V-Series
Best Practices

Version 1.0

Date: 2/18/2025

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Ink

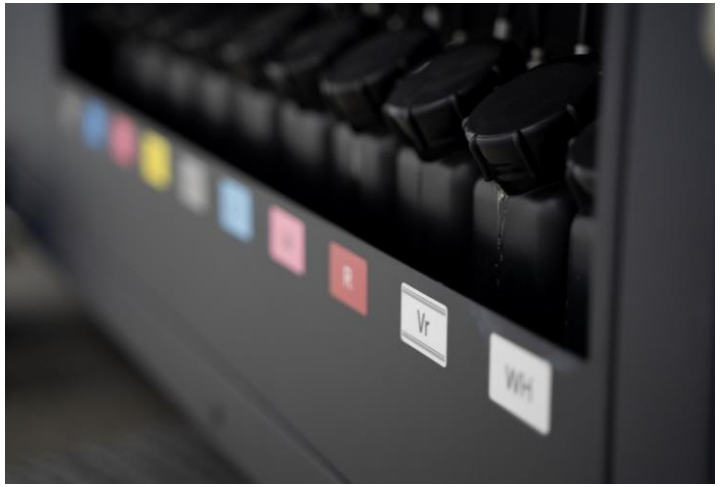
Ink Best Practices

UV Ink can be used to create a white base, color layered and covered with varnish. There are considerations to be had when using UV ink for different applications.

This section will cover those considerations, here are the high-level takeaways:

If media is likely to be bent or subjected to punch outs use less layers and less/no varnish to minimize ink distortion.

If media will be subject to contact and/or mild abrasion, use of varnish may help protect the ink.



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Application and Ink Considerations

Bending

Avoid varnish if your print will be bent or is flexible, varnish is less flexible than the other inks.

Cutting & Routing

Reduce layers, using no more than a single white, color, and varnish layer for best results. Alternatively, consider cutting the media prior to printing.

Porous

Porous media may absorb your first layer of ink, consider printing multiple white coats as a base for a more consistent white point/print surface.

Cleaning

Avoid Alcohol and Dry Scrubbing to prevent peeling or blemishing the printed product.

Scratches

Varnish will add a layer between the ink and foreign objects which can help protect the ink.

Dust

Varnish tends to show more dust, consider reducing the varnish coat percentage if print will be in dusty environment.

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Cutting & Routing

If your workflow will include any cutting, routing, or punching out of the print or pieces, test results show **keeping layers reduced** to a single white, single color, and single varnish layer **will produce the best results.**

Test Method Used : (Seiko Epson Corporation Evaluation)

Punch out the test pieces with a punch and check for cracks in the punched part

Test conditions:
Print Epson SC-V7000
Media PVC: Mactac IMAGIN JT 5829R / Film Lintec E1000ZC
Print density: Primary color 100%, secondary color 200% tertiary color 300%
Single layer color with white and varnish passes.
Multi-layer white and color leads to failures of Magenta, Black, Varnish, CM, CY, MY CMY

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Porous Media

Priming: Increasing layers

Porous medias causing issues are rare, however occasionally soft wood or absorbent materials may make their way into your workflow.

In the event of porous materials absorbing color or providing poor color outcomes you may consider increasing the number of white layers to create a nice white base to work off.

Alternatively adding more layers of color should produce more vibrant outcomes. The primary hurdle to clear is ensuring that the ink placed down exceeds what the media absorbs.

See troubleshooting section on poor color for more information.

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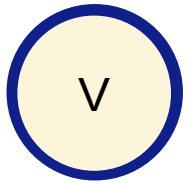
Cleaning Your Prints

- Clean prints with a damp cloth, using a dry cloth alone may cause scratching or peeling.
- If sanitation is required use a mild detergent at your own risk. We recommend testing the detergent, ink and media combo before cleaning is performed.
- Alcohol should not be used for cleaning, as peeling is very likely and the ink layer may peel off.

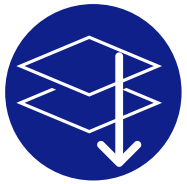
Test your cleaning method in a discrete area prior to applying fully.

Cleaning and Protection



Varnish Offers Protection

Varnish ink is more resistant to rubbing and scratching than color ink, so varnish coating improves scratch resistance.



Multiple Layers Offer Less Protection

Scratch resistance tend to deteriorate as the ink layer thickness increases.

Wet Friction is Safer Than Dry Friction

Wet friction causes less damage to the surface than dry friction.

Avoid Alcohol When Cleaning

If you wipe the printed materials with alcohol, the ink layer is significantly more likely to peel off.

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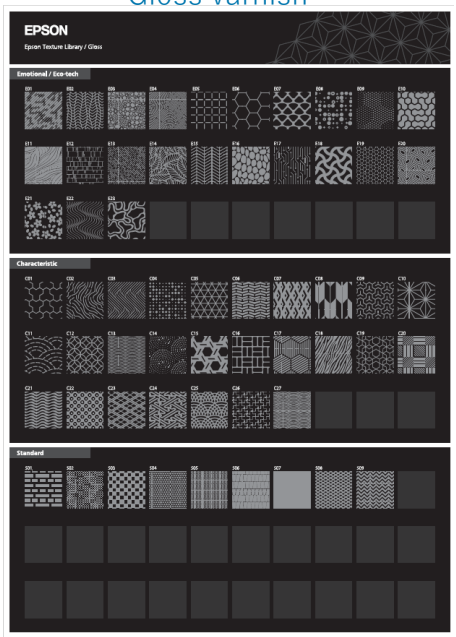
Application Versatility

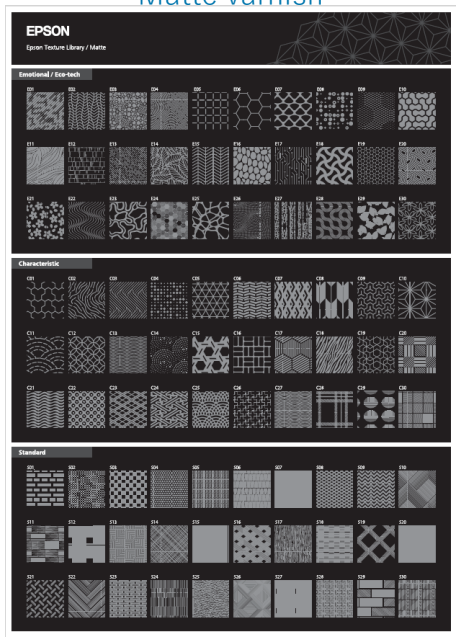
Print on a wide range of applications with unique effects

- Use opaque white ink to print on non-white objects or create prints with white-only images.
- Gloss and Matte varnish to create different effects
- All new **Epson Texture Media Library***
  - Easily print textures using the Epson Texture Media library in Adobe Illustrator. Add the Gloss and Matte libraries to your swatch palette to create stunning textured effects in your prints.

Gloss varnish



Matte varnish



*For complete compatibility the V-Series Printer in use must support gloss and matte varnish finishes. The V7000 only officially supports gloss curing of varnish.

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Varnish Considerations

V7000 Varnish

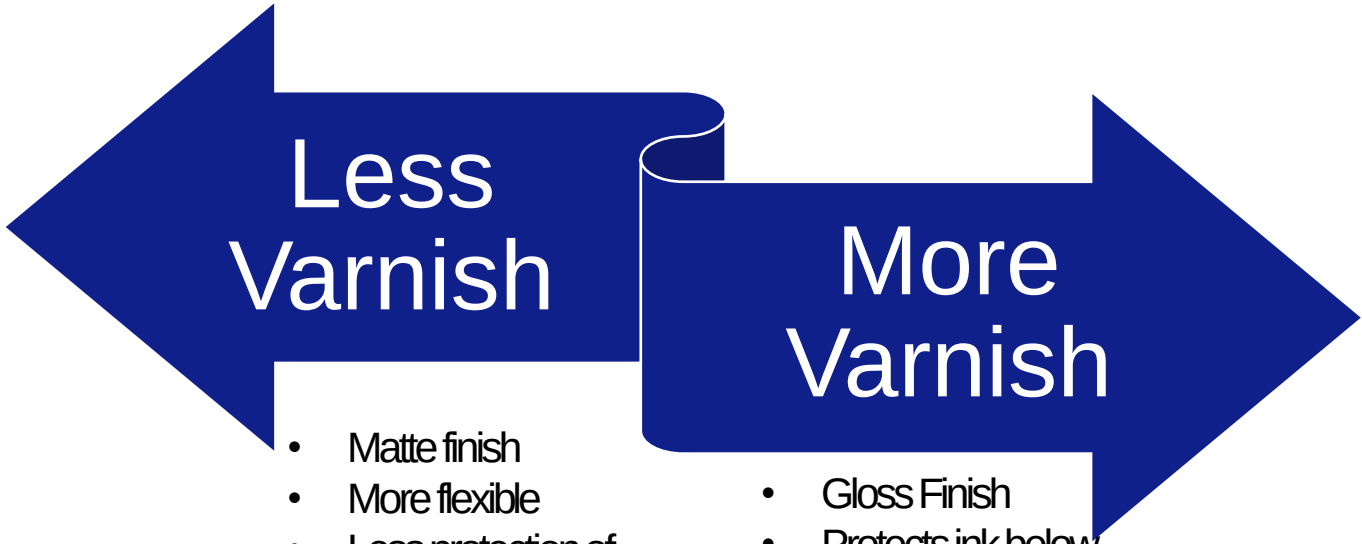
On the V7000, varnish can be cured with a gloss finish only. However, reducing the percentage of varnish can create a more matte look. On the V1070 and other models in the V-Series line up, the UV lights allow for curing the varnish with a glossy or matte finish.

Varnish offers benefits such as:

- Ability to create accents/Tactile look and feel
- Extra layer of protection for ink beneath
- Glossy look and appeal

Varnish comes with some tradeoffs:

- Varnish is less flexible than other inks and can be prone to chipping or failing if bent beyond 165 degrees.
- High varnish also tends to accentuate dust, making it more visible at a glance.
- A varnish layer of 20-30% will give more of a matte effect while also offering some benefits of Varnish



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Media

Media Best Practices

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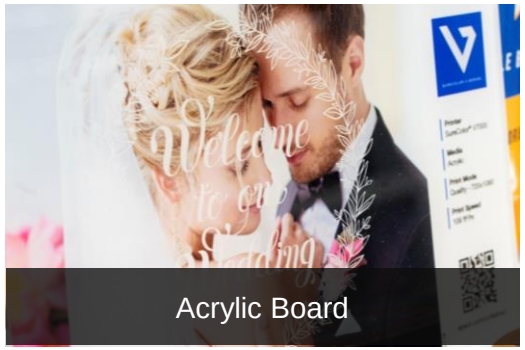
Media

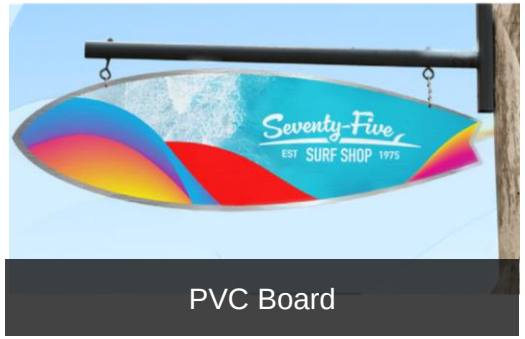
Easiest Medias to Use[1]

The Epson V-Series enables you to print on various substrates up to 3” thick on the V7000. Jigs, pre-treat, and other preparations can expand the media compatibility even further. There are many medias our users have had success with. Inclusion or exclusion of any media listed below is not a guarantee of performance or lack thereof. **The ease of use is informed by adhesion and observed performance under ISO 2409 of Cross Cut Tests** of medias referenced.

