



LEADINGEDGE™
PRINT FINISHING EXPERTS

Resource
Manual



Lamination Troubleshooting

TROUBLESHOOTING GUIDE

FOR POOR LAMINATION QUALITY



Problem	Solution
Wrinkling of the plastic on a laminated piece of material.	Make sure you have enough supply roll tension to take the wrinkles out of film before it gets past the heat roller.
Film is not properly adhered or starts to come off sometime after lamination.	<p>Unless there is something wrong with the film this problem comes from film being run at too low a temperature. Check the heat setting on the laminator. If the film is not sticking to the item it is likely that more heat is required.</p> <p>If you are running thicker films you may have the problem if you try to go too fast. In this case the thicker film may not have enough time to heat on the roller to reach its adhesive melt temperature. Thicker films may be run at lower speeds with no problem.</p>
A milky, hazy line about an inch wide appears periodically across the width of the web immediately after initial warm-up.	The rollers are not evenly heated, and the cold side of the rollers is preventing the adhesive from melting. When warming up the machine, keep the rollers open and keep the forward drive on a low speed.
Wavy or rippled sections in the laminate, especially toward the center or the web.	These “heat wrinkles” are caused by excess temperature and/or speed for the film being used. Slow down the motor and/or use a lower appropriate temperature for that particular film.
General haziness or cloudiness in the film after lamination.	Increase the temperature. The cloudiness is a function of incomplete adhesion. On a variable speed machine loaded with thicker film it may be that the film is being run too fast and is not getting enough time on the heat shoes.
Bubbles in the center of the web and/or film not sticking to the center of an item.	<p>This is caused by excessive laminating roll pressure in the center of the web.</p> <p>The other likely cause of this symptom is worn rollers. For example, if hundreds or thousands of 18” wide sheets are laminated on a 38” machine, the center of the rollers can get worn down more than the ends of the rollers. In this situation, the laminating rollers should be replaced. The rollers worn in this way are not suitable for use as pull rollers.</p>
Wrinkling of the material as it goes into the laminating rollers. This problem usually occurs when laminating an item that has been folded, rolled, bent or wrinkled.	<p>Make sure the leading edge of the item being laminated is laying flat and is inserted parallel to the laminating rollers.</p> <p>It is sometimes essential to smooth out an item as it passes over the feed table and through the rollers to ensure an even laminating without wrinkles. Smooth from the center of the item back toward the trailing edges. Once the item starts to feed you may also pull back and to the sides on the corners of the trailing edge.</p>

TROUBLESHOOTING GUIDE

FOR POOR LAMINATION QUALITY



Problem	Visual	Cause	Solution
Straight Wave Lines Across the Output		Excessive Front Roller Pressure	Loosen the Front Roller Pressure
Concave Waves in the Lamination		Excessive Rear (Pulling) Roller Pressure	Loosen the Rear Back Roller Pressure
Angles waves on Both Sides of the Output		Insufficient Rear Roller Pressure	Tighten the Rear Roller Pressure
Angles waves on One Sides of the Output		Insufficient Rear Left (of Right) Roller Pressure	Tighten the Rear Left (or Right) Roller Pressure
Straight Waves in the Output		Excessive Heat at the Nip Rollers	Lower the Roller Temperature
Wake Waves		Insufficient Heat at the Nip Rollers	Raise the Roller Temperature

IS YOUR LAMINATE NOT STICKING?

A LOOK AT FILM ADHESIVE



First, let's have a look at the components of a printed piece before we discuss applying laminating film.

Stock – Paper stocks have different textures and levels of acid content in addition to varied thicknesses.

Toner vs. Ink – Printing machines use either powdered toner (dry) or fluid ink (wet) to add an image to the stock. Whether you are using an oil-based media or not is also important to consider.

HEAVY VS. LIGHT TONER COVERAGE:

When you print using a high amount of toner coverage, for example, a full-color brochure with a full bleed, maximum adhesive strength will be required. It is important that prints are completely dry before applying laminating film to prevent unsightly bubbles, condensation, etc. On the opposite end of the spectrum, you will only require minimum adhesive strength when printing with lighter toner coverage. For example, a menu that is mainly wording with minimal graphics and a lot of the white paper showing through.

ADHESIVE TYPES OF LAMINATING FILM:

Platinum: To be used with water-based inks when toner coverage is light to medium.

UltraGrip: To be used with oil-based inks when toner coverage is heavy.

Pressure-Sensitive: To be used with stocks made of non-porous material (like a sheet of vinyl or other plastic).

A SIDE NOTE FOR SCHOOLS:

Are you a school that laminates student projects with standard laminating film? Then you may be having trouble with your film not adhering to the students' projects made with construction paper.

Construction paper often has much higher acid content than standard copy paper, which can cause a lack of film adhesion (peeling). In this case, you need to switch to an acid-free paper, and if possible, slow the speed on your laminator. You can also upgrade your films adhesive strength.



