

4300 Series UV screen ink is designed for high speed printing of plastic containers. 4300 Series inks exhibit excellent adhesion, as well as superior resistance to water, solvents, chemicals and other products typically packaged in plastic containers.

Substrates

Core Substrates

- HDPE: treated high density polyethylene
- LDPE: treated low density polyethylene
- PP: treated polypropylene

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

Additional Substrates

- PET
- PVC: vinyl
- Styrene
- PC: polycarbonate

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) monofilament polyester mesh with a mesh opening of 22-38 um for most applications.

305-355 tpi (120-140 tpcm) monofilament polyester mesh can be used for specialty applications with the mesh opening appropriate to the effect (*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.

Printing

4300 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 4300 Series with other inks besides the 4300 Series.

Cure Parameters

4300 Series cures when exposed to a single medium pressure mercury vapor lamp emitting output millijoules (mJ) and milliwatts (mW) of:
 120-150 mJ/cm² @ 600+ mW/cm²
for most colors. The starting point for mJ and mW for opaque whites and blacks will likely be higher.

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 optimize mJ and mW output, maintain the bulb and reflector, and ensure proper focus to the substrate.

These guidelines are based on measurements taken using an EIT® MICROCURE® radiometer measuring the UVA bandwidth (320-390 nm).

Clears / Varnishes

Mixing Clear: Use 4326 Mixing Clear to reduce the density of colors.

Common Performance Additives

The market specific performance properties of the 4300 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:

$$100\text{g ink} + 8\text{g additive} = 108\text{g total}$$

Reducer: Use RE301 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.

Water Resistance Additive / Adhesion Promoter: Use CARE106 UV Catalyst / Charger to increase water resistance and adhesion. Add up to 10% by weight. The first addition of CARE106 should not affect the ink's viscosity stability over time. However, the mixture will lose its effectiveness after several days. This time period is affected by the type of substrate, amount of CARE106 added and print conditions. Testing must be done under production conditions to determine the time frame for the mixed ink's effectiveness. The second addition of CARE106 is expected to react with the ink to cause an increase in the ink's viscosity and have an expected pot-life of 6-8 hours.

Use only one type of adhesion promoter / catalyst in an ink at a time. Mixing multiple reactive additives together in an ink can cause undesirable results.

Cleanup

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

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

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.

Standard 4300 Series items supplied in 1 gallon (4/5 kilo) containers or smaller are useable for a period of at least 24 months from the date of manufacture. Inks packaged in 5 gallon or greater (20 kilo or greater) containers may have a significantly reduced shelf life. To obtain the official shelf life letter, Contact Nazdar Technical Service at InkAnswers@nazdar.com or see contact listing at the end of this document.

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 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).

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.
2. Thumb twist – the ink surface should not mar or smudge.
3. Scratch surface – the ink surface should resist scratching.
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.

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

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.

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 4300 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.

Metallic Silver (aluminum): Add up to 8% by weight.

Metallic Gold (bronze): Add up to 15% by weight.

Chemical reactions in metallic inks may result in viscosity, color and printability changes over time; due to this, mix only enough metallic ink to be used the same day.

Pearlescent / Interference: Add up to 20% by weight.

Multi-Chromatic: Add up to 10% by weight.

Phosphorescent: Add up to 30% by weight.

Fluorescent: Add up to 30% by weight.

Fluorescent colors fade quickly with exposure to ultraviolet light. This includes outdoor exposure as well as UV reactor exposure.

Color Card Materials

The following is a list of available screen printed sample literature representing 4300 Series.

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

Standard Ink Items

Standard ink items listed below are inventoried in gallon containers. HB = heavy body

| Item Number | Color |
|-------------|-------------------------|
| 4310 | Primrose Yellow |
| 4312 | Medium Yellow |
| 4319 | Fire Red |
| 4320 | Brilliant Orange |
| 4326 | Mixing Clear |
| 4352 | Super Opaque Black |
| 4375 | Super Opaque White |
| 4376 | HB High Intensity White |
| 4377 | HB High Intensity Black |
| 4378 | High Intensity White |

Pantone Matching System® Base Colors

| Item Number | Color |
|-------------|---------------|
| 43358 | Tinting White |
| 43359 | Tinting Black |
| 43360 | Orange |
| 43361 | Yellow |
| 43362 | Warm Red |
| 43363 | Rubine Red |
| 43364 | Rhodamine Red |
| 43365 | Purple |
| 43366 | Violet |

Nazdar 4300 Series UV Container Screen Ink

| | |
|-------|--------------|
| 43367 | Reflex Blue |
| 43368 | Process Blue |
| 43369 | Green |

Non-Standard Ink Items

Non-Standard ink items listed below are special order, non-inventoried colors which may require additional lead time. These items are available in gallon containers.

| Item Number | Color |
|-------------|---------------|
| 4311 | Lemon Yellow |
| 4350 | Barrier White |

Additives / Reducers

| Item Number | Item Description |
|-------------|-----------------------|
| RE301 | UV Reducer |
| CARE106 | UV Catalyst / Charger |

Cleaners / Clean Up

| Item Number | Item Description |
|-------------|-----------------------------|
| IMS201 | Premium Graphic Screen Wash |
| IMS203 | Economy Graphic Screen Wash |
| IMS206 | Graphic Auto 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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UV Screen Ink