



**AMERICAN TRAFFIC SAFETY MATERIALS, INC.™**  
**T-6500 Series**

**High Intensity Prismatic Reflective Sheeting**

**Description:** *American Traffic Safety Materials, Inc.'s™* T-6500 High Intensity Prismatic sheeting is a high-quality, durable high intensity prismatic retroreflective material. Its unique prismatic construction provides an extra high level of reflectivity for demanding traffic control situations. It exceeds applicable requirements for very high intensity grade sheeting applications for Types III and IV retroreflective sheeting as set forth in ASTM D 4956.

**Construction:**

<b>Face Film:</b>	High Gloss
<b>Adhesive:</b>	Permanent Pressure Sensitive ( Class 1)
<b>Liner:</b>	Film

**Photometric Performance:**

Exceeds Types III and IV values per ASTM D 4956. Minimum Coefficient of Retroreflection (RA) (cd / lx / m<sup>2</sup>)

Observation Angle	Entrance Angle	White	Yellow	Orange	Green	Red	Blue	Brown
0.1° <sub>B</sub>	-4°	600	450	225	60	90	36	18
	30°	230	170	105	32	42	17	10
0.2°	-4°	400	300	155	45	60	25	12
	30°	165	120	72	25	30	12	9
0.5°	-4°	150	115	64	17	23	10	5
	30°	70	52	26	10	10	5	4

**NOTE:** 0.1° Observation angle is a "Supplemental Requirement" in ASTM D-4956. It represents long highway viewing distances of about 275 Meters (900 ft.) and greater.

**Colors & Specification Limits (Daytime) <sup>1</sup>**

Color	1		2		3		4		Luminance (Y %)	
	x	y	x	y	x	y	x	y	Min	Max
White	0.303	0.300	0.368	0.366	0.340	0.393	0.274	0.329	40	-
Yellow	0.498	0.412	0.557	0.442	0.479	0.520	0.438	0.472	24	45
Orange	0.558	0.352	0.636	0.364	0.570	0.429	0.506	0.404	14	30
Blue <sup>2</sup>	0.140	0.035	0.244	0.210	0.190	0.255	0.065	0.216	1.0	10
Green <sup>2</sup>	0.026	0.399	0.166	0.364	0.286	0.446	0.207	0.771	3.0	12

<b>Red</b>	<b>0.648</b>	<b>0.351</b>	<b>0.735</b>	<b>0.265</b>	<b>0.629</b>	<b>0.281</b>	<b>0.565</b>	<b>0.346</b>	<b>3.0</b>	<b>15</b>
<b>Brown</b>	<b>0.430</b>	<b>0.340</b>	<b>0.610</b>	<b>0.390</b>	<b>0.550</b>	<b>0.450</b>	<b>0.430</b>	<b>0.390</b>	<b>4.0</b>	<b>9.0</b>

**NOTE:** <sup>1</sup>The four pairs of chromaticity coordinates determine the acceptable color in terms of the CIE 1931 Standard Colorimetric System measured with Standard Illuminant D65. <sup>2</sup> The saturation limit of green and blue may extend to the border of the CIE chromaticity locus for spectral colors.

<b>T-6500 High Intensity Prismatic - Color Availability</b>	
T-6500	White
T-6501	Yellow
T-6504	Orange
T-6505	Blue
T-6507	Green
T-6508	Red
T-6509	Brown

## Physical Properties:

<b>Outdoor Durability:</b>	<i>American Traffic Safety Materials, Inc.</i> ™ T-6500 is warranted for 10 years (3 years on orange) when properly processed and applied.
<b>Minimum Surface &amp; Ambient Air Application Temperature:</b>	65° F (18° C) when applied with a squeeze roll applicator.
<b>Application Surface:</b>	Flat surfaces only. Not recommended for unpainted stainless steel. Always pretest and clean your specific substrate surfaces prior to application. Note: Wet Method of application is not recommended for T-6500 Series reflective sheeting.
<b>Typical Film Caliper (w/adhesive):</b>	17 to 18 mils
<b>Service Temperature Range:</b>	-40°F to 180°F ( -40°C - 82°C )
<b>Shelf Life:</b>	One year when stored at the following temperature and conditions 68° - 77°F (20° - 25°C) and 50% ± 5% ± R.H.
<b>Other Tests:</b>	T-6500 meets all other requirements set forth in ASTM D 4956 including Shrinkage, Flexibility, Liner removal, Adhesion, Impact resistance, Specular gloss and Outdoor weathering ( Types III and IV ).