**Lamination Supplies &
Equipment Information**

LAMINATE FILM TEMPERATURE GUIDE

RECOMMENDED TEMPERATURES FOR BEST RESULTS



Film Description	Temperature
1.5 Mil A-Lam™ Laminate Film	280°F -310°F
3.0 Mil A-Lam™ Laminate Film	280°F -310°F
1.2 Mil Platinum™ PetPRO™ Laminate Film	230°F -260°F
1.7 Mil Platinum™ PetPRO™ Laminate Film	230°F -260°F
1.2 Mil Platinum™ PetPRO™ Laminate Film	230°F -260°F
3.0 Mil Platinum™ PetPRO™ Laminate Film	230°F -260°F
5.0 Mil Platinum™ PetPRO™ Laminate Film	230°F -260°F
10.0 Mil Platinum™ PetPRO™ Laminate Film	230°F -260°F
1.7 Mil Platinum™ PetPRO™ Laminate Film with UltraGrip®	230°F -260°F
3.0 Mil Platinum™ PetPRO™ Laminate Film with UltraGrip®	230°F -260°F
5.0 Mil Platinum™ PetPRO™ Laminate Film with UltraGrip®	230°F -260°F
10.0 Mil Platinum™ PetPRO™ Laminate Film with UltraGrip®	230°F -260°F
1.2 Mil Platinum™ GsPRO™ Laminate Film	230°F -260°F
1.2 Mil Platinum™ NyPRO™ Laminate Film	240°F
2500 Series Platinum™ PolyPRO™ Laminate Film	230°F -260°F
2700 Series Platinum™ PolyPRO™ Laminate Film	185°F -210°F
3.0 Mil Diamond™ Wide Format Laminate Film	185°F -210°F
5.0 Mil Diamond™ Wide Formate Laminate Film	185°F -210°F
10.0 Mil Diamond™ Wide Formate Laminate Film	185°F -210°F
Karess™ Specialty Laminate Film	≤240°F
1.4 Mil Ebony Karess™ Specialty Laminate Film	≤240°F
1.4 Mil Karess™ Pearlescent™ Metalized Specialty Laminate Film	220°F -250°F
1.0 Mil EcoPRO™ Specialty Laminate Film	230°F
1.4 Mil Cabernet™ Specialty Laminate Film	±230°F
1.4 Mil Ocean Pearl™ Specialty Laminate Film	±230°F
1.1 Mil Mirror™ Metalized Specialty Laminate Film	≥220°F
1.2 Mil Gilt™ Metalized Specialty Laminate Film	≥220°F
1.2 Mil Matte Chrome™ Specialty Laminate Film	200°F -230°F
1.1 Mil FineLinen™ Specialty Laminate Film	≥240°F
1.1 Mil FineLeather™ Specialty Laminate Film	≥240°F

WHY IS LAMINATION SO MUCH BETTER THAN UV COATING?

