Nazdar 2800 UV-LED Decal Screen Ink

2800 Series UV-LED Decal Screen Ink is formulated to cure using a 395 nanometers LED curing lamp-system. This ink series is intended for decals used in the Durable Graphic Market. 2800 Series exhibits excellent chemical resistance and exterior durability. These inks will thermal die cut and accept pre-mask.
The use of LED curing systems rather than traditional mercury vapor curing units reduces energy costs, reduces heat within the curing process and provides significantly longer lamp life.

Substrates

Flexible vinyl (PVC)
Pressure sensitive vinyl (PVC)
Top coated / Print treated polyester (PET)

Substrate recommendations are based on commonly available materials intended for the ink's specific market when the inks are processed according to this technical data. While technical information and advice on the use of this product is provided in good faith, the User bears sole responsibility for selecting the appropriate product for their end-use requirements. Reference the 'Quality Statement' at the end of this document.

Mesh

355-420 tpi (140-165 tpcm) monofilament polyester mesh with a mesh opening of 22-38 um for most applications.

305-355 tpi (120-140 tpcm) monofilament polyester mesh with a mesh opening of 50 um or more can be used for specialty applications (i.e., pearlescents, aluminums, etc).

Coarser mesh counts and/or twill weave result in heavier ink deposit requiring additional cure output.

Stencil

Use direct emulsions and capillary films which are solvent resistant and UV compatible.

Squeegee

70-90 durometer polyurethane squeegee.

Coverage

Depending upon ink deposit, the estimated coverage per gallon: 3,200 – 4,200 square feet (295 - 390 square meters)
Reference www.nazdar.com/en-us/ColorStar for examples of coverage calculations.

Screen Printing

Standard items are formulated to be press ready. Thoroughly mix the ink prior to printing. Improper mixing can lead to inconsistent color and ink performance.

Maintain ink temperature at 65°-90°F (18°-32°C) for optimum print and cure performance. Lower temperatures increase the ink viscosity, impairing flow and increasing film thickness. Elevated temperatures lower the ink viscosity, reducing print definition and film thickness.

Pretest to determine optimum printing parameters for a particular set of ink, substrate, screen, press, and curing variables/conditions.

The ink can be affected by stray UV light. Be aware of skylights, windows and overhead lights curing the ink in the screen; light filters are recommended. Leaving a container uncovered may result in the ink's surface forming a "skin", caused by reaction with ambient lighting. Keep containers covered.

Nazdar does not recommend inter-mixing this ink series with other inks or series.

Cure Parameters

These guidelines are intended only as a starting point for determining cure parameters, which must be determined under actual production conditions. "Undercuring" the ink may result in poor adhesion, lower block resistance, reduced durability, and higher residual odor. "Overcuring" the ink may reduce the flexibility of the printed part and adhesion of subsequent ink layers.

UV-LED Curing: inks cure when exposed to a Phoseon FireLine 4+ watt, 395 nm lamp at a distance of .15 to .25 inches (4 to 6

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mm), at a belt speed of 50-70 ft/min (15-30 m/min) depending on color. Lamps of similar performance are expected to provide the necessary output to effectively cure the ink.

Mercury Vapor UV Curing: Standard ink cures when exposed to a single medium pressure mercury vapor lamp emitting output millijoules (mJ) and milliwatts (mW) of:

90-100 mJ/cm² @ 600 mW/cm² for most colors
100-130 mJ/cm² @ 600+ mW/cm² for opaque white and black colors

Adhesion Testing

When recommended UV energy output levels are achieved, checking the degree of cure on a **cooled down** print is imperative:
- Touch of ink surface – the ink surface should be smooth.
- Thumb twist – the ink surface should not mar or smudge.
- Scratch surface – the ink surface should resist scratching.
- Cross hatch tape test – per the ASTM D-3359 method, use a cross hatch tool or a sharp knife to cut through ink film only; then apply 3M #600 clear tape on cut area, rub down, and rip off at a 180 degree angle. Ink should only come off in actual cut areas.

