

Avery Dennison® OL-1000/OL-2000 Series Transparent Overlay Film

Issued: April 2011

Revision 1

Avery Dennison® OL-1000/OL-2000 Series Transparent Overlay Film is a quality, durable, computer cuttable film. OL-2000 Series is ideal for use as overlamine for manufacturing traffic control devices and guidance signage. OL-2000 Series are designed to be laminated over Avery Dennison retroreflective films.

**Performance:**

Same as underlying base sheeting



Durability: Same as retroreflective film to which it is applied

**Face:**

OL-1000: Fluoropolymer
OL-2000: Acrylic



Adhesive: Permanent
Pressure Sensitive



Liner: Friction Coated Film

Features:

- High clarity product for use with Avery Dennison Reflective Sheeting
- Field proven long term durability on safety devices worldwide
- Uniform daytime and nighttime visual appearance
- Conforms to specifications of base reflective sheeting

Conversion:

- ☒ Designed to be used with Avery Dennison Reflective Films
- ☒ Designed to be used as part of the Integrated Component System of Avery Dennison Reflective Materials
- ☒ Flat Bed Sign-Cut
- ☒ Drum Roller Sign-Cut
- ☒ Steel Rule Sign-Cut

Product Availability:

OL-1000	Anit-Graffiti
OL-2000	Clear
OL-2001	Yellow
OL-2003	Black
OL-2004	Orange
OL-2005	Blue
OL-2007	Green
OL-2008	Red
OL-2009	Brown

Applications:

- ☒ Rigid Permanent and Temporary Outdoor Signage
- ☒ Rigid Work Zone Devices

Product Data Sheet

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Graphics and Reflective Solutions
250 Chester Street
Painesville, OH 44077


www.reflectives.averydennison.com

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Colors and Specification Limits:

Figure A: Daytime Color

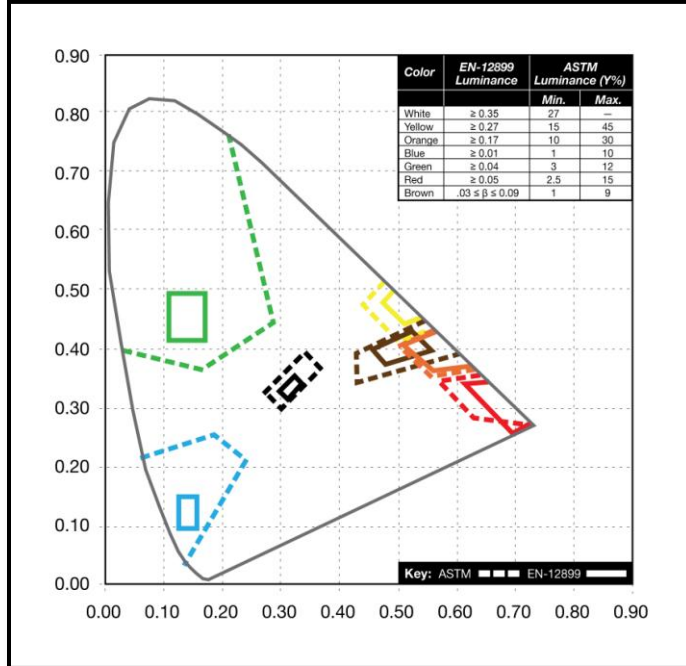
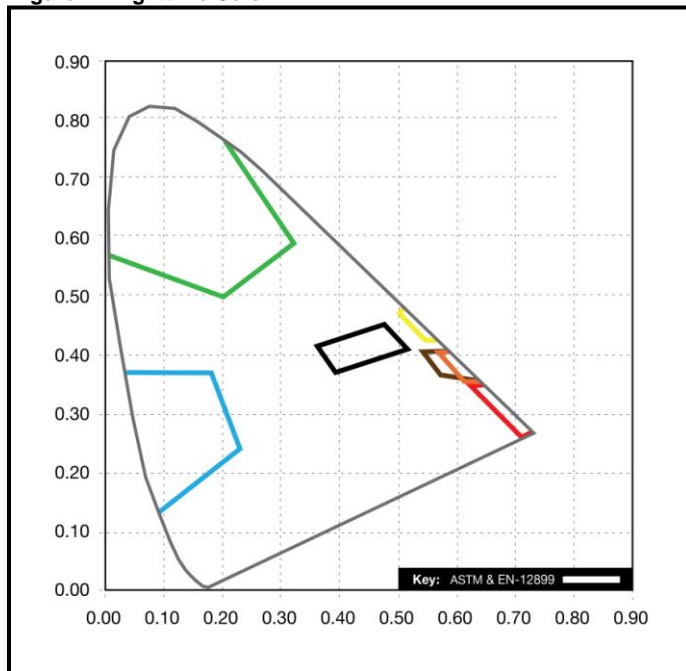


Figure B: Nighttime Color



OL-2000 Series Overlay Films **meets** the current applicable daytime and nighttime color requirements for ASTM D4956 and EN 12889.

Chromaticity Coordinate Limits

Figures A & B show the four pairs of chromaticity coordinates from ASTM D4956 and EN 12889 on the color grid.

Daytime Color

The four pairs of chromaticity coordinates in **Figure A** determine the acceptable color in terms of the CIE 1931 Standard Colorimetric System measured with Standard Illuminant D65 and CIE Publication no. 15 using CIE Standard Illuminant D65 and CIE 45/0 geometry. Luminance factor shall comply with table in **Figure A**.
Note: The saturation limit of green and blue may extend to the border of the CIE chromaticity locus for spectral colors

Nighttime Color

The four pairs of chromaticity coordinates in **Figure B** determine the acceptable color measured using CIE Illuminant A, observation angle of 0.33 degrees, entrance angle of +5 degrees, source and receiver apertures not to exceed 10 minutes of arc, and CIE 1930 (2 degree) standard observer per ASTM D4956.

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Characteristics:

<i>Property</i>	<i>Value</i>	<i>Instructional Bulletins</i>
Shelf-Life	1 year from date of purchase when stored at the following conditions; 65°-75°F (18°-24°C) and 50% ± 5% R.H.	#8.00
Typical film Caliper	OL-1000: 1.7 – 2.7 mils (43 - 69 µ) OL-2000: 4 mils (100µ)	NA
Min. Application Temperature	65° F (18° C)	#8.10
Service Temperature	-10°F to +150°F (-40°C to + 65°C)	#8.00

WARRANTY

Avery Dennison OL-1000 & OL-2000 Overlay Films ("Products") are warranted to be free from defects in material and workmanship for one (1) year from date of purchase (or the period stated on the specific product information literature in effect at time of delivery, if longer). 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.

CONDITIONS

This warranty shall be effective only if all of the following conditions are met:

Fabrication and/or installation must occur within one (1) year from the date of purchase.

The failure must have resulted solely from a manufacturing defect or deterioration of the Product due to natural causes under the Performance Warranty. Without limiting the generality of the foregoing, there is no warranty for the failure of the sheeting due to improper sign fabrication, improper storage, handling, installation, maintenance, failure of the sign substrate, vandalism or mischief. Slight color fading, cracking, chalking, edge lifting, or slight reduction in gloss or reflectivity will not materially detract from appearance and does not constitute a breach of warranty.

Avery Dennison has published instructional bulletins pertaining to the storage, handling, and cleaning of Product, approved substrates, and application procedures (collectively, the "Procedures"). The Product must have been processed and applied to blank, clean material in accordance with the Procedures, as such may be amended from time to time. Avery Dennison reserves the right to reject any warranty claim where the fabricator or installer cannot satisfactorily prove or demonstrate that the Avery Dennison procedures were utilized. The date of installation, warranty registration, and claim procedures established by Avery Dennison must be followed, and failure to follow such procedures shall void this warranty. Replacement Product carries only the unexpired warranty portion of the Product it replaces. The Product must be properly stored and applied within the shelf-life as stated in the applicable Avery Dennison Product Data Sheet including adhesive and other material product data sheets.

ADDITIONAL LIMITATIONS

Unintended Use: This warranty only applies to Product that is used by professional converters and installers for the defined end uses and in the combinations described in the applicable Avery Dennison Product Data Sheets and Instructional Bulletins. For any other use, the user is responsible for determining the suitability of the Product, and for any and all risk or liability associated with that use or application, and the user agrees to indemnify, defend and hold harmless Avery Dennison for any claims, losses, damages, judgments, expenses and/or expenses, including attorneys fees, resulting from such use or application. This warranty is expressly conditioned on the Product being processed by professional converters or installers in accordance with the Avery Dennison recommended written processing instructions, and being applied to properly prepared surfaces and cleaned and maintained in accordance with recommended Avery Dennison procedures. It is the converters, installers or other users responsibility to perform incoming raw material quality inspections, to assure proper surface preparation and that approved application procedures are followed, to retain converted samples, and to immediately cease using and notify Avery Dennison and/or its authorized agent or distributor of any Product, Materials and/or finished Product discovered to be (or reasonably capable of being discovered to be) defective.

Misuse and Force Majeure: Avery Dennison has no obligations or liability under this warranty with respect to Product that has been altered, modified, damaged, misused, abused, subject to accident, neglected or otherwise mishandled or improperly processed or installed. Product is not warranted against premature failure caused by chemical, environmental or mechanical means such as, but not limited to, vandalism, cleaning solutions, paints, solvents, moisture, temperature, mechanical washing equipment, engine fuel spills, engine exhaust, steam, organic solvents or other spilled chemicals pollutants, including industrial and volcanic ash. Damage from fire, structural failure, lightning, accidents, and other force majeure events are not covered by this warranty.

Third Party Product: Avery Dennison assumes no responsibility for any injury, loss or damage arising out of the use of a product that is not of our manufacture. Where installer or converter uses or reference is made to a commercially available product, made by another manufacturer, it shall be the responsibility of the user, installer or converter to ascertain the precautionary measures for its use outlined by the manufacturer.

INDEPENDENT TESTING REQUIRED

All statements, technical information and recommendations about Avery Dennison products are based upon tests and information believed to be reliable but do not constitute a guarantee or warranty of any kind. All Avery Dennison products are sold with the understanding that Purchaser has independently determined the suitability of such products for its intended and other purposes.

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Graphics and Reflective Solutions

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Converting Information:

The following Avery Dennison literature will provide information to the user for proper application, storage, and other requirements. Find the latest information on the Avery Dennison website, www.reflectives.averydennison.com. We encourage you to check our website periodically for updates.

