SunChemical®

Coates Screen

PRODUCT DATA SHEET

Product: OPUS XL
Series: FLX XL™

DESCRIPTION: Opus XL is a high-elongation, NVP-Free, single-package UV ink system formulated specifically for premium outdoor-grade pressure-sensitive PVC films. Opus XL has been developed to give superior exterior performance on difficult application surfaces, such as corrugated and riveted surfaces, and is resistant to edge curl of pressure-sensitive vinyls during outdoor exposure. Opus XL has exceptional flexibility combined with very high elongation.

EXTERIOR DURABILITY: Opus XL is formulated to withstand exterior exposure of 5-7 years[1] when properly printed and applied. Opus XL is resistant to edge curl and has excellent overall exterior durability. For best results, it is advisable to print full strength Opus XL at the highest practical ink deposit onto premium exterior-use pressure-sensitive materials. Full exterior durability can only be achieved by using FLX-C501 Super Overprint Clear.

[1]-Based on accelerated weathering tests simulating exposure to Northern USA and Middle European temperate climates.

NOTE: As a general rule, the exterior durability of blue, green, black and white screen inks surpasses that of yellows, oranges and reds. This is due to inherent differences between various chemical types of exterior-durable pigments.

WARRANTY: Opus XL has been tested and approved by several major substrate manufacturers who are prepared to offer warranties on outdoor durability. Please contact your local Sun Chemical representative for further details.

EDGE CURL: This is a curl effect associated with prints of UV ink on pressure-sensitive vinyls, and certain other pressure-sensitive substrates, when ink is bled to the edge. The curling of the substrate at the edge can cause a separation of the pressure-sensitive film from a surface, which may subsequently lead to the entire pressure-sensitive film becoming detached. Opus XL has been formulated to overcome this problem. For best results it is advisable to minimize the ink deposit printed to the film edge, and to select the appropriate vinyl film for any specific outdoor application. Care must be taken to utilize correct surface-preparation and mounting techniques for optimum results.

APPLICATION OF PRINTED SUBSTRATES: After decoration, substrates will usually be mounted on various outdoor vehicle or graphic sign displays. Before mounting, please consider the following ambient temperature restrictions:

- On **flat surfaces,** apply the printed substrate at temperatures above 40°F (4°C), to reduce the risk of failure caused by diminished elongation properties of cured ink films at lower temperatures.
- On **corrugated surfaces,** apply the printed substrate at temperatures above 50°F (10°C), to reduce the risk of failure caused by diminished elongation properties of cured ink films at lower temperatures.

NOTE: These temperature application recommendations are made with regards to the performance of cured ink films. Substrate manufacturers often have their own restrictions pertaining to the performance of their films. Please review and consider substrate manufacturer temperature restrictions in addition to the one's associated with cured ink films, prior to mounting.

ADHESION: Opus XL is primarily for use on premium grade pressure-sensitive PVC films.

It is important to note that many arbitrary factors such as surface treatment or variations in grade of substrate may affect the print properties, cure rate or adhesion of Opus XL inks. It is always advisable to check the performance of these inks on the actual batch of stock to be used before commencing a print run.

NOTE: Pretest all substrates prior to use in production.

MODIFICATION: Opus XL is a single-package ink which does not require the use of any additives under normal printing conditions, apart from 3-10% by weight of ST-350 Viscosity Modifier to adjust viscosity when required.

CURING: Generally, a typical 10-12 micron deposit of an Opus XL color achieved with a 381/in. (150/cm) mesh will require a UV exposure of approximately 250-500 mJ/cm^2, as measured with an IL390 International Light Radiometer. Opaque blacks and whites will require significantly more irradiation to successfully cure.

Actual cure speeds will vary, depending on: ink color, mesh, ink film deposit, opacity, number of color components (in a color blend), and type of UV lamps, in addition to a wide range of other processing parameters. Belt speeds as high as 60 ft/min (18 m/min), with two lamps at 200 watts/in. (80 watts/cm), can be achieved, dependent on these variables.

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Ink adhesion can only be achieved if the UV ink film is adequately cured. Substrates have differing receptivity to UV ink, and on certain rigid and/or colored materials it may be necessary to cure ink more effectively to achieve satisfactory adhesion.

SCREEN MESH: 355-420/in.(140-165/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 cross-linking of the increased ink film deposit. **Sun Chemical has the mesh best suited for your particular printing 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.**

INK DEPOSIT: Typically a dry ink deposit of between 10-12 microns per ink layer through a 381/in.(150/cm) mesh can be expected. Deposits in excess of 14 microns may require a greater degree of UV cure or may result in reduced ink adhesion to the substrate.

INK ADHESION: In order to achieve maximum durability it is essential to test the cure and adhesion of the printed layers of ink to the actual batch of substrate used. This is best assessed using a cross-hatch and tape test e.g. ASTM D3359 or DIN 53151.

COVERAGE: When printed through a 381/in.(150/cm) plain-weave mesh, Opus XL will cover approx. 3000 ft^2/gallon (75 m^2Kg), depending on printing variables. Higher coverage c/an be achieved when finer mesh counts are used.

PROCESS COLORS: Opus XL 4 color process inks are available as high color-strength SWOP colors.

FLX-TPL or FLX-TPS Transparent Pastes 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, dot gain and other variables associated with 4 color process printing.

WASH-UP: **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), Opus XL has a shelf-life of 24 months.

HEALTH AND SAFETY: Opus XL is formulated to be NVP--FREE. 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.**

Blending Colors:	
FLX-Y35	XL Primrose
FLX-Y55	XL Golden Yellow
FLX-R25	XL Scarlet
FLX-R55	XL Red
FLX-M50	Magenta
FLX-V50	Violet
FLX-B50	Blue
FLX-G50	Green
FLX-N50	Blending Black
FLX-W50	Blending White
FLX-E50	Blending Clear
Standard Products:	
FLX-C501	Super Overprint Clear
FLX-N501	Opaque Black
FLX-W501	Opaque White

Process Colors:	
FLX-S231	SWOP Process Yellow
FLX-S235	SWOP Process Cyan
FLX-S240	SWOP Process Magenta
FLX-S271	SWOP Process Black
FLX-TPL	Long-flow Transparent Base
FLX-TPS	Short-flow Transparent Base
Modifiers:	
ST-350	Viscosity Modifier

In accordance with information received from suppliers, the full Opus XL 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.

September 2007

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