight satin sheen.
CR	Crystal	Fine pebble grained finish with a medium gloss, 15 ± 3 gloss units.
E	Textured (no ARP)	Low gloss, textured finish, 12± 3 gloss units.
CV	Counter V	Combined natural and polished surface.
G	Gloss	A high gloss, smooth finish, 100 ± 10 gloss units.
N	High Luster	A finely textured, highly reflective finish, 35± 5 gloss units.
PV	Polished Velvet	A semi-gloss, minutely grained finish, 30± 5 gloss units.
SM	Super Matte	Smooth, non-reflective finish.
T	Textured with ARP	Fine graining; low gloss, textured finish. 12± 3 gloss units.
V	Velvet	A smooth, finely grained finish.
WE	Wood Essence	Natural-appearing. Linear woodgrain finish, 6.5 ± 1 gloss units.
Z	Ashwood	A fine wood finish with a cathedral grain, 18 ± 3 gloss units.

NOTE: Gloss units measured with a 60 degree gloss meter.

Fabrication Tips

When working with Nevamar® Fire Rated laminate, these techniques will produce a quality application.

1. Proper conditioning of the laminate, substrate, and backing sheet minimizes possible warping, shrinking, or expansion of assembled panels. Ideally, all components should be conditioned at 70 °F to 75 °F (21 °C to 25 °C) and 45 to 50 percent relative humidity for 48 hours prior to assembly.
2. Always bond laminate to a suitable substrate such as inorganic cement board, UL listed fire retardant particleboard, UL listed fire retardant MDF, or metals. It should not be glued directly to plaster walls, gypsum wallboard, or concrete.
3. Maximum performance is gained by using a fire-rated adhesive.
4. The use of Fire Rated backing sheets is recommended to minimize warpage. The thickness of the backing sheet should be relatively equal to the thickness of the decorative laminate on the face of the assembly.
5. All saw blades and router bits used for cutting should be carbide tipped. Feed rate should be slow and tool speed should be high.
6. All edges of laminate should be filed smooth with file direction towards substrate to help prevent stress cracks and to minimize chipping.
7. Inside corners of cutouts for electrical outlets, sinks, etc., should have a minimum radius of 1/8" (3 mm) and be filed smooth. This reduces the likelihood of stress cracks.
8. When fasteners must be used, it is advisable to first drill an oversized hole through the laminate. This reduces the likelihood of stress cracks.
9. All work must be designed, assembled, and installed in compliance with pertinent local fire codes.
10. Fire Rated laminate is not offered in postforming grades.
11. All laminate is intended for interior use only, and should not be exposed to extreme humidity, continuous sunlight, or temperatures above 275 °F (135 °C) for extended periods of time.
12. Nevamar® Fire Rated Laminate must be used as listed, i.e. adhesive and substrate cannot be changed.

Technical Information

Physical Properties

		NEMA LD 3-2005 TEST Method	TYPICAL NEVAMAR® VALUES NK61	NEMA STD. SGF	TYPICAL NEVAMAR® VALUES NK51	NEMA STD. HGF	TYPICAL NEVAMAR® VALUES NK32	NEMA STD. VGF
Thickness	(in.)		0.059 ± 0.005	0.059 ± 0.005	0.048 ± 0.005	0.048 ± 0.005	0.032 ± 0.005	0.032 ± 0.005
	(mm)		1.5 ± 0.12	1.5 ± 0.12	1.2 ± 0.12	1.2 ± 0.12	0.8 ± 0.12	0.8 ± 0.12
Appearance		3.1	Complies		Complies		Complies	
Light Resistance		3.3	Slight effect	Slight effect	Slight effect	Slight effect	Slight effect	Slight effect
Cleanability		3.4	10	20 (max)	10	20 (max)	10	20 (max)
Stain 1-10			No effect	No effect	No effect	No effect	No effect	No effect
Stain 11-15			No effect	Moderate effect	No effect	Moderate effect	No effect	Moderate effect
Boiling Water Resistance		3.5	No effect	No effect	No effect	No effect	No effect	No effect
High Temperature Resistance		3.6	No effect	Slight effect	No effect	Slight effect	No effect	Slight effect
Ball Impact Resistance	(in.)	3.8	60	55 (min.)	50	45 (min.)	25	20 (min.)
	(mm)		1524	1400 (min.)	1270	1150 (min.)	635	508 (min.)
Dimensional Change		3.11						
	Machine Direction (%)		0.25	0.50 (max.)	0.25	0.50 (max.)	0.40	0.70 (max.)
	Cross Direction (%)		0.70	0.90 (max.)	0.70	0.90 (max.)	0.80	1.20 (max.)
Wear Resistance	(cycles)	3.13	1000 w/ARP	400 (min.)	1000 w/ARP	400 (min.)	1000 w/ARP	400 (min.)

