

# Nazdar 2300 UV / UV-LED Screen Ink Series

## Container

The 2300 Series UV / UV-LED Screen Ink is tailored to meet the needs of the container market for printing on various glass and plastic bottles used in the packaging of cosmetics, household chemicals and other similar applications. 2300 Series is a multi-cure inks system and formulated to cure with UV-LED with peak wavelength emission of 395 nanometers and traditional UV mercury vapor curing system. The ink has been formulated to meet the processing requirements of the container printing industry, such as adhesion to commonly used plastics, opacity, resistance to commonly used chemicals, and speed of cure.

## Primary Substrates

### Core Substrates

- Glass
- Polyethylene terephthalate (PET)

### Additional Substrates

- Treated high density polyethylene (HDPE)
- Treated low density polyethylene (LDPE)
- Treated polypropylene (PP)

*The surface tension should be at or above 44 dynes/cm.*

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.

## User Information

### Mesh

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

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

Estimated 3,200 – 4,200 square feet (295 - 390 square meters) per gallon depending upon ink deposit. Reference [www.nazdar.com](http://www.nazdar.com) for examples of coverage calculations.

## Printing

2300 Series is 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 of 2300 Series with other inks besides the 2300 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 scuff resistance, reduced durability, and higher residual odor. "Overcuring" the ink may reduce the flexibility of the printed part and adhesion of subsequent ink layers.

To increase mW levels, increase the wattage setting of the UV reactor.

**Mercury Vapor UV Curing:** 2300 Series has been optimized for 395nm LED curing; however, most 2300 Ink Series colors cure when exposed to a single medium pressure mercury vapor lamp

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emitting output millijoules (mJ) and milliwatts (mW) of:

120+ mJ/cm<sup>2</sup> @ 600+ mW/cm<sup>2</sup>  
for most colors

*Note: 2378 High Intensity White may exhibit poor scratch resistance at full cure with the use of mercury vapor curing and require an additive to increase adhesion.*

UV-LED Curing: 2300 Ink Series cures when exposed to a 4+ watt, 395-405 nm lamp at a distance of .15 to .25 inches (4 to 6 mm).

## Clears / Varnishes

Mixing Clear: Use 2326 Mixing Clear to reduce the density of colors.

## Common Performance Additives

The market specific performance properties of the 2300 Series 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: Use RE310 UV Reducer to reduce the viscosity of these inks. Add up to 10% by weight. Over reduction can reduce print definition, film thickness and adversely affect cure.

UV Hardener: Use CARE69 UV Hardener to improve chemical resistance, especially with aggressive solvents such as MEK and acetone. CARE69 also minimizes scuffing especially on prints immediately after curing. CARE69 will not affect the shelf stability and viscosity of the ink mixture. However, the addition of CARE69 will make the cured ink film less flexible and may affect ink to ink or inter-coat adhesion.

Add up to 5% by weight for plastic containers.

Add up to 10% by weight for glass containers.

### Adhesion Promoter:

Use NB23 Catalyst to enhance adhesion and chemical resistance, especially for glass applications. Add up to 3% by weight. Ink will be

soft with initial curing, but will exhibit improved adhesion and chemical resistance within 24 hours. Ink mixed with NB23 UV Adhesion Promoter has a 3-5 hour pot life.

Use CARE106 UV Catalyst / Charger to increase scuff resistance, chemical resistance and water resistance, especially for plastic applications. Add up to 10% by weight. Improved adhesion and water resistance will be demonstrated within 24 hours. Ink mixed with CARE106 has an 8-12 hour pot life with performance properties slowly declining with time.

## Cleanup

Screen Wash (Prior to Reclaim): Use IMS201 Premium Graphic Screen Wash, IMS203 Economy Graphic Screen Wash, or IMS206 Graphic Auto Wash.

Press Wash (On Press): Use IMS301 Premium Graphic Press Wash.

## Storage

Store closed containers at temperatures between 65°-78°F (18°-25°C). Ink taken from the press should not be returned to the original container; store separately to avoid contaminating unused ink.

## General Information

### Ink Handling

Wear gloves and barrier cream to prevent direct skin contact. Safety glasses are suggested in areas where ink may be splashed. If ink 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 2300 Series Material Safety Data Sheet (MSDS) for further instructions and warnings. Obtain MSDS from [www.nazdar.com](http://www.nazdar.com).

2300 Series is a one-part, 100% solids UV-curable screen printing ink and does not contain N-vinyl-2-pyrrolidone (trade name V-Pyrol®).

### Adhesion Testing

Even when recommended UV energy output levels are achieved, it is imperative to check the degree of cure on a **cooled down** print:

1. Touch of ink surface – the ink surface should be smooth.

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2. Thumb twist – the ink surface should not mar or smudge. Some additives may show marring and require 24 hours for post cure.
3. Scratch surface – the ink surface should resist scratching. Some additives may show marring and require 24 hours for post cure.
4. 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.

## Weathering / Outdoor Durability

The 2300 Series was formulated for printing on containers for packaging applications. These inks are not recommended for long-term outdoor exposure. If the inks are to be used in any type of outdoor application, the printer and/or the end user has the responsibility to test the inks and substrate to the end use specifications.

## Manufacturer’s Product Offering

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.

## Standard Printing Colors

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

## Pantone Matching System® Base Colors

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

360 Series Colors: 23360-23369 colors are formulated to have no white or opaque pigments. This allows the colors to be more vibrant and allows for a better match of intense and darker colors.

## Color Card Materials

The following is a list of available screen printed samples of the 2300 Series.

UV Color Card (CARDUV): shows the Standard Printing Colors, Pantone Matching System Base Colors.

v 1 EN  
Ref: v 1 EN

## Packaging / Availability

Contact your Nazdar distributor for product availability and offering.

## Standard Ink Items

Standard ink items listed below are inventoried in gallon containers.

### Standard Printing Colors

Item Number	Color
2310	Primrose Yellow
2312	Medium Yellow
2319	Fire Red
2326	Mixing Clear
2378	High Intensity White
2379	High Intensity Black

### Pantone Matching System® Base Colors

Item Number	Color
23358	Tinting White
23359	Tinting Black
23360	Orange
23361	Yellow
23362	Warm Red
23363	Rubine Red
23364	Rhodamine Red
23365	Purple
23366	Violet
23367	Reflex Blue
23368	Process Blue
23369	Green

## Additives / Reducers

Item Number	Color
CARE69	UV Hardener
CARE106	UV Catalyst / Charger
NB23	Catalyst
RE310	UV Reducer

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## Cleaners / Clean Up

Item Number	Color
IMS203	Economy Graphic Screen Wash
IMS206	Auto Graphic Screen Wash
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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