

AVantage Polymers: The Liquid AVantage

For nearly twenty years, Anderson & Vreeland, Inc. ("A&V") has invested in the development, application and marketing of liquid photopolymers for flexographic printing applications. Over this time, we have witnessed the introduction of digital platemaking and thermal processing, and the continued evolution of water wash technology for sheet photopolymers. Each of these areas compete aggressively with liquid platemaking yet, despite these competitive pressures, liquid technology remains alive and well. Liquid continues to evolve while maintaining its ecological and economical strengths. Along with the digital revolution, an equally demanding sustainable revolution returned focus to the unique capabilities of liquid.

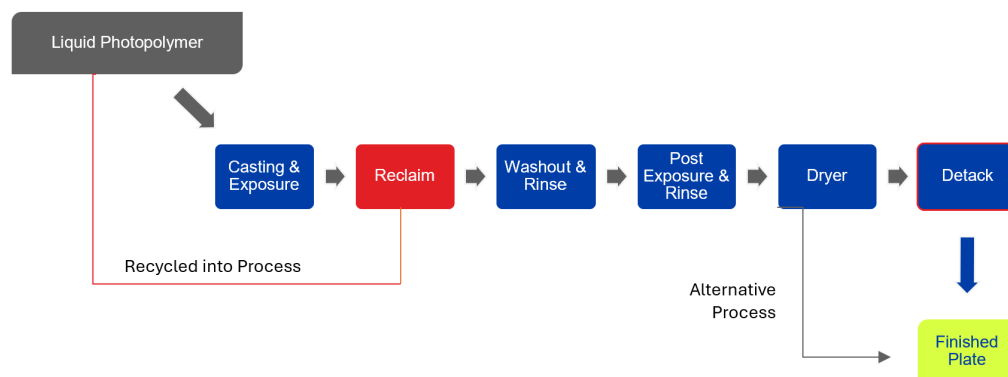


Figure 1: Liquid Workflow

The figure above shows the liquid platemaking workflow, with the Reclaim step highlighted in green. The ability to reclaim uncured resin differentiates liquid platemaking from other processes.

While deeply invested in liquid photopolymer technology, Anderson & Vreeland also has the unique vantage point of having access to multiple plate technologies such as analog and digital platemaking, as well as water wash, solvent and thermal processing techniques. It is therefore much easier for A&V to directly study the ecological and economic advantages of liquid photopolymers.



The economic and ecological advantages can be uniquely highlighted through in-position platemaking technology, which is uniquely suited for use with liquid photopolymers and most often utilized within "thick plate" corrugated applications. In-position plates are made by imaging one entire color in register as opposed to preparing individual copy pieces and mounting them. During plate exposure, only the areas with copy are cured. The result is a plate with islands of copy adhered to a thin and light polyester backing sheet. When using in-position plate technology, as much as seventy percent of the original cast polymer can be reclaimed, minimizing waste and resulting in more environmentally responsible practices. In-position plates' lighter weights reduce shipping costs and storage space requirements.

