4200 SERIES UV SCREEN INK

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/board, styrene, treated fluted polypropylene, treated polyester, most rigid and flexible vinyl, static cling vinyl, most rigid and flexible treated polyethylene, most rigid and flexible treated polypropylene
	Note: The surface tension for polyethylene and polypropylene substrates should be at or above 44 dynes/cm.

USER INFORMATION

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. See full disclaimer at the end of the document.

MESH	355-420 tpi (140-165 tpcm) monofilament polyester mesh for most applications
STENCIL	Solvent resistant, UV ink compatible direct emulsions and capillary films
SQUEEGEE	70-90 durometer polyurethane squeegee
PRINTING	4200 Series ink is formulated to be press ready. Thoroughly mix the ink prior to printing.
	Maintain ink temperature at $65°$-$90°$F ($18°$-$32°$C) for optimum print and cure performance. Lower temperatures increase the ink viscosity, impairing both flow and cure. Elevated temperatures lower the ink viscosity, reducing print definition, film thickness and opacity.
	Pretest to determine optimum printing performance for a particular set of ink, substrate, screen, press, and curing variables/conditions.
	The ink can be affected by stray UV light in and around a printing facility. Be aware of skylights, windows and overhead lights curing the ink in the screen. Leaving a container uncovered may result in the ink's surface forming a "skin," caused by reaction with room lighting or other stray lights. Keep containers covered. Light filters are recommended.
CURE PARAMETERS	4200 Series ink cures when exposed to a medium pressure mercury vapor lamp set at 200 watts per inch with millijoules (mJ) and milliwatts (mW) of:
	100-150 mJ/cm² @ 600+ mW/cm²
	These guidelines are intended only as a starting point for determining cure parameters, which must be determined under actual production conditions for each color. "Undercuring" the ink may result in poor adhesion, poor block resistance, and higher residual odor.
	The values mentioned above are representative of measurements taken using an EIT UVICURE Plus radiometer measuring the UVA bandwidth (320-390 nm). To obtain accurate mW readings with the UVICURE Plus, reduce the belt speed to less than 40 ft/min.
	Note: Porous substrates can allow ink to dive below the surface requiring a more thorough cure to overcome the added ink thickness. 4200 Series ink is not recommended for porous substrates.

CLEARS / VARNISHES	*Mixing Clear:* Use 4226 Mixing Clear to reduce the density of colors or as a clear base for specialty additives such as pearlescent powders.
	Overprint Clear: Use 4227 Overprint Clear to provide added surface protection and extend the outdoor durability.
ADDITIVES	All additives should be thoroughly mixed into the ink before each use. Prior to production, test any additive adjustment to the ink.
	Reducer: Use RE312 UV Reducer to reduce the viscosity of these inks. Add up to 10% by weight.
	Adhesion Promoter: To gain additional adhesion performance to aged or lower grade substrates, use NB80 UV Adhesion Promoter. Add up to 5% by weight. Improved adhesion will be demonstrated completely after 24 hours, with full cross linking in 4-7 days. Ink mixed with NB80 UV Adhesion Promoter has a 4-8 hour pot life.
CLEAN UP	*Screen Wash (Prior to Reclaim):* Use IMS203 Economy Graphic Screen Wash or IMS207C Graphic Recirculating Wash
	Press Wash (On Press): Use IMS301 Premium Graphic Press Wash
STORAGE	Store covered at temperatures between 65°-90°F (18°-32°C). Ink taken from the press should not be returned to the original container; store separately to avoid contaminating unused ink.
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.

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 4200 Series ink Material Safety Data Sheet for further instructions and warnings.
	4200 Series ink is a one-part, 100% solids UV-curable screen printing ink which does not contain N-vinyl-2-pyrrolidone (trade name V-Pyrol®).
ADHESION / CURE TESTING	Even when recommended UV energy output levels are achieved, it is imperative to check adhesion on a **cooled down** print:
	1. Thumb twist - the ink surface will not smudge significantly.
	2. Scratch surface - the ink surface will resist scratching. Some cardstocks scratch easily, so use magnification to determine if scratches are ink only or ink and top layer of substrate.
	3. Cross hatch tape test – 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, wait for 1 minute and rip off at a 180 degree angle. Ink should only come off in actual cut areas.

WEATHERING / OUTDOOR DURABILITY	At full strength and properly cured, 4200 Series colors are formulated to provide 6-9 months outdoor durability when mounted vertically in the Central U.S.A. The use of 4227 Overprint Clear increases outdoor durability.

