VINYLEFX®
A NEKOOSA BRAND

TECHNICAL BULLETIN
PRINTING, CUTTING & INSTALLATION GUIDELINES

VinylEfx® metallic vinyl films, coated with a permanent pressure sensitive acrylic adhesive, are designed to duplicate the look of metallic finishes in a variety of distinctive eye-catching patterns.

The VinylEfx Outdoor Durable Series provides up to 3 years exterior life; durability varies depending on environmental conditions, installation procedures, finishing and product suitability to the intended application.

For interior applications, VinylEfx Indoor Decorative Series is expected to provide service life for the duration of most indoor graphic applications when applied using the methods outlined in this document. VinylEfx Indoor Decorative Series films are not warranted for exterior applications.

These films are as easy to computer cut, weed and apply as any intermediate vinyl. Additionally, they can also be steel rule die cut, thermal die cut, embossed and domed.

VinylEfx prints like vinyl, using a variety of screen print inks, thermal transfer systems, UV, solvent, Eco-Solvent and latex printers.

It is always recommended to test your specific application. As graphics, converting equipment and surface/exposure conditions vary, ensuring that the end result meets your needs is best practice. For samples of either product line, please visit our website at Nekoosa.com.

APPLICATION GUIDE

See our Application guide, VinylEfx Application Guide, to choose the right VinylEfx for your next project.

PRINTING GUIDELINES

The following print guidelines will help you dial-in your process; however, as technology and ink systems continually evolve, consulting your ink/print equipment supplier is recommended. Again, testing is the best way to ensure success.

Humidity and temperature control are important. Make sure VinylEfx is at room temperature (70° F/21° C) and 40% - 60% RH prior to printing. Colder ambient temperatures could extend ink curing time. Proper humidity control will minimize static. Refer to ink manufacturer specifications for further guidance.

Note, heavy concentrations of ink, especially Eco-Solvent, will contribute to shrinking and edge curl of the film. Control your ink densities.

Allow at least a ¼" (6 mm) border around any printed image to minimize shrinkage. You may need to increase the size of the border for images with heavy concentrations of ink. Never cut into the printed image.

Wiping down VinylEfx with a lightly moistened lint-free towel prior to printing helps remove dust and other contaminates.

Screen Printing

VinylEfx are printable using the following screen UV inks:

· 3M 9700 UV inksNazdar 3500 UV ink

· Sericol TMI II

Digital Printing

VinylEfx are printable using a wide variety of digital print platforms. Print using a profile for white intermediate high gloss vinyl at the lower temperatures (35-40° C); see note about HP Latex below. Using high printer temperature settings can cause VinylEfx films to expand and contract resulting in tunneling of the release liner. Settings may vary from one printer to another and from one ink system to another.

*Specifically for HP Latex printing, opaque white may be necessary depending on your graphics to achieve color saturation. Recommended temperature is 170° F/77° C, 20 pass, 80% ink, 20% optimizer.

CUTTING GUIDELINES

VinylEfx films cuts as easily as any intermediate vinyl.

Plotter Cutting

For best results, use a sharp 45° blade at slow cutting speeds with swivel type of cutters. Optimal cutting pressures vary depending on plotter type and blade sharpness. Typical pressure is between 135 and 165 grams.

Thermal Cutting

Cut at heat settings between 295 and 300° F (146-149° C) and dwell times between ¼ to ½ second. Thermal die cut decals have slightly raised edges, which are prone to edge lifting. Edge sealing provides additional protection.

INSTALLATION GUIDELINES

VinylEfx films are suitable for general purpose signage application on clean, smooth, non-porous, flat, vertical surfaces. VinylEfx will not conform well around compound curves, corrugations and rivets.

If application surface has seams, such as truck panels, you must cut the vinyl along these seams. After cutting the film, use the edge of your squeegee to tuck the vinyl into the panel seam.

Do not apply wet. VinylEfx films must be applied dry. The warranty is voided for wet applications.

Optimum ambient temperature for the

application of VinylEfx is 70° F (21° C). Pressure sensitive vinyl may resist sticking immediately in very cold surfaces.

Some substrates are problematic and could cause adhesion problems:

· VinylEfx will not adhere well to untreated low-energy surfaces, such as polyethylene and polypropylene.

· Know your paint system. Each paint formulation is different. Some clear coats and automotive paints contain additives, such as wax and silicones, to repel dirt, grime, etc, which can interfere with adhesion.

· Make sure paint system is fully cured. If not, out-gassing will occur and cause bubbles underneath the vinyl. Follow the paint manufacturer's instructions for cure time.

· VinylEfx and other metallic films (reflectives and polyesters) are not recommended for application to untreated metal surfaces. Dissimilarity of metals can result in galvanic corrosion.

Surface Preparation
Prior to the application of VinylEfx film, clean the substrate according to recommended industry standards. Failure to properly clean the application surface can result in film adhesion failure.

