



City of Flint

Department of Purchases & Supplies

Sheldon A. Neeley

TO: All Proposers
FROM: Jennifer Ryan
Deputy Finance Director
DATE: **June 24, 2021**
SUBJECT: **Addendum #01 – Bid# 22000042 – Traffic Signs – (3) Years**

This addendum has been issued because of the following:

1. **Attached are Questions and Answers**
2. **Listed below is the Google Meet information for the bid opening date – Wednesday, June 30, 2021 at 11:00 a.m.**

There are two ways to attend the bid opening:

- 1) **Bid Opening via Google Meet Bidders. The public is invited to view the opening by joining the Google Meet link below:**

Join with Google Meet
meet.google.com/zze-fdjj-vmc
Meeting ID
meet.google.com/zze-fdjj-vmc
Phone Numbers
[\(US\)+1 617-675-4444](tel:+16176754444)
PIN: 292 208 891 5041#

If you have any problems signing in, please call Au Lisa McGovern at (810) 766-7340 or email at amcgovern@cityofflint.com

- 2) **In person. The public is invited to view the bid opening in person by attending at 1101 S. Saginaw Street, McKenzie Conference Room, 2nd Floor, Flint, MI 48502. Unvaccinated individuals are required to wear a face covering (unless unable to medically tolerate) and maintain social distancing. All individuals are required to complete a symptoms check.**

All other bidding terms, requirements, and conditions continue as indicated in the remaining original bid documents.

The Deputy Finance Director, Jennifer Ryan, is an officer for the City of Flint with respect to this RFP.

In the submission of their proposal, Proposer must acknowledge receipt of this addendum. Proposer shall acknowledge this addendum by signing and returning one copy of this notice with their submission.



City of Flint

Department of Purchases & Supplies

Company Name: _____

Address: _____

City / State / Zip: _____

Telephone: _____ Fax: _____ Email: _____

Print Name: _____ Title: _____

Signature: _____ Date: _____

Thank you.

Jennifer Ryan
Deputy Finance Director



QUESTIONS RECEIVED IN THE DIVISION OF PURCHASES & SUPPLIES
For Traffic Signs – (3) Years
BID# 22000042

1. We would like to request that Avery Dennison sheeting be accepted as an approved equivalent product for the solicitation referenced above. I have provided a product crosswalk below and attached our product data sheets for your reference:

3M 4083 Series/ Avery Dennison T-11513 Series (Type XI)
3M 3930 Series/ Avery Dennison T-6500 Series (Type IV)
3M EC Film 1170 / Avery Dennison Transparent Overlay Film OL-2000

We are going to stick to what the bid says, which is 3M only with no substitutions.

Avery Dennison® OmniCube™ T-11000 & W-11000 Series Full Cube Microprismatic Retroreflective Film

Issued: February 2017

Avery Dennison®OmniCube™ T-11000 & W-11000 Series High Intensity Microprismatic Retroreflective Film takes full-cube reflective sheeting to a new level. OmniCube full-cube prisms are 100% efficient – returning approximately 60% of the available light back to the driver compared to only 40% with other prismatic reflective sheetings.

OmniCube's Intelligent Cube Technology incorporates the needs of all vehicle types; trucks, SUVs, automobiles, and motorcycles into one reflective sheeting.

OmniCube T-11000& W-11000 is an Omni-Directional microprismatic film that incorporates tiles of full-cube 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
- Designed for all drivers in trucks, SUVs, automobiles, and motorcycles
- Field proven long term durability on safety devices worldwide
- Uniform daytime and nighttime visual appearance

Conversion:

- Screen Printing
- Eco Solvent 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 Superior Retroreflective Performance

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



Performance:
ASTM D4956 Type XI
See Page 2 for complete list.



Orientation: Omni-Directional



Durability: 12 year
Vertical exposure only.