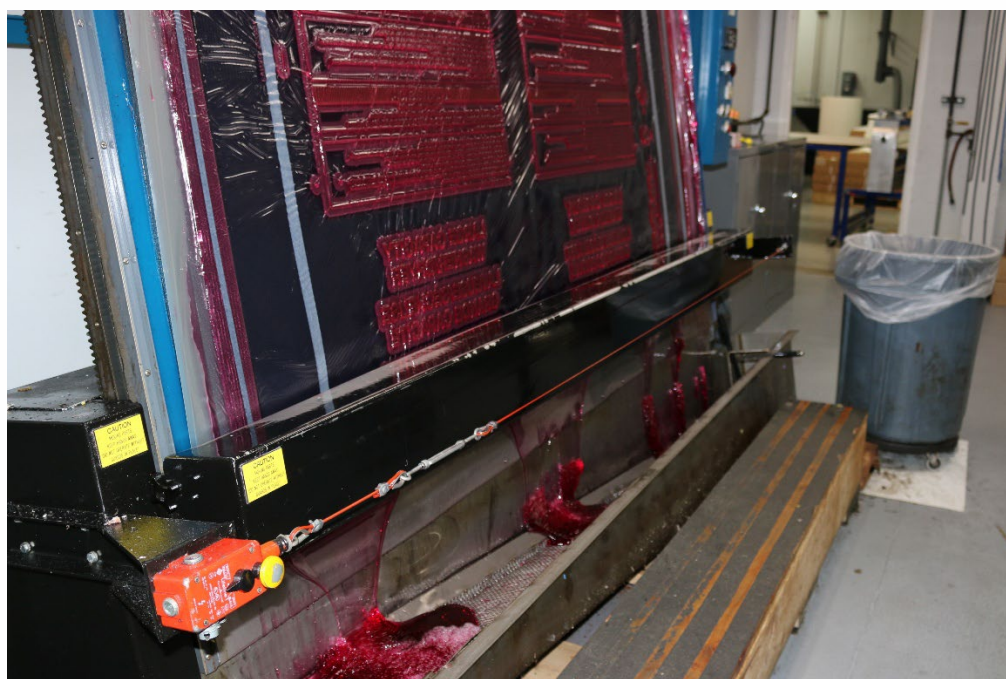


Figure 2: In -position plate

The use of liquid in-position plates can result in as much as 70% of the original cast polymer being reclaimed.



The AVantage Platform

Anderson & Vreeland's entrance into liquid technology culminated in the launch of the AVantage platform. The AVantage platform is based on the core components of focused support and service, commitment to liquid photopolymer technology longevity, and commitment to innovation in all aspects of liquid photopolymer technology. These components are intertwined into a series of innovative technologies that are supported and guided by a dedicated service, support, and research team – leveraging years of liquid photopolymer experience into a unified technology and service architecture. This architecture is based on the sum total of product chemistry, platemaking equipment, a quality production environment, sales, service and support personnel, and a devotion to continuous improvement and innovation.

Liquid Photopolymers

The heart of the AVantage process is the photopolymer technology itself. Liquid photopolymer technology has grown from use in newspaper and master resins to serve multiple print markets. AVantage products cover the corrugated, multi-wall bag, and stamp industries in addition to more unique elements such as sand-casting and even multilayer plate capabilities. The full AVantage product line is outlined below.

Corrugated: AVCorr

The top-of-the-line product in the AVantage line is AVCorr NTR, which has proven to be a workhorse for liquid platemaking in the corrugated market, especially when used at 6.35-7 mm (.250-.280") thickness in combination with in-position platemaking techniques. Its robust composition provides outstanding UV stability, an extremely wide exposure latitude, low tack and clean printing.

For those seeking an alternative platemaking approach, AVCorr LDR is available in 32 Shore A and does not require UVC treatment due to the use of the AVEEnhance washout additive. This material is widely suited for multiple board types and plate thicknesses, with excellent UV stability and the exposure latitude to cover the most demanding combination of process and line work.



Capping Technology: AVCap

Capping technology allows for the use of a second layer of photopolymer on top of a soft or hard base photopolymer. In corrugated printing, capping not only increases the tonal range of the finished plate, it also reduces fluting to an extent that rivals or surpasses that of the leading "flat top dot" technologies in the industry. A&V offers a cap product, AV HD Cap, that offers highly tunable print performance benefits for multiwall and corrugated alike.

Multiwall Bag: AVBag

A high durometer, thin plate photopolymer is offered by A&V to serve the multiwall bag /paper sack printing segment. AVBag is a high resolution, 60 durometer product capable of 150 ls imaging, highly competitive against the premium analog sheet plates on the market today.

Sand Casting and Molding: AVSand and AVMaster

A&V also offers formulations to service several unique markets, such as bronze/sandcasting, architectural molding or signage production.

Both AVSand and AVMaster are durable, polyester-backed plates that provides excellent imaging characteristics and exceptional results due to its wide imaging latitude. When resistance to swelling is essential, you can count on AVSand to deliver.