Fire Test Data

High pressure decorative laminate is frequently used in installations governed by local fire codes. Burning characteristics of laminate are greatly influenced by the adhesive and substrate utilized. Listed below are typical flame spread index and smoke developed values for Nevamar® Fire Rated laminate.

Flame spread index and smoke developed values were determined by ASTM E-84, “Standard Test Method for Surface Burning Characteristics of Building Materials.” This method is also designated by other agencies as follows:

UL723	Underwriters Laboratories Inc.	ANSI 2.5 American National Standards Institute
NFPA 255	National Fire Protection Association	UBC 42-1 Uniform Building Code
CAN/ULC S102-M	Surface Burning Characteristics	

ASTM E-84/UL723

Standard Test Method for Surface Burning Characteristics of Building Materials

Type	Sample Configuration	Flame Spread Index	Smoke Developed Values
NK61	Unbonded	55-70	95-130
NK51	Unbonded	25	95-120
NK32	Unbonded	24-40	100-170
NKD	Unbonded	10	95
NKB0	Unbonded	25-40	100-170
NKB8	Unbonded	25	95-120
NK61	Bonded* to Inorganic	20	5
NK51	Reinforced	5	5
NK32	Cement Board	5	5
NKB0		5	5
NKB8		5	5
NK61	Bonded* to 1/2” Fire Rated Plywood	50	35-85
NK61	Bonded* to 3/8”	15	55
NK51	Fire Rated	15	60
NK32	Particleboard	25	90-160
NKB0		25	90-160
NKB8		15	60

*Bonded with Cascophen G1131/Cascoset G1131B 2 part Resorcinol glue. All work should be designed, assembled, and installed in compliance with pertinent local fire codes.

CAN/ULC-S102-M

Laminated Plastic Surface Burning Characteristics

Type	Sample Configuration	Flame Spread Index	Smoke Developed Values
NK61	Unbonded	75	130
NK51	Unbonded	25	120
NK32	Unbonded	45	170
NKD	Unbonded	30	90
NKB0	Unbonded	45	170
NKB8	Unbonded	25	120
NK61	Bonded* to Inorganic	20	5
NK51	Reinforced	5	5
NK32	Cement Board	5	5
NKB0		5	5
NKB8		5	5
NK61	Bonded* to 1/2” Fire Rated Plywood”	55	85
NK61	Bonded* to 3/8”	15	55
NK51	Fire Rated	15	60
NK32	Particleboard	25	160
NKB0		25	160
NKB8		15	60

*Bonded with Cascophen G1131/Cascoset G1131B 2 part Resorcinol glue. All work should be designed, assembled, and installed in compliance with pertinent local fire codes. Cascophen G1131/Cascoset G1131B are products of Momenite, Columbus, Ohio.

Codes and Certifications

- Classified in U.S. by Underwriters Laboratories, Inc., under File R4642 Nevamar® Type NK32, NK51, NK61, NKI3, NKI5, NKI6, EK32, EK51, EK61, EKI3, EKI5, EKI6, NKH3, EKH3, NKB0, NKB8, NKB6, EKB0, EKB8, EKB6.
- Classified in accordance with Standard CAN/ULC-S102-M by Underwriters Laboratories Inc., under File R4642, Nevamar® Types NK32, NK51, NK61, NKI3, NKI5, NKI6, EK32, EK51, EK61, EKI3, EKI5, EKI6, NKH3, EKH3, NKB0, NKB8, NKB6, EKB0, EKB8, EKB6.
- Classified in accordance with Standard ANSI/UL723 by Underwriters Laboratories, Inc., and Standard CAN/ULC-S102-M under File R27586 Building Units. Nevamar® types NKD and EKD.
- National Sanitation Foundation (NSF) International Standard #35 for work and non-work surfaces. Visit www.nsf.org.