Face: High-Gloss Acrylic
Retroreflective Film with
Microprisms



Adhesive: Permanent
Pressure Sensitive



Liner: Polypropylene Film



Printable with:
TrafficJet™ Print System

Product Availability*:

Traffic Products		
T-11500	White	
T-11501	Yellow	
T-11505	Blue	
T-11507	Green	
T-11508	Red	
T-11509	Brown	
T-11511	Fluorescent Yellow	
T-11513	Fluorescent Yellow-Green	
Work Zone Products**		
W-11114	Fluorescent Yellow	
W-11514	Fluorescent Orange	
W-11142	Orange	4" Left
W-11143	Pre-Striped	4" Right
W-11144		6" Left
W-11145	Barricade	6" Right

*See Page 5 for Nomenclature

**3 Year Durability

Avery Dennison® OmniCube™ T-11000 & W-11000 Series Full Cube Microprismatic Retroreflective Film

Issued: February 2017

Retroreflectivity:

Table A:

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

Observation Angle	Color	Entrance Angle	
		- 4°	+ 30°
0.1° ³	White	830	325
	Yellow	620	245
	Blue	37	15
	Green	83	33
	Red	125	50
	Brown	25	10
	Fluorescent Yellow	500	200
	Fluorescent Yellow-Green	660	260
	Fluorescent Orange	250	100
0.2°	White	580	220
	Yellow	435	165
	Blue	26	10
	Green	58	22
	Red	87	33
	Brown	17	7
	Fluorescent Yellow	350	130
	Fluorescent Yellow-Green	460	180
	Fluorescent Orange	175	66
0.5°	White	420	150
	Yellow	315	110
	Blue	19	7.0
	Green	42	15
	Red	63	23
	Brown	13	5
	Fluorescent Yellow	250	90
	Fluorescent Yellow-Green	340	120
	Fluorescent Orange	125	45
1.0°	White	120	45
	Yellow	90	34
	Blue	5.0	2.0
	Green	12	5.0
	Red	18	7.0
	Brown	4	1
	Fluorescent Yellow	72	27
	Fluorescent Yellow-Green	96	36
	Fluorescent Orange	36	14

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

OmniCube Series 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.

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

² Measured according to ASTM E810

³Note 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.

Avery Dennison® OmniCube™ T-11000 & W-11000 Series Full Cube Microprismatic Retroreflective Film

Issued: February 2017

Colors and Specification Limits:

Figure A: Daytime Color – CIE Color Diagram

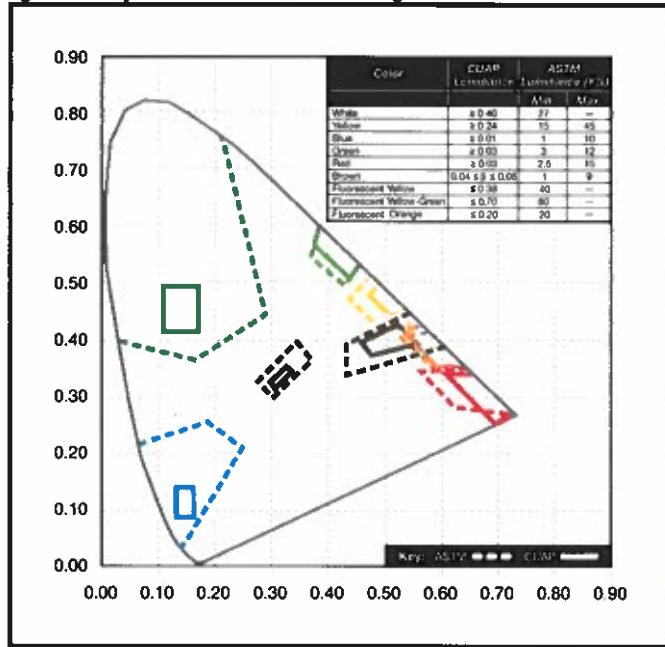
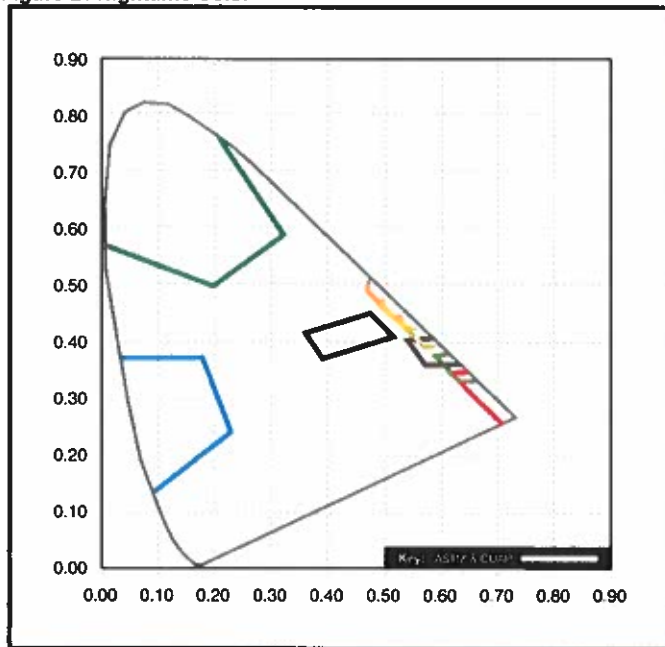