OL-2000 Clear is designed for use with Matan printed reflective sheeting.

Instructional Bulletins:

Film Care & Handling	#8.00
Substrate Requirements	#8.01
Application Techniques for PS Film	#8.10
Cutting Methods	#8.20
Computer Sign Cutting	#8.25
Matan Thermal Transfer Printing	#8.60

Substrates:

The application of Avery Dennison OL-1000/OL-2000 Overlay Film Series sheeting is limited to properly prepared Avery Dennison reflective film. Users are urged to carefully evaluate, under actual use conditions, any film application to other substrates. Failure of film caused by other substrates, materials, contamination, or improper surface preparation is not the responsibility of Avery Dennison. See Instruction Bulletin #8.01 for full details on substrate requirements.

The remedies provided under this warranty are exclusive. In no event shall Avery Dennison be responsible for any direct, indirect, incidental or consequential damages or specific relief whether foreseeable or not, caused by defects in such Product, whether such damage occurs or is discovered before or after replacement or credit, and whether or not such damage is caused by Avery Dennison's negligence. In no event shall Avery Dennison's liability hereunder exceed the remedies specifically set forth in this warranty. Avery Dennison's liability shall be limited, at Avery Dennison's option, to the purchase price, replacement of the defective Product and in some cases when authorized by Avery Dennison the repair and replacement of the defective Product.

THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHERS. ANY AND ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED. NO WAIVER, ALTERATION, ADDITION OR MODIFICATION OF THE FOREGOING CONDITIONS SHALL BE VALID UNLESS MADE IN WRITING AND MANUALLY SIGNED BY AN OFFICER OF AVERY DENNISON.

DEFINITIONS

Durability: means that the Product in a finished graphic, panel or sign situated outdoors, subject to the limitations herein and Avery Dennison Product Data Sheets and Instructional Bulletins, and applied to recommended surfaces, will not deteriorate excessively such that the finished sign, panel or graphic is ineffective for its identification when viewed under normal conditions from the intended viewing distance.

Outdoor Durability: is based on normal middle European and central North American outdoor exposure conditions and application to recommended surfaces. Actual performance life will depend on a variety of factors, including but not limited to substrate preparation, exposure conditions and maintenance of the Product and finished graphic, panel or sign. In case the finished graphics, panel or sign is in areas of high temperatures or humidity, in industrially polluted areas or other areas with air laden particulate matter, and/or in high altitudes, Outdoor Durability may be reduced. Please see your local Avery Dennison representative for changes to warranties based on such localized conditions.

Vertical Exposure: means that the face of the finished graphic is $\pm 10^\circ$ from vertical.

Non-Vertical Exposure: means that the face of the finished graphic is greater than 10° from vertical and greater than 5° from horizontal. Retroreflective films are not warranted for this exposure.

Flat surfaces: means a two dimensional flat surface without protruding objects.

Weathering Effects: Some degradation of Product performance over time is considered normal wear. Slight color fading, chalking, edge lifting, or slight reduction in gloss or reflectivity due to normal wear exposure and other natural weathering, environmental or other conditions or damage caused by tornadoes, hurricanes, wind, excessive ice buildup or extraordinary frozen particulate conditions, large hail stones or other acts of God, do not constitute a breach of warranty or give rise to any liability by Avery Dennison.

Printing, Curing and Ink Defects: Ink contaminations, failures or other defects, or other failures due to improper printing conditions or settings including, but not limited to, unsuitable color calibration, incorrect ICC color profile or incompatible printing, do not constitute a breach of warranty. Product failure caused by ink over-saturation, excessive or under curing, failure of ink to render desired colors on Product, or other treatment or processing errors are not warranted.

Adhesion to Application Surfaces: This warranty does not cover the Product if the application surface is not properly prepared; nor does the warranty cover the Product or damage to the substrate because the layers of the substrate separate due to a lower bond between those layers than the bond between the Product and the top layer of the substrate, or surfaces which subsequently crack, peel, outgas, or become damaged beneath the Product.

If any court of competent jurisdiction or relevant government agency holds any provision of this warranty and limitation of liability to be illegal, void, invalid or unenforceable, whether in terms of any competition, legislation or otherwise, such provision shall be deleted and severable from this warranty and limitation of liability but deletion shall not affect the validity or enforceability of any other provisions hereof.

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Avery® SC 900 Super Cast Series

Opaque Permanent Kraft & StaFlat

Revision: New Dated: 11/08/2010

Uses:

Avery SC900 series cast films are premium quality, flexible, opaque solid color high gloss vinyl films designed for use in a wide range of outdoor advertising, fleet marking, of outdoor uses where excellent durability, conformability, color, and gloss are required.



Face: 2.0 mil (50 microns) high gloss cast film



Adhesive: Permanent Acrylic (clear, gray, or white)



Liner: 83# Kraft or 90# StaFlat



Durability: Up to 12 years

Application Surfaces:

Flat, Flat with Rivets, Corrugations, Deep Recesses

Features:

- Superior conformability to irregular substrates
 - Deeply concave shaped
 - Extremely convex shaped
 - Compound (concave & convex) shaped
 - Best performance on rivets
 - Best performance in channels
- Available in Pantone® Color simulations
- Outstanding durability and outdoor performance
- Dimensionally stable liner for easy converting
- High gloss finish
- Excellent conversion on CAD plotters
- Excellent UV, temperature, humidity, and salt-spray resistance
- Custom colors available (contact your sales representative)
- Meets CPSIA standards for limitations on lead and phthalates – White & Clear Only

Conversion:

- ☒ Thermal Die-Cutting
- ☒ Flat Bed Sign-Cut
- ☒ Drum Roller Sign-Cut
- ☒ Steel Rule Die-Cutting

- ☒ Thermal Transfer
- ☒ Screen Printing (StaFlat)
- ☐ Cold Overlaminating
- ☐ Water based inkjet

- ☐ Solvent based inkjet
- ☐ Mild/Eco Solvent inkjet
- ☐ UV inkjet

Common Applications:

- ☒ Trucks
- ☒ Trailers
- ☒ Cars & Vans
- ☒ Marine

- ☒ Architectural Signage
- ☒ Directional Signage
- ☒ Emergency Vehicles
- ☒ Trains & light rail

- ☒ Buses
- ☒ Outdoor advertising

Product Data Sheet

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Avery® SC 900 Super Cast Series

Opaque Permanent Kraft & StaFlat

Revision: New Dated: 11/08/2010

Physical Characteristics:

Property	Value
Caliper, face	2.0 mil (50 µm)
Caliper, adhesive	1.0mil (25 µm)
Dimensional stability	<0.015"(0.4mm)
Tensile at Yield	4.0 - 8.0 lb/in (0.7-1.5 kg/cm)
Elongation	150% min.
Gloss	90%
Adhesion: 15 min.	3.0 lbs/in (525 N/m)
24 hr.	4.0 lbs/in (700 N/m)
Flammability	Self Extinguishing
Shelf-Life	1 year
Durability	Vertical Exposure
	Black & White 12 years
	Colors & Clear Up to 10 years
Min. Application Temperature	40° F (4° C)
Service Temperature	-50° - 180°F (-45° - 82° C) (Reasonable range of temperatures which would be expected under normal environmental conditions).
Chemical resistance	Resistant to most mild acids, alkalis, and salt solutions.

Important:

Information on physical and chemical characteristics are based on tests believed to be reliable. The values are intended only as a source of information. This information is given without guaranty and do not constitute a warranty. The purchaser should independently determine, prior to use, the suitability of any material for their specific purpose. (Data represents average values where applicable, and is not intended for specification purposes)

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.

Avery Dennison's liability for defective products shall not exceed the purchase price paid therefore by Purchaser and in no event shall Avery Dennison be responsible for any incidental or consequential damages whether foreseeable or not, caused by defects in such product, whether such damage occurs or is discovered before or after replacement or credit, and whether or not such damage is caused by Avery Dennison's negligence

NO EXPRESS WARRANTIES AND NO IMPLIED WARRANTIES, WHETHER OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE, OR OTHERWISE (EXCEPT AS TO TITLE), OTHER THAN THOSE EXPRESSLY SET FORTH ABOVE WHICH ARE MADE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, SHALL APPLY TO PRODUCTS SOLD BY AVERY DENNISON. AVERY DENNISON SPECIFICALLY DISCLAIMS AND EXCLUDES ALL OTHER SUCH WARRANTIES. NO WAIVER, ALTERATION, ADDITION OR MODIFICATION OF THE FOREGOING CONDITIONS SHALL BE VALID UNLESS MADE IN WRITING AND MANUALLY SIGNED BY AN OFFICER OF AVERY DENNISON.

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Graphics & Reflective Products Division
250 Chester Street
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AnswerLine: 800-231-4654
www.averygraphics.com

Avery® SC 900 Super Cast Series

Opaque Permanent Kraft & StaFlat

Revision: New Dated: 11/08/2010

Dimensional stability:

Is measured on a 6" x 6" (150 x 150 mm) aluminum panel to which a specimen has been applied; 72 hours after application the panel is scored in a cross pattern, exposed for 48 hours to 150°F (65°C), after which the shrinkage is measured.

Adhesion:

(FTM-1, FINAT) is measured by peeling a specimen at a 180° angle from a stainless steel panel, 24 hours after the specimen has been applied under standardized conditions. Initial adhesion is measured 15 minutes after application of the specimen.

Flammability:

A specimen applied to aluminum is subjected to the flame of a gas burner for 15 seconds. The film should stop burning within 15 seconds after removal from the flame.

Temperature range:

A specimen applied to stainless steel is exposed at high and low temperatures and brought back to room temperature. 1 hour after exposure the specimen is examined for any deterioration. Note: Prolonged exposure to high and low temperatures in the presence of chemicals such as solvents, acids, dyes, etc. may eventually cause deterioration.

Chemical Resistance:

All chemical tests are conducted with test panels to which a specimen has been applied for 72 hours, after application the panels are immersed in the test fluid for the given test period. 1 hour after removing the panel from the fluid, the specimen is examined for any deterioration.

Accelerated Aging:

No negative impact on films performance, wherein the color is within industry standards for Delta E shift. Material is applied to panels, and placed in a Xenon Arc Artificial Weatherometer, and exposed under conditions of SAE J1960, for 2000 hours. Some color fade may occur in severe environmental areas. Reference IB 1.30 for durability guidelines.