Outdoor durability cannot be specified exactly. Some 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:
  - Adding large amounts of additives, mixing clear or white to any color
  - Mixing several colors to achieve a specific color
  - Mixing a small quantity of any single color with any other color
- Substrate type and age, the substrate by itself should provide the required durability
- Mounting angle or directional orientation
- Geographical location
- Air pollution and exposure to excessive abrasion (for example, brush car washes)
- Non-clear coated prints exhibit more color change and loss of gloss

PRODUCT OFFERING

STANDARD PRINTING COLORS	The Standard Printing Colors have excellent opacity, and flow characteristics.
PANTONE MATCHING SYSTEM® BASE COLORS	*360 Series Colors:* 42358-42369 Pantone Matching System® Base Colors are used to simulate the Pantone® Color Formulation Guide. These inks are press ready, can be used in matches to achieve Pantone® color simulations, or let down with 4026 Mixing Clear.
ECONOMY MIXING COLORS	*42EC360 and 42EC362:* 42EC360 Economy Orange and 42EC362 Warm Red colors contain 6-9 month durable pigments and are cost effective alternative colors to the Pantone 42360 Orange and 42362 Warm Red. These economy colors have been matched as closely as possible to the comparative products to allow for use in color match formulations.
HALFTONE COLORS	*Halftone Extender Base* is used to reduce the density of the halftone colors.

Standard Halftone Colors are formulated with hues and densities suitable to meet the requirements of the graphics industry.

Dense Halftone Colors are formulated with increased densities over the Standard Halftone densities and are designed for printers that want to have the latitude to adjust the density levels of their halftone inks.

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

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

SPECIAL ADDITIVES	When inks are to be printed over a special effect color, the overprinting ink(s) 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. Specialty pigments may settle in the container; prior to printing, thoroughly mix the ink.

The following special effect pigments may be added to 4200 Series. These pigments are available in 1-pound containers. Contact Nazdar® for the item number(s) and availability of special effect products.

Metallics: Silver (aluminum) - add up to 8% by weight, Gold (bronze) - add up to 15% by weight. Mix only enough metallic ink to be used the same day. Chemical reactions in metallic inks may result in viscosity, color and printability changes over time.

Pearlescents / Interference / Multi-Chromatic: Pearlescent and Interference pigments - add up to 20% by weight, Multi-Chromatic pigments - add up to 10% by weight. See the Pearlescent, Interference, and Multi-Chromatic Technical Data Sheets for more information.

Phosphorescents: Add up to 30% by weight.

Fluorescents: 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 screen printed samples available.

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

Special Effects Color Card: shows Metallic, Pearlescent, Interference, and Multi-Chromatic effects mixed with clear.

PACKAGING/ AVAILABILITY	All items listed below are available in gallon containers.

Item Number	Standard Printing Colors	Item Number	Pantone Matching System® Base Colors
4219	Fire Red	42358	Tinting White
4226	Mixing Clear	42359	Tinting Black
4227	Overprint Clear	42360	Orange
4252	Super Opaque Black	42361	Yellow
4267	Reflex Blue	42362	Warm Red
4268	Process Blue	42363	Rubine Red
4275	Super Opaque White	42364	Rhodamine Red
4278	High Intensity White	42365	Purple
4279	High Intensity Black	42366	Violet
		42367	Reflex Blue
Item Number	**Economy Mixing Colors**	42368	Process Blue
42EC360	Economy Orange	42369	Green
42EC362	Economy Warm Red		

Item Number	Halftone Colors MTR (Medium Tack Rheology)	Item Number	Halftone Colors MTR (Medium Tack Rheology)
42140	Halftone Extender Base (MTR)	42151	Halftone Cyan Dense (MTR)
42141	Halftone Cyan (MTR)	42EC152	Economy Halftone Magenta Dense (MTR)
42EC142	Economy Halftone Magenta (MTR)	42EC153	Economy Halftone Yellow Dense (MTR)
42EC143	Economy Halftone Yellow (MTR)	42154	Halftone Black Dense (MTR)
42144	Halftone Black (MTR)		

PACKAGING / AVAILABILITY Special order colors: all items listed below are non-inventoried items and may require additional lead time. These items are available in gallon containers.

Item Number	Non-Inventoried Colors	Item Number	Non-Inventoried Colors
4210	Primrose Yellow	42120	Halftone Extender Base (LTR)
4211	Lemon Yellow	42121	Halftone Cyan (LTR)
4212	Medium Yellow	42EC122	Economy Halftone Magenta (LTR)
4213	Emerald Green	42EC123	Economy Halftone Yellow (LTR)
4220	Brilliant Orange	42124	Halftone Black (LTR)
4221	Peacock Blue	42131	Halftone Cyan Dense (LTR)
		42EC132	Economy Halftone Magenta Dense (LTR)
		42EC133	Economy Halftone Yellow Dense (LTR)
		42134	Halftone Black Dense (LTR)

PACKAGING / AVAILABILITY Additives/Reducers are available in liters or quarts. Contact customer service for availability Cleaners are available in gallon, 5 gallon and 55 gallon containers.

Item Number	Additives/Reducers	Item Number	Cleaners
RE312	UV Reducer	IMS203	Economy Graphic Screen Wash
NB80	UV Adhesion Promoter	IMS207C	Graphic Recirculating Wash
		IMS301	Premium Graphic Press Wash

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