Figure B: Nighttime Color



OmniCube Series 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.

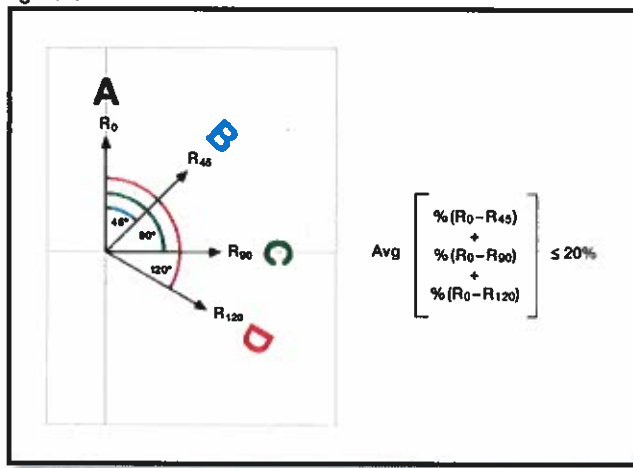
Avery Dennison® OmniCube™ T-11000 & W-11000 Series Full Cube Microprismatic Retroreflective Film

Issued: February 2017

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.

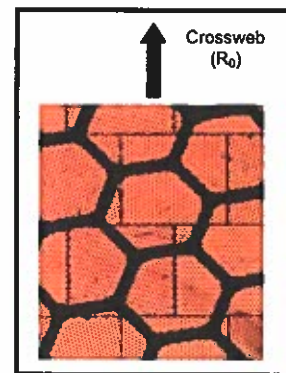
Specifying agencies and sign fabricators are cautioned that some retroreflective sheetings, even of the same ASTM "Type" may not provide consistent luminance for desired night visibility if the sheeting is not applied in the optimal, or in uniform orientation. Agencies and fabricators should be aware 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.

OmniCube Series is Omni-Directional and **passes** the AASHTO 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: OmniCube contains the watermark seen in **Figure E**.

Figure E

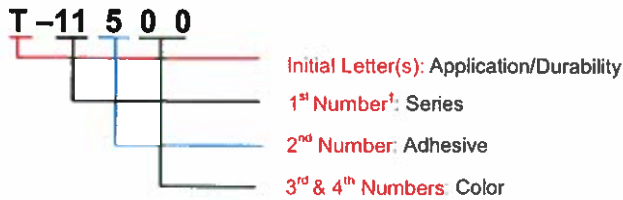


Avery Dennison® OmniCube™ T-11000 & W-11000 Series

Full Cube Microprismatic Retroreflective Film

Issued: February 2017

Nomenclature:



Initial Letter	Application	Durability*
T**	Traffic/Permanent Sheeting	12 year
W	Work Zone Sheeting	3 year
WR	Work Zone Reboundable	3 year

* See your local representative for complete details.