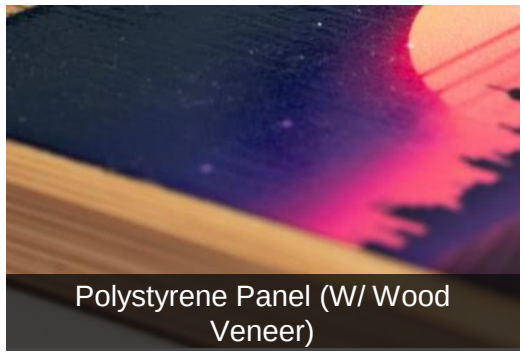
Polycarbonate Board


Acrylic Board

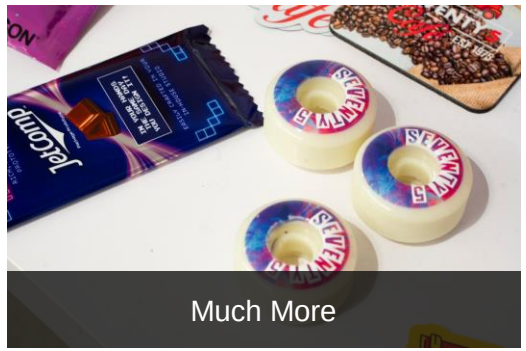
Pet Film



PVC Board


Polystyrene Panel (W/ Wood Veneer)

Corrugated Plastic


Much More

Polystyrene Panel (w/ Faced Paper)

1. The ease of use is informed by adhesion and observed performance under ISO 2409 of Cross Cut Tests of medias referenced.

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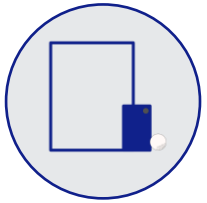
Media

Media Tips and Precautions

These substrates can be great but may require additional care.

- Prints well with precautions:
  - Polypropylene board (AKA Coroplast)
    - Freshness (Corona treatment becomes less effective with age)
    - Inconsistent manufacturing thickness/measuring points
- Buy Media Meant for digital UV Printing
- Adhesion Promoter can help with difficult media:
  - Aluminum Composite Board (Note: Adhesion Promoter Highly recommended)
- Jigs
  - See UV Printing Jigs for more info
- Absorbent Materials:
  - Porous or absorbent media, such as certain unfinished-porous woods, cork, may provide certain challenges or limitations.
  - Printing additional white base layers can help improve print quality by ensuring that the base layer is cured firmly atop of the material and providing a more consistent white point for the color ink (See Porous Media for more info).



Media

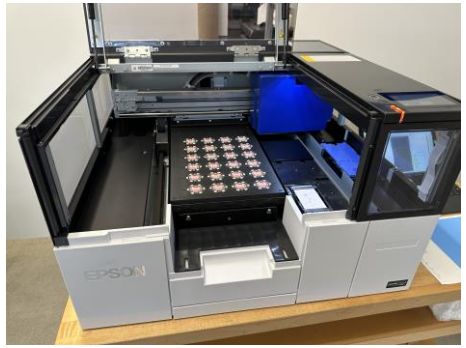
Media Handling

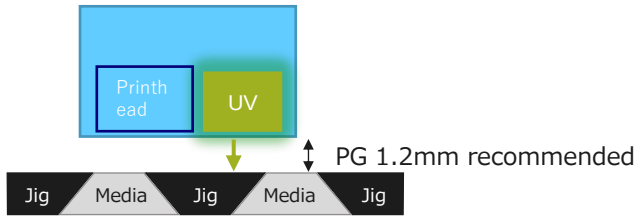
1. Wear gloves and handle with Care
2. Store properly
3. Do not get media wet
4. Ensure media is clean (denatured alcohol is good cleaning media **before** ink is applied)
5. Allow media to acclimate to print environment
6. Cover unused vacuum holes
7. Secure edges
8. Avoid bending media or using damaged and warped media
9. Cure completely
10. Keep climate clean and controlled
11. Avoid/mitigate static electricity
12. Measure your media each time, to account for variations from the factory or environment.

UV Printing Jigs

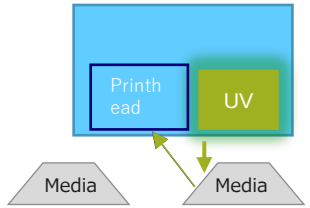
Why are they needed?

- **Prevents Damage to print head**
  - When using a jig, it prevents UV light from traveling too far, reducing the risk of the light reflecting and curing ink in the print heads.
- **Consistency and Precession**
  - Jigs ensure that each object is positioned consistently and accurately.
- **Reduce waste**
  - Accurate positioning helps avoid misprints and reduces waste of materials





Jig acts as a mask to prevent UV light from reflecting to the printhead.



Without a jig, UV light can reflect to the printhead and may damage the printhead.

* Please note that Epson does not supply jigs. However, customers can obtain jigs from local manufacturers or create their own. Epson can provide the registration hole measurements needed to make jigs.

Settings

Speed and Quality (V7000-White/Varnish/Color)

You know your customer best and can fine tune your speed settings to strike a balance between print quality, speed, and customer satisfaction. Some general guidelines to help get you started are provided here:

Speed Mode	Resolution	Ft^2/h	Boards per Hour	Minutes per/Board	Common Applications
High Speed	360x720	464	14.5	4	Point of Sale, Yard Signs, Quick/Short Term Signage
Speed	720x720	250	7.8	7.5	Point of Sale, Yard Signs, Quick/Short Term Signage
Production	720x720	165	5.2	11.5	Signage, Boards, Tactile, Promotional Goods
Quality	720x1080	113	3.5	17	Backlit Signage/Signage, Art/Photo, Tactile
High Quality	720x1440	52	1.6	37.5	High End Applied Art and Some Fine Art, Small Text/Fine Print, Tactile

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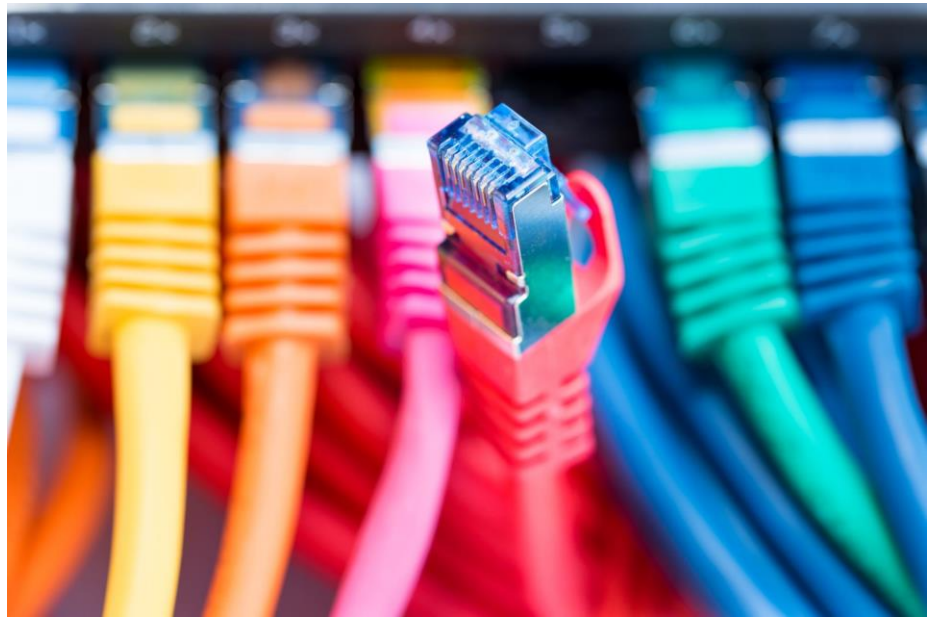
Settings

Network Considerations

- Use of a Static IP address is typically recommended to maintain communication/connection between the PC, Software, and Printer.
- Reserving the IP and proper dynamic IP settings should be implemented if required by your organization.
- Improper IP address and DNS management are frequent causes of connection issues. Please consult your IT or network specialists to ensure proper set up.



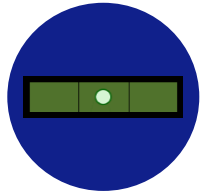
An Environment for Success

Ideal Temperature

An ideal temperature for the V7000 is between 68-77° F.

Ideal Humidity

An ideal humidity for consistent results is between 40-60%.

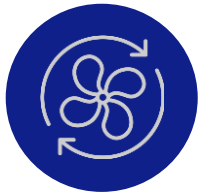


Stable and Level Foundation

Maintaining a stable and level foundation will aid in achieving consistent results time after time.

Cleanliness

Keeping your hands, media and print environment clean are all best practices to achieve consistent adhesion, quality, and performance.



Ventilation

Please refer to your specific model's ACH per Hour Recommendations.

Electrical

Ensure you have an adequate circuit for production. 200-240 single phase 3 wire, on minimum 40 amp breaker, connections hardwired into printer.

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1. The printer can operate between 59-86° F.
2. The printer can operate between 20-80% free from any condensation.

Print Environment

Maintaining Your Printing Environment

The Connection Between Consistency, Cleanliness, and Quality

Creating the optimal print environment for your V-Series is integral to maintaining consistent print quality.

Maintain a **temperature between 68F to 77F** for consistent print quality and adhesion, while maintaining **humidity between 40% - 60%** to help reduce static and keep consistent print quality and adhesion.

A level and stable floor or table will provide a reliable foundation for your flatbed or tabletop UV Printer, minimizing problematic vibrations and movement during printing

Maintaining a **clean environment** with minimal dust can help reduce environmental based print quality issues from occurring.

Gloves can assist in **preventing dirt, debris or human oils from transferring to your media** and causing inconsistency in the printing process and final output.

Using a **high percentage alcohol cleaner** on media can contribute to ensuring clean, consistent, output.

Print Environment

Maintaining Your Printing Environment

The Connection Between Consistency, Cleanliness, and Quality

Creating the optimal print environment for your V-Series is integral to maintaining consistent high-quality performance. There are four key components to an optimal print environment.

- Temperature (68F-77F)
- Humidity (40%-60%)
- Good Foundation (Stable and Level)
- Clean

Ideal vs Permitted Temperature and Humidity	
Spec	Ideal Specification
Humidity	40-60%
Temperature	68 F - 77 F

Why Should you care?

Printing outside specifications for temperature and humidity ranges can cause:

- Uneven curing
- Adhesion Issue
- Banding
    - UV Banding can occur with rapid temperature swings if environment is not controlled.
- Blurry prints from static.
- Electrical components, chillers, and media can also be affected by rapid temperature changes.

A foundation that is uneven or not level can cause:

- Blurring
- Head strikes
- Smudging
- Media Damage
- Excess noise
- Uneven wear

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Print Environment

Ventilation

Ventilation is important for UV printing and varies by model.

The SureColor V7000 must be placed in a room whose **ventilation system is capable of 3 to 5 ACH (air changes per hour).**

Refer to your specific model support documentation on ventilation recommendations and requirements.

