UVD – VAC Series

* Patent Pending

Version 1, 06.13.2007

UVD-VAC Digital Vacuum Form is an extremely flexible UV curable digital printing ink specially formulated for first surface interior and second surface exterior applications of various plastics used in vacuum forming. UVD-VAC Digital Vacuum Form ink exhibits outstanding elongation characteristics while maintaining excellent adhesion and opacity. Additionally, this ink provides ideal characteristics for heat bending and routing acrylic sheets with no chipping or loss of adhesion.

Performance Properties

- Extreme elongation for draw depth, >6" (15cm)
- Superb water / moisture resistance
- Flexible for multi-layer applications/die-cutting
- N-VP and heavy metal free
- Elevated color strength for backlit applications

Curing / Processing Guidelines

Ink will cure well when utilizing an optimal cure window of 310-350 mJ / 755 mW is generally achieved with two (2) 300 watt per inch mercury vapor lamps. This should provide thorough cure of the product. Adhesion should be a minimum of 95% from curing unit with final adhesion developing within four hours of initial polymerization.

If a loss of gloss or adhesion due to insufficient cure is noticed, a decrease of saturation levels will increase light penetration and improve cure.

The UVD-VAC vacuum forming system when properly cured develops an extremely flexible formable ink film. Even though the cured ink film has been engineered to optimize processing and handling, the printer must assume responsibility for pre-testing and qualifying the parameters for stacking printed parts prior to each run.

The intensity of cure, weight or thickness of the material and/ or elevated ambient temperatures and humidity of the printing and storage environments will influence block resistance.

Digital Systems Technology Inc. also recommends that the printer considers the use of slip-sheets or racks be used until printed parts have cooled. It is recommended that additional precautions be made for shipping by truck as temperature in trailers can exceed 160F/70C. Digital Systems Technology Inc. does not recommend the stacking of UVD-VAC on two sided prints.

Recommended Substrates

- Polystyrene
- PETG
- Polycarbonate
- High Impact Polystyrene (HIPS)
- PVC
- Acrylic

Lightfastness

Emmaqua extensive weathering tests are currently in progress. Estimated exterior durability is three (3) to five (5) years until actual tests are completed. Actual exposure test should far exceed three (3) to five (5) years.

Accelerated machine weathering are reference standards and can not precisely reproduce actual outdoor performance. Based on prior correlation of accelerated testing versus real time exposure, 500 hours is equated to approximately one year, 45° south Florida.

Storage

Care should be taken to store ink in tightly closed containers located in a cool (60-80°F/15-27°C) dark place. After long production runs excess ink from the screen should be properly disposed. With suitable conditions, unopened ink is expected to have a shelf life of approximately twelve (12) months from date of manufacture**.**

Precautions

Read the material safety data sheet prior to processing. It contains instructions for precautions when handling inks. If ink comes in contact with skin, wipe ink off with a clean, dry cloth (do not use solvent). Wash and rinse the affected area with soap and water.

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UVD-VAC & POP SYSTEM FLUSHING REQUIREMENTS

The UVD-VAC & UVD-POP inks from Digital Systems Technology are compatible with all Spectra 30, 50 & 80 Pico-liter heads. These digital UV ink lines exhibit excellent stability and firing characteristics. Prior to running these inks on your Digital UV Printer as a third party ink, the user must follow these guidelines to assure a thoroughly flushed system

1) **Before flushing** the existing UV digital inks from each particular Digital Printer, make a **test print** for each Spectra print head along with the particular nozzles which are firing. Date and time this print and archive for future reference.

2) **Remove all inks from reservoir and flush** existing inks using the current digital UV ink manufacturers flushing system. Take special care making sure each reservoir is completely free of any ink residue.

3) **Remove the existing flushing solution**. **Re-flush** using Digital Systems Technology's Digital Flushing Solution for our UVD or POP UV Digital Inks. This assures that the system is 100% cleaned prior to re-purging with the VAC or POP Digital UV inks.

4) **Remove and replace the pre-head filter(s). Replace** with new filters. Make sure the replacement filter(s) will not filter finer than a 1 micron particle size.

5) **Fill each reservoir** with the appropriate Digital Systems Technology UVD-VAC or UVD-POP inks. **Power purge** the system (each line) with the appropriate inks.

6) **Run a few test prints**, making sure all solvents have been completely flushed from each particular line.

7) **When solvents are completely free** from each particular line, make a test print for each Spectra print head along with the particular nozzles which are firing. Date and time this print and archive for future reference.

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