Cleanup

For screen cleaning, similar products to those listed below may be used.

Screen Wash (Prior to Reclaim): Use IMS201 Premium Graphic Screen Wash or IMS203 Economy Graphic Screen Wash
Press Wash (On Press): Use IMS301 Premium Graphic Press Wash

Ink Modifications

Clears / Varnishes

Mixing Clear: use to reduce the density of colors.
Overprint Clear: Use 2827 Label Overprint Clear to provide added surface protection and optimum chemical resistance.
Overprint Clear: Use 2829 Durable Overprint Clear to provide added surface protection, increased chemical resistance and outdoor durability.

Additives

The market specific performance properties of this ink series / ink item should be acceptable for most applications without the need for additives. When required, any additives should be thoroughly mixed before each use. Prior to production, test any additive adjustment to the ink. Inks containing additives should not be mixed with other inks.

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Example for additives: Ink at 100g with 8% of an additive is calculated as: 100g ink + 8g additive = 108g total

Reducer / Thinner

Use the following item(s) to reduce the viscosity of these inks. Over reduction can reduce print definition, film thickness and adversely affect cure.
RE306 UV Reducer to reduce the viscosity of these inks. Add up to 5%.

Flexibilizer

Use the following item(s) to increase the flexibility of these inks. The addition of flexibilizer could show a decrease in block resistance.
RE308 UV Reducer: add up to: 10%

Adhesion Promoter

Use the following item(s) to enhance adhesion.
NB80 UV Adhesion Promoter: add up to: 5%. Improved adhesion will be demonstrated within 8-24 hours, with full crosslinking in 4-7 days. Ink mixed with NB80 UV Adhesion Promoter has a 4-8 hour pot life. NB80 is sensitive to humidity and moisture; clean the lid and container thoroughly after each use to prevent fusing of the container. Addition of NB80 may reduce the flexibility of the printed ink.

Gloss / Flattening Powders / Improved Slip

Use to reduce gloss and improve slip.

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CARE118 UV Satin Paste add up to 20%, power mix into the ink.

General Information

Handling

Refer to the SDS for recommendations on handling.
Wear gloves and barrier cream to prevent direct skin contact. Safety glasses are suggested in areas where ink may be splashed. If product does come in contact with skin, wipe ink off with a clean, dry cloth (do not use solvent or reducer). Wash the affected area with soap and water.

Consult the applicable Safety Data Sheet (SDS / MSDS) for further instructions and warnings.

This ink series is a one-part, 100% solids UV-curable screen printing ink and does not contain N-vinyl-2-pyrrolidone (trade name V-Pyrol®).
For assistance on a wide range of important regulatory issues, consult the following Regulatory Compliance Department link at http://www.nazdar.com or contact Nazdar Ink Technologies - World Headquarters (see contact listing at the end of this document).

Weathering / Outdoor Durability

At full strength and properly cured, the outdoor durability when mounted vertically in the Central U.S.A: **4 years**
Outdoor durability can be increased by applying an overprint clear.
This Series is recommended for durable decals mounted over smooth flat surfaces. (This Series is not intended for fleet applications mounted over rough surfaces containing rivets or corrugation).
The use of 2829 Durable Overprint Clear increases outdoor durability by **1 year**. (The use of 2827 Label Overprint Clear does not enhance weather durability of the colors, but does provide greater chemical resistance for indoor or shorter term 3 year outdoor decal labels).

Outdoor Durability Variables

Outdoor durability cannot be specified exactly. Slight color change and loss of gloss should be expected. Variables affecting a printed part's durability include:
- Ink film thickness and degree of curing
- Color formulation: large amounts of mixing clear or white, mixing several colors into one match, and/or mixing a small quantity of any single color
- Substrate type and age
- Mounting angle and directional orientation
- Geographical location
- Degree of air pollution
- Excessive abrasion
- Non-clear coated prints exhibit more color change and loss of gloss.

Storage / Shelf Life

Store closed containers at temperatures between 65°-78°F (18°-25°C). Storing products outside of these recommendations may shorten their shelf life.