Source:(https://files.support.epson.com/docid/cpd6/cpd65229.pdf)

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Print Quality Troubleshooting

Print Quality Troubleshooting

Print Quality Troubleshooting Guide


Blurry Print


Blurry (Left to Right)


Blurry (Sections)


Head Strikes


Overspray


Chipping


Adhesion


UV Banding

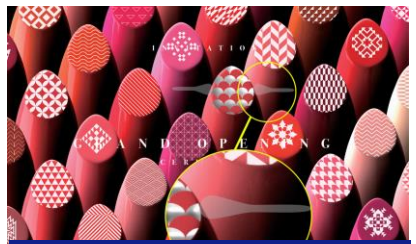

Banding

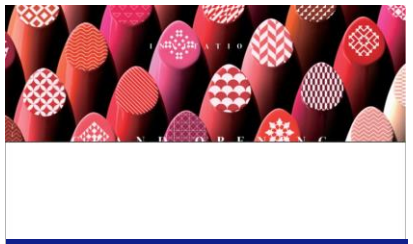

Wet

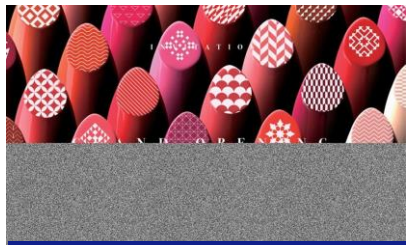

Sticky

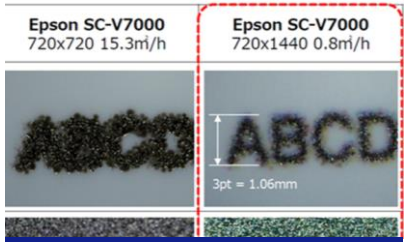

Finger Prints


Poor Color


Tactile Spread


Incomplete Job


Job Data Corruption



Fine Text

Click the thumbnail to jump to the corresponding section.

Blurry Print-Omnidirectional

Causes

- Head set too high
- Low quality images
- Poor quality media/absorbent media
    - EG: Styrofoam, Cardboard, Wood (Soft/Porous), Fabric
- If print is wet may be curing issues

Solutions

- Ensure proper head height
- Use a higher quality image
- Increase white base layers or use higher quality/alternative media
- If wet: see section on wet/curing issue

Effect: Print is blurry across entire job

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Blurry (Left to Right/Text)

Causes

- Head misalignment (bidirectional)
- Platen gap too high
- If confined to a corner, could be an unlevel bed

Solutions

- Run head alignments/bi-directional adjustment and head alignment.
- Print unidirectionally
- Platen gap. Measure media and set manually.
- Fine text print mode for white.
- Level bed

Effect: Blurry Image (Left to Right/Horizontal)

Blurry Sectional

Causes

- Leveling issues (bed) 4-Corner test.
- Especially if in corner
- Textured media (unevenly)- e.g. 5-10 mm diff in protrusions
- Bowed or uneven media (If measured at high point)
    - EG: Paneled door
- Uneven suction

Solutions

- Level bed
- Flatten or replace media
- Increase suction of vacuum bed/ensure suction is on.
- Cover all vacuum active holes to increase overall suction.

Effect: Blurry Sections (not affecting the whole image)

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Head Strikes

Causes

- Head too low
- Bowed uneven media. Run 4 corner media height test.
- Bed leveling (quadrant too high) – two tenths of a mm
- Measure at low point of media or uneven bed
- Heat from curing could bow certain media/plastics (1/4-inch acrylic)-make sure to cover all active holes in vacuum section that are not covered. (This is Important)

Solutions

- Increase suction (ensure vacuum quadrant open/closed properly)
- Remeasure media/Set head height
    - Raise head
- Level bed

Effect: Head strikes media causing print imperfections

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Overspray

Causes

- Head is set too high
- Rip/controller settings (incorrect measurements input)
- Environment
  - Lack of humidity
  - Static
- Hardware X/Y Coordinates unaligned

Solutions

- Verify media height and set manually.
- Adjust head height
- Correct coordinates/controller settings
- Introduce controls for environmental variables such as increasing humidity in dry area. Using anti static devices to remove static.
- Verify Adjustments color and same color.

Effect: Spray extends beyond intended print target

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Chipping

Causes

- Poor Cutter/Media Combo or dull blade
- Ink Density too high / tactile prints (building raised texture layers) at cut points.
- Media may have poor adhesion or if aged coating may have reduced efficacy
- UV Curing may be too high.
- Darker colors will cure quicker and lowering the UV Light intensity can resolve this.

Solutions

- Try a different cutter type or replace blade
    - Note: Cut media prior to see if media chips without ink
- Reduce layers
- Varnish chips faster than regular colors
- Use an adhesion promoter, newer media or a better media
- Decrease UV light intensity on Chiller.

Effect: When media is cut, chipping occurs along cut line

Adhesion

Causes

- Old Media or Media in Poor Storage Conditions
    - EG: Old corrugated plastic over time micropores from mechanical adhesion process can close or fill up
- Corona treatment expired
- Dirty media/not cleaning or prepping media
- Surface oil on some PVC
- Low surface tension or energy.

Solutions

- Clean media of dust, dirt, oil, etc.
- Use an adhesion promoter or pretreat
- Acrylic, aluminum, and plastic may benefit from corona treatment.
    - Plexiglass: Digital print media will have better tension post treatment
    - Aluminum: Use digital aluminum or prime aluminum with adhesion promoter.

Effect: Ink easily scratches or rubs off media

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UV Banding

Causes

- Media type/quality
- Head not aligned
- Printing out of spec

Solutions

- Increase white layer and adhesion
- Use better media
- Ensure alignments are proper (step adjustment)
- Ensure printing is within spec
- Print light white or varnish layer under image to change surface.

Effect: Banding that presents as a “lawnmower” effect

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Banding (White Gap or Dark Overlay)

Causes

- White Gap is typically caused by a missing nozzle (Image Left Side)
- Dark Overlay is usually caused by the ink overlaying due to media feeding too slow or the head not being aligned (Image Right Side). Head Vertical adjustment for SC-V7000.

Solutions

- Perform a head cleaning/Nozzle check
- Perform a head alignment (On flatbeds media feed does not apply).
- Perform Head Vertical adjustment for dark overlap or white overlap if all nozzles are present on the SC-V7000

Effect: Banding that presents as a white or dark line

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Wet (Not Cured)

Causes

- Curing is not being performed effectively
- Chiller error (E3-E1-E2)
- Low Coolant (E3) Error
- Cold Coolant low flow (E3) Error
- Lamp issues

Solutions

- If “wet” effect appears minor, turning on after cure mode may solve the issue. Slight tacky ink may be possible fist day of installation.
- Call support for chiller or lamp issues
    - Chiller: Check for chiller screen error
    - No Chiller Error: Lamp adjustment or maintenance may be needed.

Effect: Ink is wet

Overly Sticky Feel

Causes

- Dirty curing lamps
- Chiller or lamp issues
- After an install or service event the first few prints may have cleaning fluid and appear sticky as a result.

Solutions

- Clean the UV lamps if needed
- Turn on after cure mode may solve the issue.
- Call support for chiller or lamp issues
    - Chiller: Check for chiller screen error
    - No Chiller Error: lamp adjustment or maintenance may be needed
- Time will typically allow for the ink to solidify and reduce the “sticky” feeling on touch
- Verify percentage of UV intensity on the Chiller. Change the percentage of power may help.

Effect: Print job feels very sticky to touch

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Finger Prints

Causes

- Unclean media/dirty hands touch media leaving finger prints behind
- Human oil/grease from fingers onto media could cause issues
- Note: Most commonly this can be observed from the rear of a clear substrate like acrylic but can also show on the front side of prints

Solutions

- Clean hands or handle media with gloves, especially media prone to finger prints showing through
- Clean media before printing/if handled by dirty hands

Effect: Finger Prints appear on print job

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Poor Color

Causes

- Wrong quality selection
- Missing nozzles
- Bad color management or job build issues
- Corrupt file
- Media too absorbent
- Wrong profile being used
- Non-standard/unoptimized rips

Solutions

- Ensure you are using the correct profiles for your printer and when building your jobs
- Lay down extra white layers on porous or poor performing media
- Use a different media
- Perform a head cleaning/nozzle check
- Use the included RIP to help rule out software issues
- Change Print Quality setting to a higher setting. Increase color density.

Effect: Color appears washed or incorrect

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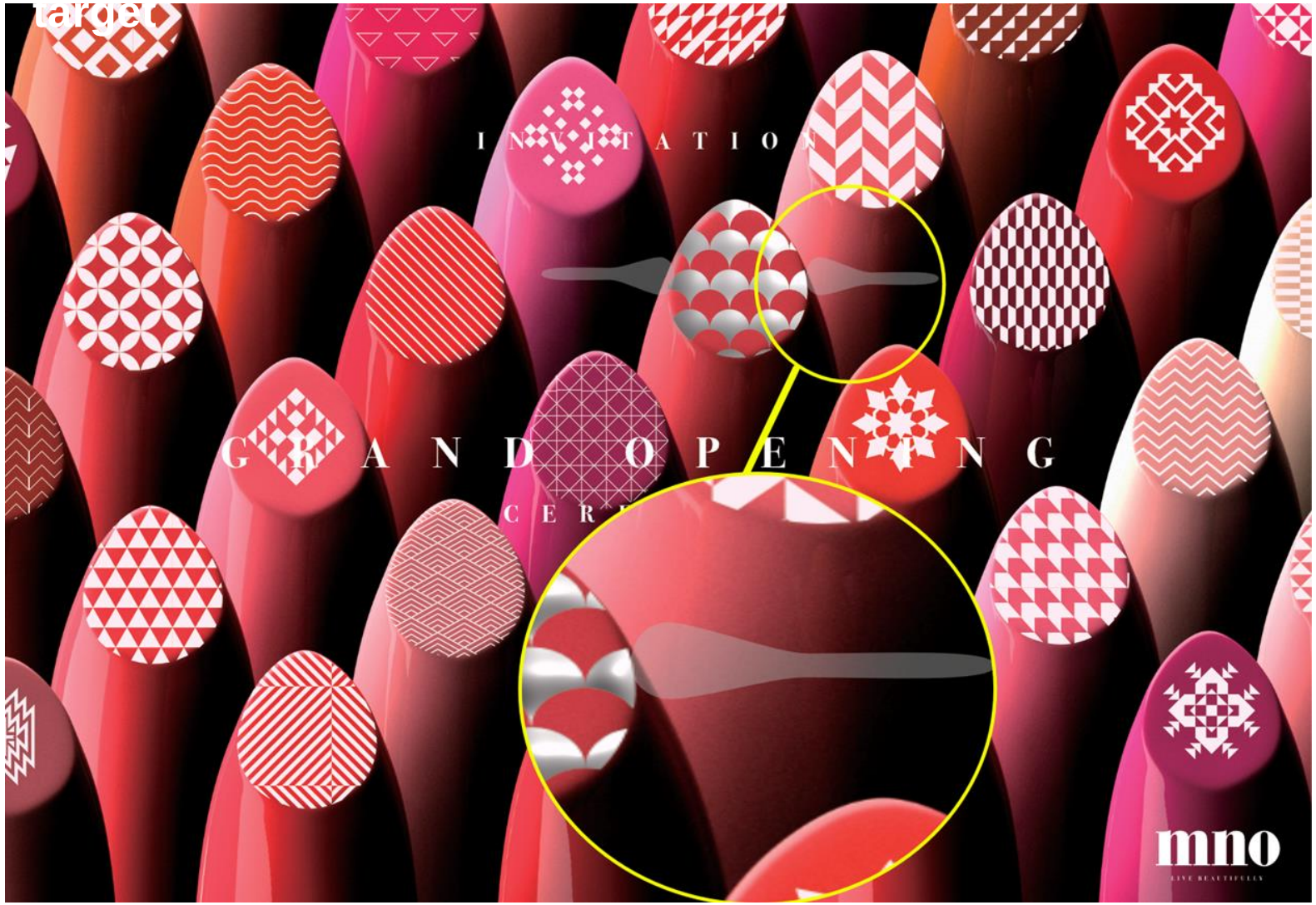
Causes

- Too much ink density may cause varnish or ink to spread past the target.
- Too many ink layers may cause white or Varnish to spread.

