

NFX20 Graphic Transparent Inks are designed to be vibrant in color and highly transparent, making them a great choice for printing on clear substrates, holographic substrates or metallic inks.

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Substrates

- Styrene
- Rigid vinyl
- Pressure Sensitive Vinyl
- Polycarbonates
- Some Acrylics
- Coated Paper
- Coated Card Stock

Substrate recommendations are based on commonly available materials intended for the ink's specific market when the inks are processed according to this technical data. 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. Reference the 'Quality Statement' at the end of this document.

User Information

Mesh

355tpi (140 tpcm) monofilament polyester mesh with a mesh opening of 22um for most applications.

Stencil

Use direct emulsions and capillary films which are solvent resistant and UV compatible.

Squeegee

70-90 durometer polyurethane squeegee.

Coverage

Estimated 3,200 – 4,000 square feet (295 - 370 square meters) per gallon depending upon ink deposit. Reference www.nazdar.com for examples of coverage calculations.

Printing

NFX20 Series is formulated to be press ready. Thoroughly mix the ink prior to printing. Improper mixing can lead to inconsistent color and ink performance.

Maintain ink temperature at 65°-90°F (18°-32°C) for optimum print and cure performance. Lower temperatures increase the ink viscosity, impairing flow and increasing film thickness. Elevated

temperatures lower the ink viscosity, reducing print definition and film thickness.

Pretest to determine optimum printing parameters 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; 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.

Nazdar does not recommend inter-mixing of NFX20 series with other inks besides the NFX20 series and NFX30 Series. Refer to the NFX30 Series TDS for information on mixing the NFX20 Series and NFX30 Series.

Cure Parameters

NFX20 Series cures when exposed to a single medium pressure mercury vapor lamp emitting millijoules (mJ) and milliwatts (mW) of:

130-200 mJ/cm² @ 600+ mW/cm² UVA
for most colors

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, reduced durability, 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, and ensure proper focus to the substrate.

These guidelines are representative of measurements taken using an EIT® UVICURE® Plus radiometer measuring the UVA bandwidth (320-390 nm). To obtain accurate mW readings with

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the UVICURE® Plus, reduce the belt speed to less than 40 ft/min.

Clears / Varnishes

Mixing Clear: Use NFX21 Graphic Transparent Clear to reduce the density of colors.

Common Performance Additives

The market specific performance properties of the NFX20 Series should be acceptable for most applications without the need for additives. When required, any additives should be thoroughly mixed before each use. Prior to production, test any additive adjustment to the ink. Inks containing additives should not be mixed with other inks.

Example for additives: Ink at 100g with 8% of an additive is calculated as:

$$100\text{g ink} + 8\text{g additive} = 108\text{g total}$$

Reducer: Use RE310 UV Reducer to reduce the viscosity of these inks. Add up to 5% by weight. Over reduction can reduce print definition, film thickness and adversely affect cure.

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 show a decrease in block resistance.

Adhesion Promoter: Use NB80 UV Adhesion Promoter to enhance adhesion. 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.

Cleanup

Screen Wash (Prior to Reclaim): Use IMS201 Premium Graphic Screen Wash, IMS203 Economy Graphic Screen Wash, or IMS206 Graphic Auto Screen Wash.

Press Wash (On Press): Use IMS301 Premium Graphic Press Wash.

Storage / Shelf Life

Store closed containers at temperatures between 65°-78°F (18°-25°C). Storing products outside of these recommendations may shorten their shelf life. Ink taken from the press should not be returned to the original container; store separately to avoid contaminating unused ink.

NFX20 items supplied in 1 gallon (4/5 kilo) containers or smaller are useable for a period of at least 24 months from the date of manufacture. Inks packaged in 5 gallon or greater (20 kilo or greater) containers may have a significantly reduced shelf life. For more detail pertaining to the shelf life of Nazdar's ink products, contact Nazdar Technical Service at InkAnswers@nazdar.com or see contact listing at the end of this document.

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 applicable [Safety Data Sheet](#) (SDS / MSDS) for further instructions and warnings.

This ink series is a one-part, 100% solids UV-curable screen printing ink and does not contain N-vinyl-2-pyrrolidone (trade name V-Pyrol®).

For assistance on a wide range of important regulatory issues, consult the following Regulatory Compliance Department link at <http://www.nazdar.com> or contact Nazdar Ink Technologies - World Headquarters (see contact listing at the end of this document).

Inter-printing Inks

NFX20 Series Graphic Transparent UV Screen inks are intended to overprint metallic effects on the substrates outlined in the 'Substrate' section. NFX20 Series inks can overprint metallic effect using the following UV ink series:

- NFX135 UV First Down Chrome Silver
- PowerPrint® 1600 UV Ink Series
- PowerPrint® Plus 1800 UV Ink Series
- PowerPrint® Banner 1900 UV Ink Series
- 4200 Series
- 4000 Series

Refer to the Technical Data Sheet for the overprinted ink to determine the processing recommendations.

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NFX20 Series Graphic Transparent UV Screen Ink

Note: when overprinting metallic effects, pre-test to determine suitable inter-printing adhesion. Some metallic effects leaf (rub off) and significantly reduce adhesion performance.

Processing

Extreme Bending / Cutting: NFX20 Series inks are not recommended for bending applications when printed with a heavy deposit or multiple layers. Any bending and cutting post printing applications should be thoroughly qualified prior to full scale production.

Background Color: Due to the high transparency of the NFX20 Series inks, the background color will have a significant effect on color.

Adhesion Testing

Even when recommended UV energy output levels are achieved, it is imperative to check the degree of cure on a **cooled down** print:

1. Touch of ink surface – the ink surface should be smooth.
2. Thumb twist – the ink surface should not mar or smudge.
3. Scratch surface – the ink surface should resist scratching.
4. Cross hatch tape test – per the ASTM D-3359 method, 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, and rip off at a 180 degree angle. Ink should only come off in actual cut areas.

Full adhesion characteristics at proper cure levels are demonstrated within 8 hours.

Manufacturer's Product Offering

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

Color Card Materials

The following is a screen printed sample literature representing NFX20 Series.

NFX20's Graphic Transparent (LITO121): shows the NFX20 colors over white and NFX135 (was 696535PS) First Down Chrome Silver.

Packaging / Availability

Contact your Nazdar distributor for product availability and offering.

The NFX20 colors are made to order.

Item Number	Color
NFX21	Graphic Transparent Clear
NFX22	Graphic Transparent Red
NFX23	Graphic Transparent Magenta
NFX24	Graphic Transparent Violet
NFX25	Graphic Transparent Blue
NFX26	Graphic Transparent Green
NFX27	Graphic Transparent Yellow
NFX29	Graphic Transparent Black

Additives / Reducers

Item Number	Item Description
RE310	UV Reducer
RE308	UV Reducer
NB80	Adhesion Promoter

Cleaners / Clean Up

Item Number	Item Description
IMS201	Premium Graphic Screen Wash
IMS203	Economy Graphic Screen Wash
IMS206	Graphic Auto Screen Wash
IMS301	Premium Graphic Press Wash

Nazdar Quality Statement

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®.

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