Ink taken from the press should not be returned to the original container; store separately to avoid contaminating unused ink. Store closed containers at temperatures between 65°-78°F (18°-25°C). Storing products outside of these recommendations may shorten their shelf life.

Standard items supplied in 1-gallon (4-5 kg) containers or smaller. Useable for a period of at least **24 months** from the date of manufacture.
Exception: 2868 Process Blue in 1-gallon containers has a shelf life of 12 months; 2868 in 1-kilo containers has a shelf life of 24 months.

Shelf life above applies to the standard ink items listed on this TDS. To obtain the shelf life for special inks and additives, contact Nazdar Customer Service or Nazdar Technical Service. See contact listing at the end of this document.

Standard Color Range

Based on information from our raw material suppliers, these ink products are formulated to contain less than 0.06% lead. If exact heavy metal content is required, independent lab analysis is recommended.

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Halftone Colors

Halftone Extender Base is used to reduce the density of any of the halftone colors.

Standard Halftone Colors are formulated with hues and densities common to the graphic industry.

Dense Halftone Colors are formulated with increased densities over the Standard Halftone colors and are designed for printers who want to have the latitude to adjust the density levels.

Low Tack Rheology (LTR) Halftones can achieve the fastest processing speeds on newer in-line presses and cylinder presses while maintaining dot quality with very minimum dot pile.

Medium Tack Rheology (MTR) Halftones can achieve processing speeds for flatbed, clam shell and most in-line presses while maintaining dot quality.

Standard Printing Colors

Standard Printing Colors: have excellent opacity and flow characteristics. These colors are intended to work as supplied.

Pantone Base Colors

Pantone Matching System Base Colors are used to simulate the Pantone® Formulation Guide when printed on a white substrate. These inks are press ready, can be used in matches to achieve Pantone color simulations, or let down with mixing clear.

Special Effect Pigments Product Specific

When inks are to be printed with a special effect color, all ink layers must be evaluated for intercoat adhesion before proceeding with the production run. To maximize intercoat adhesion, specialty colors should be printed as late as possible in the print sequence.

Mixing aluminum with colors will lower the allowable concentration of metallic in a formulation. The allowable concentration will depend on ink deposit and curing parameters. Care should be taken to ensure proper cure and adhesion. Exceeding these recommendations may lead to degradation of the ink's overall performance, including flexibility, adhesion, intercoat adhesion and exterior durability.

The following special effect pigments may be added to this ink series. Contact Nazdar for the item number(s) and availability of special effect products. Technical Data Sheets for each of the following special effect pigments can be found at www.nazdar.com.

Aluminum Pigment Load: The maximum recommended aluminum load is 15% in the Metallic Mixing Clear for this series.

SIPM571 313 Aluminum Paste (Coarse Aluminum)
SIPM606 Aluminum 6600 (Medium Aluminum)
SIPM573 2871 Aluminum Pigment (Fine Aluminum)

Using the above recommended aluminums with Metallic Mixing Clear, will result in a minimum of 6 month shelf life. Using any other aluminum pigments may cause the mixed ink to have shorter shelf life and may affect exterior durability.

Pearlescent / Interference: Using Automotive Grade Pearlescent Pigments or Interference Pigments, add up to 20%.

SIPI519 9307 SW Gold Auto Grade
SIPI520 9520 SW Bronze Auto Grade
SIPI536 Card Silver BN001

Pantone® 871c to 877c can be matched in this ink series using Automotive Grade Pearlescent Pigments. To achieve extended durability, overprint these special colors with Durable Overprint Clear. Starting formulas are available through contacting Technical Service.

Multi-Chromatic: Using Multi-Chromatic Pigments add up to 10% by weight.

Note: Pearlescent, Interference and Multi-Chromatic Pigments shift in shade and color with outdoor exposure.

Color Card Materials

The following is a list of available literature representing this ink series.

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- UV Color Card (CARDUV): shows the Standard Printing Colors, Pantone Matching System Base Colors, and Halftone Colors
- Special Effects Color Card (CARDSPL): shows various special effect pigments mixed with clear

Packaging / Availability

Contact your Nazdar distributor for product availability and offering.