THERMAL LAMINATING FILMS

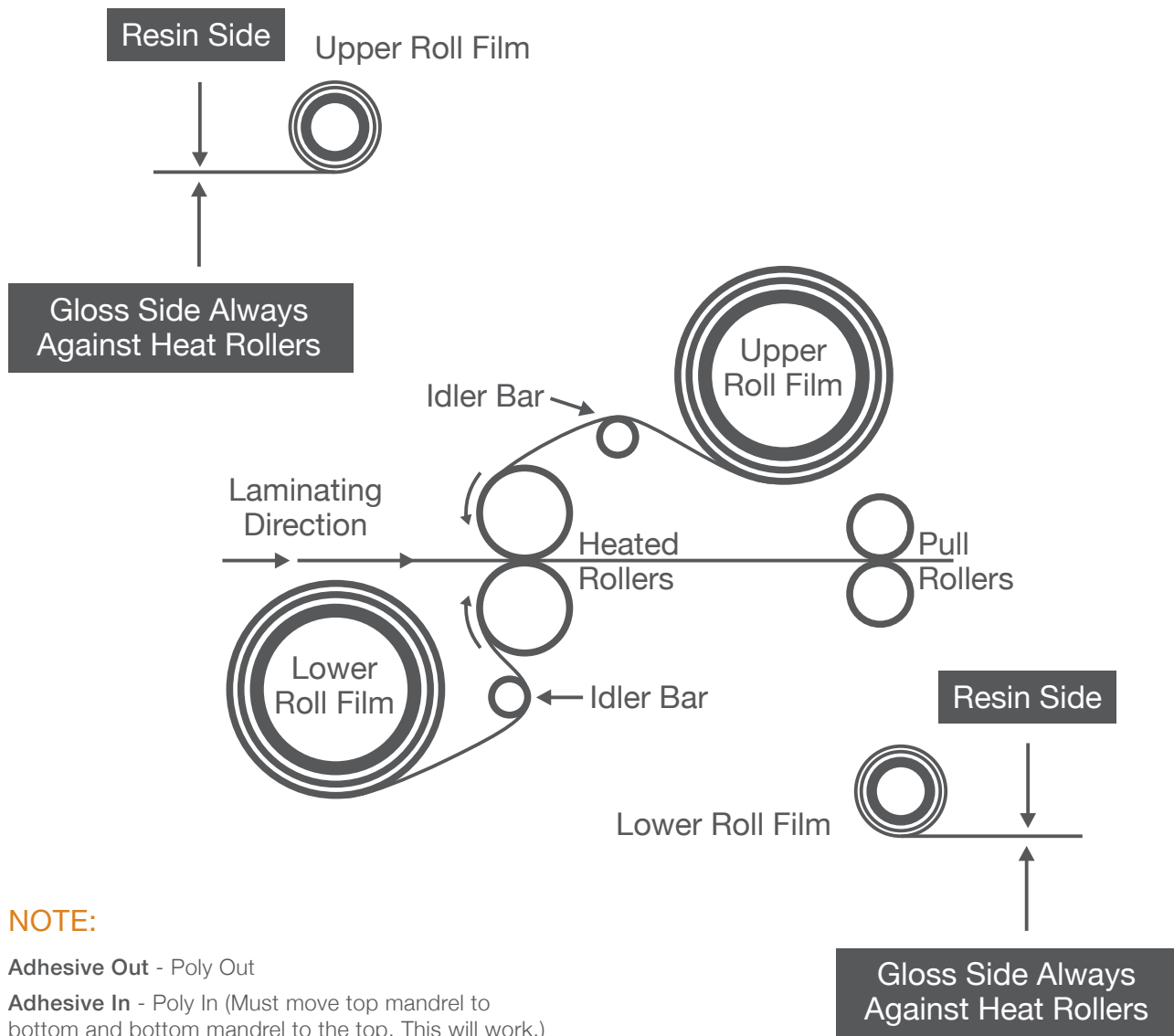
1. UV causes color shift—an absolute negative in the photo world.
2. UV shows fingerprints badly.
3. UV coating will never mimic a true photo print on Silver-Halide paper due to its extreme gloss, strong smell, and inability to be embossed properly.
4. Lamination provides a true protection against moisture and water.
5. Lamination gives tensile strength and body to the photo or printed piece.
6. Lamination is tear-resistant.
7. Lamination stands up much better in bulk-mailed product due to its abrasion-resistance.
8. UV coating requires venting, messy cleanup and setup, and is generally a more difficult product to deal with. Film laminating requires none of this.
9. UV can have a graininess in the surface that is uneven—causing an odd feeling or look to the piece. Lamination is always smooth unless embossed.
10. UV cracks when folded—lamination cannot crack.
11. Lamination adds bulk to the piece—allowing the paper stock to be slightly thinner—thus making up some of the cost differential.
12. Lamination is slightly more expensive—and “you get what you pay for”. However, for an 8”x10” print, the difference in UV vs. Lamination is only 2/3rds of one cent!
13. Lamination can be had in every thickness and finish conceivable to match consumer tastes, customer demand, or drive new opportunities.
14. UV coating causes bad odors in a production environment—even when vented outside.
15. UV coating causes a thinner sheet to curl, and will not allow easy downstream processing.



LEADINGEDGE™
PRINT FINISHING EXPERTS

LAMINATE THREADING GUIDE

TYPICAL HOT ROLL LAMINATORS



FOILS FOR THE SLEEKING™ PROCESS

STEP BY STEP

Leading Edge™ manufactures two types of specialty Sleeking™ foils, for usage with digital printing.

3 STEP SLEEKING™ PROCESS

The three step Sleeking™ process utilizes our Sleeking™ Foil for all direct foiling applications.



Sample Label Banner

1. Print all areas for direct foiling in 100% CMYK or Rich Black Ink
2. Foil sheet utilizing Sleeking™ Foil on a Leading Edge™ certified laminator
3. Overprint any other desired graphics onto the sheet using a digital printer

4 STEP SLEEKING™ PROCESS

The four step Sleeking™ process utilizes LuxeFilms® Sleeking™ Foil for all Sleeking™ on top of laminate film-building an additional dimension on the sheet.



Sample Label Banner

1. Print all areas on the sheet which DO NOT have foil applied
2. Laminate the entire sheet with LuxeFilms® Printable Gloss or Printable Karess™ Laminate
3. Overprint the graphics to be foiled in 100% CMYK or Rich Black
4. Sleek with foil

*All other Sleeking™ Films (Gloss, Matte, Holographic, etc.) are suitable for either the 3-step or 4-step Sleeking™ process.

LEADINGEDGE™
PRINT FINISHING EXPERTS

GUIDE TO LAMINATING DIGITAL PRINTS

THERMAL LAMINATING FILMS



PLATINUM™ WITH ULTRAGRIP® ADHESIVE

Available in Nylon and PET Configurations, this film features premium grade base films with a proprietary thermal adhesive formulated for adhesion to fuser oil based inks and other difficult to adhere to digital toners.