**Fluorescent Yellow & Fluorescent Yellow-Green durability is 10 year

Series	11000
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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

¹OmniCube is the exception and leads with the number 11

The following Warranty is limited to North America.

WARRANTY

Avery Dennison OmniCube™ T-11000 & W-11000 microprismatic reflective sheeting ("Product(s)") are warranted to be free from defects in material and workmanship for one (1) year from date of purchase for 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's OmniCube™ T-11000 & W-11000 Microprismatic 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	80%
8-12 years	70%

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

**Performance Warranty Period for Fluorescent Yellow and Fluorescent Yellow-Green is ten (10) years

Note: For transparent color screen printed areas using Avery Dennison supplied or approved inks or OL-2000 Overlay films on Avery Dennison's T-11500 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 twelve (12) 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 twelve (12) 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.



Avery Dennison® OmniCube™ T-11000 & W-11000 Series

Full Cube Microprismatic Retroreflective Film

Issued: February 2017

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	16 – 20 mils (406 – 508µm)	NA
Min. Application Temperature	50° F (10° 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 OmniCube Series is warranted when used with approved inks and overlays. See Page 7.	#8.30 #8.55
Eco Solvent Inkjet Printing	Long term durability of inkjet printing in combination with OmniCube Series is warranted when used with approved inks and printer systems. See Page 7.	TrafficJet™ Print System
Thermal Transfer Printing	Long term durability of thermal transfer printing in combination with OmniCube Series 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® OmniCube™ T-11000 & W-11000 Series

Full Cube Microprismatic Retroreflective Film

Issued: February 2017

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, and Printing Systems:

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
Avery Dennison	TrafficJet™ 1638 - 8 Color	Eco Solvent Inkjet*	TrafficJet™ Print System

* See Instructional Bulletin for overlay requirements

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 OmniCube Series sheeting is limited to properly prepared substrates which differ by product. For traffic products, application is limited to properly prepared Aluminum. For products in the W-11100 line, 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 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 graphic, 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, Curling 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.

Avery Dennison, OmniCube, and the logo are registered trademarks or trade names of Avery Dennison Corp. © 2011 All Rights Reserved.

US Patent RE40,700E US Patent RE 40,455E

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

Issued: April 2018

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
- Eco Solvent 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

*See Page 5 for Nomenclature

**3 Year Durability

***Non-Digital Printable Product



Performance:

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

Orientation: Omni-Directional

Durability: 10 year
Vertical Exposure only
(12 year with OL1000)

Face: High-Gloss Acrylic
Retroreflective Film with
Microprisms

Adhesive: Permanent Pressure
Sensitive

Liner: Polypropylene Film

Printable with: TrafficJet™ Print
System

Product Availability*:

<i>Traffic Products</i>		
T-6500	White	
T-6501	Yellow	
T-6505	Blue	
T-6507	Green	
T-6508	Red	
T-6509	Brown	
<i>Work Zone Products**</i>		
W-6100	White	
W-6500D	White	
W-6501D	Yellow	
W-6504D	Orange	
W-6511	Fluorescent Yellow ***	
W-6513	Fl Yellow-Green***	
W-6142	Orange Pre- Striped Barricade	4" Left
W-6143		4" Right
W-6144		6" Left
W-6145		6" Right
W-6245		6" Left
W-6246		6" Right
W-6148		6" Left
W-6149		6" Right
		Red Barricade

Product Data Sheet

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



www.reflectives.averydennison.com

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

Issued: April 2018

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
	Fluorescent Yellow	300	140
	Fluorescent Yellow-Green	400	185
0.2°	White	360	170
	Yellow	270	135
	Orange	145	68
	Blue	30	14
	Green	50	25
	Red	65	30
	Brown	18	8.5
	Fluorescent Yellow	220	100
	Fluorescent Yellow-Green	290	135
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
	Fluorescent Yellow	90	40
	Fluorescent Yellow-Green	120	55

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
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/ft^2) OR
Candelas per lux per square meter ($cd/lx/m^2$)

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.