Solutions

- Adjust the head height between passes or send the job in stages to allow for the print head to be adjusted for the additional height
- Use less layers/find the maximum number of layers for your application.
- Decrease amount or density of Varnish. Recommend to start at 65% Varnish and increase as needed.

Effect: Tactile print spreads or overspray's past intended target



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Incomplete Job

Causes

- Issue could be caused by network or security settings
- Could be an issue with your RIP
- Possible corrupted file during network transfer.

Solutions

- Check with RIP developer for documentation/help
- Ensure needed Firewall Ports are open
- Double check network settings confirm with your organization and general best practices
- Ensure Windows has allowed application to receive data from network. No firewall.
- Bad network/USB cable, router or switch.

Effect: Job does complete (Partial Print)

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Corrupt File Data

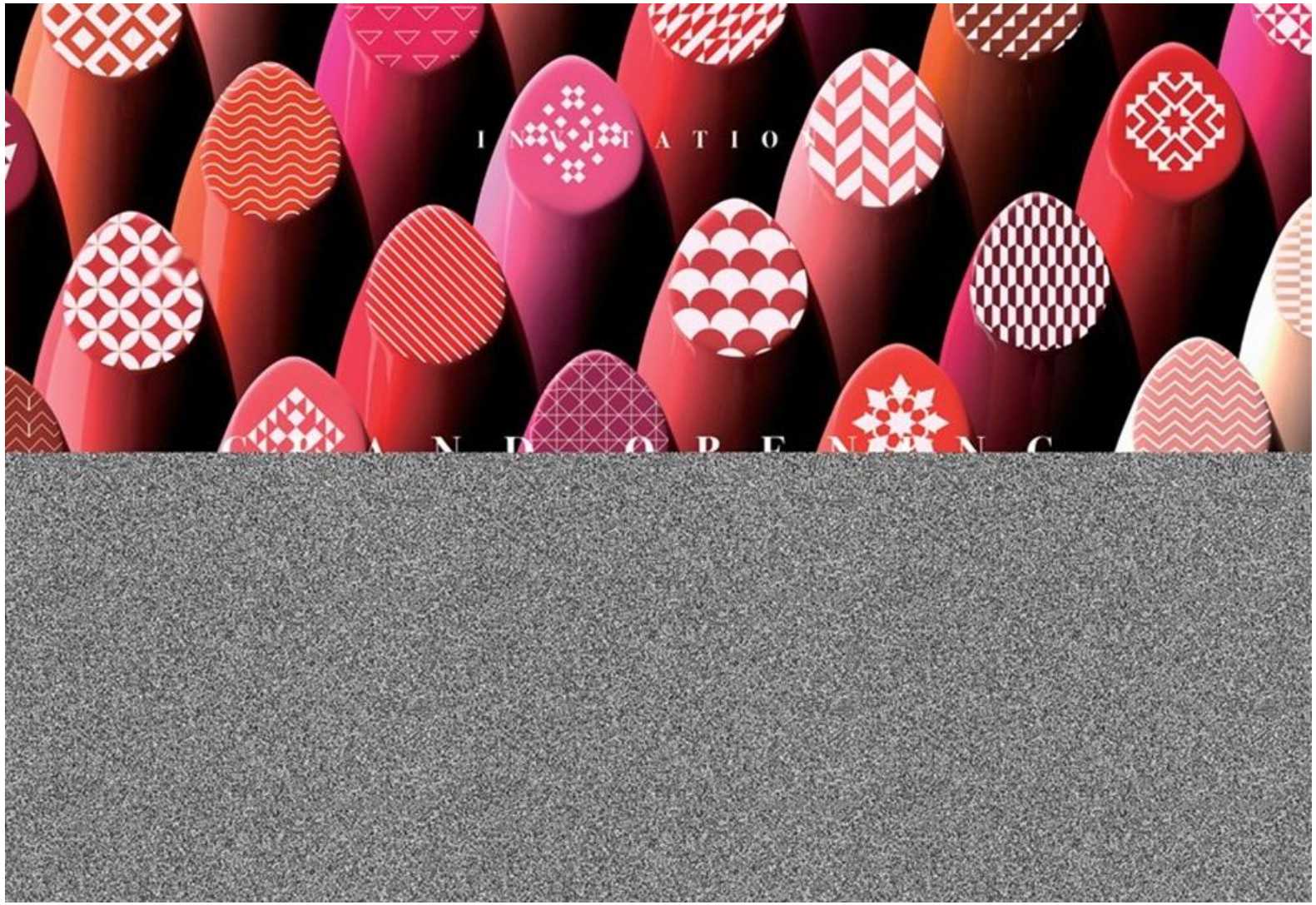
Causes

- Corrupt File
- Data transfer Issue

Solutions

- Try again
- Reproduce export file
- Verify network integrity.
- Verify cables and connections.

Effect: Portion of print does not print correctly, presents as static



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Causes

- Small text paired with a low input resolution
- Bidirectional print mode or misalignment can reduce text clarity
- Bi-Directional adjustment head left and right adjustment.
- Same color and color adjustments.

Solutions

- Use the “Fine Mode”
- Ensure source file is high quality
- Try printing unidirectionally to verify if problem is bi-directional or Head Left or Right adjustment.
- Possible static issue.
- Run adjustments.

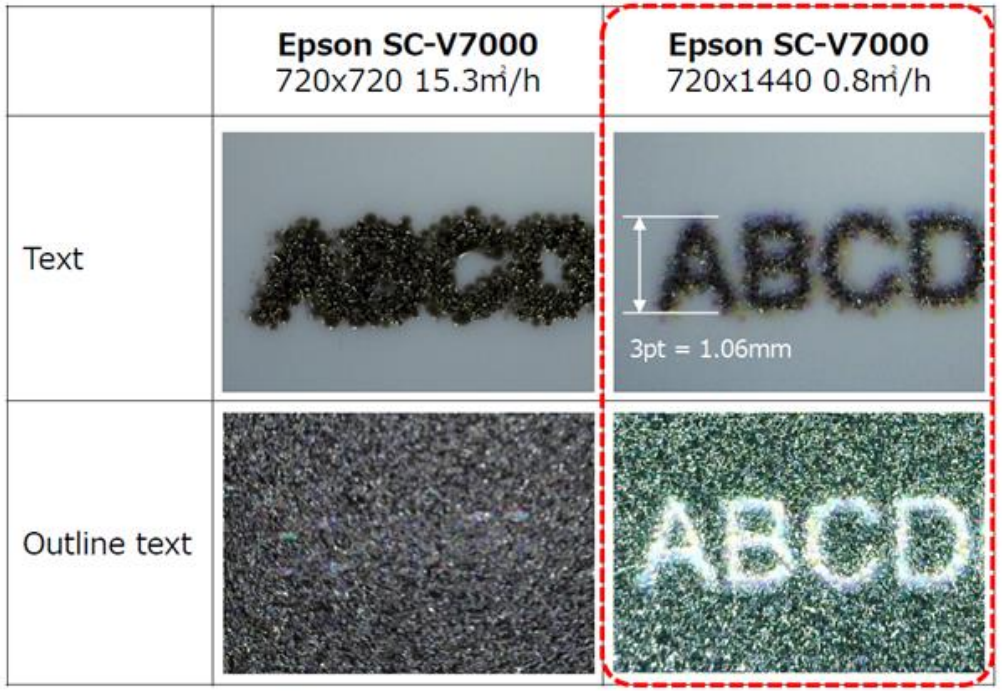
Effect: Portion of print does not print correctly, presents as static

Fine mode

Provides better line accuracy by adding newly fine mode.

<Improvements>

- Tuned CR speed to improve droplet size landing accuracy.
- Tuned minimum droplet size to improve line accuracy.



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Support Avenues

1. Contact your dealer or vendor first especially if 3rd party equipment is involved. E.G. (Media, Cutters, 3rd Party RIPs)

2. Contact Epson Support at (888) 668-3266 for Hardware and Repair Needs

3. Additional support resources can be found at Epson.com, where you can also email Epson support or verify your warranty.

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Maintenance

V-Series Maintenance

For the V7000 maintenance is vital to ensuring a consistent experience print after print. Many of the practices are quick and easy, and become a habit for many print operators regardless of print technology.

Actions like nozzle checks or light dusting are a few recommendations that fall in this category but in order to make your experience easier we created a helpful guide to maintaining your printer!

EPSON®

MAINTENANCE SCHEDULE

SureColor® V7000

Visit our video library at epson.com/support

	Daily/Weekly (When in Operation)	Monthly	6 Months	12 Months	Long-Term Storage (More Than 45-Day Idle Period)
Empty Waste Tank	■				
Nozzle Check	■				
Printhead Cleaning Cycles	■				
Clean the Table and Carriage	■				
UV Lamps Cleaning		■			
Ionizer Cleaning		■			
Conveyors Cleaning		■			
Chiller Unit Filter Cleaning		■			
Chiller Liquid Top Off			■		
Annual Preventative Maintenance Call				■	
Contact Service Provider (See Page 6 for more details)					■

For additional product support, visit epson.com/support

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Maintenance

Daily, Weekly, Monthly

SureColor V7000 Maintenance

Daily/Weekly (When in Operation)

15 Minutes

Why

UltraChrome® UV Ink is very stable and clogs are unlikely, however its a good practice before running a large job or operating for the day to perform a nozzle check to ensure the printhead is healthy and nozzles are clear. It's normal for nozzle loss to occur after a long idle period. The recommended daily maintenance helps ensure a healthy printhead by verifying nozzle checks and by running a normal cleaning to remove any particles or air that may have gotten into the system.

Process

Empty Waste Tank

Empty the waste tank to prevent overflow and ink spillage on the floor. Dispose of ink according to local laws and regulations.

Clean the platen and around the carriage and print head to prevent buildup over time. This can cause media to not lie flat and prevent complete suction of media to platen.

Print a Nozzle Check and Repeat Selective Cleanings, as Required Place a sheet of white paper and/or clear film on the bottom left corner of the platen, turn the vacuum on and complete a print setting. Print a Nozzle Check. Review the nozzle pattern for missing or deflected segments and run cleanings, as required.

Required Items

A dry lint free cloth to clean the print heads. A dry lint free cloth to clean the platen and remove the Printed nozzle pattern will require a sheet of white coated paper, general vinyl, or clear film. NOTE: Varnish/White is difficult to see on White Media. Clear substrate is the best to see Varnish and White nozzle checks. Scraper to remove dried ink from Platen.

Ink used for proper printer maintenance Labor Items needed

For additional product support, visit epson.com/support

SureColor V7000 Maintenance

Monthly

5-10 Minutes

Why

In order to maintain healthy UV lamps and Ionizers, the UV lamps and Ionizers will need to be cleaned. If UV lamps are not cleaned proper curing may not occur. Unclean Ionizers could lead to static build up during printing. Which could cause overspray. Both would diminish image quality.

Process

UV Lamp Cleaning
Review the video on Epson's support site for detailed instructions on proper UV Lamp cleaning procedures. Start cleaning by running a normal cleaning for nozzles. Once the head has moved to the highest position you will be able to clean the UV lamps. Start with dry cloth and wipe away any loose cured ink. Move to a plastic scrapper to remove any stubborn ink that has adhered to the UV lamp glass.

