

V-9700 Series Retroreflective Conspicuity Tape

Issued: 10/1/01

Revised: 10/2005

Description:

Avery Dennison® V-9700 Series Retroreflective Conspicuity Tape is high quality, durable, self-adhesive, microprismatic material. It is designed for use on numerous conspicuity applications including school buses, agricultural and construction vehicles (i.e. slow-moving vehicles), and SMV emblems. It provides exceptional long-distance viewing at night for easy detection against a variety of backgrounds. V-9700 Series Retroreflective Conspicuity Tape is a metallized, mono-layer construction to eliminate water penetration and improve flexibility.

Construction:

Face Film:	Acrylic prismatic retroreflective film
Adhesive:	Permanent acrylic pressure sensitive
Liner:	Polymeric film

Physical Properties:

The following information on physical and chemical characteristics is based on tests believed to be reliable. The values are intended only as a source of information. They are given without guaranty and do not constitute a warranty. The purchaser should independently determine, prior to use, the suitability of this material for his/her specific purpose. (Data represents averages and is not intended for use as a specification.)

Outdoor Durability	7 years when properly processed and applied (vertical exposure)
Minimum Surface/ Ambient Air Application Temperature	60°F (16°C)
Application Surface	Recommended for flat, painted or unpainted, metal surfaces. Material applied over rivets must be cut out and resqueegeed.
Service Temperature Range	-10°F to 135°F (-23°C to 57°C)
Typical Film Caliper	16-19 mil
Shelf Life	One year when stored at 73°F (23°C) and 25% to 60% relative humidity
Specifications	V-9700 Series Conspicuity Tape meets or exceeds applicable requirements of: <ol style="list-style-type: none"> 1. ASTM D-4956-01 "Standard Specification for Retroreflective Sheeting for Traffic Control" for Type V Sheeting[†] 2. ANSI/ASAE S279.11 "Lighting and Marking of Agricultural Equipment on Highways" 3. ANSI/ASAE S276.5 "Slow-moving Vehicle Identification Emblem" 4. 1995 National Standards for School Buses, FMVSS 49CFR571.131 Table 1 & NSBY from NTSP-2000 App. B

[†] V-9700 Series White Conspicuity Tape does not meet the supplemental coefficient of reflectivity requirements of ASTM D-4956-01, Table 10 at 0.1° Observation Angle.

PRODUCT DATA BULLETIN

Colors Available

• V-9700 White
• V-9701 Yellow
• V-9722 Red

Colors & Specification Limits (Daytime):

The initial daytime (D65 light source) color of V-9700 Series Sheeting shall conform to the requirements identified in the table below. Tested in accordance to ASTM D-4956-01 {45/0 (or equivalent 0/45) geometries, CIE illuminant D65, and the 1931 CIE 2-degree standard observer.}

Color	1		2		3		4		Luminance	
	x	y	x	y	x	y	x	y	Min.(Y%)	Max.(Y%)
White	.303	.287	.368	.353	.340	.380	.274	.316	15	--
Red	.613	.297	.708	.292	.636	.364	.557	.352	2.5	11
Yellow	.498	.412	.557	.442	.479	.520	.438	.472	12	30

The four pairs of chromaticity coordinates determine the acceptable color in terms of the CIE 1931 Standard Colorimetric System measured with CIE Standard Illuminant D65.

Minimum Retroreflectivity:

Minimum Coefficient of Retroreflection (R_A) ($cd / lx / m^2$). Tested in accordance with ASTM D-4956-01.

Observation Angle	Entrance Angle	White	Red	Yellow
0.2°	-4°	700	120	470
	30°	400	72	270
	45°	60	17	40
	60°	35	6.6	23
0.5°	-4°	160	28	110
	30°	75	15	51
	45°	15	4	12
	60°	7.5	2	6

Other Performance Requirements: Tested per ASTM D-4956-01, unless otherwise noted.

Shrinkage	The sheeting will not shrink in any dimension more than 1/32-inch in 10 minutes or more than 1/8-inch in 24 hours after the adhesive liner has been removed.
Flexibility	The sheeting shall be sufficiently flexible to show no cracking when wrapped around a 1/8-inch mandrel within a 1 second time frame.
Adhesion	The sheeting's adhesive will produce a bond that will support 1 3/4-pound weight with the bond not peeling more than 2-inches.
Impact Resistance	The sheeting will show no cracking or delamination outside of the area of impact when subjected to the impact of a 2-pound weight with a 5/8-inch diameter rounded tip, when the weight is dropped from a height necessary to produce an impact of 10-in-lb.
Specular Gloss	The sheeting shall have a specular gloss of not less than 40 at an angle of 85°.
Corrosion Resistance	The sheeting shall maintain the retroreflectivity at 0.2° observation angle and -4° entrance angle after testing in accordance with SAE J575, clause 3.4.

PRODUCT DATA BULLETIN

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 therefor 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.

V-9700 is protected by the following US patents: 4,460,449; 4,633,567; 5,156,863; 5,213,872; 5,310,436; 5,854,709