- United States Coast Guard / IMO FTP Code:

Approval Number	Type
164.112/A78/0	NK32, EK32, NKI3, NKH3, EKI3, EKH3
164.112/A92/0	NK51, EK51, NKI5, EKI5
164.112/A93/0	NK61, EK61, NKI6, EKI6

- MIL-STD-1623E, “Fire Performance Requirements and Approved Specifications for Interior Finish Materials and Furnishings (Naval Shipboard Use).” Nevamar® NK61 complies with this standard.
- MIL-P-17171E (SH), “High Pressure Decorative Laminate.” Nevamar® NK51 and NK61 comply with Type IV.
- American National Standards Institute/National Electrical Manufacturers Association (ANSI/NEMA), LD 3-2005, “High- Pressure Decorative Laminate.” Nevamar® Type NK32, NK51, and NK61 comply. NK32 complies with VGF, NK51 complies with HGF and NK61 complies with SGF.

10. Federal Aviation Administration for Transport
Category Airplanes Part 25.853 (a). Nevamar® NK32 and
NK51 comply.

11. UL GREENGUARD

12. UL GREENGUARD Gold

Care and Maintenance

Nevamar® decorative laminate provides a durable surface that is easy to maintain using ordinary care. To maintain the laminate's lasting beauty, cleaning with a solution of warm water and liquid dishwashing detergent is all that should be required in most cases.

Stains may be removed with most non-abrasive household cleaners such as FORMULA 409®, GLASS PLUS® or WINDEX® with AMMONIA D®. Light scrubbing with a soft bristled brush may be necessary to remove stains from the depth of the structure on some textured surfaces.

If the stain persists, use a paste of baking soda and water and apply with a soft bristled brush. Light scrubbing for 10-20 strokes should remove most stains. Although baking soda is a low abrasive, excessive scrubbing or exerting too much force may damage the decorative surface, especially if it has a gloss finish.

Stubborn stains that resist any of the above cleaning methods may require the use of undiluted household bleach. Apply the bleach to the stain and let stand no longer than 1-1/2 minutes. Rinse thoroughly with warm water and wipe dry. This step may be repeated if the stain appears to be going away and the color of the laminate has not been affected. **WARNING:** Prolonged exposure of the laminate surface to bleach will cause discoloration.

Many commercially available products contain substances that may damage or discolor a laminate surface. **ABRASIVE CLEANERS SHOULD NOT BE USED.** Particular care should be used with any products labeled CAUTION or WARNING. Any questions or concerns should be referred to the product's manufacturer or call 877-726-6526. Do not allow harsh materials to remain in contact with the laminate surface. Examples of these are as follows:

- Toilet bowl cleaners
- Chlorine bleach
- Hydrogen Peroxide
- Coffee pot cleaners
- Oven cleaners
- Hard water stain removers
- Drain cleaners
- Fruit and berry juice

- Metal cleaners and polishes
- Tub and tile cleaners

Limited Warranty

Subject to the limitations set forth below, Panolam® Industries International Inc. (Panolam) expressly warrants that our products are reasonably free of defects in material and workmanship, and when properly handled and fabricated will conform, within accepted tolerances, to applicable manufacturing specifications as set forth in our technical brochure. This warranty shall extend to the original buyer for a period of twelve (12) months from the date of shipment of this product by Panolam, and shall not be assignable by the original buyer. This warranty does not cover damage resulting from accident, misuse, alteration, abuse or lack of reasonable care.

Due to the variety of uses and applications to which this product may be put, and because the manufacturer has no control over the end products fabricated, the warranty set forth above is exclusive and in lieu of all warranties, expressed or implied, in fact or by operation of law or otherwise, or arising by course of dealing or performance, custom or usage in the trade, including, without limitation, the implied warranties of fitness for a particular purpose and merchantability, and Panolam shall have no obligation or liability to any person or entity in connection with or arising from the furnishing, sale, installation or repair, use or subsequent sale of any product supplied by it.

Our maximum liability arising out of the sale of the products or their use, whether based upon warranty, contract, tort or otherwise, shall not exceed the actual payments received by us in connection therewith. In no event shall we be liable for special, incidental or consequential damages, including, but not limited to, arising hereunder or from the loss of profits, or loss of use damages, sales of the products.

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Formula 409 is a registered trademark for The Clorox Company of Oakland, CA 94612; Glass Plus is a registered trademark for The Dow Chemical Company of Indianapolis, IN 46268-0511; Windex is a registered trademark for S.C. Johnson & Sons INC. of Racine, WI 53403-5011.