

GN Series UV Curable Ink System

The GN Series is specially formulated to achieve adhesion to fluted polyolefin and polyolefin banner materials; with exterior light-fastness and weatherability in mind. This series has excellent durability while maintaining flexibility. Developed for end use on polyolefin materials, the GN Series provides excellent adhesion on most all Point-Of-Purchase substrates; including but not limited to: polystyrene, coated and uncoated card stock, rigid vinyl, PVC, pressure sensitive vinyl and some coated metals. The GN Series does not contain N-Vinyl-2-Pyrrolidone. (common name NVP). **It is the responsibility of the end user to pretest all substrates with Norcote® products prior to production runs.**

Product Features:

- Versatile Adhesion Properties
- More Opaque Blacks and Whites
- Outstanding Flexibility
- Excellent Weathering
- High Gloss Finish
- Superb Water Resistance in Submersion Testing
- NVP Free

Printing Recommendations:

All inks should be thoroughly mixed prior to use. The GN Series is supplied in a print ready condition. For reduction of ink viscosity, the use of the UVO Universal Thinner, up to 10%, is recommended.

Do not microwave this product.

Mesh:

Mesh counts of 355 or higher are recommended for opaque colors where a single (1) lamp system is used. Mesh counts of 305 or higher are recommended for opaque colors, where two (2) lamp systems are used. Mesh counts should be selected based upon the end user's ability to cure the ink deposit.

Stencil:

Direct or capillary emulsions that are UV compatible, with a dry micron thicknesses between 7-10µ are recommended. Thicker stencils can be used based upon the ability to cure the increased ink deposit.

Squeegee:

Sharp 70-90 durometer polyurethane blade or multi-durometer blades can be used. For optimal ink lay down, a sharp 80 durometer blade is recommended.

Screen Cleaning:

Use NSW-824 Screen Wash, or other UV compatible screen washes.

Coverage:

3,200-3,600 square feet per gallon based on a film deposit of .40 - .60 mil.

Cure Parameters:

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

125 mJ/cm² @ 600+mW/cm² minimum for most colors and clear.

225 mJ/cm² @ 600+mW/cm² minimum for opaque colors (ie blacks, whites, tans, greys, metallics, etc.).

Adhesion:

Adhesion should be a minimum of 95% from curing unit with final adhesion occurring within one hour of initial polymerization. Coarser fabrics can be utilized; however, cure parameters may need to be adjusted for the increased ink film. If a loss of gloss or adhesion due to insufficient cure is noticed, the use of 5-10% of Dyno-Cote Series Mixing Clear will increase light penetration and improve cure. These guidelines are meant to be a starting point only. Curing requirements vary depending on ink film thickness, substrate type, substrate color/background color, curing equipment, reflector type etc. Testing should always be performed under actual production conditions to determine suitability.

Precautions:

Gloves and / or barrier cream is recommended when handling UV inks. Safety glasses are suggested, particularly for areas where ink may be splashed. If skin contact occurs, wash affected area with soap and water (do not use solvent or thinners).

Recommended Substrates:

Fluted polyethylene/polypropylene, polyethylene/polypropylene banner materials, polystyrene, coated and uncoated card stock, rigid vinyl, expanded PVC, pressure sensitive vinyl, ABS, polyester PSA films and some coated metals.



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Weatherability/Lightfastness:

Extensive QUV accelerated weathering tests have been conducted on Fluted Polyethylene, Polyethylene Banner and vinyl films printed with the GN Series. The GN Series withstood 1,000 hours of exposure in a QUV chamber, with 4 hour cycle time of UV light and condensation, with minimal to no changes in color or gloss. Accelerated machine weathering results reference standards and can not precisely reproduce actual outdoor performance.

Additives:

Check the Norcote® Additives list for the products that are compatible with this series. This list is available on our website at www.norcote.com, or call us at 800-488-9180 to receive a copy. If further information is needed contact one our Technical Service Representatives.

Clean Up:

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), Press Wash 140 (flash point 140°F) or NSW-824 (flash point 150°F). These products are used for cleaning ink off screens during 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.

Using Metallics:

Metallic pigments will reduce the shelf life of ink mixtures. Actual shelf life will depend upon individual users conditions. As a general rule it is recommended to only mix enough metallic ink for one day.