Ionizers
Once you have completed the UV Lamp cleaning look to the left and right inside of the lamps. You will see a white bar with bumps evenly spaced on it. Take the cloth and wipe off any mist or dried UV ink. It is important to remove all ink as it can degrade the effectiveness of the Ionizers.

Conveyors
Wipe down conveyors with a dry cloth to remove excess oil, dust, and debris. Helps to maintain easy movement of the carriage assembly.

Chiller filter
Go to the chiller and on the right side remove the filter assembly, remove dust and clean this allows the chiller to operate efficiently to cool the chiller fluid.

Required Items

Multiple Cleaning Cloth, Plastic Scrapper

Ink used for proper printer maintenance Labor Items needed

For additional product support, visit epson.com/support

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SureColor V7000 Maintenance

6 Month

5 Minutes

Why

6 month maintenance prevents issues with chiller. Coolant can evaporate over time and cause fluid levels to drop. This can impact printing function. Topping off the chiller fluid lever maintenance operational status of the printer.

Process

Verify the level of coolant in the chiller. With the printer turned off, go to the chiller and look at the lever of the fluid. If the fluid is below the required level line add fluid until the required level is reached.

Required Items

Coolant

Labor Items needed

For additional product support, visit epson.com/support

SureColor V7000 Maintenance

Annual & As Needed Maintenance

5-10 Minutes

Why

As-needed maintenance procedures are based on actual usage (UV print volume). 12 Month PM helps to maintain optimal performance of the V7000 by replacing parts that are coming to end of life.

Process

Clean Around the Printhead
Media fibers and ink can build up on the edges of the printhead. If left unattended over a long period of time, it can impact the nozzles and print heads causing image quality to degrade. Complete a cleaning and clean around the print heads and the surface of the head

Empty the waste ink bottle.
The ink bottle is located under the carriage unit. Please close the UV Ink drain valve and remove the bottle. Dispose of the ink in accordance with local laws and regulations.

Platen and HDD Cleanings
Clean Platen and verify hard drive space on V7000 Computer.

Annual PM
Call in for 12 Month PM. Performed by qualified Epson Service Technicians.

Required Items

Lint Free cleaning cloth, plastic scraper.

Call in for 12 Month PM Parts will be included in 12 Month PM.

Labor Items needed

For additional product support, visit epson.com/support

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Maintenance

Long Term Storage

Inactivity/Long Term storage

Before turning off the printer ensure

- Correct storage of the head
  - Ensure the carriage is positioned at the ink receiver before storing the printer. Turn the printer on and off to position the carriage correctly if needed.
- Every Ten Days
  - Power on the machine to:
    - Perform a head cleaning
    - Allow the white ink to circulate
- Before resuming use
  - Run nozzle check/cleaning

If you plan to leave the printer unused for over 45 days, contact your local dealer or Epson support.

1. Close the "UV Flatbed Controller" app on the printer's PC.
2. Press the "Stop" button on the front of the printer to put it in stand-by mode.
3. Open the cover of the printer's carriage to get access to the ink sub tanks and valves.
4. Use the valve tool to close all ink channels by turning the valves clockwise from the 3 o'clock position (valve open) to the 5 o'clock position (valve closed).
5. After closing all valves, turn off the printer's main power switch.

The Sure Color V7000 can now stay powered off for an extended time.

High Level Software Topics

Edge RIP

- Use a Static IP
- Toggle Operator Mode to on to reflect how the job is sent to the UV Controller
- The V-Series is not roll fed, the working space is fixed to the bed size
- Workaround for Tiling Jobs: Tile in your design software or use the cropping tool in Edge

PORT

- Use a Static IP
- Registration Email
- Understand Benefits
- Naming convention
- Agents and Ports
- Moving Printer to new Account

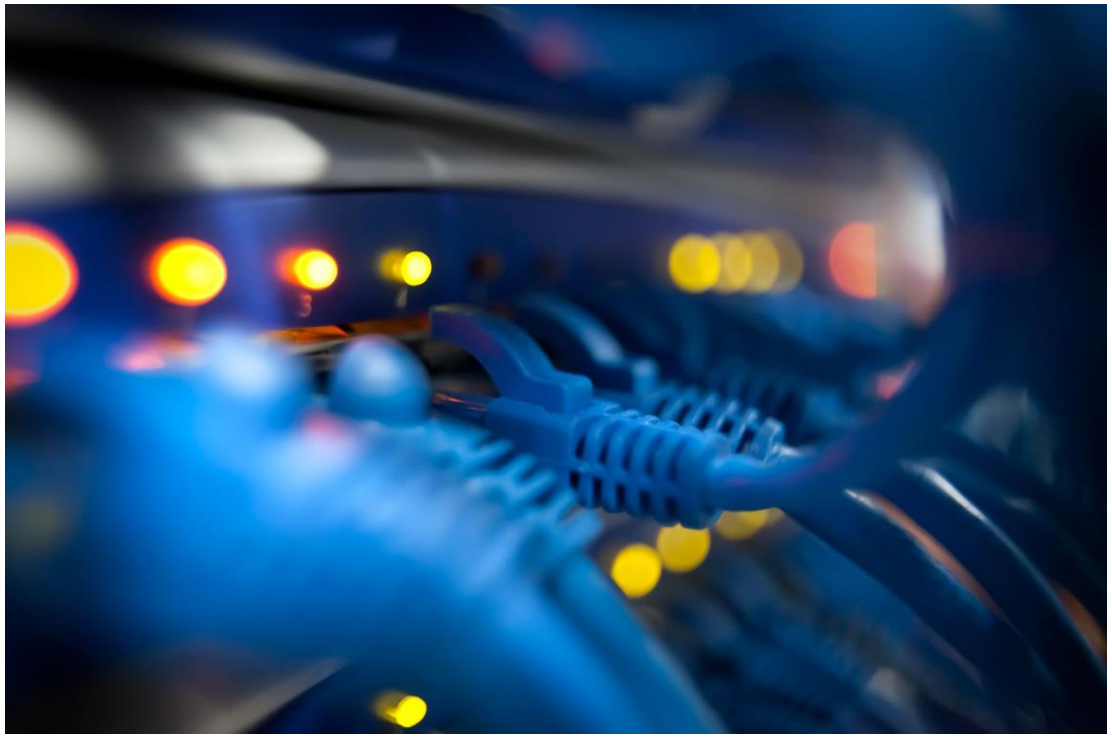
UV Controller

- Follow Correct Shutdown Procedure (Shutdown Software prior to Hardware to prevent data corruption)
- Use quick connections like USB 3.0
- Perform a platen gap measurement prior to printing, even if the same sheet type

Software

Network Considerations

- Use of a Static or Reserved IP address is required to maintain communication/connection between the PC, Software, and Printer.
- Reserving the IP and proper dynamic IP settings should be implemented if required by your organization.
- Ports required for our software vary, and the support documentation can provide you with detailed information on what ports should be opened, their purposes, and direction(s) of traffic.



Software

RIP and UV Controller

What is a RIP?

RIP stands for raster imaging processor. The RIP's main purpose is to take art files and translate them to a printer's language.

Epson Edge Print

The V7000 comes bundled with the Epson Edge Print RIP. Epson Edge Print has the capability to create layouts, resize prints, nest prints together, as well as creating white and varnish layers within the software. Within Epson Edge Print, the operator can create Quick Sets to allow similar job setups to perform in the same manner to create consistent repeatable processes.

UV Controller

The UV Controller is comparable to a Large Format Printer's control panel but with more capabilities. Within the software, operators can measure the thickness of materials, the placement of the print on the flatbed, which layer order they would like to print, and even which layer to print. This gives full control of the output to the operator with ease.

Third Party RIPs

Compatibility

Epson V-Series works with many RIP solutions.
Check with your RIP manufacture on compatibility.

Support

Epson Edge RIP is the Epson Supported RIP for the V7000, other software RIP supplied by your dealer or used by customer preference, will be supported by the RIP manufacturer or dealer.

Software

UV Controller, Edge Print, and Epson Edge Dashboard

Should I Install the UV Controller and Edge Print on the same machine or separate?

A case could be made for either separating the software applications or installing them on the same device.

Same PCs

- Easier to troubleshoot and work between software
- Not network dependent/can work in network outage with a hot folder.
- Requires much more powerful hardware

Separate PCs

- Two PC’s allows for production and workflow to be managed independently.
- Requires less power per PC (Must still meet minimum requirements)
- If you tie the RIP to the flatbed PC, then others will have to come to the flatbed to process their jobs for their printers. Meanwhile someone else is trying to use the controller to set up layering.

UV Controller Best Practices

Correctly Shutdown

- Shutdown Software prior to Hardware
- Following this order will help prevent data corruption

Connections

- Use a static IP
- Requires USB 3.0 for adequate data transfer
- Slower cables and technologies can result in slower print and processing time

Measure Every Time

- Always perform a platen gap prior to printing, even if the same sheet type to ensure the best performance and results.
- Substrates even from the same set can have tolerances in production that affect the width from sheet to sheet

Remember Controls

- Edge Rip Controls the Files, UV Controller controls the machine

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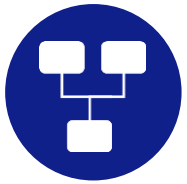
Edge RIP Best Practices

View Mode

- Toggle Operator Mode to on to reflect how the job is sent to the UV Controller



Connections

- Use a Static IP

Work Space

- The V-Series is not roll fed, the working space is fixed to the bed size.
- Workaround for Tiling Jobs: Tile in your design software or use the cropping tool in Edge

Remember Controls

- Edge Rip Controls the Files, UV Controller controls the machine

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Software

Edge Print System Specs

Why it matters? In certain situations, we have seen pc upgrades take full board rips from nearly 10 minutes to under 1 minute. We strongly recommend adequate hardware for processing large jobs.

2 Software Programs, 2 PCs

Why we recommend two devices?

The official recommendation is for one PC for Edge Print and one PC for the UV controller, to prevent the applications competing for resources.

Some arguments could be made for a single PC to host both applications, but you should strive for specs that exceed the recommendations for a single software.

