Avery Dennison® 10TS SeriesTwo-Component Printing Inks For Traffic Sign Products

Instructional Bulletin 8.32
Revised 08/2003

General Processing Recommendations

Substrate/Ink Compatibility

Avery Dennison 10TS Ink is a two-component, 10 year durability, urethane ink system *exhibiting excellent graffiti resistance properties*. Only Avery Dennison Reflective T-1500 and T-2500 Sheetings manufactured by Avery Dennison Corporation and approved for use in the traffic signage market, are warranted for use with Avery Dennison 10TS Inks. The use of other substrates and or inks is not warranted.

Substrate Conditioning

For best results, sheet stock should be allowed to stabilize under shop humidity and temperature conditions for 24 hours before a run is started. Refer to IB # 8.00 for more information.

10 TS Ink Colors:

Transparent Stop Sign Red	Transparent Orange
Transparent Blue	Transparent Brown
Transparent Yellow	Opaque Black
Transparent Green	

Ink Preparation

Fill ink to the point where the proper addition of 10TS80 crosslinker represents a complete package. Ink containers are designed to allow for the addition of the correct amount of crosslinker. The addition of crosslinker to ink is 4 oz. (by volume) of crosslinker to one quart unit of ink.

If mixing partial containers of ink, maintain the following mix ratio:

- 100 parts ink: 15 parts 10TS80 crosslinker, or
- 87% (wt) of ink: 13% (wt) 10TS80 crosslinker.

Always mix the ink well. All ink should be mixed with a high speed mixer for 10 minutes before use. The useful pot life of the mixed product is approximately 8 hours.

It may be necessary to add 10TS30 thinner to replace evaporated solvent during the course of the day or 10TS31 retarder if the ink prematurely dries in the screen. However, the maximum recommended amount of thinner and retarder to add to any Avery Dennison Ink is 10%.

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All Avery Dennison 10TS Inks are color formulated to render 10 year exterior performance. Alteration of the base colors to obtain other shades will degrade the durability and affect the reflectivity of the color. Custom color formulations are not warranted for durability.

Mesh Recommendations

Avery Dennison 10TS Inks offer a full range of traffic colors. 10TS Ink formulations have been carefully selected to meet ASTM D 4956 color and reflectivity requirements when mixed and printed on Avery Dennison Reflective sheetings through a 157 mesh screen (64µ thread diameter) with 14-20 N/cm mesh tension and implementing the process guidelines outlined in this document.

Squeegee Selection

A medium/hard (70) durometer squeegee blade is recommended. A sharp squeegee with the proper amount of pressure is required for optimum print resolution on all applications. Slight imperfections in the squeegee will be readily visible in the quality of the print. Thus, the condition of the squeegee and proper squeegee maintenance are a must. The squeegee blade must also be positioned at the correct angle to assure proper ink transfer.

A squeegee must be sharp with a smooth edge. Ink cannot be transferred through a mesh uniformly or consistently with a dull or nicked squeegee. While it is possible that too high a viscosity can prevent proper flow out of ink, resulting in the accumulation of ink residue on the screen, it can also result from insufficient flexing of the squeegee blade.

Press Selection

To ensure consistent, reproducible color and reflectivity throughout the entire printing run, a fully or semi-automatic press is recommended. Care must be taken to ensure other printing variables, such as screen tension, mesh selection, etc., are consistent with the recommendations presented in this process guide.

Squeegee Technique

Most squeegee related problems are created by applying too much squeegee pressure. Any time the squeegee has enough pressure applied to bend the blade or severely change the angle, the proper “cutting edge” of the blade will be lost.

The lower the durometer of the squeegee, the more prone it will be to distortion from excess pressure. To mitigate this issue, a 70 durometer squeegee is recommended. The 70 durometer surface will contact the ink and screen to allow proper ink deposition and reduce screen wear from excessive abrasion.

Caution should also be exercised to ensure the screen frame is sufficiently larger than the print area. If the squeegee edge is too close to the frame, the screen will not stretch properly and uniformly during printing. This will cause the outside edges of the squeegee to bend with the pressure required to maintain substrate contact. The end result will be poor print quality.

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Use of a Flood Stroke

Most screen printing mechanics require the use of a flood coat prior to the print (squeegee) stroke to assure consistency in color development and print resolution. At the proper printing viscosity, Avery Dennison 10TS Inks have excellent flow characteristics; therefore, a heavy flood will significantly add to the amount of ink deposited resulting in poor reflectivity and color). **To prevent excess ink deposit, a tight, or minimal, ink flood is recommended with little or no time between flood and print strokes. For an automatic or semi-automatic press, the flood / print mode is recommended.** Too much flood will smear small printed copy.

A heavy flood coat will result in printing up to 50% more ink through the mesh, which will adversely affect color and reflectivity.

Drying

Drying occurs with Avery Dennison 10TS Inks by solvent evaporation and oxidation. Air drying is recommended for this ink system. When air drying, good air flow is important. However, the use of additional thinner/retarder, poor air movement, high humidity, etc. can slow the drying process. Prints should be racked with a minimum of 1.5 inches between each other in the rack. Exhaust ventilation should be utilized to remove solvent vapors.

Avery Dennison 10TS Inks must be properly dried prior to stacking. To achieve this, inks must be dried for a minimum of 16 hours at 72°F and a RH of less than 50%. Cooler temperatures and/or higher humidity may lengthen drying times. Higher temperatures and/or lower humidity may shorten drying times. After the required drying period, and evaluating the dry ink for block resistance, sign faces can be vertically stacked face-to-face in short stacks with slip sheets between the faces.

Clear Coating

Avery Dennison 10TS Inks are warranted for 10 years of outdoor durability without a clear coat. Clear coating is not required to enhance the durability of Avery Dennison Reflective sheetings printed with these inks.

Ink Clean-up

Avery Dennison 10TS Inks cure in a screen like other solvent inks. Screens and other printing equipment should be cleaned immediately with Avery Dennison 10TS Screen Wash or as soon as possible after use. Always make sure to keep cans of ink covered between use.

Screens used to print Avery Dennison 10TS Inks are cleaned like screens used for standard solvent inks. The ink should be removed from the print screen using Avery Dennison 10TS Screen Wash and clean-up rags. Do not re-use ink that is removed from the screen.

Caution: Wearing gloves, safety glasses and other safety equipment is required when working with solvent inks and cleaning solvents.

Graffiti resistance of finished signs

The 10TS Ink system will harden to an extremely graffiti resistant finish. Typical graffiti cleanup solvents can be used to remove spray paint, marking pens and other graffiti without damage to the ink or reflective sheeting.

Warranty:

WARRANTY: All statements, technical information and recommendations about Avery Dennison products are based upon tests believed to be reliable but do not constitute a guarantee or warranty. All Avery Dennison products are sold with the understanding that Purchaser has independently determined the suitability of such products for its purposes. Avery Dennison products are warranted to be free from defects in material and workmanship for either one year (or the period stated on the specific product information literature in effect at time of delivery, if longer) from date of shipment if said product is properly stored and applied. It is expressly agreed and understood that Avery Dennison's sole obligation and Purchaser's exclusive remedy under this warranty, under any other warranty, express or implied, or otherwise, shall be limited to repair or replacement of defective product without charge at Avery Dennison's plant or at the location of product (at Avery Dennison's election), or in the event replacement or repairs is not commercially practical, to Avery Dennison's issuing Purchaser a credit reasonable in light of the defect in the product.

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