## Application & Conversion Information:

### **Sign Mounting/Orientation:**

This prismatic sheeting does not require a special orientation for mounting and thus does not require an orientation arrow datum mark.

# AMERICAN TRAFFIC SAFETY MATERIALS, INC.™

## VDB T-7500 SERIES

### Microprismatic Retroreflective Sheeting

**Description:** *American Traffic Safety Materials, Inc.'s™ VDB T-7500* Prismatic grade sheeting is a super-high performance, durable Microprismatic retroreflective material. Its unique prismatic construction provides for the highest level of retroreflectivity. *American Traffic Safety Materials, Inc.'s™ VDB* prismatic grade meets and exceeds Type VIII requirements as set forth in ASTM D4956 specifications.

**Construction:**

<b>Face Film:</b>	High Gloss
<b>Adhesive:</b>	Permanent Pressure Sensitive ( Class 1)
<b>Liner:</b>	Poly Liner

**Warranted Photometric Performance:**

Minimum Coefficient of Retroreflection (RA) (cd / lx / m<sup>2</sup>)

Observation Angle	Entrance Angle	White	Yellow	Green	Red	Blue	Brown
0.1° <sub>B</sub>	-4 °	1000	750	100	150	60	30
	30 °	460	345	46	69	28	14
0.2 °	-4 °	700	525	70	105	42	21
	30 °	325	245	33	49	20	10
0.5 °	-4 °	250	190	25	38	15	7.5
	30 °	115	86	12	17	7	3.5

**NOTE:** 0.1° Observation angle is a "Supplemental Requirement" in ASTM D-4956. It represents long highway viewing distances of about 275 Meters (900 ft.) and greater.

**Colors & Specification Limits (Daytime) A:**

Color	1		2		3		4		Luminance (Y %)	
	x	y	x	y	x	y	x	y	Min	Max
<b>White</b>	0.303	0.300	0.368	0.366	0.340	0.393	0.274	0.329	40	-
<b>Yellow</b>	0.498	0.412	0.557	0.442	0.479	0.520	0.438	0.472	24	45
<b>Blue<sup>1</sup></b>	0.140	0.035	0.244	0.210	0.190	0.255	0.065	0.216	1.0	10
<b>Green<sup>1</sup></b>	0.026	0.399	0.166	0.364	0.286	0.446	0.207	0.771	3.0	12
<b>Red</b>	0.648	0.351	0.735	0.265	0.629	0.281	0.565	0.346	3.0	15
<b>Brown</b>	0.430	0.340	0.610	0.390	0.550	0.450	0.430	0.390	4.0	9.0

**NOTE<sup>1</sup>** The saturation limit of green and blue may extend to the border of the CIE chromaticity locus for spectral colors.

**VDB T-7500 Microprismatic - Color Availability**

T-7500	White
T-7501	Yellow
T-7505	Blue
T-7507	Green
T-7508	Red
T-7509	Brown

### Physical Properties:

<b>Outdoor Durability:</b>	American Traffic Safety Materials, Inc.'s™ VDB T-7500 is warranted for 10 years - (3 years on orange) when properly processed and applied.
<b>Minimum Surface &amp; Ambient Air Application Temperature:</b>	65° F (18° C) when applied with a squeeze roll applicator.
<b>Application Surface:</b>	Flat surfaces only. Not recommended for unpainted stainless steel. Always pretest and clean your specific substrate surfaces prior to application. Note: Wet Method of application is not recommended for VDB T-7500 Series reflective sheeting.
<b>Typical Film Caliper (w/adhesive):</b>	17 to 18 mils
<b>Service Temperature Range:</b>	-40°F to 180°F ( -40°C - 82°C )
<b>Shelf Life:</b>	One year when stored at the following temperature and conditions 68° - 77°F (20° - 25°C) and 50% ± 5% ± R.H.
<b>Other Tests:</b>	VDB T-7500 meets all other requirements set forth in ASTM D4956 including Shrinkage, Flexibility, Liner removal, Adhesion, Impact resistance, Specular gloss and Outdoor weathering

### Application & Conversion Information:

#### ***Sign Mounting/Orientation:***

This prismatic sheeting does not require a special orientation for mounting and thus does not require an orientation arrow datum mark.

