Nazdar ADE Series Epoxy Screen Ink

ADE Series epoxy solvent-based screen ink has been formulated with high quality epoxy resins for excellent adhesion to metals, glass and a wide range of hard-to-print substrates. ADE Series is ideal for electronic and industrial applications and provides outstanding solvent, chemical and abrasion resistance. ADE is a two-part ink and must be initiated with a catalyst prior to use. ADE ink exhibits a high gloss finish. ADE Series is for indoor applications only.

Substrates

Treated polypropylene (PP)
Treated Polyethylene (Flatstock HDPE)
High Density Polyethylene sheeting (HDPE)
Treated polyethylene containers (PE)
PC Boards
Uncoated Metal
Coated metals
Steel / Stainless Steel
Glass
Ceramic

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

200-305 tpi (78-120 tpcm) monofilament polyester mesh or stainless steel 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

Ink Preparation: ADE Screen Ink is a two-part ink and must be initiated with a catalyst prior to use. Various catalysts can be used; see the 'Additives' section. The amount of catalyst should only be based on the weight of the ink and not include the weight of any other additives. Catalyzed ink requires an "induction period" or time lag of about 30 to 45 minutes to allow the catalyst to become uniformly mixed and available for the polymerization (cross linking) process.

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.

Nazdar does not recommend inter-mixing this ink series with other inks or series.

Pad Printing

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These Solvent-based inks can be pad printed. The use of thinners or retarders may be required to achieve the correct transfer. Please follow the printing and drying guidelines.

Drying / Curing Parameters

Inks crosslink or cure over time as the residual solvent is evaporated from the printed ink film. The ink's surface dries to the touch before the ink film achieves full cure to exhibit required adhesion, chemical resistance and surface hardness. At lower temperatures, drying and curing takes place over longer periods of time; whereas elevated temperatures speed up the process. At any temperature, it is necessary to maintain good air circulation to remove the vaporized solvents. Residual solvents in the air inhibit the drying/curing process. Multiple layers of ink may require longer drying times than a single layer.

The following are starting point guidelines to determine temperature and times to achieve a crosslinked ink film.

Room Temperature: The ink dries to touch in approximately 30-60 minutes and cures in 5-7 days.

Force-Drying/Curing: Baking the printed ink produces the hardest, most durable finish.

Bake most ADE printed colors for approximately 10 minutes at a maximum range of 300°-325°F (150°-164°C). Temperatures above 325°F (164°C) may result in discoloration.

Bake the following colors at a maximum range of 150°-250°F (66°-121°C): ADE10 Primrose Yellow, ADE11 Lemon Yellow, ADE12 Medium Yellow ADE20 Brilliant Orange, ADE80 Process Yellow, ADE361 Yellow and ADE456 Process Blue. Pigments used in these colors are not stable at temperatures above 250°F (121°C). Baking these colors above the recommended temperature may result in discoloration or color bleeding. Overprinting these colors with other colors which can take higher temperatures (such as white), and baking at higher temperature is not recommended.

Adhesion Testing

- 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 or IMS203 Economy 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.
Heavy Body Base: the following clear(s) may be added to the inks when printing halftones and fine details.

Additives

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

Use RE190 Thinner to reduce the viscosity of these inks for best printing results. Add up to 15%.
Use RE189 Slow Thinner to reduce the viscosity and slow drying of these inks. Add up to 15%.

Retarder

Add RE182 Retarder sparingly to prevent drying in the screen in hot environmental conditions.

Catalyst

The amount of catalyst should only be based on the weight of the ink and not include the weight of any other additives. Catalyzed ink requires an “induction period” or time lag of about 30 to 45 minutes. Catalyzed ink has a pot life of 6 to 8 hours.

ADE677 Catalyst: add 1 part catalyst to 5 parts ink or 20%.

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ADE176 Catalyst (formerly ER176 Catalyst): add 1 part catalyst to 4 parts ink or 25%.

Use ADE678 Glass Catalyst for printing on glass or when metallic pigments are used: add 1 part catalyst to 5 parts ink or 20%. Prints may be air dried but will require 7-10 days for full cure and maximum adhesion, chemical and water resistance.

Use ADE679 Snowboard Catalyst for printing on polyethylene materials used in the lamination and manufacture of snow skis and snowboards: add 1 part catalyst to 5 parts ink or 20%. Prints may be air dried or force air dried at lower temperatures which do not affect the snowboard material. Prints should be racked and allowed to chemically react at least 4 days before laminating.

Gloss / Flattening Powders / Improved Slip
Matting Agent: SIPI443 Flattening Additive may be added from ½% to 5% to the ADE inks.

Flow Control / Leveling Agent
Flow Control: CARE8 Flow Control Agent may be added from ½% to 1% to the ADE inks.

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.
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).

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 useable for a period of at least **48 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.

Physical Properties Test Results
These results were obtained by laboratory testing; this information is provided as a general indication of the ink performance, not as a specification or a guarantee.
Opaque Black with 10% by weight RE190 Thinner and 20% by weight ADE677 Catalyst was printed on anodized aluminum using 65 threads per centimeter (195 threads per inch) plain weave mesh. A set of prints was dried at room temperature for 14 days; another set was baked for 5 minutes at 77°C (170°F) then allowed to cross link at room temperatures for 14 days.