Print Engine	Ink/Toner	Fuser/Release
Xerox iGen 3, iGen 4	Polyester	Silicone Fuser Oil
Xerox 6000,6060		Silicone Fuser Oil
Xerox 8000, 8080		Silicone Fuser Oil
Xerox 700, 800	Polyester	Wax
Xerox 7228, 7235, 7245, 7655, 7675, 7755, 7765, 7775	EA Styrene Acrylate*	Wax
Xerox 240, 250, 260	Styrene Acrylate*	Wax
Xeikon 320, 330, 500	Polyester	Silicone Fuser Oil
Xeikon x-800 DFE	Polyester	Silicone Fuser Oil

PLATINUM™

Available in Nylon, PET and OPP Configurations, this film features premium grade base films with a specially formulated low-melt-point, copolymer thermal adhesive for adhesion to various imaging agents.

Print Engine	Ink/Toner	Fuser/Release
HP® Indigo 1000, 1050, s2000	Petroleum Hydrocarbon	Imaging Agent (Glycol)
HP® Indigo 3000, 3050, 3550	Petroleum Hydrocarbon	Imaging Agent (Glycol)
HP® Indigo ws4050, 4500	Petroleum Hydrocarbon	Imaging Agent (Glycol)
HP® Indigo 5000, 5500, 5600, 7000, 7600	Petroleum Hydrocarbon	Imaging Agent (Glycol)
HP® Indigo10000	Petroleum Hydrocarbon	Imaging Agent (Glycol)
HP® Indigo 4000, 5000, 6000	Polyester	

LAMINATING TIPS

- Ink drying time can affect bonds. Please allow 24 hours of drying time prior to laminating.
- Bonds can be affected by heavily loaded inks and high ink coverage. Avoid full bleeds of heavy black and primary colors.
- Heat, speed, and dwell time are variables that affect lamination bond strengths. Target temperatures of 260°F -280°F for UltraGrip® adhesive and 225°F -240°F for Platinum™ adhesive.
- Results will vary.

LAMINATE AND FINISHING TERMS



ACID FREE

A type of laminate that does not contain any type of acid, which can damage paper, photos, and other types of sensitive prints or documents.

ADHESIVE IN

Also known as A/I, the term “Adhesive In” refers to the EVA or adhesive side (typically cloudy) of the film being wound inside the roll, with the polyester, nylon, or polypropylene side being out. Most thin laminates and 1” core laminates are typically wound “Adhesive In”.

ADHESIVE OUT

Also known as A/O, the term “Adhesive Out” refers to the EVA or adhesive side (typically cloudy) of the film being wound on the outside face of the roll, with the polyester, nylon, or polypropylene side being wound inside. Most thick laminates and 3” core laminates are typically wound “Adhesive Out”.

BOAT WAKE

This occurs sometimes when very thick items are run through the laminating process, causing a high-pressure stretch over the piece being laminated, and low pressure areas on each side of the piece. This creates a “boat-wake” look on the piece being laminated, and on the edges of the piece.

COPOLYMER ADHESIVE

Premium-grade adhesive resin, requiring a lower bonding temperature. Used for photographs, color copier papers and clay-coated surfaces. The adhesive will stick to some plastics, vinyl and metals.

DELAMINATION

This refers to a film separation from the product, and can occur in two areas: the most common is the lifting of the laminate film from the surface of the printed sheet, typically due to poor adhesion, low bond temperatures, or lack of roller pressure during the laminating process. The second type of delamination occurs due to the lack of proper bond between the base film (polyester, polypropylene, or nylon) and the adhesive layer on the film. The latter is typically because of a failure in the manufacturing process.

EVA (ETHYLENE VINYL ACETATE)

Ethylene vinyl acetate (EVA) is the copolymer of ethylene and vinyl acetate, and is a very elastic material that has excellent toughness and is utilized in high-quality film lamination adhesive. This type of adhesive is quite flexible, and has a peak melting temperature of 250°F (96°C).

FILM COMPOSITION RATIO

Used to express the film and adhesive composition. Example: 3/2 which is 5 mil. The first number represents the polyester base film, and the second represents the adhesive.

FILM LAMINATION

A plastic film, typically polyester, nylon, or polypropylene basis, and coated with a heat-activated lamination, that is bonded by heat and pressure onto a substrate, generally for added protection and enhanced appearance.

FLUSH TRIM OR FLUSH CUT

This refers to the trimming of excess laminate film off of the edges of the laminated print. While flush trimming exposes the edges of the paper document, well-laminated pieces should maintain their laminate bond easily. The only danger of flush trimming is that water or moisture can seep into the exposed edges of the pieces, increasing the risk of material splitting.

FOAMBOARD

Foamboard is typically a rigid substrate manufactured by placing a layer of inflexible foam between two sheets of heavy paper or card stock. It comes in a variety of thicknesses and colors, with white being by far the most common. Typical thicknesses are 1/4", 3/16", 1/2", and 1" – and these are heavily used with wide-format print mounting and signage projects.

GLOSS

Having a shiny, translucent, or glass-like effect or appearance, as in the finish of certain types of laminating film.

GLUEABLE/STAMPABLE

Film manufactured with a special chemical coating that allows the surface to accept foil stamping, and also allows the application of most types of glue.