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

Issued: April 2018

Colors and Specification Limits:

Figure A: Daytime Color

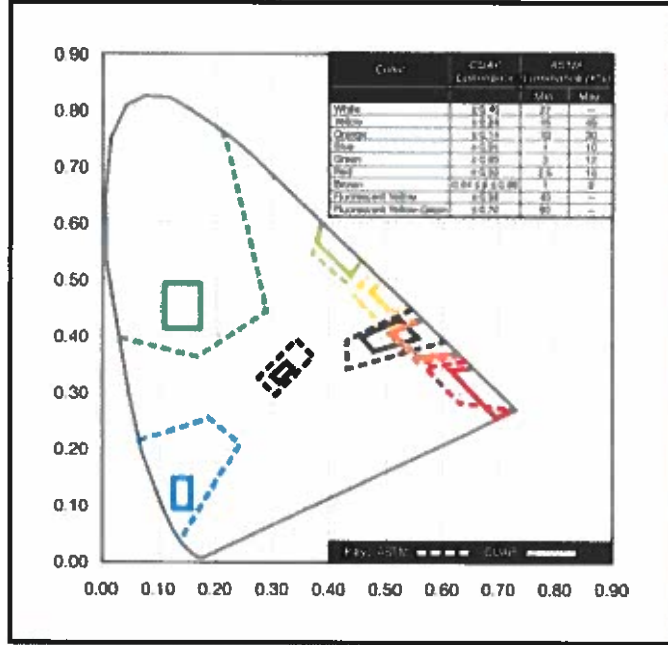
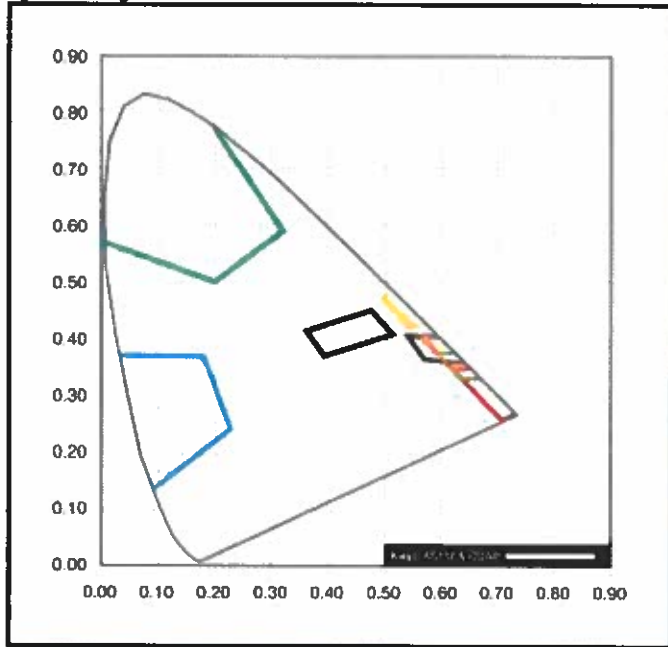


Figure B: Nighttime Color



HIPSeries 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.

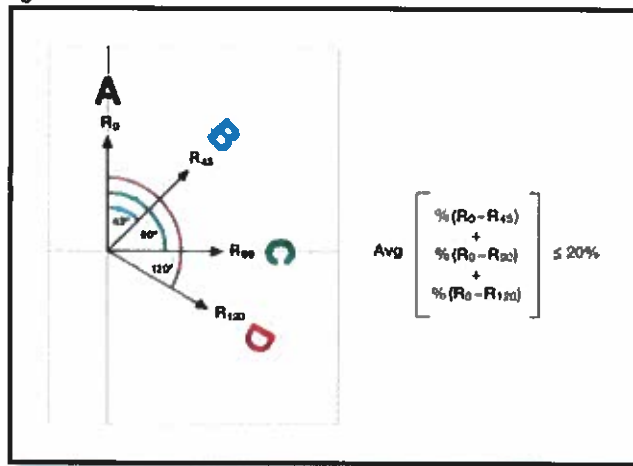
Avery Dennison® T-6000& W-6000 HIP Series High Intensity Microprismatic Retroreflective Film

Issued: April 2018

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.

