Technical Data Sheet

GV Series Gloss Vinyl Screen Ink

GV Series Screen Ink has been formulated for printing on vinyl surfaces where a high gloss finish is required. These inks form a positive bond with most vinyl surfaces and will dry to an extremely flexible film which may be vacuum formed. The pigments used in these inks have been carefully selected for fade resistance under outdoor exposure.

Substrates

Vinyl (PVC)
Polycarbonate (PC)
Acrylics (PMMA)

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.

Mesh

150-350 tpi (60-120 tpcm) monofilament polyester mesh for most applications.

Stencil

Use direct emulsions and capillary films which are solvent resistant.

Squeegee

70-80 durometer polyurethane squeegee.

Coverage

Depending upon ink deposit, the estimated coverage per gallon: 1,200-1,800 square feet (111-167 square meters)
Reference www.nazdar.com/en-us/ColorStar for examples of coverage calculations.

Screen Printing

Series must be thinned approximately 10% by weight prior to printing. (See additives section) Add only enough ink to the screen to be able to print for 5-10 minutes. Add additional ink in small increments throughout the print run to maintain screen stability. 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 this ink series with other inks or series.

Drying / Curing Parameters

Dries by solvent evaporation in 20-40 minutes or may be force dried in a jet dryer at 130° - 150°F (54° - 66°C). Good air circulation is necessary to remove the vaporized solvents. Multiple layers of ink may require longer drying times than a single layer.

Adhesion Testing

When recommended UV energy output levels are achieved, checking the degree of cure on a **cooled down** print is imperative:
- Touch of ink surface – the ink surface should be smooth.
- Thumb twist – the ink surface should not mar or smudge.
- Scratch surface – the ink surface should resist scratching.
- 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.

Cleanup
For screen cleaning, similar products to those listed below may be used.

Screen Wash (Prior to Reclaim): Use IMS201 Premium Graphic Screen Wash
Press Wash (On Press): Use IMS301 Premium Graphic Press Wash

Ink Modifications

Clears / Varnishes
Mixing Clear/Metallic Clear: use to reduce the density of colors or as a clear base for specialty additives such as Metallic additives.
Overprint Clear: use to provide added surface protection and increase durability.

Additives
The market specific performance properties of this ink series / ink item 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 / Thinner
VF180 Fast Thinner Reducer: Add up to 15%

Retarder
Use a blend of VF180 Fast Thinner and VF182 Retarder to improve screen stability during hot climate conditions or for slower drying. Add up to 10% of VF180 and 5% of VF182.

Thickener / Increase Viscosity
Thickener: Use VF178 to thicken the ink viscosity. Add 5-10%.

Catalyst
No catalyst is recommended.

Gloss / Flattening Powders / Improved Slip
Use VF178 Sharp Printing Compound to reduce gloss and improve slip. Add up to 20%.
Use SIPI413 Powder to flatten the ink. Add 1-5%; amount will depend on how much reduction in gloss needed. Consider using the VF Flat Vinyl Screen Ink line instead of flattening the gloss line.

Static Eliminator
Use Care50 for static control in the film. Add ½ -1%.

General Information
Handling
Refer to the SDS for recommendations on handling.
Wear gloves and barrier cream to prevent direct skin contact. Safety glasses are suggested in areas where ink may be splashed. If product 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).

Weathering / Outdoor Durability
At full strength and properly cured, GV colors are formulated to provide **2-3 years** outdoor durability when mounted vertically in the

Central U.S.A. The use of GV173 Overprint Clear increases outdoor durability to **3-4 years**.

Outdoor Durability Exceptions
GV139 Majestic Yellow, GV185 Brilliant Pale Gold*, and GV187 Silver have a projected **1 year** outdoor durability.
*Will darken with exposure.

Fluorescent colors fade quickly with exposure to UV light and are not rated for Outdoor Durability.

Outdoor Durability Variables
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: large amounts of mixing clear or white, mixing several colors into one match, and/or mixing a small quantity of any single color
- Substrate type and age
- Mounting angle and directional orientation
- Geographical location
- Degree of air pollution
- Excessive abrasion
- Non-clear coated prints exhibit more color change and loss of gloss.

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.

Standard items supplied in 1-gallon (4/5 kilo) containers or smaller. Useable for a period of at least **24 months** from the date of manufacture.

Shelf life above applies to the standard ink items listed on this TDS. To obtain the shelf life for special inks and additives, contact Nazdar Customer Service or Nazdar Technical Service. See contact listing at the end of this document.

Standard Color Range
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.

Standard Printing Colors
Standard Printing Colors: have excellent opacity and flow characteristics. These colors are intended to work as supplied.

Special Effect Pigments
When inks are to be printed with a special effect color, all ink layers 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 the ink. Contact Nazdar for the item number(s) and availability of special effect products or they can be found at www.nazdar.com.

Metallic Silver (aluminum), add up to: 8%
Metallic Gold (bronze), add up to: 15%
Chemical reactions in metallic inks may result in viscosity, color and printability changes over time; due to this, mix only enough metallic ink to be used the same day.

Pearlescent / Interference, add up to: 20%
Multi-Chromatic, add up to: 10%
Phosphorescent , add up to 30%

Fluorescents, add up to: 40%
Fluorescent colors fade quickly with exposure to ultraviolet light. This includes outdoor exposure as well as UV reactor exposure.

Packaging / Availability

Contact your Nazdar distributor for product availability and offering.

Item Type	Item Number	Item (or Color) Description
Standard Colors	GVLF103	Red
Standard Colors	GVLF105	Permanent Red
Standard Colors	GV107	Permanent Maroon
Standard Colors	GV110	Transparent Red
Standard Colors	GV111	Black
Standard Colors	GV112	White
Standard Colors	GV122	Opaque White
Standard Colors	GVLF124	Orange
Standard Colors	GVLF130	Primrose Yellow
Standard Colors	GVLF132	Lemon Yellow
Standard Colors	GVLF134	Medium Yellow
Standard Colors	GV139	Majestic Yellow
Standard Colors	GVLF142	Emerald Green
Standard Colors	GV149	Permanent Green
Standard Colors	GV152	Light Blue
Standard Colors	GV157	Royal Blue
Standard Colors	GV159	Permanent Blue
Standard Colors	GV162	Purple
Standard Colors	GV164	Cerise
Standard Colors	GV170	Clear Gloss
Standard Colors	GV173	Clear Gloss Exterior
Standard Colors	GV185	Brilliant Pale Gold
Standard Colors	GV187	Silver
Additives	VF178	Sharp Printing Compound
Additives	VF180	Fast Thinner
Additives	VF182	Retarder
Cleaners	IMS201	Premium Graphic Screen Wash
Cleaners	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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