Color Matching:

Fast turnaround service is offered for projects where specific color needs cannot be obtained from the broad offering of stock colors. Matches can be made to Pantone® color references, or by submitting a small reference sample (minimum 4" x 4") For match requirements, contact your Avery Dennison representative.

Pantone® Cross Reference:

Avery Dennison has been certified to produce custom color films matching Pantone color number references. A range of pre-matched Pantone colors are available for ease of use for designers and signmakers. Custom color matches are available by referencing the Pantone color system. For match requirements, contact your Avery Dennison representative.

Absence of banned substances:

Avery Dennison Black, White, and Clear SuperCast films meet the following European Directives.

EU Directive 94/62 on packaging and packaging waste Article 11 : Max. sum of concentration levels of lead, cadmium, mercury and hexavalent chromium: < 100 ppm.

EU Directive 2002/96/EC on restrictions of use of hazardous substances in electrical and electronic equipment Article 4.1: no contents of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), polybrominated diphenylethers (PBDE).

EU Directive 2000/53/EC on end-of life of vehicles article 4.2.(a) : no contents of lead, mercury, cadmium or hexavalent chromium.

Revisions are italicized

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Pantone is a registered trademark of Pantone LLC, and X-Rite Inc.

Product Data Sheet

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Graphics & Reflective Products Division
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Film Type	Cast vinyl
Adhesive	Permanent
Liner	Kraft
Conformability	Rivets/corrugations, compound curves
Durability	Up to 9 years
Gloss	90
Converting	CAS, screen print (SF only), thermal transfer

AVERY 900 SUPERCAST (SC) OPAQUE

Permanent • Kraft

SCREEN & CUT

Choose from 110 standard colors, including 19 colors matched to Pantone® standards. Custom colors available. StaFlat™ liner and specialized adhesives available on select colors.

STANDARD COLORS

ITEM NUMBER PRODUCT

SC90030	SC 900-103-O Clear ✦
SC90040	SC 900-104-O Matte Clear
✓ SC90010	SC 900-101-O White ✦✦ BL ✦✦
SC90020	SC 900-102-O Matte White ✦✦ BL
SC90050	SC 900-105-O True White BL
✓ SC90800	SC 900-180-O Matte Black ✦
✓ SC90900	SC 900-190-O Black ✦✦
SC91020	SC 900-202-O Luminous Yellow
SC91050	SC 900-205-O Butter ■
SC91060	SC 900-206-O PANTONE® Process Yellow C ■ ✦
SC91130	SC 900-216-O PANTONE® 109 C ■ ✦
SC91200	SC 900-220-O Canary Yellow ✦
SC91300	SC 900-230-O Medium Yellow ■ ✦
SC91400	SC 900-240-O Sunflower Yellow ✦
SC91500	SC 900-250-O Dark Yellow ✦
SC92500	SC 900-253-O Imitation Gold ✦
SC93150	SC 900-315-O Tangerine
SC91550	SC 900-355-O Apricot
SC91600	SC 900-360-O Orange ✦
SC91690	SC 900-362-O PANTONE® 021 C ■ ✦
SC91800	SC 900-380-O Bright Orange ✦
SC93040	SC 900-404-O Warm Red ■
SC93050	SC 900-405-O PANTONE® 1797 C ■ ✦
SC93060	SC 900-406-O PANTONE® 032 C ■ ✦
SC93170	SC 900-417-O Real Red
SC93180	SC 900-418-O Luminous Red ■
SC93210	SC 900-421-O PANTONE® 485 C ■ ✦
✓ SC93250	SC 900-425-O Tomato Red ✦
✓ SC93300	SC 900-430-O Cardinal Red ✦
SC93450	SC 900-445-O Fire Red ✦ ■
SC93500	SC 900-450-O Dark Red
SC93600	SC 900-460-O Spectra Red ✦ ■
SC93650	SC 900-465-O Apple Red
SC93700	SC 900-470-O Burgundy ✦
SC93800	SC 900-480-O Burgundy Maroon
SC94110	SC 900-511-O PANTONE® Process Magenta C ■ ✦
SC94130	SC 900-513-O PANTONE® Violet C ■ ✦
SC94150	SC 900-515-O Blossom ■ ✦
SC94300	SC 900-530-O Magenta
SC94350	SC 900-535-O Raspberry
SC94400	SC 900-540-O Plum
SC94500	SC 900-550-O Deep Purple
SC94650	SC 900-565-O Purple ✦
SC94750	SC 900-575-O Lavender
SC95050	SC 900-605-O Copenhagen
SC95150	SC 900-615-O Cadet Blue
SC95200	SC 900-620-O Shadow Blue
SC95250	SC 900-625-O Majestic Blue
SC95260	SC 900-626-O PANTONE® 285 C ■ ✦
SC95280	SC 900-628-O PANTONE® 286 C ■ ✦
SC95300	SC 900-630-O Olympic Blue ✦
SC96350	SC 900-635-O Nautical Blue
SC95400	SC 900-640-O Light Blue
SC95450	SC 900-645-O Peacock Blue
SC95500	SC 900-650-O Powder Blue

ITEM NUMBER PRODUCT

SC95520	SC 900-652-O Butterfly Blue
SC95550	SC 900-655-O Medium Blue
SC95570	SC 900-657-O PANTONE® 292 C ■ ✦
SC95590	SC 900-659-O PANTONE® 293 C ■ ✦
SC95650	SC 900-665-O Intense Blue ✦
SC95700	SC 900-670-O Vivid Blue ✦
SC95750	SC 900-675-O Interstate Blue
SC95780	SC 900-678-O PANTONE® 300 C ■ ✦
SC95790	SC 900-679-O PANTONE® Reflex Blue C ■ ✦
✓ SC95800	SC 900-680-O Sapphire Blue ✦
SC95820	SC 900-682-O PANTONE® Process Blue C ■ ✦
SC95900	SC 900-690-O Light Navy ✦
SC95950	SC 900-695-O Dark Blue ✦
SC95970	SC 900-697-O Dark Navy Blue ✦
SC96050	SC 900-705-O Dark Aqua
SC96090	SC 900-709-O Light Sage
SC96100	SC 900-710-O Spectra Everglade
SC96150	SC 900-715-O Real Teal
SC96200	SC 900-720-O Teal ✦
SC96260	SC 900-726-O PANTONE® 354 C ■ ✦
SC96300	SC 900-730-O Dark Teal ✦
SC96320	SC 900-732-O Lime Aid
SC96330	SC 900-733-O Aquamarine
SC96340	SC 900-734-O PANTONE® 375 C ■ ✦
SC96550	SC 900-755-O Vibrant Green ✦ ■
SC96600	SC 900-760-O Apple Green ✦
SC96650	SC 900-765-O Olive Green
SC96700	SC 900-770-O Kelly Green ✦
SC96720	SC 900-772-O Grow Green
SC96750	SC 900-775-O Bright Green ✦
SC96850	SC 900-785-O Forest Green ✦
SC96900	SC 900-790-O Deep Green ✦
SC96930	SC 900-793-O Dark Green ✦
SC96950	SC 900-795-O Polo Green
SC90500	SC 900-804-O Pewter
SC90100	SC 900-810-O Light Gray
SC90200	SC 900-820-O Palm Oyster
SC90250	SC 900-825-O Light Ash Gray
SC90300	SC 900-830-O Slate Gray
SC90350	SC 900-835-O Medium Gray ✦
SC90550	SC 900-855-O Dark Gray
SC90600	SC 900-860-O Medium Marine Gray
SC90690	SC 900-869-O PANTONE® 877 C ■ ✦
SC92050	SC 900-905-O Parchment
SC92100	SC 900-910-O Almond
SC92200	SC 900-920-O Beige ✦
SC92300	SC 900-921-O Dark Beige
SC92350	SC 900-935-O Putty
SC92400	SC 900-940-O Camel
SC92520	SC 900-952-O PANTONE® 466 C ■ ✦
SC92600	SC 900-960-O Terra Cotta
SC92650	SC 900-965-O Sandstone
SC92700	SC 900-970-O Buckskin
SC92780	SC 900-978-O Cocoa
SC92950	SC 900-995-O Brown ✦

KEY

- ✦ 6-yr durability
- ✦ 8-yr durability
- ✦✦ 10-yr durability
- ✦ Available in widths up to 60". All other colors available in widths up to 48."
- Pigmented adhesive—not reversible
- ✦ Thermal transfer printable
- BL Standard with blue liner
- ✓ Custom Finish available in 1-day lead time

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AVERY 900 SUPERCAST (SC) OPAQUE

Permanent • Kraft

SCREEN & CUT

Choose from 110 standard colors, including 19 colors matched to Pantone® standards. Custom colors available. StaFlat™ liner and specialized adhesives available on select colors.

STANDARD COLORS

See page 15 for color selection.

STOCK

ROLL CODE	FINISHED SIZE	WEIGHT	CLEAR / WHITE / BLACK PRICE/ROLL	COLORS PRICE/ROLL
A	15" x 10 yd punched	2 lb 11 oz	\$ 43.96	\$ 49.56
K	24" x 10 yd	4 lb 9 oz	\$ 70.32	\$ 79.30
E	30" x 10 yd punched	5 lb 11 oz	\$ 87.91	\$ 99.14
R	48" x 10 yd	6 lb 13 oz	\$ 140.65	\$ 158.61
F	15" x 50 yd	10 lb	\$ 183.07	\$ 210.07
D*	15" x 50 yd punched - No Splice	10 lb	\$ 183.07	-
C	15" x 50 yd punched	10 lb	\$ 183.07	\$ 210.07
M	24" x 50 yd	15 lb 5 oz	\$ 292.92	\$ 336.11
Q	30" x 50 yd	19 lb 5 oz	\$ 366.14	\$ 420.14
G	30" x 50 yd punched	19 lb 5 oz	\$ 366.14	\$ 420.14
P**	36" x 50 yd	22 lb 15 oz	\$ 439.37	\$ 504.17
U	48" x 50 yd	32 lb 9 oz	\$ 585.63	\$ 672.21
W	60" x 50 yd	41 lb 2 oz	\$ 732.28	\$ 840.27
S	48" x 100 yd	65 lb 2 oz	\$ 1,054.23	\$ 1,195.96
V	60" x 100 yd	130 lb 4 oz	\$ 1,317.77	\$ 1,494.94
T	48" x 250 yd	162 lb 13 oz	\$ 2,635.56	\$ 2,989.89
Z	60" x 250 yd	205 lb 10 oz	\$ 3,294.45	\$ 3,737.36

*Thermal transfer optimized for producing longer graphics on Gerber Edge® and Roland® Color Camm thermal transfer printers by leaving the vinyl to the edges splice-free.

