Nazdar 4200 UV Screen Ink Series

Nazdar's 4200 Series UV Screen Ink incorporates the newest formulation technology to optimize cure speed, adhesion range, ink film flexibility, print speed, and image quality. 4200 Series represents a breakthrough in providing a competitive, high quality ink that withstands some of the toughest finishing and shipping requirements in the graphics market. Nazdar's 4200 Series UV Screen Ink has been formulated for indoor and short-term outdoor performance on a wide range of substrates including styrene, coated paper and corrugated polypropylene substrates.

Substrates

Coated paper / Coated cardstock
Styrene (PS)
Rigid vinyl (PVC)
Matte vinyl (PVC)
Flexible vinyl (PVC)
Low tack vinyl (PVC)
Pressure sensitive calendered vinyl (PVC)
Top coated / Print treated polyester (PET)
Treated fluted/corrugated polypropylene (PP)

Substrate Material(s) listed below may be Limited in Adhesion *(testing highly recommended for each print run)*
Treated polypropylene (PP)
Treated polyethylene (PE)

Notes & Cautions

The surface tension for polyethylene and polypropylene substrates should be at or above 44 dynes/cm.
Static Cling Applications: 4200 Series is not recommended for multiple layer 2-sided static cling applications.4200 Series halftones have been used on 1-sided applications when backed with a flexible white such as 3950 Barrier White.

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.

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:

100-150 mJ/cm² @ 600+ mW/cm²

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.

Note: *Porous substrates allow ink to dive below the surface requiring a more thorough cure to overcome the added ink thickness.*

Processing

Cutting: suitable for router cutting, guillotine cutting, and die cutting.
Heat Bending: suitable for limited heat bending applications. Any heat bending applications should be qualified prior to full production printing.

Adhesion Testing

When recommended UV energy output levels are achieved, checking the degree of cure on a **cooled down** print is imperative:
- 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 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.
RE312 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.

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.
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).

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®).

Weathering / Outdoor Durability
At full strength and properly cured, the outdoor durability when mounted vertically in the Central U.S.A: **2 years**
Outdoor durability can be increased by applying an overprint clear.

Outdoor Durability Exceptions
4219, 4220, 42EC360, 42EC362, 42EC142, 42EC143, 42EC152, and 42EC153 have a projected **6 months** outdoor durability.

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 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.

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.

Economy (EC) Magenta & Economy (EC) Yellow Halftones are formulated to provide a cost effective alternative to the more durable Halftone Magenta and Yellow. Economy Halftone Colors are indoor/short-term outdoor colors.

T7 Halftones are designed to print to the targeted values of the seven colors (CMYK & RGB) as stated in ISO 12647-2 specification for process color reproduction. These inks can meet the ISO targeted numbers and achieve a neutral 100x3 black when printed on a substrate with a white value similar to a #1 Grade Coated Paper. Best results are achieved when printing these inks at the following solid ink density values and printing sequence: Cyan 1.45 – 1.50, Yellow 0.95 – 1.00, Magenta 1.25 – 1.30.

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.

360 Series Colors: These 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.

Flourescent Colors Product Specific

This ink is inter-printable with the one-part 32800 Coro-Plus® Fluorescent colors. Refer to the technical data sheet for item numbers, substrate range, and processing information.

Fluorescent Colors

Fluorescent colors fade with exposure to UV light. This includes outdoor exposure as well as UV reactor exposure. It is therefore recommended to adjust art so that these colors are the final colors printed on any image.

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.

Metallic Silver (aluminum), add up to: 8%
Metallic Gold (bronze), add up to: 15%
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%
Multi-Chromatic, add up to: 10%
Phosphorescent, add up to: 50%

Fluorescents, add up to: 30%
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 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
LTR Halftone Colors	42120	Halftone Extender Base
LTR Halftone Colors	42121	Halftone Cyan
LTR Halftone Colors	42124	Halftone Black
LTR Halftone Colors	42131	Halftone Cyan Dense
LTR Halftone Colors	42132	Halftone Magenta Dense
LTR Halftone Colors	42133	Halftone Yellow Dense
LTR Halftone Colors	42134	Halftone Black Dense
MTR T7 Halftone Colors	42140	Halftone Extender Base
MTR T7 Halftone Colors	42141	Halftone Cyan
MTR T7 Halftone Colors	42EC143	Economy Halftone Yellow
MTR T7 Halftone Colors	42144	Halftone Black
MTR T7 Halftone Colors	42146	Halftone Magenta
MTR Halftone Colors	42142	Halftone Magenta
MTR Halftone Colors	42EC142	Economy Halftone Magenta
MTR Halftone Colors	42143	Halftone Yellow
MTR T7 Halftone Colors	42151	Halftone Cyan Dense
MTR T7 Halftone Colors	42EC153	Economy Halftone Yellow Dense
MTR T7 Halftone Colors	42154	Halftone Black Dense
MTR Halftone Colors	42152	Halftone Magenta Dense
MTR Halftone Colors	42EC152	Economy Halftone Magenta Dense
MTR Halftone Colors	42153	Halftone Yellow Dense
Standard Colors	4210	Primrose Yellow
Standard Colors	4211	Lemon Yellow
Standard Colors	4212	Medium Yellow
Standard Colors	4213	Emerald Green
Standard Colors	4219	Fire Red
Standard Colors	4220	Brilliant Orange
Standard Colors	4221	Peacock Blue
Clears / Varnishes	4226	Mixing Clear
Clears / Varnishes	4227	Overprint Clear
Standard Colors	4252	Super Opaque Black
Standard Colors	4267	Reflex Blue
Standard Colors	4268	Process Blue
Standard Colors	4275	Super Opaque White
Standard Colors	4278	High Intensity White
Standard Colors	4279	High Intensity Black
Pantone Base Colors	42358	Tinting White
Pantone Base Colors	42359	Tinting Black

Pantone Base Colors	42360	Orange
Economy Mixing Colors	42EC360	Economy Orange
Pantone Base Colors	42361	Yellow
Pantone Base Colors	42362	Warm Red
Economy Mixing Colors	42EC362	Economy Warm Red
Pantone Base Colors	42363	Rubine Red
Pantone Base Colors	42364	Rhodamine Red
Pantone Base Colors	42365	Purple
Pantone Base Colors	42366	Violet
Pantone Base Colors	42367	Reflex Blue
Pantone Base Colors	42368	Process Blue
Pantone Base Colors	42369	Green
Additives	RE312	UV Reducer
Additives	NB80	UV Adhesion Promoter
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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