Stamp Photopolymer: AVStamp

Rounding out the major segments of the AVantage product line is our stamp photopolymer, AVStamp. Where clarity and colorfastness are required, such as hobby and craft applications, AVStamp performs. AV Stamp produces an extremely colorfast stamp that is renowned for its high strength as well





	Market Segment	Color	Features	Gauge (inches)	Durometer	Tone Range
AVCorr NTR	Corrugated	Red	UV/Storage stable Highly resilient, clean running Extremely durable Excellent ink transfer GPX Finishing Required	.125 - .250	36 Shore A	3-95% 85 LPI
AVCorr LDR	Corrugated	Red	Wide imaging latitude Extremely durable No GPX finishing- used with AV Enhance	.125 - .250	32 Shore A	3-95% 65 LPI
AV Bag	Multi-wall Bag / Paper Sacks	Red	Extremely durable Excellent imaging, ink transfer Optional GPX finishing	.067 - .125	60 Shore A	3-95% 120 LPI
AV Cap	Capping Resin	Red	Improved tonal range Shaper text and fine lines	.004 - .007	70 Shore A	2-95% 133 LPI
AV Stamp	Hand Stamp	Water White	UV Stable Highly resistant to yellowing	.067 - .155	50 Shore A	N/A
AV Sand	Bronze / Sandcasting / Marking/ Molding	Red	Swell resistant Highly durable Low tack	.067 - .155	55 Shore A	2-90% 85 LPI
AV Master	Bronze / Sandcasting / Marking/ Molding	Clear	Excellent toughness	.067 - .185	80 Shore A	5-85% 85 LPI

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Table 1: Photopolymer Selection Guide

Washout Components

AVantage offers a complete set of washout chemistry to process any liquid polymer resin on the market. This chemistry is fully optimized for all AVantage products and provides crisp, clean images in combination with improved bath life and cleanliness. A three-component system is used; AV Ultrawash, AVE Developer, and AVE Defoamer. Formulation guidelines are available through the AVantage Technical Guide series. However, since washout quality and effectiveness are directly linked with incoming water quality at each customer location, AVantage Technical Service specialists and chemists work directly with each customer to maximize system performance.



To complete the plate processing optimization, AVE Salt is added to the post exposure bath to ensure thorough polymerization during this critical exposure step. AVE Salt enables better surface cure during the underwater post exposure step, which greatly enhances the results of the final light finishing step, where required.

Additionally, AVE Enhance is available as a washout additive to aid in reducing plate tack without the use of the final UVC finishing step, most particularly with the AVCorr LDR product.

Ancillary Materials

AVantage also offers a complete set of platemaking consumables used in the creation of your printing plate.

AVCov coverfilms are used during the platemaking process as a barrier between the liquid resin and film negative. These films are available in matte finishing, offering a matte surface that can alter the surface roughness of the finished printing plate as well as a clear finish, which offers greater imaging resolution in more demanding applications.

AVSub is a coated polyester backing used as the support layer for AVantage printing plates. Specifically designed for use with AVantage resins, AVSub offers a combination of high photopolymer adhesion and anti-halation properties to maximize detail-holding in the printing plate. AVSub comes in roll or sheet form, and maintain high flatness integrity that is necessary for optimal finished plate flatness and consistency.





	Description	Physical	Features
AV Ultrawash / AVE Washout	Surfactant	Amber Liquid	- Efficiently removes uncured resin from plate surface - Long bath life - Easily incorporates into batch or feed & bleed systems
AVE Developer	Developer	Clear, Pale Liquid	- Prevents resin redeposition on plate during washout - Conditions water to reduce hardness variation
AVE Defoamer	Defoamer	Milky White Liquid	- Reduces foam knock-down time and surface tension - Dramatic reduction in sludge formation
AVE Salt	Post-Exposure Salt	Solid, White Powder	- Ensures a fully cured, tack free printing plate - Oxygen scavenger
AVE Enhance	Washout Additive	Clear Liquid	- Additive for detack properties, utilized with AVCorr LDR - Easily incorporates into batch or feed & bleed systems
AVCOV Clear	Clear Coverfilm	70 Gauge BOPP	High optical clarity for optimum imaging
AVCOV Matte	Matte Coverfilm	70 Gauge BOPP	- Matte finish: easy release from resin during removal - Imparts surface texture to plate for improved solids
AVSub	Adhesive-Coated Substrate	4 and 7 mil	- Excellent adhesion for all plate types, including masked plates - Low yellowing

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Table 2: Ancillary Material Selection Guide

The use of liquid in-position plates can result in as much as 70% of the original cast polymer being reclaimed.

