UVIFORM 3D

UV Ink for Thermal/Vacuum Forming Applications

Features

- Thermal / Vacuum Formable
- Extremely Flexible
- High Opacity Color System
- Wide Adhesion Range

Substrate Application

Media Type
Polystyrene
Polycarbonate
PVC
Acrylic

Thinning

Stir well before every use. The viscosity of Uviform 3D is supplied in a press ready condition for most printing
applications. It may be necessary to thin slightly (3%-5% with 3D-TH Thinner) for cylinder press users or special applications.

Mesh

Uviform 3D prints and cures well through screen mesh between 355 to 390 (140 to 154/cm) monofilament polyester.

Stencils

Stencil materials must be solvent resistant and produce a thin film stencil.

Curing

Ultraviolet cure inks are dependent on a high dosage of ultraviolet light to initiate cure, the process that converts from wet to dry film. The light must, in effect, see through or penetrate the layer of ink to achieve proper cure.

Light energy level requirements vary from ink to ink and are dependent on a number of factors:

1. Ink chemistry
2. Color
3. Ink deposit (film weight)
4. Substrate being printed
5. Halftone or line color

For Uviform 3D the following guidelines are recommended:

All Colors-380.34 PW Mesh

Output Measurement:

Minimum millijoules-175 mJ/cm^2-measured at the UVA component

Minimum milliwatts-600 mW/cm^2-measured at the UVA component

Input Measurement:

For customers without radiometer, approximately 200 Watts at 55 feet per minute should provide adequate cure.

If under-cure is experienced with any color, demonstrated through a wet film or loss of gloss, it is usually due to excessive ink deposit. To correct this, the mechanics, such as mesh, squeegee, color density, belt speed, or the amount of UV energy, must be changed.

Reduction of color density is easily achieved by letting the color down with MX (Mixing Clear) until proper cure is obtained. Adhesion should be at least 80% immediately out of the reactor with final adhesion developing in one-half hour to four hours. If total cure on a given substrate with a specific color needs to be established, the piece should be passed through the reactor one or two more times. This will usually simulate final adhesion.

Coverage

Standard colors should yield a coverage of 2,800 to 3,500 square feet/gallon (64 to 80 m^2/liter) depending on film thickness.

Wash Up

Wash up on press with press washes and after the production run with ink degradents.

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Pre-Production Tests

It is strongly recommended that all substrates be tested before use as supposedly similar substrates can vary between manufacturers and even between different batches from the same manufacturer. Certain plastics may be impregnated with lubricants, which, like plasticizer migration, may impair adhesion and block resistance, even a considerable period after printing. Other plastics can become brittle or caused to curl after printing.

END-USER MUST DETERMINE SUITABILITY OF THIS PRODUCT FOR THE INTENDED USE PRIOR TO PRODUCTION.

Two-Sided Prints

Uviform 3D was designed for thermoforming applications. While having adequate surface hardness to prevent blocking, the overall surface characteristic is intended to remain soft and flexible to conform with the materials during the forming process. 3D is not intended to be used on two sided prints where the ink will remain in contact with itself or other inks.

Thermal / Vacuum Forming

When printed and cured properly, Uviform 3D demonstrates excellent deep draw thermal/vacuum forming without mold staining.

When using 3D inks in non-formable situations, loss of gloss in the trapped areas can be eliminated by adding 3 to 5% NPC-FTH to the inks, however, this will significantly increase the hardness and decrease the formability of the colors involved.

Color Availability

The Uviform 3D standard color range includes the Intense Matching System (IMS) colors; intense halftone colors, standard colors, Opaque Black, Opaque White, Overprint Clear, and Mixing Clear.

The Intense Matching System

The Intense Matching System has been designed to enable printers to readily match most colors in-house. The system consists of nine IMS base colors, each of which has been selected for its cleanliness of tone and suitability
for intermixing. Using the IMS base colors plus, Opaque Black, Opaque White, and Mixing Clear, almost any color can be produced.

Intense Halftone Colors

Uviform 3D intense halftone colors utilize densities significantly higher than SWOP standards (Specification Web Offset Publication). These halftones may be reduced using low viscosity extender base.

Screen Stabilization

Ink may have slight tendency to dry in screen when not printing. Leave screen in flood position when possible. If drying in occurs, screen will reopen after a few prints.

Standard Colors

3D-111	Lemon Yellow
3D-123	Medium Yellow
3D-141	Fire Red (use 3D-164)
3D-155	Rubine Red
3D-180	Warm Red
3D-190	Process Blue
3D-205	Reflex Blue
3D-210	Ultra Blue
3D-221	Emerald Green
3D-301	Opaque Black
3D-311	Opaque White
3D-312	Super Opaque White
3D-MX/OP	OP Clear

Intense Halftone Colors

3D-IHY	Intense Halftone Yellow
3D-IHR	Intense Halftone Red
3D-IHB	Intense Halftone Blue
3D-IHK	Intense Halftone Black
3D-HTX	Halftone Extender Base
3D-HVX	High Viscosity Base

Intense Matching System Color

3D-064	IMS Yellow GS (Green Shade)
3D-066	IMS Yellow RS (Red Shade)
3D-114	IMS Orange
3D-121	IMS Red YS (Yellow Shade)
3D-127	IMS Violet
3D-164	IMS Red BS (Blue Shade)
3D-165	IMS Magenta
3D-230	IMS Blue
3D-325	IMS Green

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Storage

Containers should be tightly closed immediately after use. At the end of long printing runs, surplus ink from the screen should be disposed of. Uviform inks and reducers should not be stored in direct sunlight or extreme temperatures. Refer to Material Safety Data Sheet (MSDS) for materials and conditions to be avoided.

In the interest of maximum shelf life, storage temperatures should be between 50°F (10°C) and 77°F (25°C). When stored under these conditions the maximum shelf life is shown by the use by dates, which are clearly marked on all ink containers.

Safety and Handling

Refer to MSDS for safety, handling, waste disposal and regulatory information. All colors have been formulated to contain no pigments which contain lead or other heavy metals. These products are formulated to meet CONEG Packing Legislation and ROHS Electrical and Electronic Equipment Directive. If necessary, certification of lead and heavy metals content can be obtained from an independent laboratory.

Product Information

The information and recommendations contained in this Technical Data Sheet, as well as technical advice otherwise given by representatives of our Company, whether verbally or in writing, are based on our present knowledge and believed to be accurate. However, no guarantee regarding their accuracy is given as we cannot cover o r anticipate every possible application of our products and because manufacturing methods, printing stocks and other materials vary. For the same reason our products are sold without warranty and on condition that users shall make their own tests to satisfy themselves that they will meet fully their particular requirements. Our policy of continuous product improvement might make some of the informa tion contained in this Technical Data Sheet out of date and users are requested to ensure that they follow current recommendations.

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