**P configuration available in products with 60" widths.

CUSTOM FINISH

Items with a check mark are available with custom finish in 1 day lead time.

QUANTITY	CLR / WHT / BLK 48" - FULL WEB PRICE/SQ FT	COLORS 48" - FULL WEB PRICE/SQ FT	MIN. ORDER QTY*
Custom Slitting	\$ 1.025	\$ 1.176	50 yd
Custom Punching	\$.997	\$ 1.141	100 yd
Custom Premasking/Slitting	\$ 1.101	\$ 1.245	100 yd

* Purchase of full web width required.

CUSTOM COLOR

QUANTITY PER ORDER	48" - FULL WEB PRICE/SQ FT - ROLLS*
3,000 - 5,999 square feet	\$ 1.400
6,000 - 11,999 square feet	\$ 1.232
12,000 + square feet	\$ 1.120

* Does not include standard upcharges for punching or premasking

TABLE OF CONTENTS



Avery Dennison® T-1000-A & W-1000-A Series

Engineering Grade Beaded Retroreflective Film

Issued: July 2015

Avery Dennison® T-1000-A & W-1000-A Series beaded Engineering Grade Retroreflective Film for permanent and temporary traffic signage, is a high-quality, durable, enclosed lens retroreflective material with a pressure sensitive adhesive.

T-1000-A & W-1000-A Series sheeting is an Omni-Directional beaded film. This feature benefits agencies by providing confidence that all signs will perform with uniform visual reflectivity at all sign face orientations.



Performance:
ASTM D4956 Type I,
EN-12899 RA1
See Page 2 for complete list.



Orientation: Omni-Directional



Durability: 7 years
Vertical Exposure Only



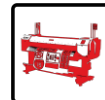
Face: Urethane with Glass Microspheres
(A-version: Acrylic)
(D-version: PVC)



Adhesive: Permanent Pressure Sensitive



Liner: White Polyethylene Coated Paper



Printable with: TrafficJet™ Print System* (D-versions)

Features:

- Omni-Directionality provides consistent performance when mounted in different orientations¹
- Designed for long term durability on safety devices worldwide
- Pattern free face allows for clean graphic imaging
- Economical choice for non-critical signs
- Uniform daytime and nighttime visual appearance

Conversion:

- ☒ Screen printing
- ☒ Thermal transfer printing
- ☒ Thermal die-cut
- ☒ Flat bed sign-cut
- ☒ Drum roller sign-cut
- ☒ Steel rule sign-cut

Applications:

- ☒ Rigid permanent and temporary outdoor signage
- ☒ Rigid work zone devices
- ☒ Nonessential signage where retro-reflection is necessary

¹ See Sheeting Orientation section for explanation on directional sensitivity

² See Page 5 for Nomenclature.

³ 3 Year Durability

Product Availability²:

Traffic Products		
T-1100	White	
T-1500-A	White	
T-1500-D	White (Digital)	
T-1101	Yellow	
T-1501-A	Yellow	
T-1501-D	Yellow (Digital)	
T-1505-A	Blue	
T-1507-A	Green	
T-1508-A	Red	
T-1509-A	Brown	
Work Zone Products ³		
W-1104	Orange	
W-1204		
W-1504-A		
W-1504-D		
W-1142	Orange	4" Left
W-1143	Pre-Striped	4" Right
W-1144	Barricade	6" Left

Product Data Sheet

Page 1 of 7
Reflective Solutions
7542 North Natchez Ave.
Niles, IL 60714



www.reflectives.averydennison.com

Avery Dennison® T-1000-A & W-1000-A Series

Engineering Grade Beaded Retroreflective Film

Issued: July 2015

W-1145		6" Right
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Retroreflectivity:

Table A:

Min. coefficients of retroreflection (R_A)¹ per ASTM D4956² Type I

Observation Angle	Color	Entrance Angle	
		- 4°	+ 30°
0.2°	White	70	30
	Yellow	50	22
	Orange	25	7
	Blue	4	1.7
	Green	9	3.5
	Red	14	6
	Brown	1.0	0.3
0.5°	White	30	15
	Yellow	25	13
	Orange	13	4
	Blue	2.0	0.8
	Green	4.5	2.2
	Red	7.5	3.0
	Brown	0.3	0.2

Table B:

Min. coefficients of retroreflection (R_A)¹ EN 12899 Table 3

α Observation Angle	Color	$\beta 1$ ($\beta 2=0^\circ$) Entrance Angle		
		+ 5°	+ 30°	+ 40°
12' (0.2°)	White	70	30	10
	Yellow	50	22	7
	Orange	25	10	2.2
	Blue	4	1.7	0.5
	Green	9	3.5	1.5
	Red	14.5	6	2
	Brown	1	0.3	--
20' (0.33°)	White	50	24	9
	Yellow	35	16	6
	Orange	20	8	2.2
	Blue	2	1	--
	Green	7	3	1.2
	Red	10	4	1.8
	Brown	0.6	0.2	--
2°	White	5	2.5	1.5
	Yellow	3	1.5	1.0
	Orange	1.2	0.5	--
	Blue	--	--	--
	Green	0.5	0.3	0.2
	Red	1	0.5	0.5
	Brown	--	--	--

T-1000-A & W-1000-A Series **exceeds** all values listed in **Table A** and **Table B**.

T-1000-A & W-1000-A Series also **exceeds** the current applicable requirements for the following specifications:

ASTM D4956	International
EN-12899	EU
GB/T 18833	China
JIS Z9117	Japan
SANS 1519-1	South Africa
AS/NZS 1906.1	Australia New Zealand

Avery Dennison suggests you obtain the current requirements from your local agency and ensure product conformance with such requirements. Your Avery Dennison Representative can assist you in this regard.

¹ R_A =
candelas per foot-candle per
square foot (cd/ft²) OR
Candelas per lux per square meter
(cd/lx/m²)

Avery Dennison® T-1000-A & W-1000-A Series Engineering Grade Beaded Retroreflective Film

Issued: July 2015

² Measured according to ASTM E810

Colors and Specification Limits:

Figure A: Daytime Color – CIE Color Diagram

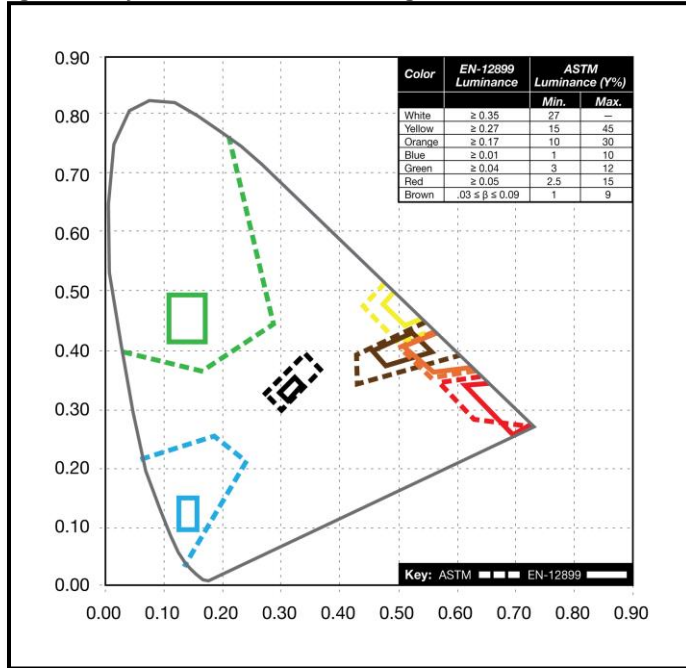
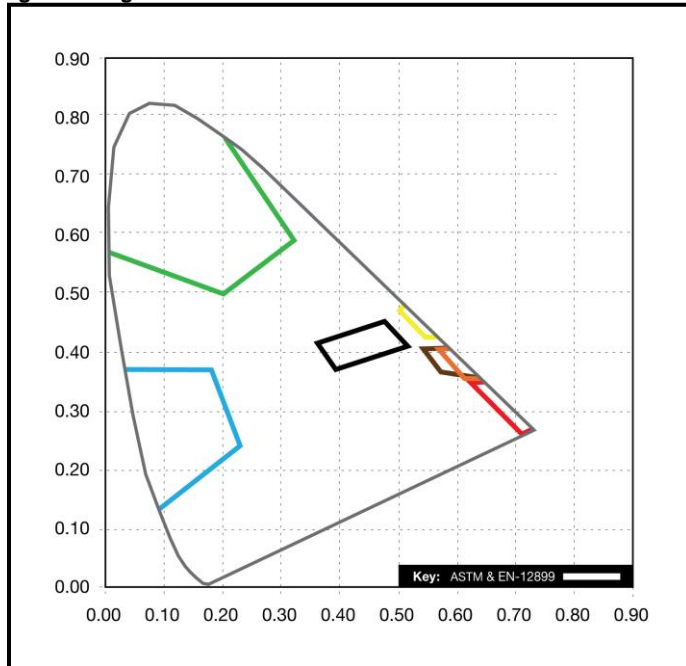


Figure B: Nighttime Color



T-1000-A & W-1000-A Series **meets** the current applicable daytime and nighttime color requirements for ASTM D4956 and EN-12899 as well as standards listed on Page 2.

Chromaticity Coordinate Limits

Figures A & B show the four pairs of chromaticity coordinates from ASTM D4956 and EN-12899 on the color grid.

Daytime Color

The four pairs of chromaticity coordinates in **Figure A** determine the acceptable color in terms of the CIE 1931 Standard Colorimetric System measured with Standard Illuminant D65 and CIE Publication no. 15 using CIE Standard Illuminant D65 and CIE 45/0 geometry. Luminance factor shall comply with table in **Figure A**.

Note: The saturation limit of green and blue may extend to the border of the CIE chromaticity locus for spectral colors

Nighttime Color

The four pairs of chromaticity coordinates in **Figure B** determine the acceptable color measured using CIE Illuminant A, observation angle of 0.33 degrees, entrance angle of +5 degrees, source and receiver apertures not to exceed 10 minutes of arc, and CIE 1930 (2 degree) standard observer per ASTM D4956.