Equipment

With liquid photopolymer, you are the plate manufacturer, so accurate, dependable platemaking equipment is critical to plate quality. AVantage platemaking systems are ideally suited for the increasing quality demands placed on platemakers today. Full production systems, complete with exposure unit, reclaim system, washout system, post exposure, and light finisher, are available in sizes ranging from 30x40 all the way up to 52x80.





Figure 3: Liquid Exposure System

Liquid exposure systems take platemaking to the next level of efficiency.

Silver Film Alternatives: AVStar

Changes in the larger market for silver halide film affected the availability of film processors and film negatives, and in response A&V has developed various alternatives to film processing within our AVStar family. Each technology uses the powerful StudioRIP foundation and offers improved resolution capability and color-to-color registration compared to alternative options. AVStar eliminates the need for film processing chemicals while allowing for the continued use of film-based platemaking technologies.

For inkjet configurations, AVstar uses Mutoh imaging units with AVstar's bulk ink system with four proprietary ink bags and film.

For thermal configurations, AVStar offer Exile thermal film technology for an alternative method to negative production. Exile utilizes thermal imaging technology to produce film media with competitive quality to the inkjet technique.



For digital configurations, AVStar offers XSYS Thermoflex digital imaging units to ablate away the black mask paired with a high-quality thermal ablative Laserpoint film. This process is excellent for specialty applications with fine lines.

With multiple configurable workflows driven by the StudioRIP platform, AVstar adapts to your operation – whether focused on fine detail or high-speed output. It requires no harsh chemicals, and used consumables can be discarded with no special disposal costs. Each AVstar system is installed and optimized on-site by Anderson & Vreeland's Technology Team, who provide hands-on training and ongoing support.



Figure 4: AVstar

AVstar provides flexible film solutions for high-quality negative and positive output, offering an efficient analog replacement solution for corrugated, screen, and line work applications. The figure (above/below) shows the AVstar Inkjet Configuration for producing 1200 dpi and up to 100 line screen.

Quality

A&V's AVantage products are produced domestically in our Bryan, Ohio facility. This facility maintains a close relationship between the manufacturing staff and the AVantage polymer development and support teams to enable quick and consistent communication on market and customer needs. This communication enables rapid feedback, adaptation and responsiveness to our customers' needs as their environments and needs evolve.





Figure 5: AVantage Lab

Service & Support

The AVantage service and support team is the most critical element of AVantage. The team is comprised of specialists and chemists in liquid development, sales and support, with a majority having more than a decade of experience developing and working on liquid photopolymer technology. With this combined emphasis on service, development and sales support, one can expect a consultative relationship rather than merely a customer-supplier relationship; A&V strives to make our customers better.



Continuous Innovation

Driving the committed growth strategy for AVantage is innovation—and innovation is most valuable when it is guided by customer needs. The strength of the AVantage platform comes from our understanding of the full technology chain: how chemistry influences photopolymer imaging, how imaging shapes dots, lines and reverses, and how these marry with polymer properties to guide print performance. We continually evolve resin technology so that our customers can print better and better serve their customers with high-quality products. We are on the forefront of UV technology with critical knowledge and relationships to ensure a robust supply chain for our customers. We also manufacture consumables that enhance plate quality to deliver more consistent print quality and ensure efficient plate production. These are the kinds of customer-focused innovations the AVantage team will continue to deliver for years to come.

No system combines the specialized craft, technical depth, and practical printing experience than AVantage. Purpose-built around liquid technology and its core benefits to the flexographic industry, AVantage brings together A&V's proven proficiency and continuous innovation to meet the needs of today's market and anticipate the demands of tomorrow. AVantage: committed to liquid photopolymer technology and committed to our customers.