Adhesion	Test: Cross-hatch tape (ASTM D3359) Result: Pass
Gloss	Test: 60° meter >90 Result: Pass
Pencil Hardness	Test: Gardco/Wolff Wilborn Pencil Hardness Tester Result: Pass H2 (air dried sample), Pass H3 (baked sample)
Impact Resistance	Test: Gardner Impact Tester, 1.2 cm (0.5 in) diameter, 454 gram (1 lb.) weight dropped 75 cm (30 in) Result: Pass
Heat Resistance	Test: 72 hours at 182°C (360°F) Result: Pass; gloss decreased from 90 to 68 at 60°

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Chemical Resistance	Test: 100 double rubs with MEK (methyl ethyl ketone), xylene, isopropyl alcohol, and mineral spirits Result: Pass
Water Immersion	Test: 20 minutes (air dried sample), 50 minutes (baked sample) Result: Pass
Abrasion Resistance	Test: Taber Abrader CS10 wheels, 500 grams - 600 cycles (air dried sample), 300 cycles (baked sample) Result: Pass

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.

Halftone Colors

4-Color Process Printing: When 4-color process / halftone printing with the ADE Series, use the following colors: ADE90 Heavy Body Base, ADE456 HT Process Blue, ADE80 Process Yellow, ADE586 Permanent Process Red and ADE52 Opaque Black. These colors have an opacity and viscosity of the standard printing colors, which is not typical of specific halftone printing colors. To increase the viscosity and decrease the density of these colors to be more suitable for halftone printing, use the ADE90 Heavy Body Base.

Standard Printing Colors

Standard Printing Colors have excellent opacity over a variety of substrates.

High Opacity Colors have been formulated to achieve hard to match red, orange and yellow colors over dark substrates.

Pantone Base Colors

Pantone Matching System Base Colors are used to simulate the Pantone® Formulation Guide when printed on a white substrate. These inks are press ready, can be used in matches to achieve Pantone color simulations, or let down with mixing clear.

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%

Fluorescents, add up to: 25%
Fluorescent colors fade quickly with exposure to ultraviolet light.

Packaging / Availability

Contact your Nazdar distributor for product availability and offering. *These colors are not recommended for baking temperatures over 250°F (121°C).

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NAZDAR INK TECHNOLOGIES

Item Type	Item Number	Item (or Color) Description
Standard Colors	ADE10	* Primrose Yellow
Standard Colors	ADE11	*Lemon Yellow
Standard Colors	ADE12	*Medium Yellow
Standard Colors	ADE15	Yellow (GS)
Standard Colors	ADE16	Yellow (RS)
Standard Colors	ADE19	Fire Red
Standard Colors	ADE20	*Brilliant Orange
Standard Colors	ADE22	Ultra Blue
Standard Colors	ADE26	Mixing/Metallic Clear
Standard Colors	ADE52	Opaque Black
Standard Colors	ADE62	Warm Red
Standard Colors	ADE67	Reflex Blue
Standard Colors	ADE75	Opaque White
Standard Colors	ADE78	High Intensity White
Standard Colors	ADE80	*Process Yellow
Standard Colors	ADE81	Orange
Standard Colors	ADE82	Carmine
Standard Colors	ADE83	Magenta
Standard Colors	ADE84	Maroon
Standard Colors	ADE85	Green
Standard Colors	ADE86	Blue (GS)
Standard Colors	ADE87	Blue (RS)
Standard Colors	ADE88	Violet
Standard Colors	ADE89	Red Toner
Standard Colors	ADE90	Heavy Body Base
Standard Colors	ADE114	Brown
Standard Colors	ADE170	Clear Gloss
Standard Colors	ADE172	Flat Clear
Standard Colors	ADE315	Emerald Green
Standard Colors	ADE405	Brilliant Blue
Standard Colors	ADE435	Regal Blue
Standard Colors	ADE456	*HT Process Blue
Standard Colors	ADE503	Permanent Red Y
Standard Colors	ADE568	Permanent Magenta
Standard Colors	ADE578	Permanent Cerise
Standard Colors	ADE586	Permanent Process Red
Standard Colors	ADE700	Opaque Orange
Standard Colors	ADE703	Opaque Red
Pantone Base Colors	ADE358	Tinting White
Pantone Base Colors	ADE359	Tinting Black
Pantone Base Colors	ADE360	Orange
Pantone Base Colors	ADE361	*Yellow
Pantone Base Colors	ADE362	Warm Red
Pantone Base Colors	ADE363	Rubine Red
Pantone Base Colors	ADE364	Rhodamine Red
Pantone Base Colors	ADE365	Purple
Pantone Base Colors	ADE366	Violet
Pantone Base Colors	ADE367	Reflex Blue
Pantone Base Colors	ADE368	Process Blue
Pantone Base Colors	ADE369	Green
Additives	ADE176	Catalyst *(formerly ER176)*
Additives	ADE677	Catalyst
Additives	ADE678	Glass Catalyst
Additives	ADE679	Snowboard Catalyst
Additives	CARE8	Flow Control Agent
Additives	RE182	Retarder
Additives	RE189	Slow Thinner
Additives	RE190	Thinner

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Additives	SIPI443	Flattening Additive
Cleaners	IMS201	Premium Graphic Screen Wash
Cleaners	IMS203	Economy 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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