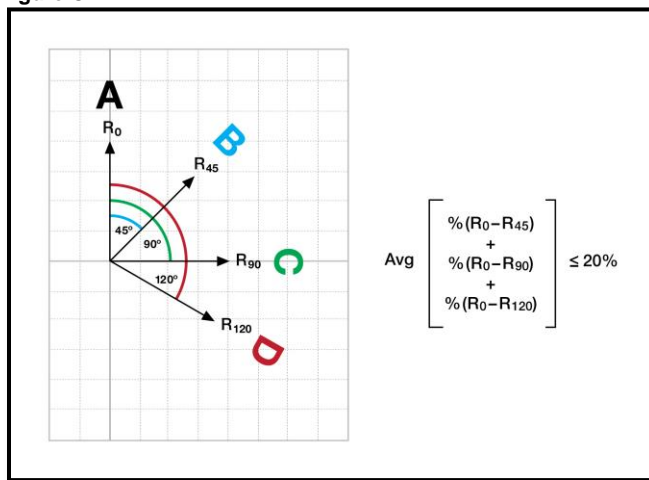
Avery Dennison® T-1000-A & W-1000-A Series Engineering Grade Beaded Retroreflective Film

Issued: July 2015

Sheeting Orientation:

The American Association of State Highway Transportation Officials (AASHTO) has recognized that some retroreflective films are rotationally (orientation) sensitive. Because this impacts sign luminance, AASHTO has defined a specification to measure orientation performance. **Figure C** shows how the orientation sensitivity is measured. In order for a film to be considered rotationally insensitive, the average percent difference (shown in **Figure C**) must be less than or equal to 20%.

Figure C



When measured for orientation sensitivity as described in AASHTO M 268-10, all Avery Dennison sheeting, both beaded and prismatic, **pass** the specification as **rotationally insensitive**. Therefore, no special identification marks or other features (such as a datum mark, or distinctive seal pattern) are required to denote optimum orientation for sheeting. Because the user can expect visual uniformity regardless of orientation, no costly and cumbersome fabrication techniques are required to orient sheets, cut sign legend or border tape during sign fabrication.

Specifying agencies and sign fabricators are cautioned that some retroreflective sheetings, even of the same ASTM "Type" may not provide consistent luminance for desired night visibility if the sheeting is not applied in the optimal, or in uniform orientation. Agencies and fabricators should be aware of this concern and discuss the potential effects of rotation on luminance of specific sheetings with their material supplier before beginning installation and/or fabrication.

T-1000-A & W-1000-A Series is Omni-Directional and **passes** the AASHTO specification as being **rotationally insensitive**.

Retroreflectivity R_A values taken per ASTM E810 at 0.5°
Observation angle and -4° or 5°
Entrance angle

As a datum for laboratory measurements R_0 is identified in the crossweb direction.

*Watermark*¹: T-1000-A & W-1000-A Series does not have a watermark.

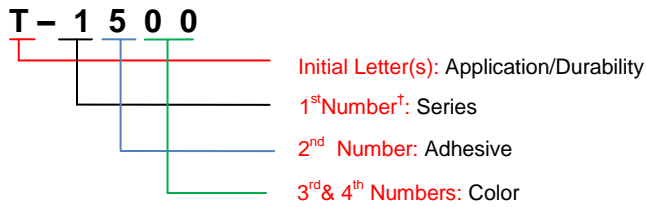
¹ May vary by region.

Avery Dennison® T-1000-A & W-1000-A Series

Engineering Grade Beaded Retroreflective Film

Issued: July 2015

Nomenclature:



Initial Letter	Application	Durability*
T	Traffic/Permanent Sheeting	7 year
W	Work Zone Sheeting	3 year
WR	Work Zone Reboundable	3 year

* See your local representative for complete details.

Series	1000
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2 nd Number	Substrate
1	Pressure Sensitive for Plastic Substrates
2	Pressure Sensitive for Wood Substrates
5	Pressure Sensitive for Aluminum Substrates

3 rd & 4 th Numbers	Color
00	White
01	Yellow
04	Orange
05	Blue
07	Green
08	Red
09	Brown
11	Fluorescent Yellow
13	Fluorescent Yellow-Green
14	Fluorescent Orange
42	4" LEFT Orange Pre-Striped Barricade
43	4" RIGHT Orange Pre-Striped Barricade
44	6" LEFT Orange Pre-Striped Barricade
45	6" RIGHT Orange Pre-Striped Barricade

[†]OmniCube is the exception and leads with the number 11

The following Warranty is limited to North America.

WARRANTY

Avery Dennison T-1000-A & W-1000-A beaded retroreflective sheeting ("Product(s)") are warranted to be free from defects in material and workmanship for one (1) year from date of purchase (or the period stated on the specific product information literature in effect at time of delivery, if longer). 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.

Avery Dennison further warrants that Avery Dennison® T-1000-A & W-1000-A Beaded reflective sheeting will retain its effectiveness as a component of traffic control and guidance signs, and will meet the stated minimum values for coefficient of retroreflection ("Performance Warranty") as set forth in accordance with the following standards:

Warranty Period*	Minimum Percentage R _A Retained
1-7 years	50%

*Performance Warranty Period for Work Zone products is one to three (1-3) years

Note: For transparent color screen printed areas using Avery Dennison supplied or approved inks or OL-2000 Overlay films on Avery Dennison® T-1500-A white sheeting, values shall be a minimum of 70% of values in Table A

R_A percentage retained above apply to all entrance and observation angles in Table A, and shall be measured per ASTM E 810.

All measurements shall be made after cleaning according to Avery Dennison procedures.

PERFORMANCE WARRANTY

If within seven (7) years of installation such deterioration occurs or the Product fails to retain the minimum seven (7)-year reflectivity values, Avery Dennison will restore the installation surface to its original effectiveness at no cost for materials or labor.

CONDITIONS

This warranty shall be effective only if all of the following conditions are met:

Fabrication and/or installation must occur within one (1) year from the date of purchase.

The failure must have resulted solely from a manufacturing defect or deterioration of the Product due to natural causes under the Performance Warranty. Without limiting the generality of the foregoing, there is no warranty for the failure of the sheeting due to improper sign fabrication, storage, handling, installation, maintenance, failure of the sign substrate, vandalism or mischief. Slight color fading, cracking, chalking, edge lifting, or slight reduction in gloss or reflectivity will not materially detract from appearance and does not constitute a breach of warranty.

Avery Dennison has published instructional bulletins pertaining to the storage, handling, and cleaning of Product, approved substrates, and application procedures (collectively, the "Procedures"). The Product must have been processed and applied to blank, clean material in accordance with the Procedures, as such may be amended from time to time. Avery Dennison reserves the right to reject any warranty claim where the fabricator or installer cannot satisfactorily prove or demonstrate that the Avery Dennison procedures were utilized. The date of installation, warranty registration, and claim procedures established by Avery Dennison must be followed, and failure to follow such procedures shall void this warranty. Replacement Product carries only the unexpired warranty portion of the Product it replaces. The Product must be properly stored and applied within the shelf-life as stated in the applicable Avery Dennison Product Data Sheet including adhesive and other material product data sheets.

Avery Dennison® T-1000-A & W-1000-A Series

Engineering Grade Beaded Retroreflective Film

Issued: July 2015

Characteristics:

<i>Property</i>	<i>Value</i>	<i>Instructional Bulletins</i>
Shelf-Life	1 year from date of purchase when stored at the following conditions: 65°-75°F (18°-24°C) 50% ± 5% R.H.	#8.00
Typical film Caliper	5.5 – 6.5 mils (140 – 165 µm)	NA
Min. Application Temperature	65° F (18° C)	#8.10
Service Temperature	-10°F to +150°F (-23°C to + 65°C)	#8.00
Screen Printing	Long term durability of screen printing in combination with T-1000-A & W-1000-A is warranted when used with approved inks and overlays. See Page 7.	#8.30 #8.55
Thermal Transfer Printing	Long term durability of thermal transfer printing in combination with T-1500-D is warranted when used with approved ribbons and printer systems. See Page 7.	#8.60

ADDITIONAL LIMITATIONS

Unintended Use: This warranty only applies to Product that is used by professional converters and installers for the defined end uses and in the combinations described in the applicable Avery Dennison Product Data Sheets and Instructional Bulletins. For any other use, the user is responsible for determining the suitability of the Product, and for any and all risk or liability associated with that use or application, and the user agrees to indemnify, defend and hold harmless Avery Dennison for any claims, losses, damages, judgments, expenses and/or expenses, including attorneys fees, resulting from such use or application. This warranty is expressly conditioned on the Product being processed by professional converters or installers in accordance with the Avery Dennison recommended written processing instructions, and being applied to properly prepared surfaces and cleaned and maintained in accordance with recommended Avery Dennison procedures. It is the converters, installers or other users responsibility to perform incoming raw material quality inspections, to assure proper surface preparation and that approved application procedures are followed, to retain converted samples, and to immediately cease using and notify Avery Dennison and/or its authorized agent or distributor of any Product, Materials and/or finished Product discovered to be (or reasonably capable of being discovered to be) defective.

Misuse and Force Majeure: Avery Dennison has no obligations or liability under this warranty with respect to Product that has been altered, modified, damaged, misused, abused, subject to accident, neglected or otherwise mishandled or improperly processed or installed. Product is not warranted against premature failure caused by chemical, environmental or mechanical means such as, but not limited to, vandalism, cleaning solutions, paints, solvents, moisture, temperature, mechanical washing equipment, engine fuel spills, engine exhaust, steam, organic solvents or other spilled chemicals pollutants, including industrial and volcanic ash. Damage from fire, structural failure, lightning, accidents, and other force majeure events are not covered by this warranty.

Third Party Product: Avery Dennison assumes no responsibility for any injury, loss or damage arising out of the use of a product that is not of our manufacture. Where installer or converter uses or reference is made to a commercially available product, made by another manufacturer, it shall be the responsibility of the user, installer or converter to ascertain the precautionary measures for its use outlined by the manufacturer.

The remedies provided under this warranty are exclusive. In no event shall Avery Dennison be responsible for any direct, indirect, incidental or consequential damages or specific relief whether foreseeable or not, caused by defects in such Product, whether such damage occurs or is discovered before or after replacement or credit, and whether or not such damage is caused by Avery Dennison's negligence. In no event shall Avery Dennison's liability hereunder exceed the remedies specifically set forth in this warranty. Avery Dennison's liability shall be limited, at Avery Dennison's option, to the purchase price, replacement of the defective Product and in some cases when authorized by Avery Dennison the repair and replacement of the defective Product.

THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHERS. ANY AND ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED. NO WAIVER, ALTERATION, ADDITION OR MODIFICATION OF THE FOREGOING CONDITIONS SHALL BE VALID UNLESS MADE IN WRITING AND MANUALLY SIGNED BY AN OFFICER OF AVERY DENNISON.

Avery Dennison® T-1000-A & W-1000-A Series

Engineering Grade Beaded Retroreflective Film

Issued: July 2015

Converting Information:

The following Avery Dennison literature will provide information to the user for proper application, storage, and other requirements. Find the latest information on the Avery Dennison website, www.reflectives.averydennison.com. We encourage you to check our website periodically for updates.

Approved screen printing inks, overlays, thermal transfer ribbons:

Supplier	Series	System	Instructional Bulletins
Avery Dennison	4930 Inks	1 Part Solvent	#8.40
Avery Dennison	7TS	1 Part Solvent	#8.37
Avery Dennison	OL-2000	Acrylic Overlay	#8.01, #8.10, #8.25
Avery Dennison	OL-1000	Anti-Graffiti	#8.01, #8.10
Matan	DTS	Thermal Transfer	#8.60

Instructional Bulletins:

Film Care & Handling	#8.00
Substrate Requirements	#8.01
Application Techniques for PS Film	#8.10
Cutting Methods	#8.20
Computer Sign Cutting	#8.25
Screen Preparation	#8.30
Troubleshooting Printing & Processing	#8.34
Ink Recommendations Guide	#8.55

Substrates:

The application of Avery Dennison T-1000-A & W-1000-A Series sheeting is limited to properly prepared substrates. For T-1500 and W-1500 products, application is limited to properly prepared aluminum. For T-1200 and W-1200 products, application is limited to properly prepared wood. For T-1100 and W-1100 products, application is limited to properly prepared plastic. Users are urged to carefully evaluate, under actual use conditions, any film application to other substrates. Failure of film caused by other substrates, materials, contamination, or improper surface preparation is not the responsibility of Avery Dennison. See Instructional Bulletin #8.01 for full details on substrate requirements.

DEFINITIONS

Durability: means that the Product in a finished graphic, panel or sign situated outdoors, subject to the limitations herein and Avery Dennison Product Data Sheets and Instructional Bulletins, and applied to recommended surfaces, will not deteriorate excessively such that the finished sign, panel or graphic is ineffective for its identification when viewed under normal conditions from the intended viewing distance.

Outdoor Durability: is based on normal middle European and central North American outdoor exposure conditions and application to recommended surfaces. Actual performance life will depend on a variety of factors, including but not limited to substrate preparation, exposure conditions and maintenance of the Product and finished graphic, panel or sign. In case the finished graphics, panel or sign is in areas of high temperatures or humidity, in industrially polluted areas or other areas with air laden particulate matter, and/or in high altitudes, Outdoor Durability may be reduced. Please see your local Avery Dennison representative for changes to warranties based on such localized conditions.

Vertical Exposure: means that the face of the finished graphic is $\pm 10^\circ$ from vertical.

Non-Vertical Exposure: means that the face of the finished graphic is greater than 10° from vertical and greater than 5° from horizontal. Retroreflective films are not warranted for this exposure.

Flat surfaces: means a two dimensional flat surface without protruding objects.

Weathering Effects: Some degradation of Product performance over time is considered normal wear. Slight color fading, chalking, edge lifting, or slight reduction in gloss or reflectivity due to normal wear exposure and other natural weathering, environmental or other conditions or damage caused by tornadoes, hurricanes, wind, excessive ice buildup or extraordinary frozen particulate conditions, large hail stones or other acts of God, do not constitute a breach of warranty or give rise to any liability by Avery Dennison.

Printing, Curing and Ink Defects: Ink contaminations, failures or other defects, or other failures due to improper printing conditions or settings including, but not limited to, unsuitable color calibration, incorrect ICC color profile or incompatible printing, do not constitute a breach of warranty. Product failure caused by ink over-saturation, excessive or under curing, failure of ink to render desired colors on Product, or other treatment or processing errors are not warranted.

Adhesion to Application Surfaces: This warranty does not cover the Product if the application surface is not properly prepared; nor does the warranty cover the Product or damage to the substrate because the layers of the substrate separate due to a lower bond between those layers than the bond between the Product and the top layer of the substrate, or surfaces which subsequently crack, peel, outgas, or become damaged beneath the Product.

INDEPENDENT TESTING REQUIRED

All statements, technical information and recommendations about Avery Dennison products are based upon tests and information believed to be reliable but do not constitute a guarantee or warranty of any kind. All Avery Dennison products are sold with the understanding that Purchaser has independently determined the suitability of such products for its intended and other purposes.

If any court of competent jurisdiction or relevant government agency holds any provision of this warranty and limitation of liability to be illegal, void, invalid or unenforceable, whether in terms of any competition, legislation or otherwise, such provision shall be deleted and severable from this warranty and limitation of liability but deletion shall not affect the validity or enforceability of any other provisions hereof.

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Avery Dennison® T-6000 & W-6000 HIP Series

High Intensity Microprismatic Retroreflective Film

Issued: April 2011

Revision 1

Avery Dennison® T-6000 & W-6000 Series High Intensity Microprismatic (HIP) Retroreflective Film for permanent and temporary traffic signage, is a high-quality, durable, microprismatic retroreflective material with a pressure sensitive adhesive. Its unique microprismatic construction provides a high level of retroreflectivity for demanding traffic control situations.

T-6000 & W-6000 Series sheeting is an Omni-Directional microprismatic film that incorporates tiles of microprisms arranged in multiple orientations. This feature – “Smart at Every Angle” benefits agencies by providing confidence that all signs will perform with uniform visual reflectivity at all sign face orientations.

Features:

- Omni-Directional
- High Intensity Microprismatic Retroreflective Performance
- Field proven long term durability on safety devices worldwide
- Uniform daytime and nighttime visual appearance

Conversion:

- ☒ Screen Printing
- ☒ Thermal Transfer Printing
- ☒ Solvent Based Inkjet Printing
- ☒ Mild/Eco Solvent Inkjet Printing
- ☒ UV Inkjet Printing
- ☒ Thermal Die-Cut
- ☒ Flat Bed Sign-Cut
- ☒ Drum Roller Sign-Cut
- ☒ Steel Rule Sign-Cut

Applications:

- ☒ Rigid Permanent and Temporary Outdoor Signage
- ☒ Rigid Work Zone Devices
- ☒ Safety Devices that Require Robust Retroreflective Performance



Performance:
ASTM D4956 Type III & IV,
CUAP Table 7
See Page 2 for complete list.



Orientation: Omni-Directional



Durability: 10 year
Vertical Exposure only



Face: High-Gloss Acrylic
Retroreflective Film with
Microprisms



Adhesive: Permanent
Pressure Sensitive



Liner: Polypropylene Film

Product Availability*:

Traffic Products		
T-6500	White	
T-6501	Yellow	
T-6505	Blue	
T-6507	Green	
T-6508	Red	
T-6509	Brown	
Work Zone Products**		
W-6100	White	
W-6200	White	
W-6204	Orange	
W-6504	Orange	
W-6511	Fluorescent Yellow	
W-6513	Fluorescent Yellow-Green	
W-6142	Orange Pre-Striped Barricade	4" Left
W-6143		4" Right
W-6144		6" Left
W-6145		6" Right
W-6242		4" Left
W-6243		4" Right
W-6244		6" Left
W-6245		6" Right

*See Page 5 for Nomenclature.

**3 Year Durability

Product Data Sheet

Page 1 of 7
Graphics and Reflective Solutions
250 Chester Street
Painesville, OH 44077



www.reflectives.averydennison.com

Avery Dennison® T-6000 & W-6000 HIP Series

High Intensity Microprismatic Retroreflective Film

Issued: April 2011

Revision 1

Retroreflectivity:

Table A:

Min. coefficients of retroreflection (R_A)¹ per ASTM D4956² Type III & IV

Observation Angle	Color	Entrance Angle	
		- 4°	+ 30°
0.1° ³	White	500	240
	Yellow	380	175
	Orange	200	94
	Blue	42	20
	Green	70	32
	Red	90	42
	Brown	25	12
0.2°	White	360	170
	Yellow	270	135
	Orange	145	68
	Blue	30	14
	Green	50	25
	Red	65	30
	Brown	18	8.5
0.5°	White	150	72
	Yellow	110	54
	Orange	60	28
	Blue	13	6.0
	Green	21	10
	Red	27	13
	Brown	7.5	3.5

Table B:

Min. coefficients of retroreflection (R_A)¹ CUAP Table 7 (EN-12899 RA2)

α Observation Angle	Color	β_1 ($\beta_2=0^\circ$) Entrance Angle		
		+ 5°	+ 30°	+ 40°
12' (0.2°)	White	250	150	110
	Yellow	170	100	70
	Orange	100	60	29
	Blue	20	11	8
	Green	45	25	12
	Red	45	25	15
	Brown	12	8.5	5.0
20' (0.33°)	White	180	100	95
	Yellow	120	70	60
	Orange	65	40	20
	Blue	14	8.0	7.0
	Green	21	12	11
	Red	25	14	13
	Brown	8.0	5.0	3.0
2°	White	5.0	2.5	1.5
	Yellow	3.0	1.5	1
	Orange	1.5	1	--
	Blue	0.2	--	--
	Green	0.5	0.3	0.2
	Red	1	0.4	0.3
	Brown	0.2	--	--

HIP Series sheeting **exceeds** all values listed in **Table A** and **Table B**.

HIP Series sheeting also **exceeds** the current applicable requirements for the following specifications:

ASTM D4956	International
AASHTO M268	USA
CUAP	EU
GB/T 18833	China
N-CMT-5-03-001	Mexico
UNE 135340	Spain
NF XP98520	France
BSI 8408	UK
UNI 11122	Italy
JIS Z9117	Japan
SANS 1519-1	South Africa
AS/NZS 1906.1	Australia New Zealand
ABNT NBR 14644	Brazil
IRAM 3952	Argentina

Avery Dennison suggests you obtain the current requirements from your local agency and ensure product conformance with such requirements. Your Avery Dennison Representative can assist you in this regard.

