

Versacon[®] 4100 Screen Ink is specifically designed for high speed printing of a variety of plastic containers. Properly cured, these inks will exhibit excellent adhesion and scuff resistance.

Due to the variety of products and chemicals which are packaged in containers printed with the 4100 inks, testing for end use application is strongly advised.

Versacon[®] 4100 Series screen printing ink exhibits a high gloss finish in all colors.

SUBSTRATES Treated polyethylene (HDPE, LDPE), polyethylene terephthalate (PET), polycarbonate (PC), treated polypropylene (PP)

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 threads per inch (140-165 threads per cm) monofilament polyester mesh for most applications

STENCIL Solvent resistant, UV ink compatible direct emulsions and capillary films

SQUEEGEE 70-90 durometer polyurethane squeegee

COVERAGE 2500 to 3800 square feet (232 – 353 square meters) per gallon depending upon ink deposit

PRINTING Versacon[®] 4100 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. Be aware of skylights, windows and overhead lights curing the ink in the screen. Be aware of stray light coming out of curing stations which may affect ink stability on press. Keep containers covered. Leaving a container uncovered may result in the ink's surface forming a "skin," caused by reaction with room lighting or other stray lights. Light filters are recommended.

CURE PARAMETERS Versacon[®] 4100 Series is formulated to cure at production speeds of 60-80 bottles per minute with properly maintained curing equipment.

Millijoules – radiometer readings in millijoules represent the total amount of UV energy arriving on the surface. In container printing, the total amount of energy the ink and the container is exposed to depends on the number of bottle rotations under the curing unit. A minimum of 300 millijoules may be necessary to cure certain colors.

Milliwatts – radiometer readings in milliwatts represent the penetrating power of the UV energy arriving on the surface. A minimum of 600 milliwatts may be necessary for through cure.

These guidelines are intended only as starting point for determining cure parameters, which must be determined under actual production conditions.

CLEAR / VARNISHES

Mixing Clear / Metallic Mixing Clear: Use 4126 Mixing Clear to reduce the density of colors or as a clear base for specialty additives such as metallic powders.

ADDITIVES

Additives should be thoroughly mixed into the ink before each use. Prior to production, test any additive adjustment to the ink.

Reducer: Use RE310 UV Reducer to reduce the viscosity of these inks. Add up to 10% by weight.

Adhesion Promoter: To gain additional adhesion performance to certain substrates use CARE68 Adhesion Promoter. Add up to 1% by weight. Mix thoroughly and use the ink mixture immediately. The addition of CARE68 will not affect on-screen stability. However, the mixture will lose its efficiency after a certain amount of time. This time period is affected by the type of substrate, amount of CARE68 added and print conditions. Testing must be done under production conditions to determine the time frame for the ink's effectiveness. Additional CARE68 may be added throughout the day's production only.

UV Hardener: To improve chemical resistance and to minimize scuffing especially on prints immediately out of the curing unit, CARE69 UV Hardener may be added to the inks. On PET containers, CARE69 may be added up to 5% by weight. On HDPE containers CARE69 may be added up to 10% by weight. 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. Test thoroughly before any production as to suitability for the printing and end use requirements.

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 tightly 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.

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 Material Safety Data Sheet for further instructions and warnings.

Versacon[®] 4100 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 adhesion on a **cooled down** print:

1. Touch of ink surface – the ink surface will be smooth and slick.
2. Thumb twist – the ink surface will not mar or smudge.
3. Scratch surface – the ink surface will resist scratching
4. 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.

Full adhesion characteristics are demonstrated within 24 hours after cure.

PRODUCT OFFERING

STANDARD PRINTING COLORS

The Standard Printing Colors have excellent opacity, flow characteristics, and are intended to work well from the container.

4176 HB (Heavy Body) High Intensity White and 4177 HB High Intensity Black are formulated with higher viscosities. Depending on production parameters such as printing speed, mesh and cure capability, the 4176 may be inter-mixed with 4178 High Intensity White and 4198 Bright White to achieve a desired printing viscosity. The same is also true for 4177 HB High Intensity Black and 4179 High Intensity Black.

PANTONE MATCHING SYSTEM[®] BASE COLORS

The 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 mixing clear. The ColorStar[®] Color Management System software provides blend formulations using Pantone Matching System[®] Base Colors. These blend formulations are also available at www.nazdar.com.

360 Series Colors: 41360-41369 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. All white needed to match a color is added as the 41358 Tinting White.

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 matched to the high end of the SWOP standards.

SPECIAL ADDITIVES

When inks are to be printed over a special effect color, the overprinting ink(s) must be evaluated for inter-coat adhesion before proceeding with the production run. To maximize inter-coat adhesion, specialty colors should be printed as late as possible in the print sequence.

The following special effect pigments may be added to 4100 Series. These pigments are available in 1-pound containers. Contact Nazdar for the item number(s) and availability of special effect products. Specialty pigments may settle in the container; prior to printing, thoroughly mix the ink.

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

Gold (bronze) Metallic: 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 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.

Pantone[®] 871c to 877c have been matched in 4100 Series Ink using the Pearlescent Pigments.

Phosphorescents: add up to 20% by weight.

Fluorescents: add up to 25% 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: shows the Standard Printing Colors and Pantone Matching System® Base Colors.

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

Non-Metallic Pantone® Simulations sheet: shows representations of the 871c to 877c Pantone® Metallic color matches using pearlescent pigments.

PACKAGING

All items listed below are available in liters and/or gallon containers.

Stock Number	Standard Printing Colors	Stock Number	Pantone Matching System® Base Colors
4110	Primrose Yellow	41358	Tinting White
4112	Medium Yellow	41359	Tinting Black
4119	Fire Red	41360	Orange
4126	Mixing Clear	41361	Yellow
4176	HB High Intensity White	41362	Warm Red
4177	HB High Intensity Black	41363	Rubine Red
4178	High Intensity White	41364	Rhodamine Red
4179	High Intensity Black	41365	Purple
4198	Bright White	41366	Violet
		41367	Reflex Blue
	Halftone Colors	41368	Process Blue
4190	Halftone Extender Base	41369	Green
4191	Halftone Cyan		
4192	Halftone Magenta		
4193	Halftone Yellow		
4194	Halftone Black		

PACKAGING

Additives/Reducers are available in liters, quarts and/or gallon containers.
Cleaners are available in 1-gallon, 5-gallon and 55-gallon containers.

Stock Number	Additives/Reducers	Stock Number	Cleaners
RE310	UV Reducer (1 liters and gallons)	IMS203	Economy Graphic Screen Wash
CARE68	Adhesion Promoter	IMS207C	Graphic Recirculating Wash
CARE69	UV Hardener	IMS301	Premium Graphic Press Wash

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®.

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.

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