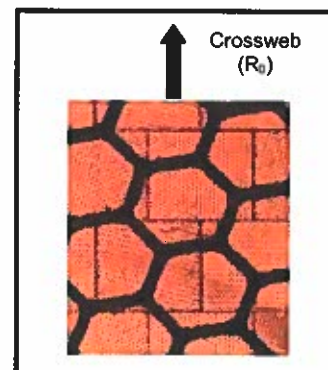
Specifying agencies and sign fabricators are cautioned that some retroreflective sheetings, even of the same ASTM "Type" may not provide consistent luminance for desired night visibility if the sheeting is not applied in the optimal, or in uniform orientation. Agencies and fabricators should be aware 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 #



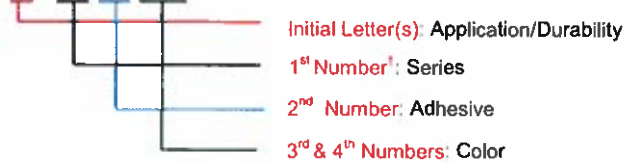
Avery Dennison® T-6000 & W-6000 HIP Series

High Intensity Microprismatic Retroreflective Film

Issued: April 2018

Nomenclature:

T - 6 5 0 0



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
48	6" Left Red Pre-Stripe Barricade
49	6" Right Red Pre-Stripe Barricade

¹OmniCube 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 microprismatic 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 _s 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_s 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.



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

Issued: April 2018

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) W-6500/01D 14 – 15 mils (356 – 381µ)	NA
Min. Application Temperature	50° F (10° 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
Eco Solvent Inkjet Printing	Long term durability of inkjet printing in combination with HIP series sheeting is warranted when used with approved inks and printer systems. See Page 7.	TrafficJet™ Print System
Thermal Transfer Printing	Long term durability of Thermal Transfer Printing in combination with any HIP series sheeting is warranted when used with approved ribbons and printer systems.	#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-6000& W-6000 HIP Series High Intensity Microprismatic Retroreflective Film

Issued: April 2018

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, and Printer Systems:

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
Avery Dennison	TrafficJet™ 1638 - 8 Color	Eco Solvent Inkjet*	TrafficJet™ Print System

* See Instructional Bulletin for overlay requirements.

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 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 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.

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

Issued: November 2016

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

Avery Dennison® OL-1000 Anti Graffiti film is a high quality, clear, pressure-sensitive overlaminate film designed to protect finished signs. Laminate OL-1000 Anti Graffiti film over signs with ink printed systems or electronic cut overlay films to protect from vandalism and solvents. Most types of graffiti can be cleaned from the surface of this film.



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 or Paper

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

Applications:

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

Product Availability:

OL-1000	Anti-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
OL-2023	Purple
OL-2025	Dark Blue
OL-2027	Dark Green

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

Issued: November 2016

Colors and Specification Limits:

