Thermoform TF Series

Thermoform TF is an extremely flexible UV curable screen printing ink specially formulated for printing plastics used in vacuum forming. Thermoform exhibits outstanding vacuum forming characteristics and ink lengthening 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.

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Performance Properties

- Extreme elongation for draw depth, >6" (15cm)
- Multiple pass heat bending without chipping
- Excellent intercoat adhesion
- Superb water / moisture resistance
- Flexible for multi-layer applications/die-cutting
- N-VP and heavy metal free
- Elevated halftone color strength for backlit prints

Printing

Mix well prior to use. While supplied in press ready condition, TF may be reduced up to 10% with #9058 or #1458 Thinner. Care should be taken to print the ink at optimal temperature 70-90°F (21-27°C). Cool ink will have heavier viscosity and will not flow properly. Hot ink will be lower in viscosity resulting in poor definition and decreased opacity.

Curing / Processing Guidelines

Ink will cure well when printed through 355 (140cm) plain weave polyester mesh or finer. TF's optimal cure window of 310-350 mJ / 755 mW is generally achieved with one 300 watt per inch mercury vapor lamp at a belt speed of 30 feet per minute (10 m/min). This should provide thorough cure of the product including opaque colors. Belt speeds can be increased dramatically as the substrate gauge is reduced.

For maximum opacity retention on deep draws coarser screen mesh may be used, increase mW output and test for proper cure and adhesion. Excessive film thickness will not impede vacuum forming properties.

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, the use of 5-10% TF Mixing/Overprint Clear will increase light penetration and improve cure.

The TF Thermoform 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 caliper of the material and/ or elevated ambient temperatures and humidity of the printing and storage environments will influence block resistance.

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

Recommended Substrates

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

Coverage

3,200 to 3,600 square feet per gallon based on ink deposit of .40–.60 mil dependant on color and printing conditions.

Lightfastness

Extensive weathering tests have been completed with TF Series. The ink withstood 500 hours of exposure with 4-hour cycle times of light and condensation at elevated temperatures with minimal color change when printed first surface. Based on these results, TF is lightfast up to one (1) year with a 355/ inch or coarser mesh. Overprinting with #6918 Solar Shield Clear, improves outdoor performance, however this clear is not suitable for vacuum forming.

Additional testing has been done on parts printed sub-surface with TF Series. In this situation, the ink is protected from the elements and withstood up to 1,500 hours of exposure. In any extended exposure, it is recommended that a Polymeric technical representative review the ink color selection and print construction to ensure the highest lightfast results.

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.

MIX WELL BEFORE USE. Follow any indications on the package, ask for the safety data sheets and always follow the indications contained therein. In case of doubt, please contact our Technical Service department

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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.

Metallics
Use the Metallic Mixing Clear to prepare metallic ink as it's increased viscosity helps insure a good particle suspension and extended shelf life. Recommended mixing ratios, by weight are:
- 28% gold paste
- 12% silver paste

For optimum coverage and opacity, 280-305 (110-120cm) plain weave mesh is recommended. Use TF Overprint Clear for extended weatherability and to improve the non-tarnishing properties of the product.

Additives
- 9058 or 1458 Thinner up to 10% as needed

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.

Process Printing
For superior halftone reproduction, Thermoform halftones are available in a range of density levels. Additional control of density may be achieved with use of TF HT Base. For best results, 380 (150 cm) or finer and a smooth, thin stencil coating should be utilized with process printing.

	High Density	Backlit Densit
TF Halftone Yellow	1.10	1.35
TF Halftone Magenta	1.75	2.05
TF Halftone Cyan	1.80	2.20
TF Halftone Black	2.00	2.25

Color Availability
Thermoform TF is available in twenty opaque standard colors. Custom matches, metallic, fluorescent and transparent colors are obtainable upon request.

TF-101 Primrose Yellow	TF-210 Ultra Blue
TF-111 Lemon Yellow	TF-220 Emerald Green
TF-123 Medium Yellow	TF-225 Forest Green
TF-131 Brilliant Orange	TF-226 Lime Green
TF-135 Vivid Orange	TF-235 Teal
TF-141 Fire Red	TF-240 Purple
TF-151 Scarlet Red	TF-260 Brown
TF-155 Rubine Red	TF-301 Opaque Black
TF-160 Rhodamine Red	TF-311 Opaque White
TF-180 Warm Red	TF-312 Dense Black
TF-190 Process Blue	TF-026 Brilliant White
TF-200 Peacock Blue	TF Mixing/Overprint Clear
TF-205 Reflex Blue	TF Metallic Mixing Clear

Pantone Matching System® Colors
The nine PANTONE® approved Color Matching System (CMS) shades are used to simulate the PANTONE Color Specifier colors. Formulas were designed for maximum opacity and are available in book or Imaging Color Source Software formats.

TF-064 CMS GS Yellow
TF-066 CMS RS Yellow
TF-114 CMS Orange TF-121 CMS YS Red
TF-164 CMS BS Red
TF-165 CMS Magenta
TF-127 CMS Violet
TF-230 CMS Blue
TF-325 CMS Green
TF Tinting White
TF Shading Black
TF Mixing/Overprint Clear

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