Norcote Technical Bulletin

LED First Surface Series
LED Curable Ink System

Suggested Uses:
The LED series was designed for use in many applications where direct printing is required. The LED series inks are suitable for use in almost all graphic/POP and plastic container printing markets with excellent curing speeds. When properly cured, these inks provide a scratch resistant surface. These inks have excellent adhesion to a number of substrates. For some applications a flame treatment might be necessary to achieve an acceptable adhesion. For additional information, please contact Technical Service. **It is the responsibility of the end user to pretest all substrates with Norcote® products prior to use in production.**

Product Features
- One part
- Multiple substrates
- Quick curing
- Excellent adhesion and scratch resistance
- First surface formulation

Recommended Substrates:
- HDPE
- LDPE
- Polypropylene
- Polycarbonate
- Fluted Poly
- Metal
- Polyester (Treated)
- Styrene

Printing Recommendations:
All inks should be thoroughly mixed prior to use. Inks are supplied at print ready viscosity for most applications. If adjustment is needed the LED-070 Thinner or LED-000 Clear can be used to thin the ink. Do not microwave this product. Note that very high or low temperatures can change the ink's viscosity. This in turn can affect flow properties, print definition and the color opacity of the ink.

Mesh:
A mesh count of 305 threads per linear inch and higher (120 cm^2) low elongation, monofilament polyester is suggested. Tension should range from 18-25 N/cm^2 on a rigid frame.

Stencil:
All direct emulsions and thin capillary films (15-25µ before application) compatible with UV inks are acceptable.

Squeegee:
A sharp 80 shore durometer polyurethane squeegee is preferred. Inks can be printed with durometers ranging from 60-90 as well as dual durometer squeegees.

Curing Parameters:
Curing speeds depend on several factors including ink film thickness, energy level of the lamps and distance to the substrate. Norcote LED inks will cure using:

- 4-8 watt/cm LED units
- 395 nm light source

Always test the inks under your printing conditions.

Adhesion:
The LED series is a nonvisual post-curing system. Although further cross-linking occurs up to 24 hours later, the inks should pass a crosshatch tape test, (ASTM #D3359-97), using 3M 600 tape after exiting the curing unit and cooling to room temperature. In-line, direct flame treat of Polyethylene containers is recommended for optimum performance.

Intercoat Adhesion:
LED series inks intercoat adhesion is very good. Although loss of intercoat adhesion is difficult, it should be monitored throughout the production run especially when printing 6 or more passes. Use of additives may adversely affect intercoat adhesion.

Screen Cleaning:
Most conventional solvent cleaners work well. Alcohol based solutions must be avoided as they break down the emulsion. Norcote recommends Press Wash 110 (flash point 113° F), 140 (flash point 140° F) or NSW-824 (flash point 150° F). These products are used for cleaning ink off screens during on press color changes or before storing the screen. They work well when removing ink from squeegees, flood bars and other equipment. Contact us for packaging options.

Coverage:
Approximately 2,500 square feet per gallon. Note: Coverage, cure and color are affected by the mesh count, screen tension, squeegee durometer and other press variables.

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Chemical Resistance:
The LED series inks have been exposed to a variety of chemicals to determine chemical resistance. LED series inks have proved to resist most common chemicals when properly cured. Allow 10-15 minute post cure prior to testing chemical resistance. For details contact the Technical Service Department.

Water Resistance:
If water resistance is required, a cross-hatch tape adhesion must be attained upon exiting the curing unit and before any further testing is performed. Test thoroughly for conformance to your specific water resistance requirements.

Precautions:
Avoid direct contact of ink with skin and clothing. If contact occurs, wash affected area with warm soapy water and dry thoroughly. If eye contact occurs, irrigate the area with water for 15 minutes and consult a physician. For more specific information, refer to the relevant Material Safety Data Sheet.

Color Range:
Specific colors can be matched at Norcote® against prints, wet ink or PANTONE® numbers.

Standard Colors:

Radiant Yellow	LED-012 •
Medium Yellow	LED-017
Orange	LED-019
Red	LED-022
Emerald Green	LED-030
Spruce Green	LED-031
Blue	LED-034
Violet	LED-035
Reflex Blue	LED-037
Peacock Blue	LED-038
Process Blue	LED-050
Opaque White	LED-1046
Opaque Black	LED-1019

• May not be suitable for lightfast applications and is not recommended for prolonged exposure to direct sunlight.

Revision: 11/11/2014

Additives:
Check the Norcote Additives list for the products compatible with this ink series. The list is available on our website at www.norcote.com or call us at 800-488-9180 to receive a copy.

Storage & Available Warranties
All LED series inks should be stored in tightly closed, black polyethylene containers in an area with the temperature not to exceed 90° F (32.2° C). Do not freeze. Do not store ink below 32˚F. Avoid direct sunlight and indirect white light. Excess ink from print runs should be stored in separate containers to avoid contamination and is not covered under any warranty. When stored under these conditions, Norcote warrants the Products shall be free from defects in material and manufacture for a period of one (1) year from the date of sale for the LED series standard inks, with no additives, and for a period of one (1) month from the date of sale for any custom color containing Day Glo® JZB or T-Powder. Norcote will not warrant any custom colors containing metallic pastes or any inks intermixed with competitor products. Any warranties provided will be limited to the price paid for the actual products used which give rise to the warranty claim.

This Technical Bulletin is intended to be used for informational purposes only, and is in no way intended to create any warranties or other obligations on behalf of Norcote. All warranties, terms and/or conditions for a particular product will be specified on the applicable invoice and are only valid upon the creation of a legally-binding contract.

Testing
Due to the inability of Norcote to anticipate or control the conditions under which the Products and information relating thereto will be used and/or stored, Norcote cannot guarantee the results obtained from using the Products. Any Suggested Uses are merely representative, and because the final product will depend on a number of specific factors, the end user should pretest all substrates with the Products prior to use in production.

*PVC Plastics:
Decoration can aggravate embrittlement properties of PVC plastics which can lead to cracking and failure of the plastic. It is strongly recommended that the end user contact the polymer manufacturer to obtain information on the suitability for decorating with a UV ink as well as recommendations for molding / processing to reduce this potential. As every situation can not be tested for in a laboratory environment, it is the responsibility of the end user to determine the suitability of the products chosen for an end application.

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