

# YUPO PRINTING RECOMMENDATIONS

MAY 2009 REV. 1



**Yupo Corporation America**, located in Chesapeake, Virginia, would like to thank you for making YUPO the world's most popular synthetic paper. This technical guide was developed as part of our proactive focus on educating our customers to assist them at each stage of their synthetic project. If you have any questions, suggestions, or ideas about this or any other matter, please feel free to contact us at 1-888-USE-YUPO or visit our website at [www.yupousa.com](http://www.yupousa.com).

**YUPO Papers** are a family of ultra-smooth, multi-layered, biaxially oriented, synthetic printing papers. They are manufactured from the highest quality polypropylene resins and inorganic fillers through the process of extrusion. The process creates innumerable micro-voids giving YUPO superior opacity and whiteness characteristics. After cooling, the sheet's surface is treated to enhance its appearance and printing performance. The result is an extremely durable, dimensionally stable, synthetic printing paper that's water repellent, flexible, scuff-resistant, and that has unmatched folding endurance.

## Initial Project Planning

1. Pre-test with samples of YUPO using the intended: design, inks, coatings, varnishes, adhesives, laminations, binding methods, and finishing techniques. Dummies should be tested under the end use conditions.
2. Discuss each project with your suppliers and ask for their recommended products. (i.e. underwater in the ocean, restaurant menu, liquor tag, outdoor map, book cover, etc.).
3. Your fountain solution chemistry may not necessarily be compatible for printing oxidizing inks on a synthetic stock, therefore, contact your supplier and confirm its compatibility.
4. Avoid the following pigments if applying an aqueous coating because the color may burn-out: red-lake C, warm red, reflex blue, purple, violet, rhodamines. Your ink supplier can provide substitute pigments that will be more stable.
5. YUPO is supplied grain-long unless otherwise specified. When laying out the piece, consider the grain direction for binding and finishing operations such as folding, scoring, and perforating. Also, grades thicker than 10 mils should be pre-tested for scoring and folding.
6. Set aside enough delivery boards to be able to rack jobs on 4-inch lifts.
7. **YUPO is not yet recommended for ink-jet, photo copiers, nor laser printers (except for flash or cold fusion).**
8. Avoid inside die-cuts less than or equal to 90 degrees. A  $\frac{1}{16}$ " rounded corner is recommended. This also includes binding.
9. **If YUPO will be combined with other printed substrates, PRINT THE ENTIRE JOB WITH INKS FORMULATED FOR YUPO.**
10. Allow YUPO to acclimate to pressroom conditions for at least 24 hours before unwrapping, and even longer during winter months.
11. Plan for at least 24 hours of dry time between printing first side and second side on any two-sided jobs, or before conducting any finishing operations.
12. For special applications, such as magazine inserts, bags, etc., please contact our Technical Service Department for assistance.

## Pre-Press Recommendations

1. Compensate for 4 - 7% more dot gain, between the quarter and three-quarter tone, than on coated papers.
2. Use Under Color Removal (UCR) and Grey Component Replacement (GCR) whenever possible.
3. Avoid Total Area Coverage (TAC) greater than 300% if possible.
4. When trimming, use sharp, nick-free blades.

## Printing Recommendations

The ink/water balance when printing YUPO is more critical than when printing on conventional paper stocks. YUPO absorbs virtually no water and therefore very little water is needed (probably less than half of that required to print paper). The plate requires only enough water to keep the surface wet and any more will only cause problems.

