

### Suggested Uses:

The 04 Series is recommended for use on PVC (Container and flat sheet \* Note pg. 4), static cling vinyl, pressure-sensitive vinyl's, many polyesters (print treated and top-coated) and some bookcloths. The 04 Series inks also work on some ABS materials. **It is the responsibility of the end user to pretest all substrates with Norcote® products prior to use in production.**

### Product Features

- Abrasion Resistant
- Chemical Resistant
- Opaque
- Resistant to Blocking
- Excellent Intercoat Adhesion
- Flexible
- Durable Surface

### 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 04-070 Thinner or 04-049 Overprint Clear can be used to thin the ink. **Do not microwave this product.**

### Mesh:

A mesh count of 305-355 threads per linear inch (120-140 cm<sup>2</sup>) low elongation, monofilament polyester is suggested. Tension should range from 18-25 N/cm<sup>2</sup> 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:

Norcote® 04 Series inks cure only when exposed to UV light of the proper wavelength. Curing speeds depend on several factors including ink film thickness and the energy level of the lamps. Ink should be cured immediately after printing.



### Curing Equipment:

04 Series inks are fast curing and work well with one 300 watts/in (120 watts/cm) or two 200 watt/in (80 watts/cm) focused medium pressure mercury vapor lamps with millijoules (mJ) and (mW) of:

200 mJ/cm<sup>2</sup> @ 600 + mW/ cm<sup>2</sup> minimum for most colors and clears-

300 mJ/cm<sup>2</sup> @ 600 + mW/ cm<sup>2</sup> minimum for opaque colors (blacks, whites, tans, grays, metallics, etc.). The 04 Series inks will cure up to 100 feet per minute (30 meters per minute) with most focused UV curing units.

### 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 (230 square meters per gallon) depending on printing variables affecting ink film thickness and coverage.

### Mixing:

All Norcote® 04 Series colors are intermixable. The 04 Series inks may also be mixed with the 09 Matte Series inks to achieve a wide range of gloss levels.

### 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.

### Adhesion:

The 04 Series is a nonvisual post-curing system. Although further cross-linking occurs up to 24 hours later, the 04 Series inks should pass a crosshatch tape test, (ASTM #D3359-97), after exiting the curing unit and cooling to room temperature. Maximum chemical and abrasion resistance and adhesion will be attained after 24 hours. The use of 800 Initiator is needed for proper adhesion.

### Intercoat Adhesion:

04 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 3 or more passes. Use of additives may adversely affect intercoat adhesion.

### Weatherability:

Weather resistance is subject to conditions of use. Consult the Technical Service Department prior to use for information regarding weather resistance and weatherable applications of the 04 Series inks.

### Heat-Sealing/Embossing:

The 04 Series inks are formulated specifically to produce excellent results under controlled heat-sealing conditions. To obtain acceptable results the 04 Series inks must pass a crosshatch tape test, (using 3-M 600 tape) before heat sealing or embossing. Highly pigmented (opaque) inks and inks with special effects pigments may not heat-seal or emboss well. Radio frequency heat-sealing or high stress embossing of metallic ink is not recommended. For further details contact the Norcote® Technical Service Department.

### Chemical Resistance:

The 04 Series inks have been exposed to a variety of chemicals to determine chemical resistance. The 04 Series has proved to be resistant to most common chemicals when properly cured.

### Metallic Colors:

Most metallic pigments work well with the 04-000 Clear for Powders. Ability to cure a suspension is related to pigment load and UV exposure. Select mesh with openings large enough to transfer the metallic pigments of choice; generally a mesh count of 305 threads per inch (120/cm) or lower is required. Metallic pigments will reduce the shelf life of 04 Series ink mixtures. **RECOMMENDATION:** Mix only enough metallic ink for one day.

### Color Range:

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

### Standard Colors:

Clear for Powders	000
Lens Clear	1085
Mixing White	002
Opaque White	1046
Non-Chalking Opaque White	1056
Non-yellowing White	1059
Mixing Black	005
Opaque Black	1019
Thick Jet Black	4000
Brown	007
<b>Radiant Yellow</b>	<b>012 •</b>
Medium Yellow	017
Opaque Yellow	2233
Lightfast Yellow	2313
<b>Permanent Orange</b>	<b>019 •</b>
Lightfast Orange	2872
Red	022
Rhodamine Red	023
Rose	024
Magenta	026
Emerald Green	030
Spruce Green	031
Permanent Blue	034
Violet	035
Reflex Blue	037
Peacock Blue	038
Overprint Clear	049
Process Blue	050
Halftone Base	060
Opaque Process Blue	2021

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

### Fluorescent Colors/JZB's:

Aurora Pink (Blue shade)	11 B
Aurora Pink (Yellow shade)	11 Y
Rocket Red	13
Fire Orange	14
Blaze Orange	15
Arc Yellow	16
Saturn Yellow	17
Signal Green	18
Horizon Blue	801
Corona Magenta	21



---

## **Metallics:**

Gold Paste	040 •(see note)
Silver Paste	042
Red Gold Paste	044
Copper Paste	046
Rich Gold Ink	240
Silver Ink	242

• 040 paste should be stored between 18C-35C to avoid solidification. If this occurs, reliquify the paste by placing it in an area with temperatures of 25C-35C.