Epson Edge Print Requirements

Spec	Recommended	Minimum
Operating System	Windows 10 or 11	
Processor	12th Gen i7 or Equivalent	If older generation min i7
Ram	16 GB	8 GB
SSD/HDD	1 TB	512 GB
Connectivity	USB 3.0 or 1000 Base T Ethernet	USB 3.0 or 1000 Base T Ethernet

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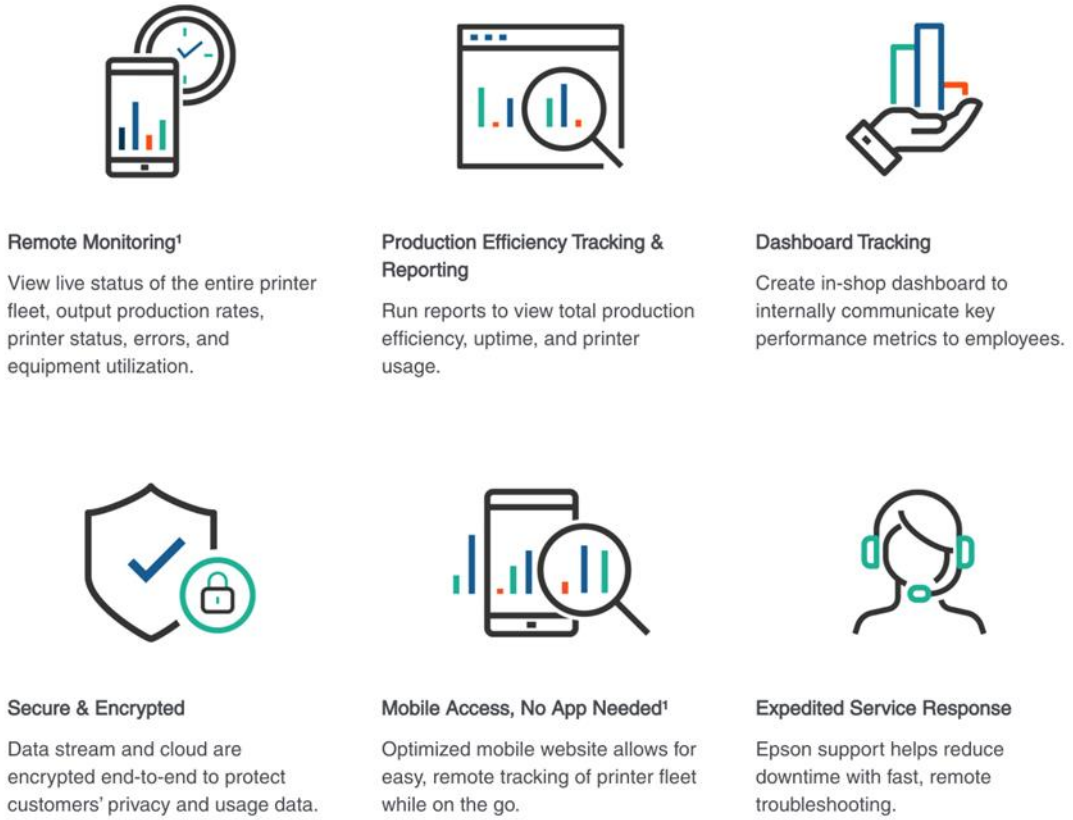
Epson Cloud Solution PORT

PORT

Ensure the end user is aware of how to:

- Track their production
- Track their costs
- Access their devices via remote monitoring/mobile devices
- The service and support benefits of using Epson Cloud Solution PORT.



[1] All features of this system require an active internet connection and use of a supported browser.

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Software

Cloud Solution PORT-Agents

Agents

- Some models require a DC Agent (data collection agent).
  - **V7000 requires a unique dedicated agent specific to the V7000**
- Some models require embedded reporting using our ES Agent.
  - V1070
- DCA models are not compatible with embedded reporting methods, and embedded supported models are not supported using the DCA method.

DC Agent Recommendation

- We recommend installing the DC Agent on a server or desktop, as the DC Agent must be on and communicating with the printer to maintain up to date information and data.
- 50 Printers maximum per DCA

Common Install Options (DCA)

- Central Server with one DCA
  - Requires connectivity from local server to remote sites
- Local workstation install
  - one per site

- Ports for PORT
  - Additionally, these are the ports required for Epson PORT. Also attached it our security guidelines.
- For the DCA only 161 and 3289 are required, while the embedded agent adds a need for port 443 (all outbound).
- See below:

Network Protocol

The DC Agent for ECSP collects device data by using the following network protocols and ports.

See Appendix for all network protocols and ports used by the DC Agent for ECSP.

DC Agent for ECSP

Protocol	Port	IN/OUT	Explanation
SNMP(UDP)	161	OUT	Collects data from the network-connected devices.
ENPC(UDP)	3289	OUT	Epson's proprietary printer control protocol.

*Ports used by the printer drivers are not mentioned.

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Port media cost

Port Media Cost workaround

In port can not add media info for the V7000, but you can export an excel and if using the correct workflow calculate your costs using naming convention.

If you use a naming conventions such as:
FileName_JobID_MaterialType_QTY_of_Material

You can calculate material costs through manual calculations or automated spreadsheet functions.

Some users use a material Item number or sku, in place of a material type.

EG:

FunGolf_19857_GolfBalls_36

FunGolf_19857_1230_36

FunGolf_19857_60713_3

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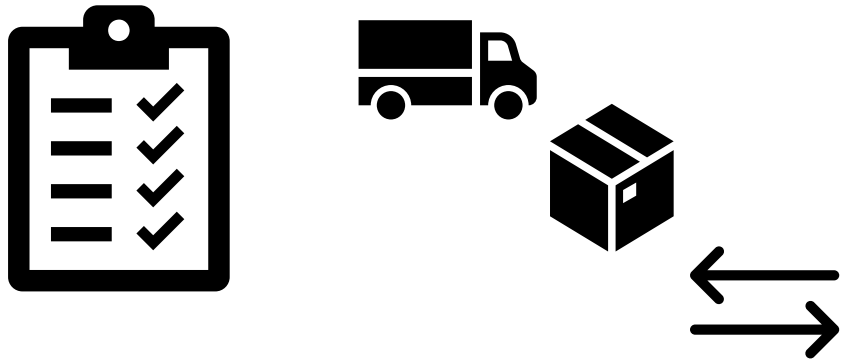
PORT Registration and Transfer

Printer Move, Remove, Transfer



- If you are moving the V-Series or Transferring the device you should unregister the device, so it can be newly registered to the new site.
- Delete the DC Agent so it does not re-establish a connection
- Delete the device from PORT
  - If the device was not deleted you need to contact Epson to remove the device/free up the device to be added to a new PORT account

Registration Email

- Use a common/accessible email, such as a help desk or dedicated email so support/access is not removed with a specific user
- It can be helpful to use a password manager to remember your credentials.
  - Note: Use password storage and policies that align with your organizations best practices.

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Spot Color Creation

Spot Color Creation

How to create:

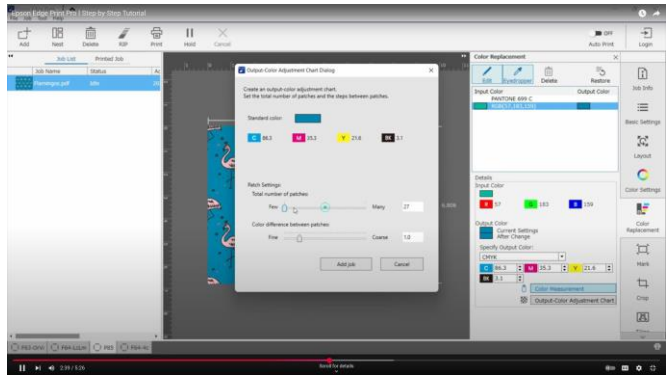
Option 1. Use Epson Edge Print

Easy to create, but you cannot make detailed designs.

Option 2. Use Illustrator or Photoshop

You can make more flexible designs.

For a Video Example/Guide on Epson Edge Print Pro: Click Here



Spot Color Creation

Spot Color Creation – Edge Print

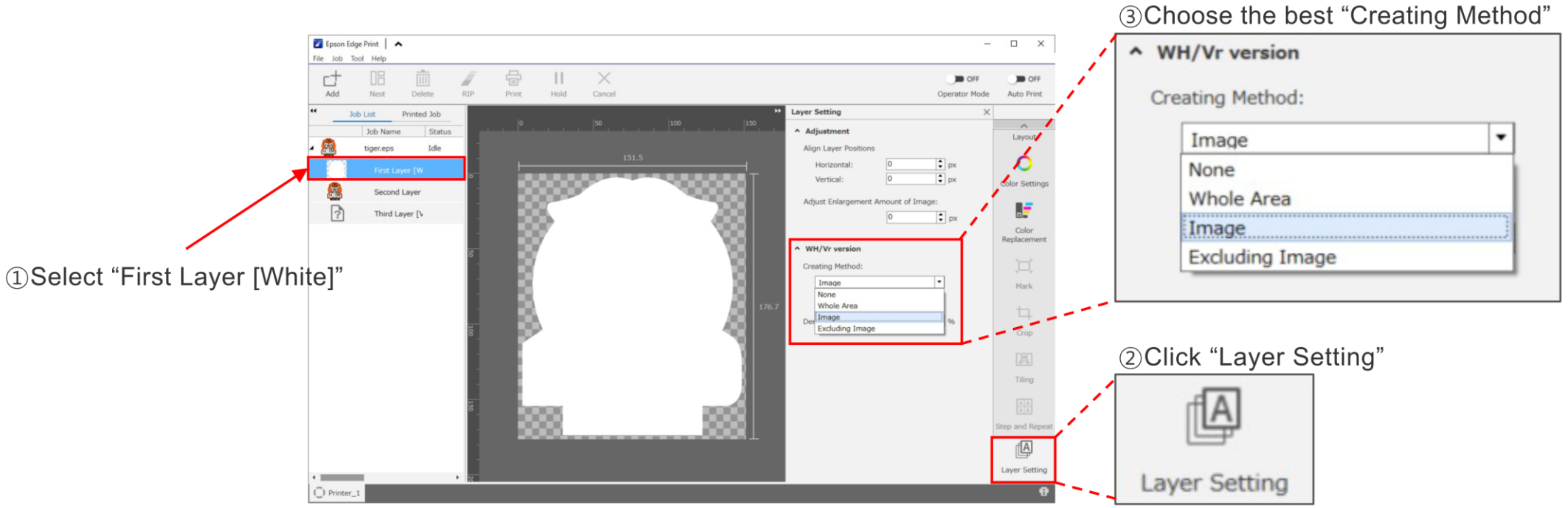
White layer Color layer

Epson Edge Print

Step1: Select the “First Layer [White]”

Step2: Choose the Creating Method. Spot layer created automatically.

e.g. In case of white and color layer print image.



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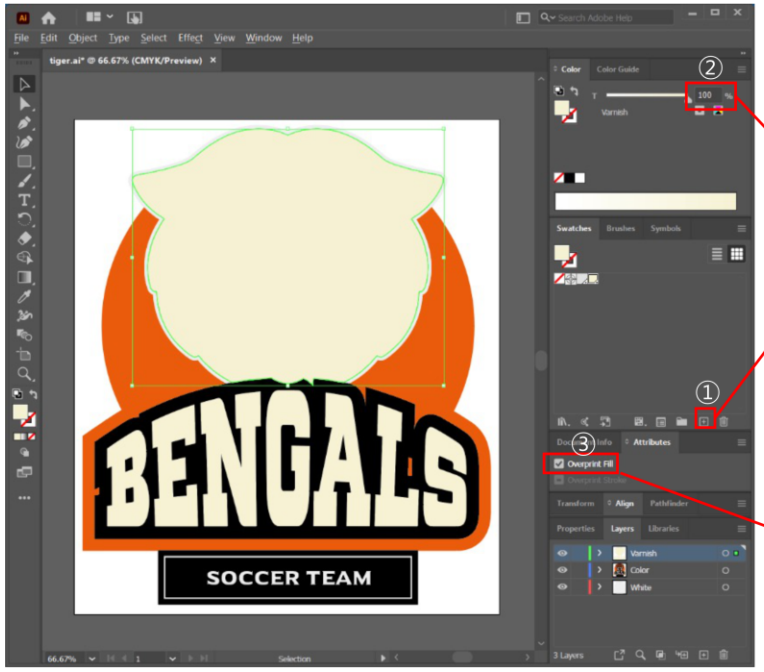
Spot Color Creation

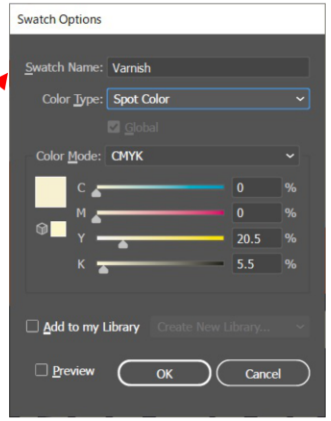
Spot Color Creation - Illustrator

Illustrator

Step1: Create a new swatch.

Step2: Set the appropriate density depending on the print mode resolution.