Installation
Using Application Tape or Premasks are recommended methods for install:

· For plotter-cut VinylEfx lettering and graphics, use a high tack application tape, such as, R-Tape ApliTape 4075 or Conform® 4075RLA, 4076RLA or 4775RLA or Clear Choice® AT75.1. A mid-tack tape as in Clear Choice® AT60N works well for medium sized VinylEfx lettering.

· For digitally printed and UV screen printed wide format graphics, use a low tack premask, such as 4000, DigiMask or DigiMask Clear. These products are designed to remove cleanly from the printed image and not damage the print.

After applying the application tape, turn the graphics over so the application tape is facing down. Pull the liner from the vinyl, rather than pulling the vinyl off the liner.

Alternatively, if you do not use application tape, VinylEfx films can be applied just like intermediate vinyl. However, as the adhesive is permanent and not repositionable, using the "hinge method" during installation is a recommended.

As you apply the graphics, firm squeegee pressure is important to create a bond to the substrate. Maintaining good squeegee pressure is also critical in forcing air from under the vinyl.

Remove the application tape, if used, after final application by pulling it against itself at a 180° angle.

Using a low-friction sleeve on your squeegee (to prevent scratching the VinylEfx film), re-squeegee the entire graphic, especially the edges and overlaps to prevent edge lifting.

Use an edge sealer for durable outdoor applications. Using a line-tip brush, paint the edges of the VinylEfx film with a commercial grade product.

VINYLEFX® Digital and Screen Printable Metallic Vinyls

● Indoor Decorative | ● Outdoor Durable

WIDE FORMAT (ECO-SOLVENT/SOLVENT, LATEX, UV) & SCREEN

		24" x 50 yd	48" x 50 yd	54" x 50 yd	60" x 50 yd	24" x 10/250 yd	48" x 10/250 yd
Pattern	**Color**	**Stocked Sizes**				**Made to Order**	
Smooth	Silver	●●	●●	●		●●	●●
	Gold	●●	●●	●		●●	●●
Fine Brush	Silver	●●	●●	●		●●	●●
	Gold	●	●			●●	●●
Large Engine Turn	Gold	●				●	●
Diamond Plate	Silver	●●	●●			●●	
Metal Flake	Silver	●	●			●	●
	Gold	●				●	
Rainbow Brite Overall	Silver	●	●	●	●		

Physical Properties		**Test Method**	**Indoor Decorative**	**Outdoor Durable**	**Rainbow Brite Overall**
Finish			Various - See Chart	Various - See Chart	Rainbow
Color			Various - See Chart	Various - See Chart	Holographic Silver
Adhesive			High Peel, High Tack Permanent	High Peel, High Tack Permanent	High Peel, High Tack Permanent
Film			Metallized Flexible Vinyl	Metallized Flexible Vinyl	Calendered Flexible Vinyl
Liner			88# Layflat Liner	88# Layflat Liner	88# Layflat Liner
Opacity			2.2 Minimum	2.2 Minimum	3.5 ± 0.2 mil (90 ± 6 µm)
Thickness	Film	TAPPI T-411	3.0 ± 0.3 mil (76 ± 8 µm)	3.0 ± 0.3 mil (76 ± 8 µm)	4.7 ± 0.4 mil (118 ± 9 µm)
	Film + Adhesive	TAPPI T-411	3.7 ± 0.5 mil (94 ± 13 µm)	3.9 ± 0.5 mil (94 ± 13 µm)	10.2 ± 0.4 mil (258 ± 9µm)
	Total Thickness	TAPPI T-411	10.1 ± 0.6 mil (259 ± 15 µm)	10.3 ± 0.6 mil (262 ± 15 µm)	40 oz/in typical
Adhesion to Stainless Steel	15 Minutes	ASTM D3330	40 oz/in Typical	40 oz/in Typical	60 oz/in typical
	24 Hours	ASTM D3330	60 oz/in Typical	60 oz/in Typical	
Weight	Film + Adhesive	TAPPI T-410	123 - 138 gsm	126 - 141 gsm	
	Total w/ Liner	TAPPI T-410	260 - 285 gsm	265 - 290 gsm	

Conditions for Use	**Indoor Decorative**	**Outdoor Durable**	**Rainbow Brite Overall**
Shelf Life	1 Year	1 Year	1 Year
Outdoor Durability	Indoor Use Only	Up to 3 Years	Up to 2 Years
Min. Application Temperature	40° F (4° C)	40° F (4° C)	41° F (5° C)
Service Temperature Range	-20° to 130° F (-29° to 55° C)	-20° to 130° F (-29° to 55° C)	−4° F to +176° F (−20° C to + 80° C)
Application Method	Dry	Dry	Dry
Solvent Resistance	Good	Good	Good
Water Resistance	Good	Good	Good

PRODUCT WARRANTY All Nekoosa products are subject to continuous quality control throughout the manufacturing process and are under warranty to be free from manufacturing defects. Nekoosa stands behind its products and will replace for credit any defective material. Because Nekoosa products are used for a variety of applications, the purchaser is responsible for determining the suitability and performance of this product for their specific purpose prior to use, and the purchaser shall assume all risks regarding such use.

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