---

## **Key Additives**

---

Thoroughly mix all additives both prior to and after addition into base inks. Store additives in a tightly sealed container.

### **04-000 Clear for Powders:**

Use 04-000 as an extender base or as a curing aid; however, 04-000 is primarily used as a base to suspend special effects pigment. If used as an extender base or as a curing aid, add up to 25% by weight to base colors. Use of 04-000 will affect lightfastness if mixed into base colors.

### **04-060 Halftone Base:**

A thick clear used in the screenprinting of halftone or 4-color process reproductions. 04-060 may be used to decrease the density of a color in order to match the color key. Additions of 060 will enhance fine line detail or fine copy negative artwork. Additions of 20% or less by weight will correct most variations in color density or print quality. Use of 04-060 will adversely affect lightfastness.

### **065-Flow and Bubble Control:**

Used to control bubbles which may occur in the wet ink film upon screening. This effect is primarily observed during screenprinting on high gloss surfaces, during high-speed printing, or on certain types of vinyl (where plasticizer conditions may exist). Use of 065 will adversely affect intercoat adhesion; monitor intercoat adhesion throughout the production run. Do not exceed additions of 1.5% by weight.

### **04-070 Thinner:**

Enhances transfer of ink through the screen by reducing ink viscosity. Most useful for high-speed printing applications. Excessive amounts of 070 will reduce cure rates and impair surface durability. Do not exceed additions of 10% by weight.

### **073 Cure Promoter:**

Improves depth and speed of cure. Most useful for promoting rapid curing of thick ink deposits, particularly when applied to heat sensitive substrates. The 073 Cure Promoter will increase surface hardness and may increase gloss if curing conditions and production speeds remain unchanged. Resistance to blocking in a tall stack is greatly improved. Use of 073 may reduce the shelf life of the 04 Series inks. Mix inks fresh daily. Use of 073 may affect intercoat adhesion; monitor cure and adhesion throughout the production run. Do not exceed additions of 3% by weight.

### **074 Adhesion Promoter:**

Enhances initial adhesion and adhesion of inks after multiple passes of some substrates through the curing unit (e.g. polyesters). Shelf life of inks will be significantly reduced by adding 074. Mix inks fresh daily. Do not exceed additions of 1% by weight.

### **075 Vinyl Adhesion Modifier:**

Improves wetting characteristics of the inks on vinyl substrates; 075 may eliminate the need to wipe the plasticized vinyl prior to printing. The 075 aids in the elimination of bubbles and enhances adhesion regardless of most plasticizer conditions. The 075 will increase the cure rate. Use of 075 will reduce the shelf life of the 04 Series inks. Mix only enough ink for one day. Use of 075 may adversely affect intercoat adhesion; monitor intercoat adhesion throughout the production run. Excessive use of 075 will affect weatherability. Do not exceed additions of 5% by weight.

### **076 Flexibilizing Agent:**

Primarily designed to increase flexibility for embossing, folding or any application where severe ink elongation on a flexible or rigid substrate is required. Excessive use of 076 will affect cure rate, surface hardness and weatherability. Don't exceed additions of 15% by weight.

### **077 Rate Enhancer:**

Developed to accelerate the cure rate of the 04 Series inks. Most useful for promoting rapid cure of heavy ink deposits, particularly when applied to heat sensitive substrates. Add only if necessary as 077 will increase gloss. Mix inks containing 077 fresh daily. 077 may affect intercoat adhesion. Monitor intercoat adhesion throughout the production run. Do not exceed additions of 5% by weight.

### **100 Thickening Agent:**

Thickens the ink, yet the powder will not dramatically affect gloss. Monitor cure and adhesion of the 04 Series inks when using. Increased ink film thickness may result when printing more viscous inks. Use of 100 Powder will adversely affect weatherability. Do not exceed additions of 2% by weight.

### **770 Anti-Static Additive:**

This product eliminates static spider webbing affect under most conditions. Mix this additive with the ink at 2% - 5% by weight. After mixing, the anti-static characteristics will remain for one week when stored in a dark closed container. Intercoat adhesion should be monitored throughout the production run.



### Storage & Available Warranties

All UV 04 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). 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 04 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.

Revision: 05/01/2012  
Supersedes: 04/02/2012