R_A =
candelas per foot-candle per
square foot (cd/ft²) OR
Candelas per lux per square meter
(cd/lx/m²)

² Measured according to ASTM E810

³ Note that 0.1° Observation angle is a "supplemental Requirement" in ASTM D4956. It represents long highway viewing distances of about 900 ft (275 Meters) and greater.

Product Data Sheet

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Graphics and Reflective Solutions
250 Chester Street
Painesville, OH 44077



www.reflectives.averydennison.com

Avery Dennison® T-6000 & W-6000 HIP Series High Intensity Microprismatic Retroreflective Film

Issued: April 2011

Revision 1

Colors and Specification Limits:

Figure A: Daytime Color

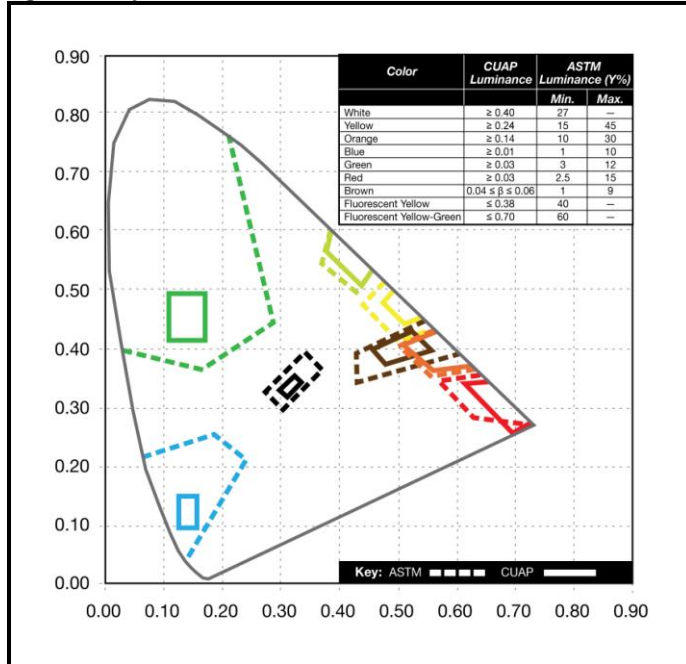
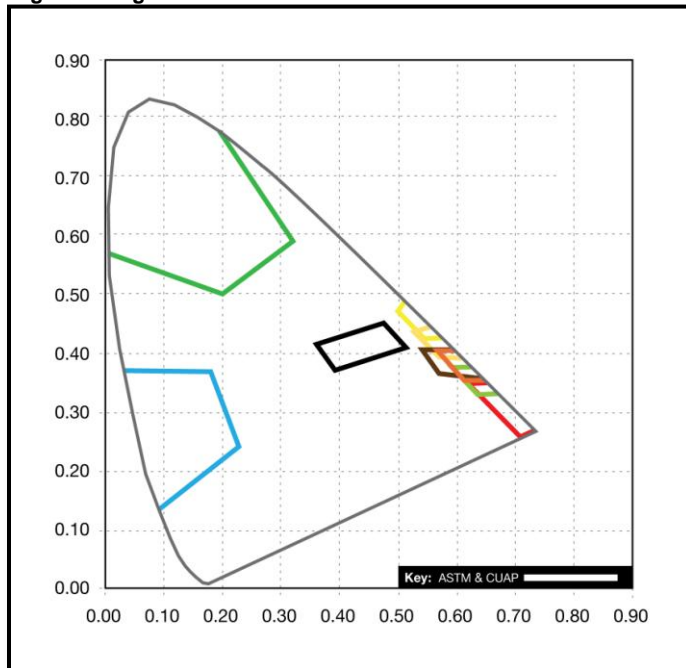


Figure B: Nighttime Color



HIP Series sheeting **meets** the current applicable daytime and nighttime color requirements for ASTM D4956 and CUAP as well as standards listed on Page 2.

Chromaticity Coordinate Limits

Figures A & B show the four pairs of chromaticity coordinates from ASTM D4956 and CUAP on the color grid.

Daytime Color

The four pairs of chromaticity coordinates in **Figure A** determine the acceptable color in terms of the CIE 1931 Standard Colorimetric System measured with Standard Illuminant D65 and CIE Publication no. 15 using CIE Standard Illuminant D65 and CIE 45/0 geometry. Luminance factor shall comply with table in **Figure A**.

Note: The saturation limit of green and blue may extend to the border of the CIE chromaticity locus for spectral colors

Nighttime Color

The four pairs of chromaticity coordinates in **Figure B** determine the acceptable color measured using CIE Illuminant A, observation angle of 0.33 degrees, entrance angle of +5 degrees, source and receiver apertures not to exceed 10 minutes of arc, and CIE 1930 (2 degree) standard observer per ASTM D4956.

Avery Dennison® T-6000 & W-6000 HIP Series High Intensity Microprismatic Retroreflective Film

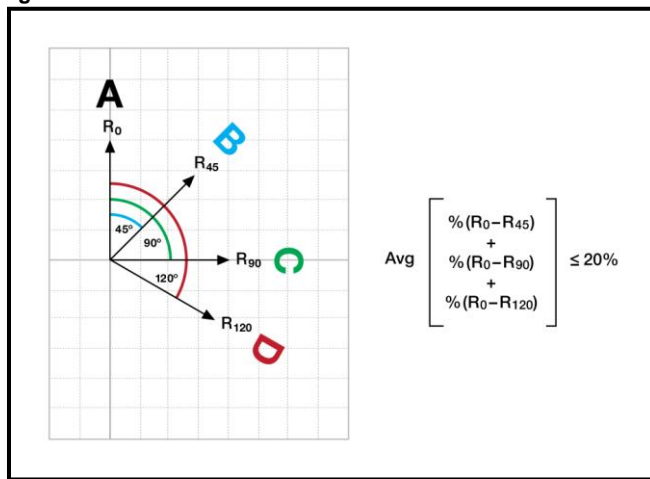
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Sheeting Orientation:

The American Association of State Highway Transportation Officials (AASHTO) has recognized that some retroreflective films are rotationally (orientation) sensitive. Because this impacts sign luminance, AASHTO has defined a specification to measure orientation performance. **Figure C** shows how the orientation sensitivity is measured. In order for a film to be considered rotationally insensitive the average percent difference (shown in **Figure C**) must be less than or equal to 20%.

Figure C



When measured for orientation sensitivity as described in AASHTO M 268-10, all Avery Dennison sheeting, both beaded and prismatic, **pass** the specification as **rotationally insensitive**. Therefore no special identification marks or other features (such as a datum mark, or distinctive seal pattern) are required to denote optimum orientation for sheeting. Because the user can expect visual uniformity regardless of orientation, no costly and cumbersome fabrication techniques are required to orient sheets, cut sign legend or border tape during sign fabrication.

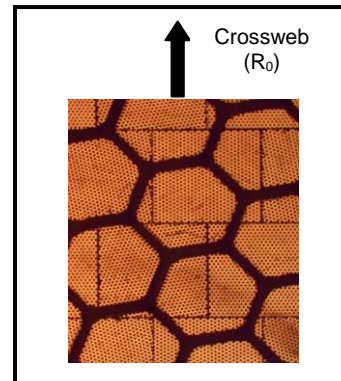
Specifying agencies and sign fabricators are cautioned that some retroreflective sheetings, even of the same ASTM "Type" may not provide consistent luminance for desired night visibility if the sheeting is not applied in the optimal, or in uniform orientation. Agencies and fabricators should be aware of this concern and discuss the potential effects of rotation on luminance of specific sheetings with their material supplier before beginning installation and/or fabrication.

HIP Series sheeting is Omni-Directional and **passes** the AASTHO specification as being **rotationally insensitive**.

Retroreflectivity R_A values taken per ASTM E810
0.5° Observation angle and
-4° or 5° Entrance angle

As a datum for laboratory measurements R_0 is identified in the crossweb direction. See **Figure D**

Figure D



Watermark: HIP Series contains the watermark seen in **Figure E**.

Figure E

HIP Lot #

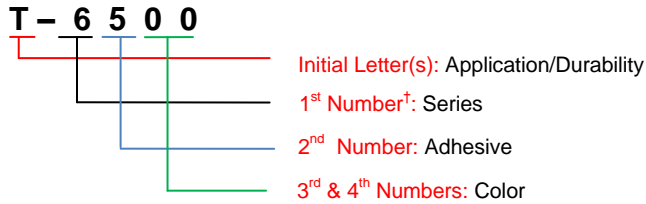
Avery Dennison® T-6000 & W-6000 HIP Series

High Intensity Microprismatic Retroreflective Film

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Nomenclature:



Initial Letter	Application	Durability*
T	Traffic/Permanent Sheeting	10 year
W	Work Zone Sheeting	3 year
WR	Work Zone Reboundable	3 year

* See your local representative for complete details.

Series	6000
--------	------

2 nd Number	Substrate
1	Pressure Sensitive for Plastic Substrates
2	Pressure Sensitive for Wood Substrates
5	Pressure Sensitive for Aluminum Substrates

3 rd & 4 th Numbers	Color
00	White
01	Yellow
04	Orange
05	Blue
07	Green
08	Red
09	Brown
11	Fluorescent Yellow
13	Fluorescent Yellow-Green
14	Fluorescent Orange
42	4" LEFT Orange Pre-Striped Barricade
43	4" RIGHT Orange Pre-Striped Barricade
44	6" LEFT Orange Pre-Striped Barricade
45	6" RIGHT Orange Pre-Striped Barricade

[†] OmniCube is the exception and leads with the number 11

The following Warranty is limited to North America.

WARRANTY

Avery Dennison T-6000 & W-6000 prismatic retroreflective sheeting ("Product(s)") are warranted to be free from defects in material and workmanship for one (1) year from date of purchase (or the period stated on the specific product information literature in effect at time of delivery, if longer). 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.

Avery Dennison further warrants that Avery Dennison® T-6000 & W-6000 prismatic retroreflective sheeting will retain its effectiveness as a component of traffic control and guidance signs, and will meet the stated minimum values for coefficient of retroreflection ("Performance Warranty") as set forth in accordance with the following standards:

Warranty Period*	Minimum Percentage R _A Retained
1-7 years	80%
8-10 years	80%

* Performance Warranty Period for Work Zone products is one to three (1-3) years

Note: For transparent color screen printed areas using Avery Dennison supplied or approved inks or OL-2000 Overlay films on Avery Dennison® T-6500 white sheeting, values shall be a minimum of 70% of values in Table A

R_A, percentage retained above apply to all entrance and observation angles in Table A, and shall be measured per ASTM E 810.