Item Type	Item Number	Item (or Color) Description
LTR Halftone Colors	28120	Halftone Extender Base (LTR)
LTR Halftone Colors	28131	Halftone Dense Cyan (LTR)
LTR Halftone Colors	28132	Halftone Dense Magenta (LTR)
LTR Halftone Colors	28133	Halftone Dense Yellow (LTR)
LTR Halftone Colors	28134	Halftone Dense Black (LTR)
MTR Halftone Colors	28140	Halftone Extender Base (MTR)
MTR Halftone Colors	28151	Halftone Dense Cyan (MTR)
MTR Halftone Colors	28152	Halftone Dense Magenta (MTR)
MTR Halftone Colors	28153	Halftone Dense Yellow (MTR)
MTR Halftone Colors	28154	Halftone Dense Black (MTR)
Standard Colors	2810	Primrose Yellow
Standard Colors	2811	Lemon Yellow
Standard Colors	2812	Medium Yellow
Standard Colors	2819	Fire Red
Standard Colors	2821	Peacock Blue
Clears / Varnishes	2827	Label Overprint Clear
Clears / Varnishes	2829	Durable Overprint Clear
Standard Colors	2836	Metallic Mixing Clear
Standard Colors	2852	Super Opaque Black
Standard Colors	2875	Super Opaque White
Standard Colors	2879	High Intensity Black II
Standard Colors	28178	High Intensity White
Standard Colors	28179	High Intensity Black
Pantone Base Colors	2858	Tinting White
Pantone Base Colors	2859	Tinting Black
Pantone Base Colors	2861	Yellow
Pantone Base Colors	2862	Warm Red
Pantone Base Colors	2863	Rubine Red
Pantone Base Colors	2864	Rhodamine Red
Pantone Base Colors	2865	Purple
Pantone Base Colors	2866	Violet
Pantone Base Colors	2867	Reflex Blue
Pantone Base Colors	2868	Process Blue
Pantone Base Colors	2869	Green
Mixing Colors	2880	Yellow Toner
Mixing Colors	2881	Permanent Orange
Mixing Colors	2889	Red Toner
Mixing Colors	28159	Tran Orange Toner
Mixing Colors	28160	Tran Red Toner (YS)
Mixing Colors	28161	Primrose Yellow
Mixing Colors	28162	Yellow Toner (GS)
Mixing Colors	28163	Yellow Toner (RS)
Mixing Colors	28164	Medium Yellow
Mixing Colors	28165	Permanent Orange Toner
Mixing Colors	28166	Red Toner
Mixing Colors	28167	Deep Red Toner
Mixing Colors	28169	Magenta Toner
Mixing Colors	28170	Maroon Toner
Mixing Colors	28171	Violet Toner

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Mixing Colors	28172	Green Toner (YS)
Mixing Colors	28173	Green Toner (BS)
Mixing Colors	28174	Blue Toner (GS)
Mixing Colors	28175	Blue Toner (RS)
Additives	Care118	UV Satin Paste
Additives	NB80	Adhesion Promoter
Additives	RE306	UV Reducer
Additives	RE308	UV Reducer
Cleaners	IMS201	Premium Graphic Screen Wash
Cleaners	IMS203	Economy Graphic Screen Wash
Cleaners	IMS301	Premium Graphic Press Wash

Nazdar Quality Statement

Nazdar® stands behind the quality of this product. Nazdar® cannot, however, guarantee the finished results because Nazdar® exercises no control over individual operating conditions and production procedures. While technical information and advice on the use of this product is provided in good faith, the User bears sole responsibility for selecting the appropriate product for their end-use requirements. Users are also responsible for testing to determine that our product will perform as expected during the printed item's entire life-cycle from printing, post-print processing, and shipment to end-use. This product has been specially formulated for screen printing, and it has not been tested for application by any other method. Any liability associated with the use of this product is limited to the value of the product purchased from Nazdar®.

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