1. Run speed is typically not more than 7,000 impressions per hour.
  2. Use the thinnest ink, coating, varnish - film-thickness. Solid ink density targets: K-1.65; C&M-1.30; Y-0.95
  3. Dry dust on any available open units to remove filler dust from the surface of the sheet.
  4. Use the thinnest possible film-thickness of aqueous coating or overprint varnish.
  5. Wind the loads soon after the ink sets.
  6. The side of the form with the lighter ink coverage should be printed first.
  7. If using an aqueous coating, wind the loads within 1-hour after printing, and again within 4-hours.
  8. Add dryer to the ink (Grafo, X+Y=Dry or Speedy Dry) particularly with forms having light ink coverage, and use take-off bars to prevent over-emulsification.
  9. For best results, use a freshly mixed alcohol-based fountain solution. Alcohol substitute may be used as well. Avoid etches or substitutes that contain high percentages of glycerin because they retard drying.
- Please contact your supplier for recommendations.  
**Do not use fountain solution stimulator driers.**
10. Use metal plates that carry minimal water. Do not use paper or polyester plates.
  11. Maintain fountain solutions between 4.5 - 5.5pH (target is 5.0, however above 4.0 is required).
  12. If backing up, avoid using drying agents on the first side printed, or wind quickly after the inks set.
  13. To avoid static, maintain at least 42% relative humidity. Also, use anti-static equipment such as ionizing air units at the feeder and/or delivery. Contact SIMCO at 1-800-203-3419 for additional information about the equipment.
  14. To avoid marking, minimize pressure of suckers and feeder-board wheels/brushes.
  15. Wash blankets to remove filler-dust, typically 2,000 to 3,000 sheets, or as ink density decreases in the shadow-tones.

## Delivery Recommendations

1. Rack the lifts on one-piece delivery boards, up to 4 inches depending on the amount of ink coverage.
2. Printed sheets should fall gently onto the pile.
3. Do not use encapsulated spray powder.
4. Spray powder volume should be the same as when running a premium matte-coated sheet.
5. For most jobs, use 24 to 35 micron particle size spray powder.
6. To avoid set-off, move/wind the printed loads with care.
7. Wind the lifts after ink sets to promote drying and to avoid gas ghosting on backside.
8. Re-rack wound lifts in small piles.
9. Pile temp should be run at 95°F; IR dryers and air knives should be used.

## Converting Recommendations

1. Always test adhesives, the design, laminations and bindery processes prior to actual production runs.
2. Dies, drill bits, and blades must be sharp and nick-free to prevent tears from developing.
3. Do not exceed one-inch stack height when drilling, otherwise YUPO may distort or melt.
4. YUPO folds and perforates better parallel to the grain direction than against it.
5. Avoid folds that cause air entrapment.
6. Due to the waterproof nature of the stock, hotmelt glue or double-sided tape is required for gluing.
7. YUPO can be perfect bound. PUR adhesive is recommended, especially when the entire book is made of YUPO.

## Aqueous Coating Recommendations

Aqueous coatings formulated for Yupo can successfully be used. **Note: Most work-&-turn coatings are seal-coats, therefore, they would seal off oxygen from the oxidizing inks and prevent the inks from drying.** However, coatings formulated for Yupo are porous, like a primer; therefore, oxygen can permeate through the aqueous coating, dry the inks, and then come back out of the aqueous coating. Contact coating suppliers on page 4 for product recommendations.

1. **A press equipped with an extended delivery should be able to successfully run aqueous coatings in-line.**
2. Aqueous coating should not be run in-line on a press with a short delivery, unless recommended by the supplier.
3. Strictly adhere to the manufacturer's specifications (viscosity, pile height and temperature, winding instructions, compatibility concerns).
4. Maximize airflow, not necessarily heat, to ensure complete drying of the coating.
5. Pay close attention to the pile temperature: **side one: 95°-100°F; side two: 90°-95°F.**
6. Maximum lift size should be 3 inches.
7. Minimize the use of spray powder. You may want to use coarser powder on second side.
8. **Wind the lifts within 45 minutes to prevent set-off and to assist drying.**
9. **More attention and control is required for two-sided aqueous jobs.**
  - Top side must be completely dry and cool before coating the second side.
  - Decrease press speed on second side.
  - Apply less coating, with a lower viscosity, on the second side. Check with coating manufacturer for specific recommendations.
  - Wind the lifts within 45 minutes to prevent set-off and to assist drying. Do not stack piles after winding - re-rack on delivery boards.

