SPARTECH®

Korad®

Acrylic Polymer

Guidelines for fabricating and working with Korad® material.

PRODUCT OVERVIEW

Korad acrylic film provides an aesthetic surface, while also offering weatherability and durability. It is typically used as an overlay laminated onto a variety of thermoplastic sheet substrates, including ABS, HIPS, PVC, PMMA, PC and ASA. Korad film can also be applied to metal.

Korad film is available as clear or opaque. Opaque films are available in a variety of standard and custom colors, and include black, white, gray, brown, cream, tan and red.

High gloss, low gloss and ultra low gloss finishes are also available.

GENERAL TIPS

Following are a few general guidelines to keep in mind when fabricating and otherwise working with thermoplastic film & sheet materials.

1. Korad® Acrylic Film Storage Guidelines

a. Leave film in its original packaging until use.

b. Rolls should be suspended during storage. Do not store rolls on a flat surface horizontally or stand on end, as edge damage can occur.

c. Keep away from direct sunlight and heat sources to prevent blocking.

2. Thermoplastic sheet and film materials are combustible. Do not place or store in or near open flame or other sources of ignition. Always consider fire precautions when working with thermoplastic materials.

3. Korad® Acrylic Film Cutting Guidelines

a. Cutting raw film can be performed with standard rewind slitting methods. Razor and shear methods are recommended. Lathe slitting is not recommended as edges can fuse.

4. Determine suitability of all materials for use with products such as paint, adhesives or cleaners with their manufacturers prior to adopting them on a commercial scale.

5. For assistance with custom requirements, contact a Spartech technical sales representative.

PRODUCT DIMENSIONS

Width: .Up to 110” (minimum slit width of 2”)

Standard widths of 50”, 54”, 62”

Length:. Standard lengths of 2300’, 4600’ (NOTE: 4600’ will be on 6” core)

Gauge:.2 mils (50 microns) to 6 mils (150 microns)

UV PROTECTION

Korad® acrylic film serves as an excellent weatherable cap layer, providing outstanding protection against ultraviolet (UV) rays. Korad® film blocks UV light, either by the pigments used or by its specific formulation, providing a ‘screening’ effect that prevents the substrate from prematurely aging. The appearance of your Korad® laminated part will exhibit excellent long-term weatherability, effectively resisting fading, chalking, dulling and hazing.

FABRICATION / LAMINATION

Korad film is typically laminated to a thermoplastic sheet substrate. The substrate provides structural integrity to the laminate. Primary substrates include: ABS, Polystyrene, PVC, Polycarbonate, Acrylic, ASA, Melamine, Thermoset Polyester Resin, Thermoset Urethanes, metals. Korad films offer aesthetic and protective surface qualities, but do not affect structural integrity.

Korad is typically laminated to thermoplastic sheet continuously during the extrusion process. It permanently bonds to the sheet substrates by passing the film and hot plastic sheet through polishing and embossing rolls during the extrusion process. Lamination is accomplished with the heat and roll pressure alone. No adhesive is required, although some materials, such as TPO, may require the addition of a tie layer to the Korad film. Optimum adhesion to a smooth surface requires slightly higher polymer and roll temperatures than an embossed surface. Correct tension of the film is a key to successful lamination as sufficient tension is needed to ensure that the film will lie flat on the extruded sheet. Film contact with the laminating roll should be minimal, less than 45 degrees. The longer the Korad film is in contact with the laminating roll, the greater the possible shrinkage or neck-down. This can cause wrinkles and creases, or thinning of the film, reducing the effectiveness of the Korad laminate.

Korad film may also be applied with platen pressing, but care must be taken to use appropriate release agents on the platen surfaces. Korad has also been laminated in reaction casting processes to polyesters and urethanes.

CONTROLLING COLOR WITH PRINTED KORAD® LAMINATES

For printed Korad films, 10% stretch or less is generally recommended. Opacity of the inks can be altered and the pattern can be distorted if the stretch is not controlled, resulting in a change to the overall coloration and loss of definition in the pattern.

Methods to measure stretch include:

1. % increase in a recognizable design feature in the print pattern before and after lamination

2. Making measured marks on the edge of the Korad film to see the increase after lamination

FABRICATION / LAMINATION (CONTINUED)

Heat shielding of the Korad film prior to the lamination nip is one way to reduce stretch at a given tension. Tensions needed to achieve a flat sheet at the nip can be lowered by:

1. Use of transverse tensioning devices such as bow rollers
2. Shortening any unsupported distance between rollers in the Korad film web path
3. Reducing the degree of wrap around rollers in the web path

PAINTING

Korad film is itself an outstanding primer for paint systems. Thorough cleaning of the Korad surface will usually provide a readily paintable surface. The user should do some testing with the specific paint planned for use, but a variety of solvent and water based coatings have been successfully used.

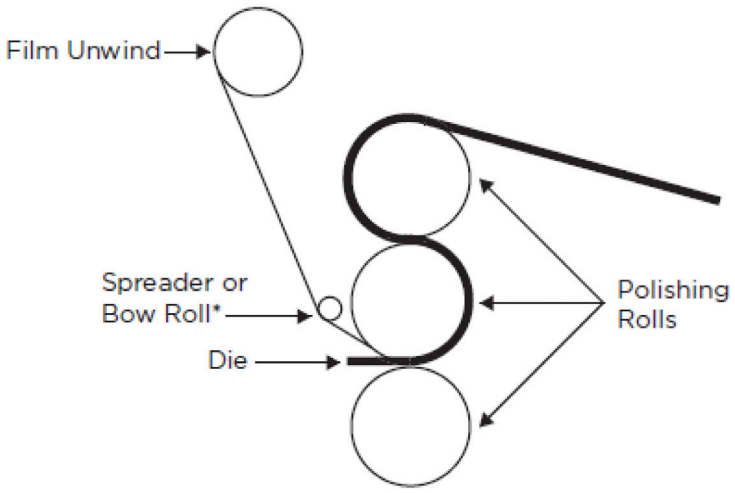
THERMOFORMING

Guidelines for thermoforming Korad-capped thermoplastic sheet should follow the guidelines of the substrate sheet.