040 Gold Paste*

042 Silver Paste

044 Red Gold Paste

046 Copper Paste

038 Silver Powder

240 Liquid Gold

243 Silver Metallic

***040 Gold Paste should be stored between 64°-95°F (18°-35°C) to avoid solidification. If this occurs, re-liquify the paste by placing it in an area with a temperature of 77°-95°F (25°-35°C)**

Metallics:

The GN 011 Metallic Mixing Clear is supplied to use for mixing metallic powders and pastes, such as silver and gold. The increased viscosity of the Metallic Mixing Clear helps to ensure a good powder suspension. Recommended mixing ratios are: 8% by weight of Silver and 20% by weight of Gold. For optimum coverage and opacity, 260-305 meshes are recommended. Use GN Series Overprint Clear for extended weatherability and non-tarnishing properties. Introducing metallic materials into an ink will reduce the shelf life of the ink. Actual shelf life is dependent upon individual users conditions. As a general rule, it is recommended that only enough metallic ink is mixed for one days use (approximately 8 hours). Paste should be stored between 65° F-95° F to avoid solidification. If this occurs, reliquify the product by placing in an area with temperatures of 25° C-35° C.

Recommended mixing ratios are (by weight):

040 Gold Paste: up to 20%*

042 Silver Paste: up to 8%

044 Red Gold Paste: up to 20%

046 Copper Paste: up to 15%

038 Silver Powder: up to 15%

240 Liquid Gold: up to 30%

243 Silver Metallic: up to 30%

Select mesh with openings large enough to transfer the metallic pigment of choice; generally a mesh count of 195-305 pw are recommended.



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Color Range:

Custom and specific colors can be matched at Norcote® with customer supplied print sample, wet ink sample, Pantone® numbers as well as other recognized standards.

Standard Colors:

GN-123	Medium Yellow
GN-131	Brilliant Orange
GN-151	Scarlet Red
GN-155	Rubine Red
GN-160	Rhodamine Red
GN-190	Process Blue
GN-200	Peacock Blue
GN-205	Reflex Blue
GN-210	Ultra Blue
GN-220	Emerald Green
GN-485	Warm Red

Color Matching Guide*:

GN-010	Mixing Clear
GN-112	Weatherable Lemon Yellow
GN-111	Lemon Yellow**
GN-214	Weatherable CMG Orange
GN-121	CMG Red (YS)
GN-127	CMG Violet
GN-241	Weatherable Fire Red
GN-165	CMG Magenta
GN-230	CMG Blue
GN-301	Opaque Black
GN-311	Opaque White
GN-325	CMG Green

* Used in Norcote's® Color Matching Guide

Whites, Blacks & Clears:

GN-026	Barrier White
GN-030	Shading Black
GN-031	Tinting White
GN-312	Dense Black
GN-011	Metallic Mixing Clear
GN-012	Overprint Clear
GN-015	Satin Overprint Clear
CLGN-2852	Sunscreen Clear

**Do NOT use outdoors

Process Colors:

GN four color process colors exceed "SWOP" standards. Variation densities may be achieved with the use of the GN Series 450 Halftone Base. For best results, a plain weave mesh and smooth, thin stencil coating is recommended for four color process printing.

Product ID		Density
GN-410	HT Yellow	1.10
GN-420	HT Magenta	1.75
GN-430	HT Cyan	1.80
GN-440	HT Black	2.00
GN-450	HT Base	N/A
GN-510	HD HT Yellow	1.20
GN-520	HD HT Magenta	2.20
GN-530	HD HT Cyan	2.10
GN-540	HD HT Black	2.10

Fluorescent Colors/JZB's:

Eight shades of fluorescent colors are available upon request. Fluorescent pigments are not light fast beyond 60-90 days even with the use of an overprint clear. For maximum brightness and color stability, 260-305 mesh counts are recommended. Fluorescent colors are not recommended for outdoor use or in direct sunlight. Please contact our Norcote for more information. 800-488-9180

CLGN-2852 Sunscreen Clear:

Sunscreen Clear is recommended to increase the outdoor durability of screen printed images. Use of this product will also increase the light-fastness of digitally printed images and make dull digital graphics "pop" with a high gloss finish.



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Storage & Available Warranties:

All GN 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 until the expiration date shown on the product label. **Norcote® will not warrant any custom colors containing metallic pastes or any ink intermixed 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 there to will be used and/or stored, Norcote® cannot guarantee the result 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 product 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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