LAMINATE ADHESIVE RESIN

The part of the laminate that actually adheres or bonds to the print or document being laminated. It is often constructed of EVA, which is ethylene vinyl acetate, a common adhesive used in laminate films.

LAMINATE POUCH

A polyester laminate material formed into a two-sided pouch, with a sealed hinge on one side. Laminate pouches are typically manufactured in 3.0, 5.0, 7.0, and 10.0mil thicknesses, the total of which is twice that due to being two sided.

MASTER ROLL

Also called a "Mother Reel" or "Mill Roll", a master roll designates the larger rolls from which thermal laminate films are manufactured in. Slitting, or converting, is the process of reducing a master roll to usable sizes.

MATTE

Having a dull, opaque, or textured surface or appearance, which is often highly favored in situations where a suave or sophisticated finish is desired. Also, matte surfaces are excellent to reduce glare and increase readability, and are available on certain types of laminating film. Slightly granular texture, with write-on capabilities; some matte surfaces accept pencil, pen, or permanent marker.

MIL WEIGHT

Refers to the thickness of most lamination films, and as a unit of measure is approximately 1/40th of a millimeter at 0.0254 mm. As the mil grows higher, so does the thickness of the film.

MIRROR® METALIZED OR MET-PET POLY FILM

Metalized polyester laminate film, which has all the beneficial properties of PET film, plus much improved oxygen and water vapor barrier properties. Mirror Metalized is typically used for high-end packaging and book covers where a metallic background is desired.

MSI

The very common abbreviation for thousands (Roman numeral M) of square inches (SI). MSI is the most common unit of buying and selling thermal laminating films in the industry.

MYLAR

A brand name of the DuPont® company, and often referred to as another name for standard polyester laminating film.

NYLON

Nylon thermal laminate film is a hygroscopic breathable film, popular for use in one-sided applications including dust jackets, book covers, and packaging products. It is extremely stable and does not curl, due to the breathable nature of the laminate. Nylon also does not stretch or expand when exposed to heat, and is similar in stability to polyester. Nylon films also display excellent abrasion resistance and very good optical properties, with a high level of clarity and surface gloss. Nylon films are available in 1.0, 1.2, and 1.7 mil thicknesses.

POLY IN

The term "Poly In" refers to the Polyester or base film side (typically hard and shiny on gloss film) of the film being wound inside the roll, with the EVA or adhesive side being out. Most thick laminates and 3" core laminates are typically wound "Poly In".

POLY OUT

The term "Poly Out" refers to the Polyester or base film side (typically hard and shiny on gloss film) of the film being wound outside the roll, with the EVA or adhesive side being in. Most thin laminates and 1" core films are typically wound "Poly Out".

POLYESTER

Also known as (PET), the full name for polyester is polyethylene terephthalate film, and scientifically it is a thermoplastic polymer that is biaxially oriented or bubble extruded. It is the most common type of laminate for two-sided laminating, and available typically in mil thicknesses (with adhesive) of .8 mil up to 15.0 mil.

POLYPROPYLENE

Also known as (OPP), most polypropylene is "biaxially oriented", which means that the film is stretched in two different directions while being manufactured. Orientation brings about several changes in the film, such as lower elongation rates, making it harder to stretch, higher tensile strength for a given thickness, greater stiffness, improved optical properties, and improved barrier properties. For thermal laminating, polypropylene film is coated with EVA adhesive, and is available in thicknesses of 1.0 mil, 1.2 mil, 1.7 mil, and 3.0 mil. It is often used in thin film applications for book-covers, posters, and packaging applications.

POUCH BOARD

A pre-made amalgamation of a Foamboard sheet which has a HAM (Heat-Activated Mastic) surface, along with a pre-mounted laminate film overlay attached on one side. A Pouch Board allows is typically used for 1-step mounting and laminating.

PRESSURE-SENSITIVE ADHESIVE

A clear base film, typically polyester, which is coated with the same or different adhesives on both sides. Typically, one side of the adhesive will be bonded to a specific print or print media, while the opposite could be used to adhere to multiple surfaces. Most pressure sensitive adhesives come with a release liner for ease of application. Pressure sensitive adhesives can be of permanent or removable nature, depending on the application.

PRESSURE-SENSITIVE LAMINATE POUCH

A two-sided laminate pouch, typically manufactured in 3.0, 5.0, 7.0, and 10.0 mil thicknesses, with self-stick adhesive mounted on the back of the pouch for easy application in a variety of circumstances.

PRESSURE-SENSITIVE LAMINATING FILM

This is a pressure sensitive laminate film, applied generally with pressure, or in some cases a low level of heat with pressure. All pressure-sensitive laminates come with a silicon-coated release liner, which requires the use of a rewind roller on the wide-format laminator.

PRESSURE-SENSITIVE POUCH

A self-stick adhesive layer on the back of a laminating pouch. After lamination, the protective release liner is removed and the document is affixed in the desired position.

QUATRO-SLIT™ HINGE TECHNOLOGY

A laminating technology that first slits a thin wedge of paper out of a printed sheet, prior to two-side laminating, and allows the production of hinged lay-flat photobooks, brochures, and folded maps.