Figure A: Daytime Color

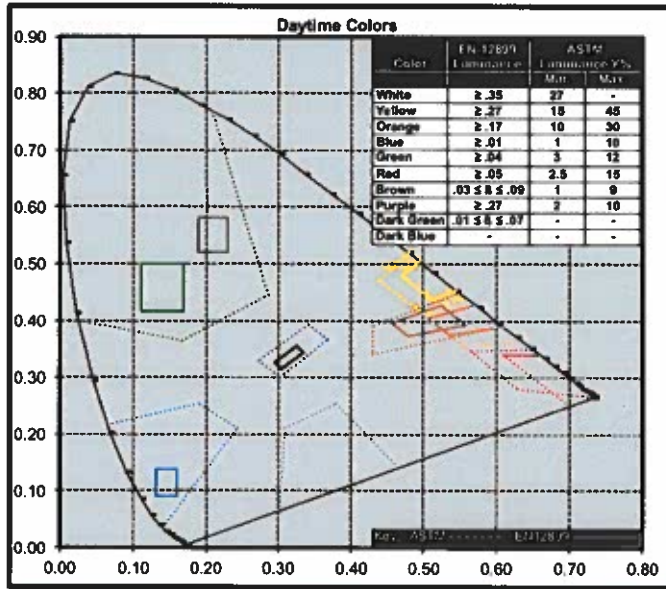
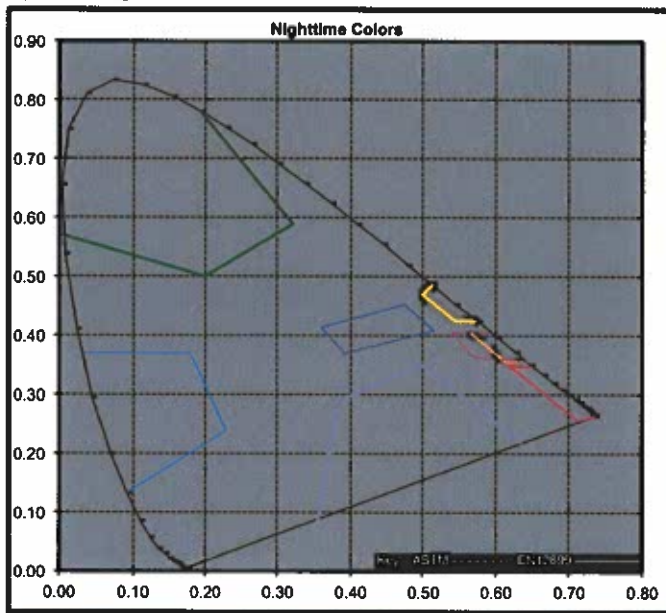


Figure B: Nighttime Color



OL-2000 Series Overlay Films meet 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.

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

Issued: November 2016

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	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 (-23°C to + 65°C)	#8.00
Minimum Adhesion Values (OL-1000 Only)	180° Peel	NA
	Substrate 15 min. Stainless Steel: 1.25 lb./in (15 min 180°) Always pre-test your specific substrate prior to actual application.	
Dimensional Stability (OL-1000 Only)	MD 3% Shrinkage, CD 3.5% Shrinkage	NA

Solvent Resistance (OL-1000):

When properly processed and applied, the film is resistant to most common solvents. When tested according to LS-300C, Section 3.6.2, immersion in the following solvents for the specified length of time the film shows no deterioration:

Kerosene	10 minutes
Turpentine	10 minutes
Toluene	1 minute
Xylene	1 minute
Methyl Alcohol	1 minute

Product Data Sheet
Page 3 of 4
Reflective Solutions
7542 North Natchez Ave.
Niles, IL 60714

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 attorney's 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.



www.reflectives.averydennison.com

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

Issued: November 2016

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 Series 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
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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.

Cleaning Instructions for OL-1000:

Avery Dennison OL-1000 Premium Anti-Graffiti film can be cleaned when defaced with most common graffiti materials. Cleaning is accomplished through the use of a mild graffiti cleaning solvent and should be tested on an inconspicuous area prior to complete treatment.

Materials Required	Action Item
Mild graffiti removal solvent	Generously apply solvent to the entire defaced area Allow the Solvent to set on the material for a period of one minute.
Non-abrasive paper towel	Wipe the solvent and graffiti from the affected area.
Mild graffiti removal solvent Non-abrasive nylon scouring pad	If necessary, reapply the solvent for a period of two minutes on heavily affected areas. Remove with a paper towel then nylon non-abrasive scouring pad.
Paper towel & water	Remove solvent residue with water and a non-abrasive paper towel.

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 lomedoes, 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, Cutting 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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