



## TECHNICAL SHEET

What is FlexLam™? FlexLam™ is a decorated thermoplastic available in sheet and roll form. The decorative surface is fused to its substrate utilizing several proprietary techniques that create a laminate suitable for its intended use. The composition of FlexLam™ products varies dramatically according to individual industry requirements. For example, automotive products require high UV stability. Point of purchase display products require vacuum formability, ceiling tiles require non-flammability, many furniture applications require high degrees of scratch, chemical, and solvent resistance. Yet other products such as signage require routability, laser compatibility and more. To accomplish these goals, FlexLam™ can be constructed with high impact styrene, rigid ABS, rigid PVC, polycarbonate, and modified acrylics. The enclosed chart will give the fabricator more information on the specific characteristics of the various types of FlexLam™.

### Advantages of FlexLam™

- Ease of “on the job” fabrication
- High quality appearance
- Low cost
- Can be supplied with or without pressure sensitive adhesive
- Protective carrier sheet which does not have to be removed until final fabrication is completed
- Ability to be bent and/or die cut to almost any shape needed, e.g., furniture parts, moulding, tables, etc.
- Wide color range to meet designers' specification
- Designers and architects are interested because of the material's unique appearance

### FLEXLAM™ TYPES

**N Series - NTP (No technical problems):** Constructed in such a way as to provide the maximum degree of flexibility in fabricating. Are usually suitable for application with all tools and techniques commonly used in thermoplastic fabrication. Main uses are: the furniture industry, display industry, store fixture industry, signage and engraving industries. Has good chemical resistance, good abrasion resistance. Metallic edgbanding program, metallic sheet program, ease of fabrication, high impact resistance, removable protective film. Normally uses HIPS as a substrate, but PVC and ABS are also used.

**X Series, A Series:** Constructed for use in areas that require high UV stability and/or exterior use such as: automotive industry marine industry, exterior signage- usually constructed on ABS. Usually high degree of vacuum formability (some metallics too), ultra high UV resistance, ultra high gloss, custom thickness and sizes.

**CBS Series, C Series:** Constructed as co-laminates. Care must be taken in fabrication so that devices used to fabricate the sheet only cut from the decorative surface through the material. Fabrication techniques that cut from the back side then through the decorative side can cause delamination. Routing is not recommended in these series. If routing must be used in fabrication, it is recommended that a down spiral high steel be used as these dissipate heat faster than a carbide tip and the down spiral will prevent delamination of the decorative surface. Typical products are: our imitation mirrors with the highest degree of mirror reflectively, holographic patterns and other specialty patterns not possible with our other techniques. The C Series differs from our KN and CBS in that it does not use polyester.

**CC Series (ClearCore™):** See separate Fabrication/Technical manual for this product.

## TECHNICAL INFORMATION and FABRICATION TIPS

### N SERIES, X SERIES and A SERIES SHEETS

**Fabrication Tips:** These Series fabricate with all standard woodworking tools. The material can be slit, scored, sawed, routed, steel rule die cut, and more. They can basically be fabricated and laminated the same as high pressure laminates.

**Sheet Size:** 2' x 8', 4' x 8', other sizes possible.

**Sheet Thickness:** .032" fire retardant grade and .040" are stock. Other thicknesses up to .250" are available.

**Special Order:** Thickness of material can be changed, base color can be changed, and the shorter or longer rolls can be produced cut-to-size.

**Storage:** All FlexLam™ sheets should be stored flat.

**Cleaning:** Clean with isopropyl alcohol.

DO NOT USE ANY SOLVENT CONTAINING ACETONE OR LACQUER THINNERS.

**Postforming/Vacuum Forming:** It is possible to bend or shape the material to meet specific needs whether inside or outside angles or complex forming is desired. Top and bottom heaters are suggested. Some items do not vacuum form (please inquire). Suitable for heating purposes are short wave, round pipe, infra red radiators.

### N SERIES, X SERIES and A SERIES (NTP) RIGID PLASTIC ROLLS

**Standard Rolls:** N Series products are stocked in 1/4", 1/2" 5/8", 1", 1 1/4", 1 1/2", 2", 3", 4" and 6" x 250 ft. However, virtually any size from 1/4" to 24" is possible. Usually in stock with pressure sensitive adhesive backing or primed for high speed edgebanding and profile wrapping use. Roll thickness normally .020" (other thickness available).

**Composition:** Unique combination of metallized deposits and state-of-the-art lacquers for a non-mylar surface directly bonded to a plastic substrate.

