

The multi-purpose PowerPrint[®] Plus 1800 Series UV Screen Ink has been formulated to meet the processing speeds of the most modern printing equipment including in-line presses, for a wide range of substrates including treated corrugated polypropylene. PowerPrint[®] Plus 1800 features include: fast curing, hard ink surface, and high block resistance.

SUBSTRATES	Styrene, cardstock, coated paper, matte vinyl, rigid vinyl, top coated polyester, pressure sensitive vinyl, treated polyethylene banner, treated polypropylene banner, treated corrugated polypropylene and some high density polyethylene sheeting (not recommended for highly plasticized vinyl materials such as vinyl banner and static cling, and not recommended for container or nameplate applications) The surface tension for polyethylene and polypropylene substrates should be at or above 44 dynes/cm
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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
COVERAGE	2,500-3,500 square feet (232 - 325 square meters) per gallon depending upon ink deposit
PRINTING	PowerPrint [®] Plus 1800 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 inks 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. 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.

**CURE
PARAMETERS**

PowerPrint[®] Plus 1800 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:

80-100 mJ/cm² @ 600+ mW/cm² for most colors

100-130 mJ/cm² @ 600+ mW/cm² for 1820, 1878, 1879, 18136, 18156

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, and higher residual odor. “Overcuring” the ink may reduce the flexibility of the printed part, and adhesion of subsequent ink layers.

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 condition and focus to the substrate.

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 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.

**CLEAR /
VARNISHES**

Mixing Clear / Metallic Mixing Clear: Use 1826 Mixing Clear to reduce the density of colors or as a clear base for specialty additives such as Metallics.

Overprint Clear: Use 1827 Overprint Clear to provide added surface protection and to extend the weatherability and outdoor durability of colors.

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

Flexibilizer: Use RE308 UV Reducer to increase the flexibility of these inks. Add up to 10% by weight. The addition of RE308 UV Reducer could decrease block resistance.

Adhesion Promoter: To gain additional adhesion to aged or lower grade fluted polypropylenes or to increase adhesion on some acrylics, use NB80 UV Adhesion Promoter. Add up to 5% by weight. Improved adhesion will be demonstrated 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.

Gloss / Flattening Powders / Improved Slip: Use CARE59 UV Satin Paste to reduce gloss and improve slip. Add up to 20%. Use CARE63 Anti-Blocking Additive to reduce the potential for blocking, reduce gloss, and improve slip. Add up to 10%. CARE59 UV Satin Paste and CARE63 Anti-Blocking Additive should be power mixed into the ink.

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

Inks react to light and temperature. 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.

PROCESSING

Qualify PowerPrint[®] Plus 1800 Series with respect to finishing processes before conducting full scale production; see the ‘Additives’ section for suggested Additives/Reducers to enhance finishing process performance.

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 1800 Material Safety Data Sheet for further instructions and warnings.

PowerPrint[®] Plus 1800 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 should feel dry.
2. Thumb twist – the ink surface should not mar or smudge.
3. Scratch surface – the ink should resist scratching. Some cardstocks scratch easily, so use magnification to determine if scratches are ink only or ink and top layer of substrate.
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 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, PowerPrint[®] Plus 1800 Series colors are formulated to provide 2 years outdoor durability when mounted vertically in the Central U.S.A. The use of 1827 Overprint Clear increases the projected outdoor durability.

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:
 - Adding large amounts of 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
- Mounting angle or directional orientation
- Geographical location
- Air pollution
- Exposure to excessive abrasion (for example, brush car washes)
- Non-clear coated prints exhibit more color change and loss of gloss

Exceptions: 1800 EC (Economy) Halftones have a projected 6 months outdoor durability.

PRODUCT OFFERING

STANDARD PRINTING COLORS Standard Printing Colors have excellent opacity and flow characteristics. These inks are intended to work well from the container.

**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. ColorStar[®] Color Management System software uses Pantone Matching System[®] Base Colors to match Pantone colors. These blend formulations are also available at www.nazdar.com.

360 Series Colors: 18360-18369 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 18358 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.

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.

Yellow (RS) Halftone Colors are intended to better facilitate matching redder shades without blending Halftone Magenta into the Halftone Yellow.

High Intensity Halftone Black has been developed to function as a dense halftone and line color in a single pass.

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.

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.

EC (Economy) Halftones are indoor/short-term outdoor colors closely matching the long-term, durable counterpart.

**PANTONE[®]
871c - 877c
METALLIC
SIMULATED
COLORS**

Pantone[®] 871c to 877c colors have been matched in 1800 Series ink using pearlescent pigments. When printed on a white background, a gold or silver metallic effect is achieved. A 305 tpi (120 tpcm) monofilament polyester mesh is recommended for printing these colors. These colors are Special Order items.

**FLUORESCENT
COLORS**

PowerPrint[®] Plus 1800 Series ink is inter-printable with the one-part PowerPrint[®] Fluorescent colors and CoroPlus[™] Fluorescent colors on their respective substrates. Refer to the technical data sheet for each set of colors in reference to item numbers, substrate range, and processing information.