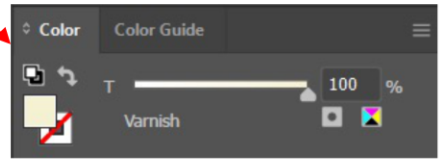




①Create a new swatch

Swatch Name; [Varnish] or [White]
*First letter “V” or “W” is capital letter and others are small letter.
*The object which is created by [Varnish] or [White] swatches are converted automatically when the data is loaded to Epson Edge Print.

Color Type; Select “Spot Color”
Color Mode; CMYK is recommended.
CMYK density; Anything is OK.



②Input the spot color density

*If you create the Spot color layer data in illustrator, please input appropriate density.

③Check the “Overprint Fill”

*Please check this if the object is overprinted

White layer Color layer Varnish layer

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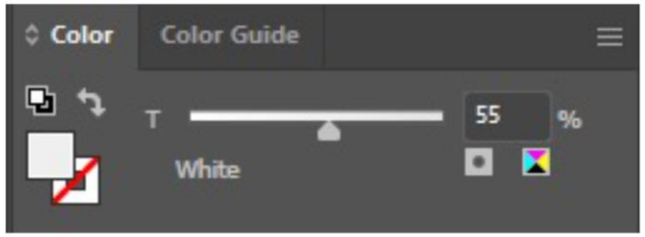
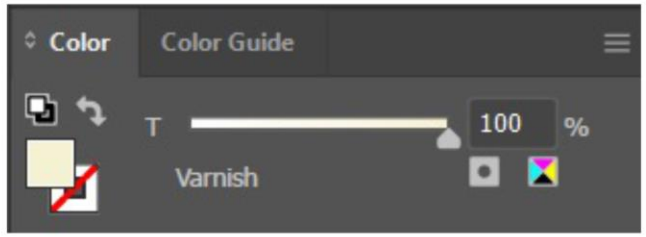
Spot Color Creation

Spot Color Creation – Density

Illustrator

- When you need to adjust color density on a Spot color swatch, please apply the following density below depending on print mode.

	White	Varnish
720x720 dpi	55% 	100% 
720X1080 dpi	36%	93%
720x1440 dpi	27%	70%

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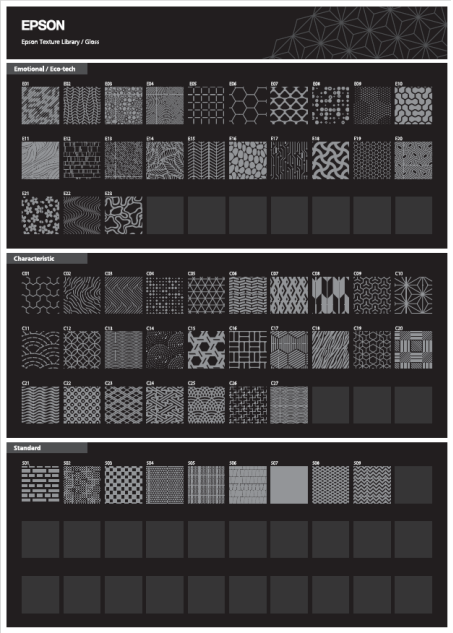
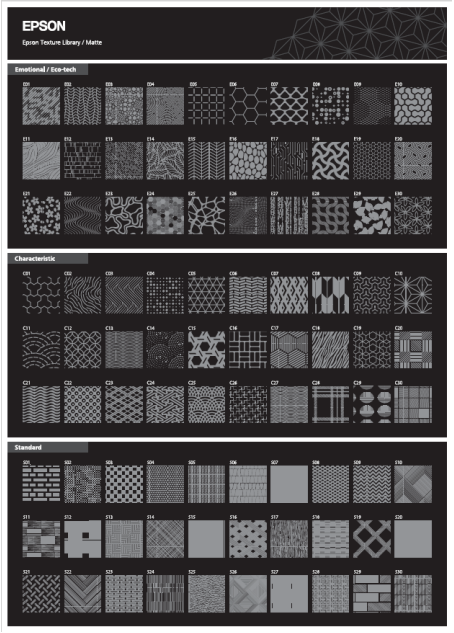
Epson Texture Media Library

- Use opaque white ink to print on non-white objects or create prints with white-only images.
- Gloss and Matte varnish to create different effects
- All new **Epson Texture Media Library***
  - Easily print textures using the Epson Texture Media library in Adobe Illustrator. Add the Gloss and Matte libraries to your swatch palette to create stunning textured effects in your prints.

Gloss varnish



Matte varnish



*For complete compatibility the V-Series Printer in use must support gloss and matte varnish finishes. The V7000 only officially supports gloss curing of varnish.

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Overprint vs Knockout

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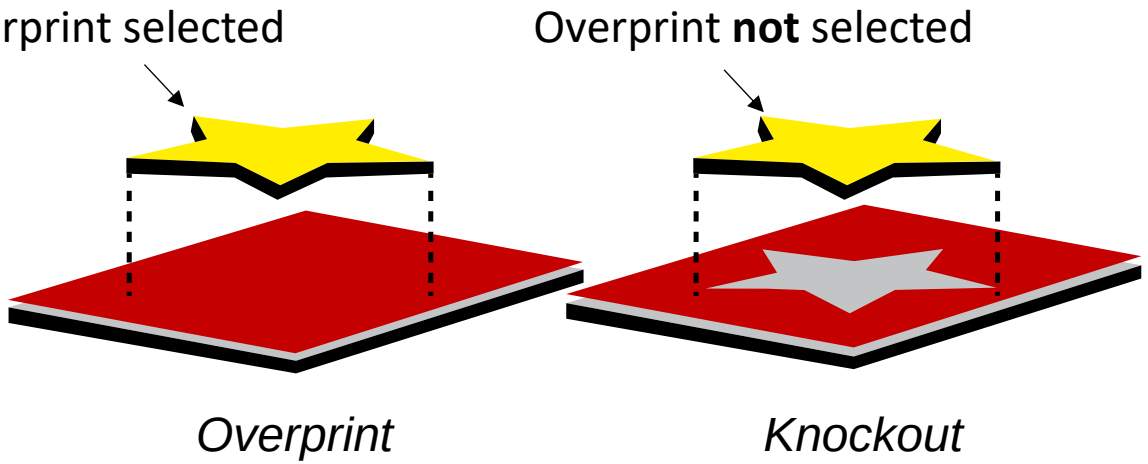
What is Overprint and Knockout?

Overprint – When two colors overlap and blend to create a new color.

Knockout – When two colors overlap, the top color cuts through the design underneath. The top design will stay true to color.

Knockout acts like a cookie cutter and removes any design.



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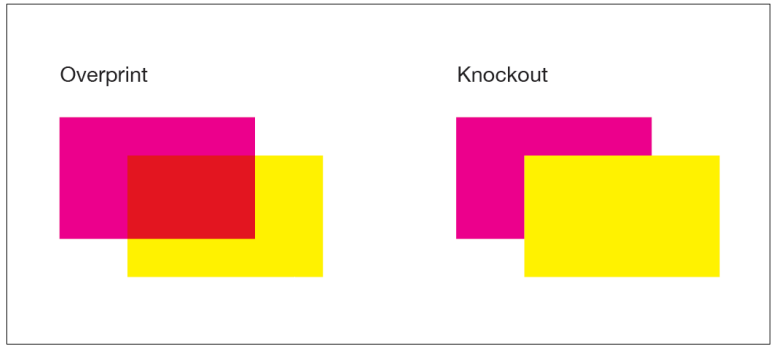
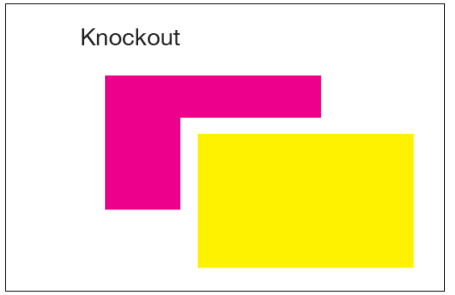
What is Overprint and Knockout?

Please see the illustration below for reference. the yellow rectangle is on top of the magenta rectangle.

- Overprint
  - On the left, “Overprint Fill” has been selected on the yellow rectangle.
  - This allows the yellow and magenta rectangles to blend and create a red tone. On the right, overprint has not been selected.
- Overprint not selected (Knockout)
  - This allows the yellow and magenta rectangles to stay “pure” tones—the yellow cuts through the magenta rectangle and is printed to the substrate.



If we separate the two colors as a knockout, the yellow rectangle cuts the magenta rectangle.



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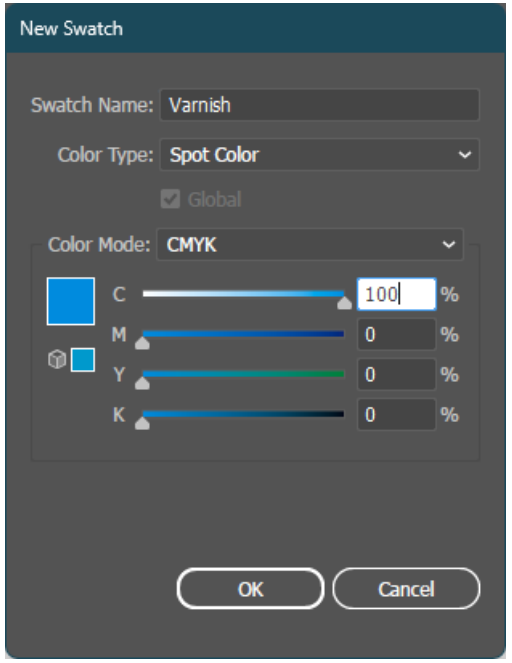
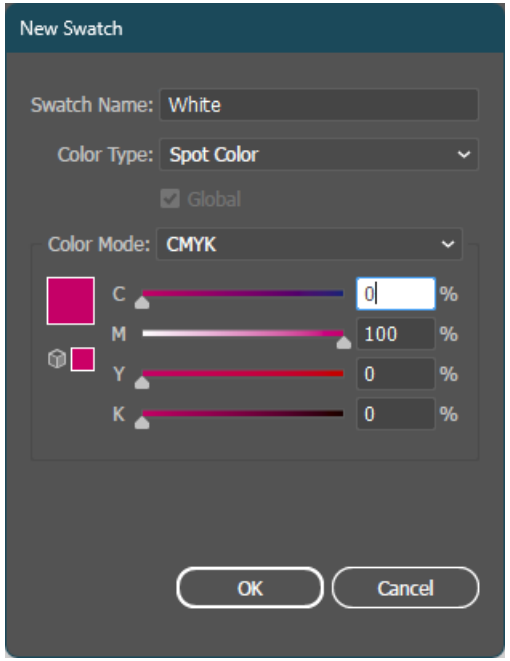
White and Varnish (Overprint and Knockout)

To use the White and Varnish inks in a file, there are a few requirements and a few decisions based on the desired design and output.

1. The image area of the design that requires white or varnish ink will need to laid down will need to be a spot color. The color of the spot does not influence the print. (Only White or Varnish will be printed and not the color).
2. The spot color must be called “White” or “Varnish” spot color with capital first letters and spelled correctly.
3. The design must be on top of the colored portion of the design. The layer name does not influence the print.