For thermoformed parts, the gauge of the Korad layer should be taken into consideration. In order to benefit from the UV protective properties of Korad, a minimum of 1.8 mils must remain AFTER the sheet is stretched, bent, or thermoformed. For opaque films, there may be visual opacity issues that could cause apparent color problems at 1.8 mils. A color matched base sheet is recommended when possible. This will prevent a color change if the Korad laminate is thinned during thermoforming.

When thermoforming a Korad laminate with a printed pattern or color different from the substrate, aesthetics of the material can be impacted by depth of draw and corner radius. Stretch of the Korad layer will distort the coloration and/or definition of the printed pattern or color of the film. Depth of draw greater than 4” is possible, but depends on application, coloration and design. Keep masking on as long as possible through fabrication operations.

TYPICAL LAMINATION PROCESS



* NOTE: A rotating smoothing roll is recommend for wide sheet applications.

CLEANING & HANDLING

Korad® laminates will retain their original appearance with reasonable handling and care. The following are general guidelines for cleaning and handling of Korad-capped sheet.

DOS AND DON'TS

Dos:

- Dust and clean Korad with a soft, damp cloth or chamois, wiping the surface gently
- Use pure soap and lukewarm water
- Dry the surface after washing and rinsing, by blotting with a damp cloth or chamois
- Korad may be waxed by applying a non-abrasive wax sparingly in a thin, even film, using a soft, clean cloth
- Polish waxed surfaces lightly with a clean cotton flannel or jersey, then wipe gently with a damp cloth to ground any electrostatic charges which may attract dust particles
- Korad film surfaces may be cleaned using mild detergents or most household cleaners.

Don'ts:

- Do not use cloths containing grit or abrasive particles, or kitchen scouring compounds to dust or clean Korad film; light scratches may be rubbed out with non-abrasive wax
- Do not subject Korad laminates to hard, direct blows
- Do not use boiling water, strong solvents or other materials listed below to clean Korad film, as they will soften the plastic
- Strong soaps, solvents or abrasive cleaners should not be used. It is recommended to always test any cleaner, wax or solvent on a small area of the Korad surface before use to ensure compatibility.

Solvents/Cleaners NOT Recommended:

- Tetrahydrofuran
- Methanol
- Ethanol
- Isopropanol (> 70%)
- Gasoline
- Halogenated Hydrocarbons
- Brake Fluid
- Aromatic Hydrocarbons
- Kerosene
- Perchloroethylene
- Trichloroethane
- Trichloroethylene
- Abrasive Cleaners

CHEMICAL & STAIN RESISTANCE

Korad® acrylic film has undergone testing for chemical resistance and stain resistance for a variety of solvents and other chemicals. The following summarizes the findings of the chemical and stain resistance testing procedures.

Chemical*	Effect on Film
Household Ammonia	No Change
Citric Acid (10%)	No Change
Coffee	No Change
Tea	No Change
Mustard	No Change
Olive Oil	No Change
Naphtha	No Change
100 Proof Alcohol	No Change
Sodium Hydroxide (10%)	No Change
Wesson Oil	No Change
Beet Juice	No Change
Grape Juice	No Change
Butter	No Change
Hydrogen Peroxide (10%)	No Change
Wax Crayon	Slight Change
Hydrochloric Acid (0%)	Slight Change
Amyl Acetate	Definite Change
Methyl Alcohol	Definite Change
Solvent**	**Effect on Film**
Ethyl Alcohol (100%)	Swollen
Iso-Octane	No Change
Gasoline	No Change
JP4-Jet Fuel	No Change
Motor Oil (SAE-30)	No Change
Ethyl Acetate	Dissolved
Toluene	Dissolved
Sulfuric Acid (30%)	No Change
Nitric Acid (10%)	No Change

* Tests run in accordance with NEMA Test LD-1-2.05

** Tests run in accordance with ASTM D-543, 7 days immersion at 75°F

This fabrication manual is a general guide for working with Korad™ acrylic films. Because actual results vary with differences in operating conditions, thickness, color, and composition, nothing contained herein can be construed as a warranty or representation that these products will perform in accordance with these general guidelines.

Important Notice: Our recommendations, if any, for the use of these products, are based on tests believed to be reliable. The greatest care is exercised in the selection of raw materials and in the manufacturing operations. However, because the use of these products are beyond the control of the manufacturer, no guarantee or warranty, express or implied, is made as to such use or effects incidental to such use, handling or possession of the results to be obtained, whether in accordance with the directions, or claimed so to be. The manufacturer expressly disclaims responsibility therefor. Furthermore, nothing contained herein shall be construed as a recommendation to use any product in conflict with existing laws and/or patents covering any material or use.

Anyone experiencing problems fabricating materials should refer those questions to the Sales Department at (800) 677-4338.

This manual does not constitute an offer to sell.

SPARTECH®

11650 Lakeside Crossing Ct.
Maryland Heights, MO 63146

800-677-4338

www.spartech.com

Rev 8/2025