ROUNDED CORNERS

Common in the world of laminating, this means utilizing a “corner rounder” to cut a radius on the edge of a laminated piece to remove sharp corners, often prevalent on thicker laminates. Most laminating pouches are pre-diecut with rounded corners.

SATIN

Having a soft, glare-free, and slightly textured surface or appearance, which is often favored in situations where a suave or sophisticated finish is desired. Also, satin surfaces are excellent to reduce glare, and are available on certain types of laminating film. Satin is somewhat akin to a “semi-gloss” finish in the world of paint, as opposed to a Gloss (high-gloss paint) or Matte (flat paint).

SHR™

SHR™ stands for Silver Halide Replacement, and is a photo printing and production method that is lower cost and more environmentally friendly, but still retains the look, feel, and weight of regular photo paper. SHR™ photo finishing combines a special laminate film technology along with digital print innovation, and saves 20-40% over standard silver halide production. It is also chemical free.

SILVERING

This surface blemish occurs as a consequence of lack of pressure while applying thermal laminates, and results in tiny air pockets being trapped between the surface of the printed piece and the adhesive of the film. Silvering, true to its name, causes a slight haze or silvery look on darker sheets.

SINGLE-SIDED

One side has laminate, back has cardboard mount backing. Only visible through one side.

SLEEKING™

Sleeking is a special image transfer that specifically bonds to digital ink and some toners on many printed surfaces, allowing the ability to create special effects and designs. Sleeking permits the application of a finish, such as gloss or matte, a metalized background, such as gold or silver, or a holographic impression, in spot locations or full coverage. Available in multiple patterns and styles, Sleeking can be applied first onto spot print applications, then trap printed; or can be applied on top of a special printable Karess™ laminate surface, once overprinted with digital ink. The most common application for sleeking today is variable data foiling, as it allows complete variability of data with excellent registration.

SLOT PUNCH

A small manual tool which punches a small slot in pouch use applications, typically for I.D. badges, lanyards, or luggage tag holders.

SPLICE

Common in laminating film, splices are the position where two webs of laminating film are joined together on the same roll, a result of a master roll change during the manufacturing process.

TEXTURED LAMINATE

Textured laminates often have a surface pattern, either through a varnish or an embossing process, in or on the surface of a laminate film. Linen and Leather patterns are among the most popular textured laminates.

THERMAL LAMINATE FILMS

Films that bond based on the application of heat, also known as thermal laminating films.

UV INHIBITING FILM

Common for prints that have high exposure to the sun, UV blocking films like Diamond® branded films are treated in both the EVA (adhesive), and the polyester (base) films with inhibitors to block UV exposure, and thus reduce fading from the sun.

LAMINATING EQUIPMENT TERMS



AIR-SHAFT MANDREL

A pneumatically activated mandrel used to fix or lock film rolls in place during the laminating process.

ANTI-STATIC UNIT

A device used on a laminating system to reduce or eliminate static electricity, which often causes feeding or stacking problems in the laminating process.

BOTTOM MANDREL

A bar or rod which typically mounts below the feed table of a two-sided laminator and holds the laminating film roll.

BOTTOM-FED LAMINATOR

A feeder used on laminators that feeds from the bottom of a short stack of prints or book covers; typically used in the on-demand production environment.

CHILLER SYSTEM

A forced chilled water system used to cool a laminating web after the laminating process. This is usually only typical on larger one-sided laminating systems.

COOLING FANS

Located between the nip and pull rollers on most two-sided laminators, cooling fans provide forced air to cool film quickly and prevent curling issues.

DANCER BAR

A feeding technology used on high-output automatic trimmers, which “dances” up and down to allow the free flow of the film web into the automatic trimmer.

DE-CURLING BAR

A bar used in the one-sided laminating process; the print is typically run around this bar to counteract the natural curl which comes from applying film to only one-side of a sheet. This is sometimes used to “break” the fibers in the sheet for better flattening of sheets.

DE-CURLING ROLLER

A roller used in a one-sided laminator to counter-effect the natural tendency of sheets to curl when having one-sided laminate applied.

DEEP PILE FEEDER

A top-running feeder which allows a deep stack, or “pile” of sheets to be fed from, reducing loading frequency and production interruptions.

DUAL TEMPERATURE CONTROL

Common on smaller laminators, dual temp control controls temperature settings on top and bottom rollers/heat shoes simultaneously.

ELECTRIC REVERSE

An option on some laminators that allows a laminating machine to run in reverse, often used for fixing a film wraparound or jamming issue.

FEED GUIDE

A small edge guide located on the feed tray of a two-sided laminator, allowing the accurate and square feeding of prints into the machine.

FEED TABLE

The infeed table used on most one and two-sided laminators, just prior to the nip rollers.

HEAT SHIELD

A guard that protects fingers from a hot heat shoe or heated roller while feeding prints into a laminator.

HEAT SHOE

A Teflon® or non-stick coated metal shoe which allows the flow and heat-up of laminate film prior to entering the nip rollers.

