Product: Panel Display
Series: PD™

DESCRIPTION: PD series is a single-package UV ink system specifically formulated for printing onto polycarbonate and top-coated polyester used in the manufacture of panel displays, membrane switch overlays and nameplates.

PD SERIES CHARACTERISTICS & PRODUCT FEATURES:

- Supplied as "700 Series" High Density Colors and SunMatch™ Blending Colors, offering printers the versatility of using PD inks for both first surface graphics as well as second-surface backlit displays commonly seen on automotive dash panels and appliances.
- Resistant to delamination when in contact with pressure-sensitive adhesives
- Excellent flexibility for embossing and die-cutting operations
- Good multiple-pass intercoat adhesion
- Excellent image definition

PROCESSING NOTES & RECOMMENDATIONS:

- Due to the many different substrates and processing variables used in the manufacture of panel displays and nameplates, pre-testing of all components and phases of application, to ensure adequate performance, is essential prior to use in production.
- For best results, adhesives should be applied 24 hours after curing.
- The surface of polycarbonate and top-coated polyesters can deteriorate and become less receptive to printing inks due to a combination of factors, which include: substrate grade; processing conditions; excessive exposure of the substrate to UV radiation; and spectral output of the particular UV curing unit.
- Blends of PD inks containing a high percentage of white or clear, will have reduced lightfastness properties.
- Any outdoor application requiring the use of white for either printing or blending purposes, must use PD-W50 Blending White. PD-W501 and PD-W70 Whites are not suitable for outdoor exposure.

INTERCOAT ADHESION: PD inks exhibit excellent intercoat adhesion and compatibility with pressure-sensitive adhesives. However, as with all UV inks, intercoat adhesion should be monitored throughout the print run when processing multiple ink layers.

PRODUCT RANGE:

- Special "700 Series" High Density colors for Automotive and Appliance displays. 700 Series inks can be used at full strength or blended with PD-799 Mixing Clear to produce transparent or translucent colors.
- SunMatch™ Blending Colors
- PD-799 also serves as a Metallic Mixing Clear to produce blends using metallic pigments.
- SWOP 4-color process shades
- Opaque Black and White
- Extra Opaque Black and Super Opaque White

CURING: Actual cure speeds for PD series inks are dependant on a number of factors and processing variables, including ink film deposit; color shade, strength & opacity; mesh; wattage and type of UV lamps; efficiency of UV curing unit; and substrate.

UV Energy – Typical UV energy levels in the range of 250-300 mJ/cm^2 for PD colors, 300-350 mJ/cm^2 for PD Opaque White, and approximately 350-400 mJ/cm^2 for PD Opaque Black is required to ensure adequate cure. PD Super Opaque White will require approximately 400-450 mJ/cm^2 and the Extra Opaque Black requires approximately 450-500 mJ/cm^2 for adequate cure.

Substrates have differing receptivity to UV ink, and on certain rigid and/or colored materials, or when preparing blends of PD series inks containing a high percentage of white or black, it may be necessary to boost curing power to achieve satisfactory adhesion and cure.

MODIFICATION: PD does not require the use of additives under normal printing conditions. If viscosity reduction is required, 3-10% by weight of ST-290 Viscosity Modifier may be added.

PROCESS COLORS: PD 4-color process inks are available as high color-strength SWOP colors. PD-TPL or PD-TPS Transparent Bases may be used to adjust density. As with all UV halftone printing, plain-weave mesh counts and thin stencil coatings should be used to minimize ink deposit, and reduce dot gain.

SCREEN MESH: 305-420/in.(120-165/cm) monofilament polyester mesh, or finer, is suitable for processing. It is possible to use coarser fabrics, however, the curing parameters must be adjusted for sufficient cure of the increased ink film deposit. **Sun Chemical has the mesh best suited for your particular requirements. Contact your local Sun representative for details.**

SQUEEGEE: Sharp urethane squeegee of approximately 75-85 durometer. **Sun Chemical has the best squeegee for your particular application. Contact your local Sun representative for recommendations.**

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Product: Panel Display
Series: PD™

METALLIC INKS: Most Aluminum and Bronze pigments can be used with PD-799 Mixing Clear to produce inks with metallic appearance. Typical levels by weight are:

- 15-20% Bronze paste for gold colors
- 5-10% Aluminum paste for silver colors

NOTE: Care should be taken to select metallic pigments with a particle size sufficiently small to easily pass through the selected screen mesh.

NOTE: Do not exceed 120ºF (49ºC) when preparing metallic blends.

NOTE: Due to the instability of many metallic pigments,metallic blends must be considered a two-pack system with less than 24 hours (approximate) pot-life. Only mix sufficient quantities for immediate use.

NOTE: Pretest all metallic blends prior to use in production.

COVERAGE: When printed through a 380/in. (150/cm) plain-weave mesh, PD will cover approximately 3000 square feet per gallon, depending on printing variables. Higher coverage can be achieved when finer mesh counts are used.

WASH-UP: PD Series inks may be cleaned from screens and processing equipment with any suitable screen wash, such as VL Wash. **Sun Chemical has a variety of wash-ups including ECO friendly screen washes available for your particular needs. Contact us for *all* of your pre and post-press chemical requirements.**

STORAGE: When stored in black polyethylene containers at temperatures between 40-90°F (5-32°C), PD has a shelf-life of 36 months.

HEALTH AND SAFETY: As with all inks, gloves and safety goggles should be used when handling this product. For more complete information, refer to the relevant **Material Safety Data Sheets.**

700 Series High Density Colors:

PD-711	GS Yellow
PD-715	RS Yellow
PD-721	YS Red
PD-725	BS Red
PD-749	Green
PD-755	RS Blue
PD-759	GS Blue
PD-783	Magenta
PD-785	Violet
PD-799	Mixing Clear

Modifiers:

ST-290	Viscosity Modifier

SunMatch™ Blending Colors:

PD-Y30	Primrose
PD-Y50	Golden Yellow
PD-O50	Orange
PD-R20	Scarlet
PD-R50	Red
PD-M50	Magenta
PD-V50	Violet
PD-B50	Blue
PD-G50	Green
PD-N50	Blending Black
PD-W50	BlendingWhite
PD-E50	Mixing Clear

Note: Although SunMatch pigments are lightfast, we do not recommend this series for applications requiring extreme outdoor durability. If blended inks contain high contents of white, lightfastness is reduced.

Standard Products:

PD-C50	Overprint Clear
PD-N501	Opaque Black
PD-W501	Opaque White

Super Opaque Black & White:

PD-W70	Super Opaque White
PD-N70	Extra Opaque Black

SWOP Process Colors:

PD-S231	SWOP Process Yellow
PD-S235	SWOP Process Cyan
PD-S240	SWOP Process Magenta
PD-S271	SWOP Process Black
PD-TPL	Long-Flow Transparent Base
PD-TPS	Short-Flow Transparent Base

In accordance with information received from suppliers, the full PD series is formulated without heavy metals and complies with: 16 CFR, Part 1303; ANSI Z66.1-1964; ASTM F 963; CONEG packaging regulations; EC Packaging Waste Directive EC/94/62; EN71, section 3; RoHS 2002/95/EC; WEEE 2002/96/EC; E2003/11/EC.

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