



## Technical Bulletin

# Long Term Decal

## UV Curable Inks

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LTD (*Long Term Decal*) is a UV curable ink system specifically formulated for flat, cast and calendared, pressure sensitive decal applications, requiring exterior exposure for five years. Extensive weathering tests have proven LTD yields durable decals, which will not edge curl due to ink/vinyl shrinkage or diminish in color intensity. LTD has been formulated with lead free, automotive grade pigments producing an extremely opaque, remarkably high gloss, lightfast ink film with minimal chalking characteristics.

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### Performance Properties

- Suitable for five (5) year exterior exposure
- Exceptional opacity and high gloss
- Extremely flexible for multi-layer applications and die-cutting
- Low shrinkage which diminishes edge curl
- Suitable with pre-mask films for easy application
- Non-blocking, low tack finish for easy handling
- Solvent and abrasion resistant

### Printing

Mix well prior to use. While supplied in press ready condition, LTD may be reduced up to 10% with LTD Thinner for special viscosity adjustments. 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, whereas hot ink will be lower in viscosity resulting in poor definition and decreased opacity.

### Coverage

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

### Curing

Ink will cure well when printed through 355 (140cm) plain weave polyester mesh or finer. LTD's optimal cure window of 175 - 200 mJ / 550-650 mW is generally achieved with one 200 watt per inch mercury vapor lamp at belt speeds between 50 - 60 feet per minute (2 0- 30 m/min). This should provide thorough cure of the product. Cure speeds may vary as thicker material and dark surface colors require more energy. Adhesion should be a minimum of 95% from curing unit with final adhesion developing within four hours of initial polymerization. Coarser fabrics can be utilized; however, cure parameters may need to be adjusted for increased ink film. If a loss of gloss or adhesion due to insufficient cure is noticed, the use of 5 - 10% LTD Mixing Clear will increase light penetration and improve cure.

### Recommended Substrates

Pressure Sensitive Vinyl  
Print Treated Polyester  
Electrostatic vinyl  
Polycarbonate (adhesive not recommended)  
PVC  
Vinyl coated magnets  
Polystyrene  
Coated paper  
Many coated metals

### Lightfastness

LTD is lightfast up to five (5) years with a 355/inch or coarser mesh. Weathering tests have been completed on 4-mil vinyl printed with LTD. The ink withstood 2500 hours of exposure with 4-hour cycle times of light and condensation at elevated temperatures with minimal color change and no shrinkage. To maintain a high gloss finish use LTD Overprint Clear.

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

The use of premium grade, long-term vinyl films are recommended for applications intended to weather three (3) years or longer.

### Solar Shield Clear

For maximum chemical and UV resistance DF Solar shield clear has been specifically engineered to withstand the most hazardous environments with the addition of UV absorbers that have been incorporated into the DuraFlex DF Solar Shield Overprint clear, which lengthen the graphics life by acting as a sunscreen and as a chemical resistant barrier. This clear requires more energy to cure. A minimum of 225 - 250 mJ is needed.

### Pre-Mask

A medium to high tack adhesive is recommended for good adhesion.

### 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 its 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 **LTD Overprint Clear** for extended weatherability and improved non-tarnishing properties of the product.

### Additives

- 1004 Thinner up to 10% as needed
- 1534 Adhesion Promoter, 3 - 5% as needed

### Precautions

Read the material safety data sheet prior to processing. It contains instructions for precautions to be taken 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, **LTD** halftones are available in a range of density levels. Additional control of density may be achieved with use of DF HT Base. For best results, 380 (150 cm) mesh or finer and a smooth, thin stencil coating should be utilized with process printing.

	Press Ready	High Density	Backlit Density
LTD Halftone Yellow	0.90	1.10	1.35
LTD Halftone Magenta	1.40	1.75	2.05
LTD Halftone Cyan	1.40	1.80	2.20
LTD Halftone Black	1.60	2.00	2.25

### Color Availability

**LTD** is available in twenty opaque standard colors. Custom matches, metallic, fluorescent and transparent colors are obtainable upon request.

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

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

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We strongly recommend a preliminary test of printing and curing on the supports intended to use, in order to ascertain exactly the procedure, the working times and the obtained effect. MIX WELL BEFORE USE. Follow the indications on the package, ask for the safety data sheets and always follow the directions contained therein.

IMPORTANT— Only the correct use of the product will allow satisfactory results. For this reason, closely related to the product supplied, Polymeric must decline all direct and indirect responsibility for the proper or improper use of the product. Make certain that product is right for the desired use, work according to the instructions given in our technical data sheets. Before use contact Technical Service in case of doubt.