HEATED ROLLER

A laminating roller that contains a heating element inside, typically a chrome or silicon roller, and which allows the source of heat to be more directly applied to the laminate and piece being laminated. Most heated roller applications achieve 15-20% better bond than a heat-shoe machine, often important in digital print applications.

IDLER BAR

A small bar or roller which the film web passes over or under after feeding off the mandrel. The idler bar typically helps with the even and wrinkle-free flow of film into the rollers for laminating.

JOGGING TABLE

A vibrating stacker or catch unit used on the back of laminating system to keep sheets jogged and flowing freely.

LAMINATING PRESSURE ADJUSTMENT

Typically found on most laminators, this adjustment is a lever or pneumatic adjustment which allows higher or lower pressure settings for the nip and pull rollers during the laminating process.

ONE-SIDED FILM SLITTING UNIT

A small but sharp cutting wheel that is attached to the film feed mandrel on a one-sided film laminator. It allows the in-line slitting of one-sided laminate films to any desired width prior to web going into the machine.

PERFORATOR

A special wheel used in one-sided laminators to punch a tiny hole all along the edge of the laminate film, allowing film to be skewed and burst (or separated) as part of the one-sided laminating process.

PHOTO EMBOSSING ROLLER

A specially textured roller used to produce the matte texture into specialty SHR™ laminated photo prints, simulating the feel of standard matte photo paper.

QUATRO-SLIT™ HINGE LAMINATOR

A specialty laminator that die-cuts a hinge slit on printed sheets prior to two-sided laminating, and which allows the production of hinged lay-flat photobooks, brochures, and folded maps.

SEPARATOR

Also called a bursting unit, this device is fitted to most one-sided laminators and acts to “burst” or “pull” the sheets apart prior to exiting the laminator.

SHR™ LAMINATOR

A specialty laminator that allows the production of SHR™ (Silver Halide Replacement), photo prints, using a combination of film and print technology that is lower cost and more environmentally friendly. SHR™ prints are indistinguishable from standard chemical-processed prints, but still retains the look, feel, and weight of regular photo paper. The SHR™ process is typically 20-40% cheaper than standard silver halide production, and is chemical-free.

SILICON ROLLERS

Rubberized rollers which are used in most laminators, and offer good pressure and bond strength when applying thermal laminating films.

SKEWING WHEEL

A small wheel used to twist the sheet slight during the bursting process in one-sided laminating.

SLEEKING™ LAMINATOR

A specialized laminator which permits the application of a finish, such as gloss or matte, a metallic foil, or a holographic impression, in spot locations or full coverage on a printed sheet. These films are manufactured to bond with digital inks or toners.

SLITTER KNIVES

Cutting devices that are positioned between the nip and pull rollers on a two-sided laminator, and which pre-slit the sides of the laminate film automatically prior to exiting the machine.

STACKER

An outfeed device used on large laminating systems for stacking finish laminated pieces.

TAKE-UP MANDREL

An additional mandrel, typically mounted on top of a laminator, that allows the roll-up of a release liner or Sleeking film after application of foil or a pressure-sensitive film.

THREADING CARD OR BOARD

A thicker piece of board or card stock used to thread laminating film through the nip and pull rollers without safety issues.

TOP-FED LAMINATOR

A feeder used on laminators that feeds from the top of the stack, similar to most printing presses. It is typically used in a high-production / fast workflow environment.

UPPER MANDREL

A bar or rod which typically mounts above the feed table of a two-sided laminator and holds the laminating film roll.

POUCH LAMINATOR TERMS

BACK ROLLERS

Also, called the pull rollers, these provide the power to pull the finished pouches out of the pouch laminator.

CARRIER

A thick, silicon-coated paper pouch which is folded on one side, and allows pouches to be fed through a laminator without fear of wrap-arounds or excessive glue-ooze onto the rollers.

CLOUDING

An effect sometimes called "ghosting", which is typically caused by the heat setting being too low, and the film adhesive not having enough heat to effectively activate and bond.

COOLING TRAY

A flat plate or surface at the rear of a pouch laminator which allows pouches to remain flat and cool down without thermo-warping, while exiting the laminating process.

FRONT ROLLERS

Sometimes called the Feed or Nip rollers, these are the first two rollers in a pouch laminator. They are positioned in front of the platen heat source.

PLATENS

Large metal plates which are heated, and provide the heat source.

POUCH

A manufactured pocket of laminating film, typically sealed on one edge and activated by laminating in a platen-style pouch laminator.