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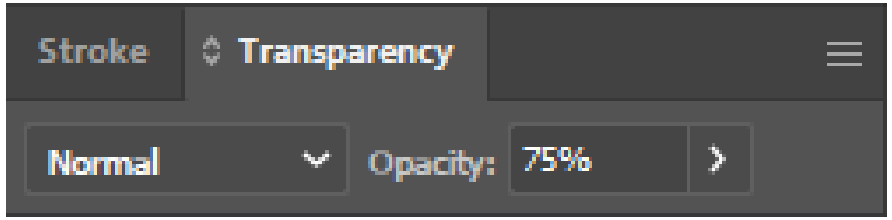
Varnish Opacity (Overprint and Knockout)

The following are not requirements but can change the overall output.

- The transparency of the color will dictate the density of the ink being laid down.
    - Example: If the opacity of the spot color is 70%, then the density of the ink will be 70%.
- If the spot color is set to “Overprint Fill” or “Overprint Stroke”, then the spot color will lie on top or under the design depending on the Y-Direction selected.
    - Example: Choosing a y-direction of “Forward” will put white on top of the design, which is used for second surface acrylic.
- If the spot color is not set to “Overprint Fill” or “Overprint Stroke”, then the spot color will cut through the design under the spot color and the design under the spot will not show, regardless of the Y-Direction.



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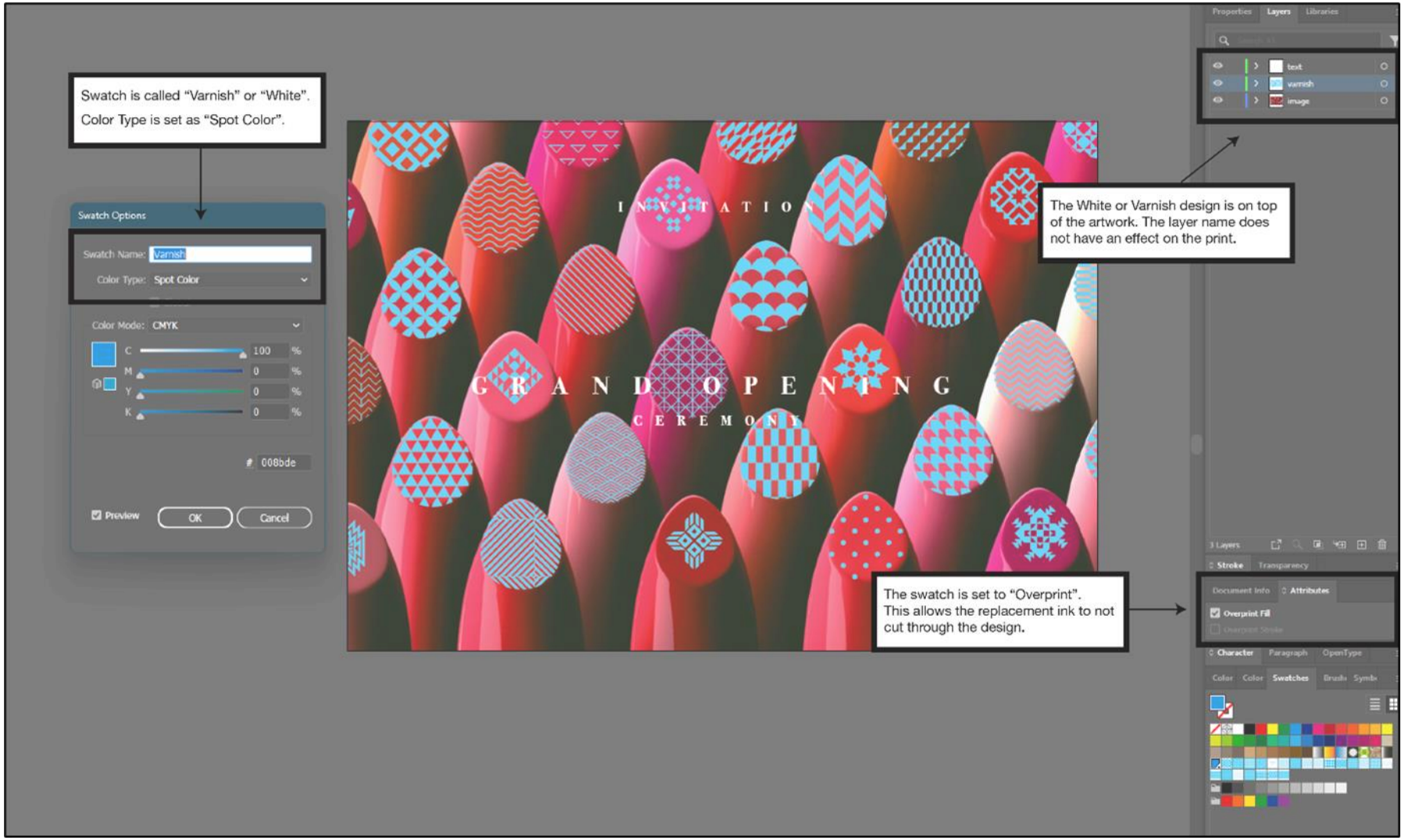
File Example (Overprint and Knockout)



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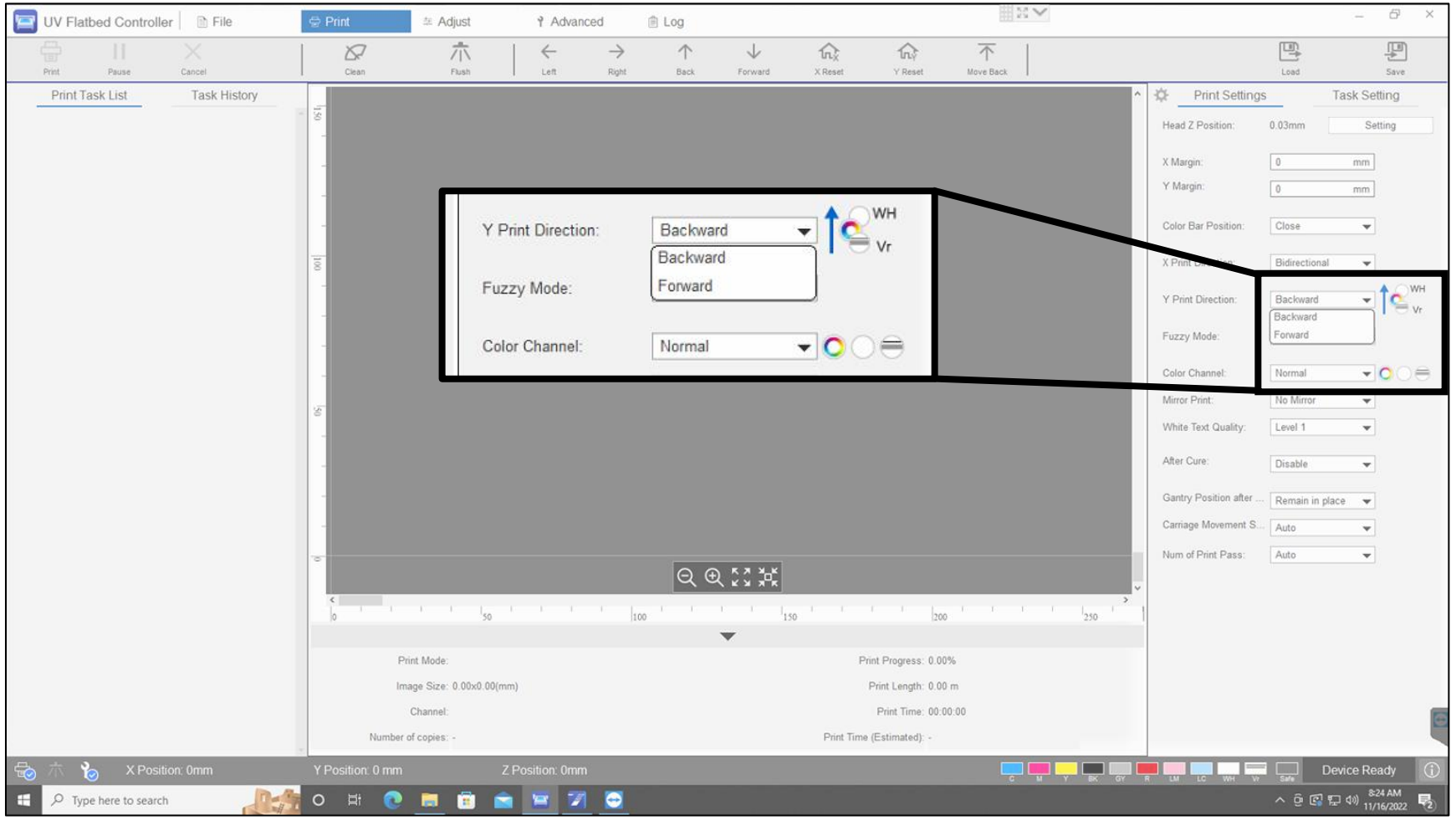
UV Controller (Overprint and Knockout)

UV Controller

- “Y Print Direction”
  - Determines the order of inks.
  - i.e., If the “Y Print Direction is set to backward, then the white ink will lay down first, then color, then varnish.

- “Color Channel”
  - Determines which combination of inks will be laid down.
  - i.e., “Normal” is white, color and varnish. “White and Color” will only print white and color, even if varnish is in the print file.



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Safety

PPE and Ventilation

The V-Series is user friendly and safe, there are some considerations to keep in mind whenever printing with UV processes, especially when dealing with ink in an uncured state.

UV Light (Curing)

The UV light can be harmful to your eyes if direct exposure occurs. Using safety glasses rated for UV exposure is typically a best practice if your eyes are exposed to the light.

Safety and Maintenance

Refer to the SDS and Maintenance guides and follow any PPE recommendations when performing applicable maintenance.

Ventilation

Ventilation and introduction of fresh air is highlight advisable. Please refer to the ventilation section for more information.

UltraChrome UV ink

EPSON
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GHS symbols

- SC-V7000 ink has GHS symbols. Please refer to SDS for handling.

	EPSON SC-V7000		
	Color	White	Varnish
Hazard symbol			
Acute toxicity - Oral	 WARNING: Harmful if swallowed		-
Skin irritation	WARNING: Causes skin irritation		
Skin sensitization	WARNING: May cause an allergic skin reaction		
Serious eye damage/ eye irritation	DANGER: Causes serious eye damage		
Carcinogenicity	-		
Reproductive toxicity	WARNING: Suspected of damaging fertility or the unborn child		
Specific target organ Systemic toxicity	 DANGER: Causes damage to organs		 WARNING: May causes damage to organs
Hazardous to the aquatic environment	 Toxic to aquatic life with long lasting effects	-	 WARNING: Very toxic to aquatic life with long lasting effects

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Safety

PPE

PPE Requirements During maintenance, some ink splashes and ink aerosols can occur.

Technicians must wear the appropriate PPE listed below:

- Ansell Edmont Neoprene 865 or Solvex Nitrile Rubber number 275 gloves
- Polyethylene or equivalent gloves to be worn under the gloves listed above
- N95-style face mask with charcoal linings to cover mouth, nose, and lower jaw
- Full coverage goggles, sufficient to protect eyes from ink splashes and aerosols
- Adequate clothing to protect skin from ink splashes and aerosols
- Portable/Permanent eyewash solution/station

https://files.support.epson.com/docid/cpd6/cpd65229.pdf

Safety

Environmental

Certifications

Epson UV printing holds multiple ecolabel certifications, including Greenguard (gold), AgBB, and the French-VOC A+ for building material, interior material.

Sustainability (Waste Disposal)

Our UV Cured Ink is generally easy to dispose of , but we always recommend you follow local laws and regulations.

Certification	Logo	
GREENGUARD (Gold) [WW]		Eco-label for Building material, Interior material
AgBB [Germany]		Eco-label for Building material, Interior material
French-VOC (A+) [France]		Eco-label for Building material, Interior material

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