All measurements shall be made after cleaning according to Avery Dennison procedures.

PERFORMANCE WARRANTY

If within ten (10) years from the initial date of installation, the Product deteriorates due to natural causes to the extent that: 1) the Product fails to retain the minimum reflectivity values warranted for the ten (10) year period under the standard in force at the time of installation, or 2) the Product is ineffective for its intended purpose when viewed from a moving vehicle under normal daytime or nighttime driving conditions, Avery Dennison will furnish a replacement amount of like Product at no cost to enable the installed surface to be restored to its original effectiveness. If within seven (7) years of installation such deterioration occurs or the Product fails to retain the minimum seven (7) year reflectivity values, Avery Dennison will restore the installation surface to its original effectiveness at no cost for materials or labor.

CONDITIONS

This warranty shall be effective only if all of the following conditions are met:

Fabrication and/or installation must occur within one (1) year from the date of purchase.

The failure must have resulted solely from a manufacturing defect or deterioration of the Product due to natural causes under the Performance Warranty. Without limiting the generality of the foregoing, there is no warranty for the failure of the sheeting due to improper sign fabrication, storage, handling, installation, maintenance, failure of the sign substrate, vandalism or mischief. Slight color fading, cracking, chalking, edge lifting, or slight reduction in gloss or reflectivity will not materially detract from appearance and does not constitute a breach of warranty.

Avery Dennison has published instructional bulletins pertaining to the storage, handling, and cleaning of Product, approved substrates, and application procedures (collectively, the "Procedures"). The Product must have been processed and applied to blank, clean material in accordance with the Procedures, as such may be amended from time to time. Avery Dennison reserves the right to reject any warranty claim where the fabricator or installer cannot satisfactorily prove or demonstrate that the Avery Dennison procedures were utilized. The date of installation, warranty registration, and claim procedures established by Avery Dennison must be followed, and failure to follow such procedures shall void this warranty. Replacement Product carries only the unexpired warranty portion of the Product it replaces. The Product must be properly stored and applied within the shelf-life as stated in the applicable Avery Dennison Product Data Sheet including adhesive and other material product data sheets.

Product Data Sheet

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Characteristics:

Property	Value	Instructional Bulletins
Shelf-Life	1 year from date of purchase when stored at the following conditions; 65°-75°F (18°-24°C) and 50% ± 5% R.H.	#8.00
Typical film Caliper	18 – 19 mils (457 – 483µ) Orange: 17 – 18 mils (432 – 457µ)	NA
Min. Application Temperature	65° F (18° C)	#8.10
Service Temperature	-10°F to +150°F (-23°C to + 65°C)	#8.00
Screen Printing	Long term durability of screen printing in combination with HIP series sheeting is warranted when used with approved inks and overlays. See Page 7.	#8.30 #8.55
Inkjet Printing	User assumes responsibility for fitness of use for this converting method. Long term durability of inkjet printing in combination with HIP series sheeting is not warranted.	#8.55
Thermal Transfer Printing	Long term durability of Thermal Transfer Printing in combination with any HIP series sheeting is warranted. Refer to Instructional Bulletin	#8.60

ADDITIONAL LIMITATIONS

Unintended Use: This warranty only applies to Product that is used by professional converters and installers for the defined end uses and in the combinations described in the applicable Avery Dennison Product Data Sheets and Instructional Bulletins. For any other use, the user is responsible for determining the suitability of the Product, and for any and all risk or liability associated with that use or application, and the user agrees to indemnify, defend and hold harmless Avery Dennison for any claims, losses, damages, judgments, expenses and/or expenses, including attorneys fees, resulting from such use or application. This warranty is expressly conditioned on the Product being processed by professional converters or installers in accordance with the Avery Dennison recommended written processing instructions, and being applied to properly prepared surfaces and cleaned and maintained in accordance with recommended Avery Dennison procedures. It is the converters, installers or other users responsibility to perform incoming raw material quality inspections, to assure proper surface preparation and that approved application procedures are followed, to retain converted samples, and to immediately cease using and notify Avery Dennison and/or its authorized agent or distributor of any Product, Materials and/or finished Product discovered to be (or reasonably capable of being discovered to be) defective.

Misuse and Force Majeure: Avery Dennison has no obligations or liability under this warranty with respect to Product that has been altered, modified, damaged, misused, abused, subject to accident, neglected or otherwise mishandled or improperly processed or installed. Product is not warranted against premature failure caused by chemical, environmental or mechanical means such as, but not limited to, vandalism, cleaning solutions, paints, solvents, moisture, temperature, mechanical washing equipment, engine fuel spills, engine exhaust, steam, organic solvents or other spilled chemicals pollutants, including industrial and volcanic ash. Damage from fire, structural failure, lightning, accidents, and other force majeure events are not covered by this warranty.

Third Party Product: Avery Dennison assumes no responsibility for any injury, loss or damage arising out of the use of a product that is not of our manufacture. Where installer or converter uses or reference is made to a commercially available product, made by another manufacturer, it shall be the responsibility of the user, installer or converter to ascertain the precautionary measures for its use outlined by the manufacturer.

The remedies provided under this warranty are exclusive. In no event shall Avery Dennison be responsible for any direct, indirect, incidental or consequential damages or specific relief whether foreseeable or not, caused by defects in such Product, whether such damage occurs or is discovered before or after replacement or credit, and whether or not such damage is caused by Avery Dennison's negligence. In no event shall Avery Dennison's liability hereunder exceed the remedies specifically set forth in this warranty. Avery Dennison's liability shall be limited, at Avery Dennison's option, to the purchase price, replacement of the defective Product and in some cases when authorized by Avery Dennison the repair and replacement of the defective Product.

THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHERS. ANY AND ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED. NO WAIVER, ALTERATION, ADDITION OR MODIFICATION OF THE FOREGOING CONDITIONS SHALL BE VALID UNLESS MADE IN WRITING AND MANUALLY SIGNED BY AN OFFICER OF AVERY DENNISON.

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Converting Information:

The following Avery Dennison literature will provide information to the user for proper application, storage, and other requirements. Find the latest information on the Avery Dennison website, www.reflectives.averydennison.com. We encourage you to check our website periodically for updates.

Approved screen printing inks, overlays, thermal transfer ribbons:

Supplier	Series	System	Instructional Bulletins
Avery Dennison	4930 Inks	1 Part Solvent	#8.40
Avery Dennison	UVTS Nazdar	UV	#8.38
Avery Dennison	OL-2000	Acrylic Overlay	#8.01, #8.10, #8.25
Avery Dennison	OL-1000	Anti-Graffiti	#8.01, #8.10
Matan	DTS	Thermal Transfer	#8.60

Instructional Bulletins:

Film Care & Handling	#8.00
Substrate Requirements	#8.01
Application Techniques for PS Film	#8.10
Cutting Methods	#8.20
Computer Sign Cutting	#8.25
Screen Preparation	#8.30
Troubleshooting Printing & Processing	#8.34
UVTS Nazdar Inks	#8.38
4930 Series Inks	#8.40
Ink Recommendations Guide	#8.55
Matan Thermal Transfer Printing	#8.60

Substrates:

The application of Avery Dennison HIP Series sheeting is limited to properly prepared substrates which differ by product. For traffic products and W-6504, application is limited to properly prepared Aluminum. For products in the W-6100 line, application is limited to properly prepared plastic. For products in the W-6200 line, application is limited to properly prepared wood. Users are urged to carefully evaluate, under actual use conditions, any film application to other substrates. Failure of film caused by other substrates, materials, contamination, or improper surface preparation is not the responsibility of Avery Dennison. See Instruction Bulletin #8.01 for full details on substrate requirements.

DEFINITIONS

Durability: means that the Product in a finished graphic, panel or sign situated outdoors, subject to the limitations herein and Avery Dennison Product Data Sheets and Instructional Bulletins, and applied to recommended surfaces, will not deteriorate excessively such that the finished sign, panel or graphic is ineffective for its identification when viewed under normal conditions from the intended viewing distance.

Outdoor Durability: is based on normal middle European and central North American outdoor exposure conditions and application to recommended surfaces. Actual performance life will depend on a variety of factors, including but not limited to substrate preparation, exposure conditions and maintenance of the Product and finished graphic, panel or sign. In case the finished graphics, panel or sign is in areas of high temperatures or humidity, in industrially polluted areas or other areas with air laden particulate matter, and/or in high altitudes, Outdoor Durability may be reduced. Please see your local Avery Dennison representative for changes to warranties based on such localized conditions.

Vertical Exposure: means that the face of the finished graphic is $\pm 10^\circ$ from vertical.

Non-Vertical Exposure: means that the face of the finished graphic is greater than 10° from vertical and greater than 5° from horizontal. Retroreflective films are not warranted for this exposure.

Flat surfaces: means a two dimensional flat surface without protruding objects.

Weathering Effects: Some degradation of Product performance over time is considered normal wear. Slight color fading, chalking, edge lifting, or slight reduction in gloss or reflectivity due to normal wear exposure and other natural weathering, environmental or other conditions or damage caused by tornadoes, hurricanes, wind, excessive ice buildup or extraordinary frozen particulate conditions, large hail stones or other acts of God, do not constitute a breach of warranty or give rise to any liability by Avery Dennison.

Printing, Curing and Ink Defects: Ink contaminations, failures or other defects, or other failures due to improper printing conditions or settings including, but not limited to, unsuitable color calibration, incorrect ICC color profile or incompatible printing, do not constitute a breach of warranty. Product failure caused by ink over-saturation, excessive or under curing, failure of ink to render desired colors on Product, or other treatment or processing errors are not warranted.

Adhesion to Application Surfaces: This warranty does not cover the Product if the application surface is not properly prepared; nor does the warranty cover the Product or damage to the substrate because the layers of the substrate separate due to a lower bond between those layers than the bond between the Product and the top layer of the substrate, or surfaces which subsequently crack, peel, outgas, or become damaged beneath the Product.

INDEPENDENT TESTING REQUIRED

All statements, technical information and recommendations about Avery Dennison products are based upon tests and information believed to be reliable but do not constitute a guarantee or warranty of any kind. All Avery Dennison products are sold with the understanding that Purchaser has independently determined the suitability of such products for its intended and other purposes.

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