## Product Recommendations

The success of this project depends upon your ability to communicate with all involved parties/companies: designer, printer, Yupo, fountain solution, ink, coating, varnish, finisher. **Moreover, each supplier should be consulted prior to production about the details of the project.** This includes communicating your expectations (fade resistant, alcohol resistant, scuff resistant, shelf life, etc.) of the project, and letting them recommend their products for you.

We suggest you contact any of the following **ink** suppliers based upon their track record with our product. Please note, the following products are not necessarily designed with your specific project's requirements in mind, therefore, **we recommend that you discuss them with your supplier prior to production.**

Braden Sutphin Ink	Synthetic Stock	(216) 271-2300 Bruce Smolinski, Marc Castillo	
Flint Ink	Arrowstar Hard Surface	(734) 879-5020 Rodney Balmer	
Hostmann-Steinberg Ink	Synthebond	(815) 929-9293 Ernie Meyer	
INX International	High Solids	(562) 404-5664 ext. 5350 Chris Bonk	
Kohl & Madden Ink	Syntex FD/Super Dry	(410) 458-4217 Vinny Dimauro	(201) 543-1580 John Carlisle
Taniguchi Ink Corporation	**TC-90 Waterless, Non-Porus	(562) 802-2177 Martin Valencia	
Toyo Ink- America	TSP400 * Aqualess TSP400	1-866-969-8696 Mike Keegan	
Van Son Holland Ink	Tough Tex LR	1-800-645-4182 Ken Ferguson	

\*Denotes waterless ink series. \*\*Recommended for a Heidelberg Quick Master DI Press.

We suggest you contact any of the following **aqueous coating** suppliers based upon their track record with our product. **Please note, the following products are not necessarily designed with your specific project's requirements in mind, therefore, we recommend that you discuss them with your supplier prior to production.**

Ashland	(414) 762-3330, Mike Trakhtenberg
Coating & Adhesive Corporation	1-800-462-4295, John Mason
Kelstar International	1-800-255-0021, Jeff Jacobs, Steve Mandel

If a project requires **UV inks**, and/or a **UV varnish**, you will need to first prime Yupo's surface with a **UV-curable primer** or an appropriate aqueous coating.

Ashland	(414) 762-3330, Mike Trakhtenberg
Coating & Adhesive Corporation	1-800-462-4295, John Mason
Craig Adhesives & Coatings Co.	(973) 522-2536, Mark Mity (mmity@craigadhesives.com)
Kelstar International	1-800-255-0021, Jeff Jacobs, Steve Mandel

YUPO can be **laminated**.

Boss Laminating	1-800-473-2762, Luke Walker
Dikeman Laminating	(973) 473-5696, Jeff Snyder
GBC	1-800-772-9281
Piedmont Laminating	(363) 272-1600, Marty Agee

**Remember, none of the product recommendations listed in this Bulletin should be used without first discussing your project with the supplier. These products are generically designed to work on synthetic paper, and they will not necessarily meet the requirements of your project. You must communicate to the supplier the conditions in which your project will be used (i.e. underwater in the ocean, restaurant menu, liquor tag, outdoor map, book cover, etc.).**

Last but not least, if you have any concerns about your project, please contact Dave Jeffers in Technical Service for assistance [1-888-873-9876]. We would like to assist, and feel that all problems can be avoided by proactively planning with all parties.

For more information on terms and conditions of sale, please visit our web site at [www.yupousa.com](http://www.yupousa.com).

**We are always interested in how YUPO® is being used in the marketplace.  
If you would like to show off your work, you may send finished samples to:**

**Customer Service/Samples  
YUPO CORPORATION AMERICA  
800 Yupo Court  
Chesapeake, Virginia 23320**

**For every 50 finished samples received, we will send you a token of our appreciation.**

**Thanks again for your interest in YUPO® Synthetic Paper.**

[www.yupousa.com](http://www.yupousa.com)



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