

**NSC UV Crystal Clear Transparent Screen Inks have been formulated for membrane overlays. These inks exhibit excellent clarity with very little haze, making them ideal for use as transparent window colors. NSC UV Crystal Clear Transparent inks may be printed top or sub surface.**

## Substrates

- Polycarbonate
- Some pre-treated polyester  
(*UV ink receptive primer*)

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

255 tpi (100 tpcm) monofilament polyester mesh for most applications.

Coarser mesh counts and/or twill weave result in heavier ink deposit requiring additional cure output. Finer mesh counts reduce the ink deposit and impair the flowing out of the ink.

### Stencil

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

### Squeegee

70-90 durometer polyurethane squeegee.

### Coverage

Estimated 2,000 – 3,000 square feet (185 - 280 square meters) per gallon depending upon ink deposit. Reference [www.nazdar.com](http://www.nazdar.com) for examples of coverage calculations.

### Printing

NSC Crystal Clear inks are formulated as concentrates and are intended primarily as color matching toners. Color density may be reduced and cure speed is increased with the addition of NSC29 Mixing Clear and/or RE310 UV Reducer.

To achieve the best results some experimentation may be necessary. Variables to consider include: mesh count, flood speed, squeegee hardness, squeegee type, squeegee angle, print speed, peel, off-contact, and viscosity. The addition of NSC29

Mixing Clear or RE310 UV Reducer and/or CARE65 Flow Agent may be necessary for acceptable printability. Mixing the inks at least 24 hours before printing may also optimize print appearance. Prior to printing, gently mix with a spatula only, to minimize air bubbles in the ink.

Exposure to heat or infrared immediately after printing or allowing time between printing and curing allows the ink film to flow-out better resulting in a smoother appearance.

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.

### Inter-Printing

Laminating Adhesives: NSC UV Crystal Clear inks are not recommended for use with laminating adhesives.

UV Inks: NSC Crystal Clear inks may be over-printed and under-printed with the 3400 Series UV Screen ink. Inter-coat or ink-to-ink compatibility with the 3400 Series improves with the addition of NSC29 Mixing Clear to the NSC UV Crystal Clear Transparent colors. Reference the 3400 Series Technical Data Sheet at [www.nazdar.com](http://www.nazdar.com) for processing information.

Solvent-based Inks: NSC Crystal Clear inks may be over-printed onto thoroughly dried 8800 Series Color-Vue Membrane solvent-based ink. NSC Crystal Clear inks cannot be overprinted with solvent-based ink. Reference the 8800 Series Technical Data Sheet at <http://www.nazdar.com> for processing information.

Nazdar does not recommend inter-mixing of NSC Crystal Clear ink with other inks.

## Cure Parameters

NSC Crystal Clear ink cures when exposed to a single medium pressure mercury vapor lamp emitting output millijoules (mJ) and milliwatts (mW) of:

300+ mJ/cm<sup>2</sup> @ 800+ mW/cm<sup>2</sup>

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.

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

## Clears / Varnishes

Mixing Clear: Use NSC29 UV Crystal Mixing Clear to reduce the density of colors.

## Common Performance Additives

The market specific performance properties of the NSC Crystal Clear ink 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:

100g ink + 8g additive = 108g total

Reducer: Use RE310 UV Reducer to reduce the viscosity of these inks. Add up to 20% by weight. Over reduction can reduce film thickness, adhesion, gloss, abrasion resistance and adversely affect cure.

Flow Agent: Use CARE65 Flow Agent to improve flow. Add up to 1% by weight. CARE 65 will make the ink film cloudy.

## 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

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.

NSC Crystal Clear items supplied 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](mailto: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.

NSC Crystal Clears are 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).

## 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 4 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.

## Halogen-Free

UV Air Texture Screen Inks and their reducers are free of the halogens Chlorine and Bromine based on supplier information and in compliance with the electronics industry standard, IEC 61249-2-21 (<http://www.iec.ch/>).

## Color Card Materials

The following is a list of available screen printed sample literature representing NSC Crystal Clear inks.

[NSC Crystal Clear Transparent Ink \(CARDCC2\):](#) shows the NSC30 to NSC39 colors printed subsurface on polycarbonate.

## Packaging / Availability

Contact your Nazdar distributor for product availability and offering.

## Standard Ink Items

Standard ink items listed below are inventoried in kilogram containers. Colors in gallon containers are non-inventoried, which may require additional lead time.

## Standard Colors

Item Number	Color
NSC29	UV Crystal Mixing Clear
NSC30	UV Crystal Clear Yellow (GS)
NSC31	UV Crystal Clear Yellow (RS)
NSC32N	UV Crystal Clear Red (BS)
NSC33	UV Crystal Clear Red (YS)
NSC34	UV Crystal Clear Magenta
NSC35	UV Crystal Clear Violet
NSC36	UV Crystal Clear Blue (GS)
NSC37	UV Crystal Clear Blue (RS)
NSC38	UV Crystal Clear Green
NSC39	UV Crystal Clear Black

## Additives / Reducers

Item Number	Item Description
RE310	UV Reducer
CARE65	Flow Agent

## 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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