SPRING-HINGED ROLLERS

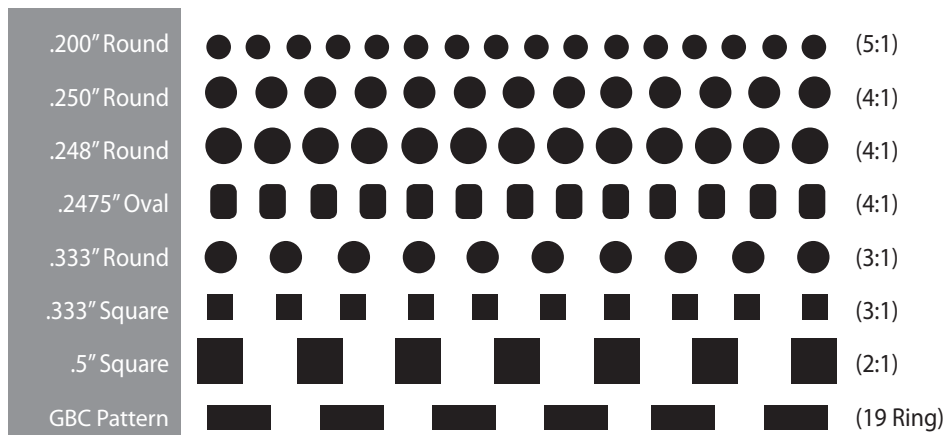
Spring-hinged rollers in a pouch laminator allow for variability in thickness, and often are used for machines that do laminating and mounting on board simultaneously.



Binding Information

BINDING DATA

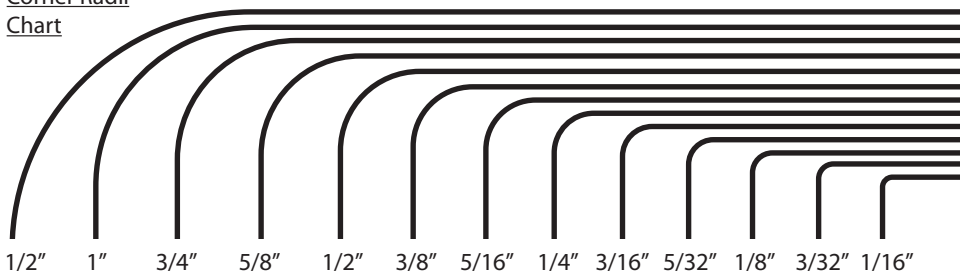
Punch Patterns



Plastic Comb Size Chart*

Inside Diameter	Est. Sheet Capacity*
1/4"	20-39
5/16"	40-54
3/8"	55-9
7/16"	70-89
1/2"	90-99
9/16"	100-119
5/8"	120-134
11/16"	135-149
3/4"	150-169
7/8"	170-199
1"	200-219
1 1/8"	220-229
1 1/4"	230-289
1 1/2"	290-359
1 3/4"	360-424
2"	425

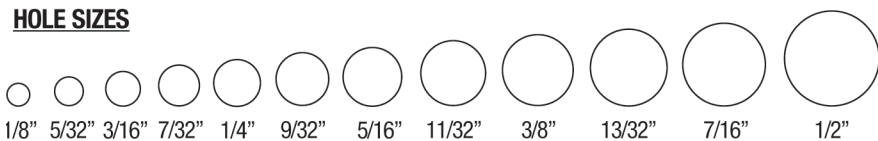
Corner Radii Chart



Wire Binding Size Chart*

Inside Diameter	Pitch	Est. Sheet Capacity*
1/4"	3:1	30-49
5/16"	3:1	50-59
3/8"	3:1	60-79
7/16"	3:1	80-99
1/2"	3:1	100-119
9/16"	3:1	120-139
5/8"	2:1	140-159
3/4"	2:1	160-189
7/8"	2:1	190-219
1"	2:1	220-249
1 1/4"	2:1	280-309

HOLE SIZES



Wire Spools

- 1/4" Black Wire-O Spools Pitch 3:1 (93,000 Loops)
- 5/16" Black Wire-O Spools Pitch 3:1 (66,000 Loops)
- 3/8" Black Wire-O Spools Pitch 3:1 (47,000 Loops)
- 7/16" Black Wire-O Spools Pitch 3:1 (34,000 Loops)
- 1/2" Black Wire-O Spools Pitch 3:1 (26,000 Loops)
- 9/16" Black Wire-O Spools Pitch 3:1 (21,000 Loops)
- 5/8" Black Wire-O Spools Pitch 2:1 (12,000 Loops)
- 3/4" Black Wire-O Spools Pitch 2:1 (8,000 Loops)
- 7/8" Black Wire-O Spools Pitch 2:1 (6,000 Loops)
- 1" Black Wire-O Spools Pitch 2:1 (4,500 Loops)
- 1-1/4" Black Wire-O Spools Pitch 2:1 (2,800 Loops)

Plastic Coil Size Chart*

Inside Diameter		Est. Sheet Capacity*
mm	inches	
6	1/4"	30-41
7	9/32"	42-51
8	5/16"	52-64
9	11/32"	65-74
10	3/8"	75-84
12	7/16"	85-94
14	9/16"	115-124
16	5/8"	135-154
18	11/16"	155-159
20	3/4"	172-189
22	7/8"	190-219
25	1"	220-249
28	1 1/8"	250-269
30	1 3/16"	270-279
32	1 1/4"	280-289

*All above charts are estimated using 20# bond paper. Always check actual mock-up for accurate size prior to ordering. Seller does not take responsibility for mismatched or mis-ordered element sizes.