**Finish Range:** Polished gold, polished brass, polished silver, brushed brass, brushed brass, brushed aluminum, brushed stainless and exterior grade chrome. High gloss black, white, woodgrains, marbles, and specialty patterns.

**Nominal Thickness:** .011", .020", .030", .032", .040"

Protective peel coat standard on all finishes.

N Series rolls are available with or without pressure sensitive adhesive backing.

N Series products are stocked in 250' rolls, other sizes upon request.

**Fabrication:** NTP series fabricates with all standard woodworking tools. It can be slit, scored, sawed, routed, and more. NTP basically can be laminated and fabricated the same as high pressure laminates.

**Surface:** Apply NTP to a smooth surface. Irregularities in your substrate can show through the metallic surface.

**Cleaning:** Clean with solvent alcohol or isopropyl alcohol. DO NOT USE ANY SOLVENT CONTAINING ACETONE OR LACQUER THINNER.

### **CBS SERIES and C SERIES**

**Cleaning:** Clean only with soft chamois and Plexiglas cleaner (anti-static).

**Storage:** FlexLam™ sheets should be stored flat.

**Protective Mask:** Should not be removed when temperature exceeds 80° Fahrenheit. The sensitivity (its' ability to cling) becomes much greater and can cause delamination when being removed.

**Fabrication Tips:** Unlike other FlexLam™ products, these are co-laminates and require care in fabrication.

- Always fabricate from the decorative side. (Except heating - see section on "Postforming")
- If fabricated improperly, delamination can occur. Test your method to insure proper results.
- Scoring or punching produces the cleanest edge.
- When applying FlexLam™ on large areas, hard rubber rollers should be used.
- Leave protective mask on until fabrication is completed.
- Peel protective mask off very slowly.
- Shearing and die cutting are acceptable means of fabrication.
- When using our pressure sensitive adhesive on large areas, it is extremely important to get all air bubbles out; otherwise distortion/delamination could take place as the humidity or temperature changes.
- This is accomplished by peeling off the carrier sheet of the pressure sensitive backing (only slightly) across the width of the item to be bonded and sealing this small edge from left to right across the width with a hard rubber roller to insure there are no air pockets. Very slowly start removing more and more of the carrier sheets, the same time using a rubber roller rolling from left to right and downward in such a manner to insure all air is pressed out.

**Routing is not recommended.** If routing must occur, use a down spiral router bit. High speed steel is preferred over carbide because of its ability to dissipate heat. Caution as delamination may occur.

**Postforming/Vacuum Forming:** It is possible to bend or shape the material to meet specific needs whether an inside or outside angle is desired.

### **FLEXLAM™(ALLTYPES)**

**Laminating Without Pressure Sensitive Adhesive:** It is recommended to use a water based contact adhesive. Non-flammable, solvent, acrylic based adhesives are also acceptable. It is important that the adhesive used is suitable for thermoplastic material and the substrate to which it will be applied. *Test the contact to insure its' suitability and compatibility with your specific application.* The same gluing methods should be used as those for working with high pressure laminates. It is extremely important that both surfaces are clean. Contact cement should be applied to both surfaces and allowed to dry according to the glue manufacturers' directions so that all solvents evaporate before actual gluing takes place.

Lamination with Pressure Sensitive Adhesive: Pressure sensitive adhesives, by their nature, are always tacky and never dry like normal contact adhesives. The bond they produce can be extremely strong. It must be emphasized that pressure sensitive adhesives are considered a temporary bond. We do not guarantee the suitability of pressure sensitive adhesives for your application. Always test prior to use. The most important thing to remember is preparation of the surface to be adhered to. The surface must be absolutely clean, free of dirt, etc. Pressure sensitive adhesives will not adhere to items with plasticizers or silicone. It is recommended that contact adhesive be used to prepare the surface for which pressure sensitive material will be applied. DO NOT APPLY ADDITIONAL CONTACT ADHESIVE DIRECTLY TO PRESSURE SENSITIVE MATERIAL.

**NTP ADHESIVE**

**Features:**

- See through liner for part inspection.
- High cohesive strength for reduced edge ooze.
- Excellent chemical, temperature, and environmental resistance.

**Properties and Performance:** The properties defined are based on the attachment of impervious faceplate materials (such as aluminum) to an aluminum test surface.

**Bond Buildup:** The bond strength of "hi performance" acrylic adhesive increases as a function of time and temperature.

**Humidity Resistance:** High humidity has minimal effect on adhesive performance. Bond strengths are generally higher after exposure to seven days 100° Fahrenheit (38° Centigrade) 100 percent R.H.

