

3600 Series UV Screen Ink has been formulated for applications on pressure-sensitive decals requiring exceptional performance. 3600 UV Decal Series exhibits excellent exterior durability and chemical resistance, especially with the addition of an overprint clear. The inks will thermal die cut and accept pre-mask.

Substrates

Pressure sensitive calendered vinyl (PVC)

Pressure sensitive cast 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

355-390 tpi (140-153 tpcm) with a mesh opening of 22-38 um monofilament polyester mesh for most applications.

305-355 tpi (120-140 tpcm) with a mesh opening of 50 um or more monofilament polyester 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: 2,500 – 3,500 square feet (232 - 325 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.

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

To increase mJ levels, slow down the belt speed or scan speed. To increase mW levels, increase the wattage setting of the UV reactor. To optimize mJ and mW output, maintain the bulb and reflector, and ensure proper focus to the substrate. These guidelines are representative of measurements taken using an EIT® UVICURE® Plus radiometer measuring the UVA bandwidth (320-390 nm). To obtain accurate mJ readings with the UVICURE® Plus, reduce the belt speed to less than 40 ft/min.

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.

Full adhesion characteristics at proper cure levels are demonstrated within: 24 hours

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): IMS301 Premium Graphic Press Wash.

Ink Modifications

Clears / Varnishes

Mixing Clear/Metallic Clear: use to reduce the density of colors or as a clear base for specialty additives such as Metallic additives.
Overprint Clear: use to provide added surface protection and increase 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.

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 10%.

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.

Gloss / Flattening Powders / Improved Slip

Use to reduce the potential for blocking, reduce gloss, and improve slip.

CARE118 UV Satin Paste at 10%, 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.

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®).

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

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, 3600 Series colors are formulated to provide enhanced outdoor durability and can be used without an overprint clear. However, the use of 3627 Overprint Clear increases the projected outdoor durability. (See durability table estimates listed under product offering).

All rating estimates for outdoor weathering in this technical data sheet are based on 3600 Series colors or special additive pigmented colors being printed on pressure sensitive cast vinyl and mounted vertically in Central USA. Temperate climates can add to the rating estimates while hotter climates can reduce the rating estimates.

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.

Outdoor Durability Series Information

Aluminum colors prepared according to the Special Additives section must be overprinted with 3627 Overprint Clear and properly cured to provide 3 years outdoor durability.

Pearlescent colors prepared according to the Special Additives section must be overprinted with 3627 Overprint Clear and properly cured to provide 5 years outdoor durability.

Multi-Chromatic and Interference colors prepared according to the Special Additives section must be overprinted with 3627 Overprint Clear and properly cured to provide outdoor durability when mounted vertically in the Central U.S.A. While printed decals appear legible outdoors over a 3 year period, these pigments are prone to color shift with outdoor exposure.

Fluorescent colors fade quickly with outdoor exposure and are not recommended for outdoor durability.

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.

Standard items supplied in 1-gallon (4/5 kilo) containers or smaller. Useable for a period of at least **24 months** from the date of manufacture.

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.

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.

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. ColorStar® Color Management System software uses Pantone Matching System Base Colors to match Pantone colors. Blend formulations are also available at www.nazdar.com using ColorStar On-Line.

60 Series Colors: 61-69 colors have a high pigment concentration. These colors are formulated to have some white pigment or opaque pigment to increase opacity.

Toners

Single Pigment Toners produce clean and vibrant colors. Single Pigment Toners can be used as supplied, in color matches or let down with mixing clear.

Pantone 871c-877c Metallic

Pantone® 871c to 877c colors have been matched using pearlescent pigments. When printed on a white background, a gold or silver metallic effect is achieved. A 305 tpi (120 tpcm) mesh with a mesh opening of 50 um or more is recommended.

Special Effect Pigments

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.

Pigments may settle in the container; prior to printing, thoroughly mix the ink.

The following special effect pigments may be added to the ink. Contact Nazdar for the item number(s) and availability of special effect products or they can be found at www.nazdar.com.

Special Effect Pigments Product Specific

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.

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.

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Gold and Bronze Powders: Gold and bronze powders are not recommended due to poor exterior durability. To achieve gold and bronze colors use pearlescent and aluminum.

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.

- 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	Est. Durability without Overprint Clear (years)	Est. Durability with Over Print Clear (years)
			* ink chalks	With 3627 Clear Coating
Standard Colors	3610	Primrose Yellow	2	3
Standard Colors	3611	Lemon Yellow	4	5
Standard Colors	3612	Medium Yellow	4	5
Standard Colors	3619	Fire Red	4	5
Standard Colors	3621	Peacock Blue	4	5
Standard Colors	3652	Super Opaque Black	4	5
Standard Colors	3675	Super Opaque White	4*	5
Standard Colors	3678	High Intensity White	4*	5
Standard Colors	3679	High Intensity Black	4	5
Standard Colors	3698	Bright White	4*	5
Clears / Varnishes	3627	Overprint Clear	5	n/a
Mixing Colors	3626	Mixing Clear	4	n/a
Mixing Colors	3658	Tinting White	4*	5
Mixing Colors	3659	Tinting Black	4	5
Mixing Colors	3661	Yellow	4	5
Mixing Colors	3662	Warm Red	4	5
Mixing Colors	3663	Rubine Red	4	5
Mixing Colors	3664	Rhodamine Red	4	5
Mixing Colors	3665	Purple	4	5
Mixing Colors	3666	Violet	4	5
Mixing Colors	3667	Reflex Blue	4	5
Mixing Colors	3668	Process Blue	4	5
Mixing Colors	3669	Green	4	5
Blending Toners / Toners	3680	Yellow Toner	4	5
Blending Toners / Toners	3681	Permanent Orange	4	5
Blending Toners / Toners	3682	Carmine Toner	3	5
Blending Toners / Toners	3683	Magenta Toner	4	5
Blending Toners / Toners	3684	Maroon Toner	4	5

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Blending Toners / Toners	3685	Green Toner	4	5
Blending Toners / Toners	3686	Blue Toner (GS)	4	5
Blending Toners / Toners	3687	Blue Toner (RS)	4	5
Blending Toners / Toners	3688	Violet Toner	4	5
Blending Toners / Toners	3689	Red Toner	4	5
Half-tone Colors	36HTEX	Half-tone Extender Base	4	n/a
Half-tone Colors	36HTC	Half-tone Cyan	4	5
Half-tone Colors	36HTM	Half-tone Magenta	4	5
Half-tone Colors	36HTY	Half-tone Yellow	4	5
Half-tone Colors	36HTBK	Half-tone Black	4	5
MTR Half-tone Colors	36140	HT Extender Base G7 (MTR)	4	n/a
MTR Half-tone Colors	36151	HT Cyan Dense G7 (MTR)	4	5
MTR Half-tone Colors	36152	HT Magenta Dense G7 (MTR)	4	5
MTR Half-tone Colors	36153	HT Yellow Dense G7 (MTR)	4	5
MTR Half-tone Colors	36154	HT Black Dense G7 (MTR)	4	5
Additives	CARE118	UV Satin Paste		
Additives	NB80	UV 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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