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. Pigments may settle in the container; prior to printing, thoroughly mix the ink. The following special effect pigments may be added to 1800 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.

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, Halftone Colors

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

Non-Metallic Pantone[®] Simulations sheet (LIT0121): shows representations of the 871c to 877c Pantone[®] metallic color matches using pearlescent pigments

PACKAGING / AVAILABILITY

All items listed below are inventoried items and available in gallon containers.

Item Number	Standard Printing Colors	Item Number	Pantone Matching System [®] Base Colors
1810	Primrose Yellow	18358	Tinting White
1811	Lemon Yellow	18359	Tinting Black
1812	Medium Yellow	18360	Orange
1813	Emerald Green	18361	Yellow
1819	Fire Red	18362	Warm Red
1820	Brilliant Orange	18363	Rubine Red
1826	Mixing Clear	18364	Rhodamine Red
1827	Overprint Clear	18365	Purple
1852	Super Opaque Black	18366	Violet
1867	Reflex Blue	18367	Reflex Blue
1868	Process Blue	18368	Process Blue
1875	Super Opaque White	18369	Green
1878	High Intensity White		
1879	High Intensity Black		

Item Number	MTR Standard/Dense Halftone Colors (Medium Tack Rheology)	Item Number	LTR Standard/Dense Halftone Colors (Low Tack Rheology)
18140	Halftone Extender Base (MTR)	18120	Halftone Extender Base (LTR)
18141	Halftone Cyan (MTR)	18131	Halftone Cyan Dense (LTR)
18142	Halftone Magenta (MTR)	18134	Halftone Black Dense (LTR)
18EC142	<i>Economy</i> Halftone Magenta (MTR)		
18143	Halftone Yellow (MTR)		
18EC143	<i>Economy</i> Halftone Yellow (MTR)		
18144	Halftone Black (MTR)		
18151	Halftone Cyan Dense (MTR)		
18152	Halftone Magenta Dense (MTR)		
18EC152	<i>Economy</i> Halftone Magenta Dense (MTR)		
18153	Halftone Yellow Dense (MTR)		
18EC153	<i>Economy</i> Halftone Yellow Dense (MTR)		
18154	Halftone Black Dense (MTR)		
18155	Halftone Yellow Dense RS (MTR)		
18156	High Intensity Halftone Black (MTR)		

PACKAGING / AVAILABILITY

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

Item Number	Non-Inventoried Colors	Item Number	Non-Inventoried Colors
18121	Halftone Cyan (LTR)	68157518	SPL 18 871C Pearl Gold
18122	Halftone Magenta (LTR)	68157618	SPL 18 872C Pearl Gold
18EC122	<i>Economy</i> Halftone Magenta (LTR)	68157718	SPL 18 873C Pearl Gold
18123	Halftone Yellow (LTR)	68157818	SPL 18 874C Pearl Gold
18EC123	<i>Economy</i> Halftone Yellow (LTR)	68157918	SPL 18 875C Pearl Gold
18124	Halftone Black (LTR)	68158018	SPL 18 876C Pearl Gold
18132	Halftone Magenta Dense (LTR)	68158118	SPL 18 877C Pearl Silver
18EC132	<i>Economy</i> Halftone Magenta Dense (LTR)		
18133	Halftone Yellow Dense (LTR)		
18EC133	<i>Economy</i> Halftone Yellow Dense (LTR)		
18135	Halftone Yellow Dense RS (LTR)		
18136	High Intensity Halftone Black (LTR)		

PACKAGING / AVAILABILITY

All items listed below are inventoried items. Additives/Reducers are available in quart and gallon containers. Cleaners are available in gallon, 5 gallon, and 55 gallon containers.

Item Number	Additives/Reducers	Item Number	Clean Up
RE310	UV Reducer	IMS203	Economy Graphic Screen Wash
RE308	UV Reducer	IMS207C	Graphic Recirculating Wash
CARE59	UV Satin Paste	IMS301	Premium Graphic Press Wash
CARE63	Anti-Blocking Additive		
NB80	UV Adhesion Promoter (quarts only)		

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.

Nazdar - World Headquarters
8501 Hedge Lane Terrace
Shawnee, KS 66227-3290 USA
Toll Free US: 866.340.3579
Tel: 913.422.1888
Fax: 913.422.2296
E-mail: custserv@nazdar.com
Technical Support E-mail:
InkAnswers@Nazdar.com

Nazdar Limited - England
Barton Road, Heaton Mersey
Stockport, England SK4 3EG
Tel: + (44) 0.161.442.2111
Fax: + (44) 0.161.442.2001
UK Technical Service E-mail:
technicalservicesuk@nazdar.com

Nazdar - China
Room 17-04, Silver Centre
1388, North Shan Xi Road
Shanghai 200060 China
Tel: 86-13818301261
E-mail: aspac@nazdar.com

Nazdar - Singapore
10, Changi South Street 3 #04-04
Singapore 486147
Tel: +65-65434920
Fax: +65-65433690
E-mail: aspac@nazdar.com

Website: www.nazdar.com