



## Suggested Uses:

The 09 Matte Series was designed for use on polycarbonate (some hard coats), many polyesters (print-treated and top-coated), PVC \*Note pg. 4 and some book cloths.

## Product Features

- \* Abrasion Resistant
- \* Chemical Resistant
- \* Excellent Adhesion
- \* Matte Finish
- \* 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 09-070 Thinner can be used to thin the ink.

## 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® 09 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.

## UV Curable Ink System



## Curing Equipment:

09 Series inks work well with one 300 watts/in (120 watts/cm) or two 200 watt/in (80 watts/cm) medium pressure mercury vapor lamps. The 09 Series inks will cure up to 80 feet per minute (25 meters per minute) with most focused UV curing units.

## Screen Cleaning:

Most conventional solvent cleaners work well. Norcote's® NSW-824 Screen Wash is an environmentally friendly cleaner proven effective with UV and other inks. It is available in 1 and 5 gallon containers or 55 gallon drums. Refer to the NSW-824 technical data sheet for additional information. Alcohol based solutions must be avoided as they break down the emulsion.

## 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® 09 Series colors are intermixable. The 09 Series matte clears may be combined to provide a wide range of textures and gloss levels for applications requiring a hard coat, matte overprint. The 09 Series inks may also be mixed with the 04 Series gloss inks to achieve a wider 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 09 Series is a nonvisual post-curing system. Although further cross-linking occurs up to 24 hours later, the 09 Series inks should pass a crosshatch tape test, (ASTM #D3359-97), using 3-M 600 tape 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 074 Adhesion Promoter may improve adhesion and surface durability.

**Intercoat Adhesion:**

09 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:**

The 09 Series inks are not weatherable.

**Heat-Sealing/Embossing:**

The 09 Series inks are difficult to emboss and heat-seal without cracking of the ink film. Consult the Norcote® Technical Service Department prior to testing the 09 Series inks for applications that require heat-sealing or embossing.

**Chemical Resistance:**

The 09 Series inks have been exposed to a variety of chemicals to determine chemical resistance. The 09 Series has proved to be resistant to most common chemicals when properly cured.

**Metallic Colors:**

Most metallic pigments work well with the 09-CL Matting Clears. 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 09 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:**

Matting Clear	CL2	4 day lead time
Matte Clear	CL3	"
Matte Satin Clear	CL4	"
Matte Velvet Clear	CL5	"
Low Texture Satin Finish	CL6	2 day lead time*
Signature Panel Clear	088	
Signature Panel White	1183	

**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		19
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.

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**Key Additives**

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

**09-CL6:**

Use the 09-CL6 as an extender base or as a curing aid or as a base to suspend special effect pigments. If used as an extender base or as a curing aid, add up to 25% by weight to base colors. Use of 09-CL6 will affect lightfastness. Consult the Technical Service Department for details on optimum special effects pigment loading, and proper mixing instructions.

**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.

**09-070 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 and increase gloss levels of the 09 Series inks. Additions of 09-070 Thinner may clog the screen by accelerating transfer of the ink base components, leaving a high concentration of matting material on the screen surface. 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 09 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:**

Developed to enhance adhesion of the 09 Series inks onto materials used in the membrane switch markets. Use of 074 will enhance the initial adhesion and adhesion of the inks after multiple passes of substrate through the curing unit (e.g. hard-coat, print-treated or top-coated polyesters). If intercoat adhesion is impaired by over curing previous prints of 09 Series inks, the use of 074 in subsequent prints may restore intercoat adhesion. Addition of 070 Thinner to any ink containing 074 may reduce cure rates. 074 must be kept in tightly closed containers and mixed prior to use as separation of ingredients will occur. Shelf life of the inks will be reduced by using 074. Mix fresh daily. Stir the ink immediately and thoroughly upon the addition of 074. Do not exceed additions of 1% by weight.

**075 Vinyl Adhesion Modifier:**

Improves the 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. Vinyl Adhesion Modifier will also increase the cure rate. Use of 075 will reduce the shelf life of the 09 Series inks. Mix only enough ink for one day. Do not exceed additions of 5% by weight.

**078 Polycarbonate Adhesion Modifier:**

The 078 was formulated to enhance adhesion and cure rates. 078 is most useful for accelerating production speeds, particularly when processing heat sensitive substrates that are susceptible to distortion. 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.

**170 Anti-Stat Gel:**

Prevents static and fuzzy prints. Anti-stat gel should be added to the ink fresh daily. Intercoat adhesion should be monitored throughout the production run. Do not exceed additions of 12% by weight.

**900 Matting Powder:**

This powder will increase the matte effect and viscosity when used in the 09 Series inks. Monitor cure and adhesion when using 900 powder. Increased ink film thickness may result in printing more viscous inks. Additions greater than 5% by weight will impair surface durability. The 900 Matting agent is recommended for mesh counts of 305 threads per inch or lower. Do not exceed additions of 15% by weight.



## Storage & Available Warranties

All UV 09 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 09 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. 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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