**Water Resistance:** Immersion in water has no appreciable effect on the bond strength. After 100 hours in 150° Fahrenheit (65° Centigrade) water, the bond actually shows an increase in strength.

Temperature cycling bond strength generally increases after cycling five times through:

Resistance:	30 minutes	250° Fahrenheit (121° Centigrade)
	15 minutes	72° Fahrenheit (22° Centigrade)
	30 minutes	-20° Fahrenheit (-29° Centigrade)

**Chemical Resistance:** When properly applied, decorative trim parts will hold securely after exposure to numerous chemicals, including gasoline, oil, kerosene, JP-4 fuel, grease, mild acids and alkalis, and most aromatic and aliphatic solvents.

**Heat Resistance:** The "hi performance" adhesive is serviceable for short periods (minutes, hours) at temperatures up to 400° Fahrenheit (204° degrees Centigrade) and for intermittent long exposure (days, weeks) up to 300° Fahrenheit (149° Centigrade).

**Special Consideration for Best Adhesive Bond:** For maximum bond strength, the surface that FlexLam™ is to be applied to should be thoroughly cleaned and dried. Typical cleaning solvents are heptanes or isopropyl alcohol. Users should follow all precautionary instructions noted by the manufacturer. Bond strength can also be improved with firm application, pressure, and moderate heating causing the adhesive to develop more intimate contact with the bonding surface.

PROGRAMS	SIZE	USES	SELECTIONS	TYPES	REMARKS
FlexLam™ Ceiling Tile Programs (Stock)	2' x 2' 2' x 4'	Ceiling Wall Panel Interior Design	Metallics Woodgrains Paintable Specialty	N Series CBS Series	Designed to fit standard suspension PVC substrate, Non-flammable, flat and 3D designs. Custom.
FlexLam™ DIY Backsplash Program	18" x 24"	Backsplash Ceilings Walls	Metallics Woodgrains Paintable Specialty	N Series CBS Series	Small tile easily handled and applied. Ideal for backsplash and DIY applications.
FlexLam™ Wainscot Program	30 or 32" x 48"	Wainscot Walls	Metallics Woodgrains Paintable Specialty	N Series CBS Series	Designed for wainscot applications (under a chair rail) or stacked for walls.
FlexLam™ Rocker Panel Trims (Stock)	Various Up to 24" .020" and .030" available	Automotive After Market Exterior Signage	Polished Chrome Polished Gold Brushed Stainless Steel Argent	X Series	Real chrome PVC/ABS rolls, 3D diamond plate (patented) designs, pressure sensitive adhesive backing built for exterior use.
FlexLam™ ClearCore™ Series (Stock)	4' x 8' x .060" 3' x 8' x .60" 2' x 8' x .60" <b>Optional</b> .030", .040", .125"	Furniture Display Interior/Exterior Design	Full pallet of colors and patterns See ClearCore™ sample chain	CC Series	All are second surface laminated, high depth of gloss. Usually acrylic base, polycarbonate on special order.
FlexLam™ Auto & Marine (Special Order)	Various (Not a stocked program)	Auto After Market Marine Exterior Signage Display RV	Special selection. See auto/marine sample chain	A Series X Series CC Series N Series (with top coat)	Thickness to 250". UV stability ultra high gloss works with epoxy & urethanes, exterior use OK. Most car interior matches available. Vacuum formable. Usually ABS based.
FlexLam™ Standard Program (Stock)	4' x 8' x .032" FR 2' x 8' x .040" 4' x 8' x .040"	All	Over 100 See FlexLam™ sample chain	N Series X Series C Series CBS Series	Includes most popular designs usually on HIPS substrate or PVC. Has large metallic selection. A full palette or colors in imitation mirror; pressure sensitive backing optional, cut-to-size optional, custom available.
FlexLam™ Structures & Perforated Sheets (Stock)	4' x 8' x .032" FR 4' x 8' x .040"	POP Furniture Store Fixture Interior Design	Various 3D designs in popular colors. See Structure sample chain	CBS Series N Series	Pressure sensitive adhesive can be added. HIPS or fire retardant PVC's.
FlexLam™ Engraving Program (Stock)	2' x 4' x .060" Custom thickness available	Signage	A selection of over 50, See engraving sample chain	Special Please Inquire	ABS, acrylic & HIPS substrates, many are laserable, designed for interior & exterior applications. Optional thickness & size.

Pressure sensitive adhesives can be added • Protective mask on most products UPS shippable  
• Most products made in the USA • Die cutting and cut-to-size available