## **AMERICAN TRAFFIC SAFETY MATERIALS, INC.™ VDB T-7500 SERIES Fluorescent Microprismatic Retroreflective Sheeting**

**Description:** *American Traffic Safety Materials, Inc.'s™ VDB T-7511 Fluorescent Yellow & T-7513 Fluorescent Yellow/Green* Prismatic grade sheeting is a super-high performance, durable Microprismatic fluorescent retroreflective material. Its unique combination of long-term fluorescent light-fastness and Microprismatic reflectivity offers the highest levels of visibility available 24-hours per day. *American Traffic Safety Materials, Inc.'s™ VDB*

Fluorescent Yellow & Fluorescent Yellow/Green prismatic grade sheeting meets and exceeds Type VIII requirements as set forth in ASTM D4956 specifications.

**Construction:**

<b>Reflective Layer:</b>	Proprietary polymer composite
<b>Adhesive:</b>	Permanent Pressure Sensitive ( Class 1)
<b>Liner:</b>	Poly Liner

**Daytime Fluorescence:**

Sign sheeting materials get their color by absorbing wavelengths and emitting or reflecting other wavelengths. Non-fluorescent sheeting loses its absorbed light. Fluorescent sheeting emits some of the absorbed light which is what produces exceptionally bright colors that are pronounced more at dawn and twilight.

Standard daylight (D65 light source) colors of fluorescent sheeting can be measured in accordance with ASTM E1349 using 45/0 (or equivalent 0/45) geometries, CIE illuminant D65, and the 1931 CIE 2-degree standard observer. The daytime (D65 light source) color of VDB T-7511 shall conform to the requirements identified in the table below.

**Daytime Color Box and Total Luminance Factor:**

Daytime Color <sup>1</sup>	x	y	Total Daytime Luminance Factor Y% <sup>2</sup>	Minimum Y% for VDB T-7500 Yellow Fluorescent
Fluorescent Yellow	0.479	0.520	> 0.70 x Y <sub>M</sub>	45
	0.446	0.483		
	0.512	0.421		
	0.557	0.442		

<sup>1</sup> The four pairs of chromaticity coordinates determine the acceptable color in terms of CIE 1931 Standard Colorimetric System measured with CIE Standard Illuminant D65.

<sup>2</sup> The MacAdam limit luminance factor, is defined as the maximum Y producible by and imaginable non-fluorescent object (i.e. sheeting). For each chromaticity, in each illuminant, there is a unique optimal color having this maximum Y. To ensure the brilliant appearance of the fluorescent color exists, the total luminance (Y%) in illuminant D65 must remain above 70% of the MacAdam limit Y<sub>M</sub>. For a detailed discussion of MacAdam's limits and the calculation thereof, refer to CIE D65.

**VDB T-7511 Fluorescent Yellow & VDB T-7513 Fluorescent Yellow/Green**

**Twilight-Dawn Fluorescent Color:**

The brightness of fluorescent colors is especially pronounced at twilight and dawn when the balance of light tipped towards the absorbed wavelengths of the fluorescent sheeting. Since more light is absorbed, more light is emitted from the fluorescent sheeting. CIE non-standard illuminant D150 is a representation of twilight-dawn light.

**VDB T-7511 Fluorescent Yellow & VDB T-7513 Fluorescent Yellow/Green**

Twilight-Dawn (D150) Color	Total Luminance Factor (Y %) <sup>2</sup>	Initial Y% (D150) T-7511 Fluorescent Yellow
Fluorescent Yellow	>0.85 Y <sub>M</sub>	78 ± -6.0
Fluorescent Yellow/Green	>0.85 Y <sub>M</sub>	115 ± -6.0

**Nighttime Fluorescent Color:**

At nighttime, fluorescence is not present and does not contribute to the color of sheeting; however the color is governed almost entirely by retroreflection. Please refer to the specific color boxes listed below.

### VDB T-7511 Fluorescent Yellow & VDB T-7513 Fluorescent Yellow/Green

<b>Nighttime Color (CIE 1931)</b>	<b>x</b>	<b>y</b>
VDB T-7511 Fluorescent Yellow	0.590	0.410
	0.550	0.410
	0.470	0.490
	0.480	0.520
<b>Nighttime Color (CIE 1931)</b>	<b>x</b>	<b>y</b>
VDB T-7511 Fluorescent Yellow/Green	0.590	0.410
	0.550	0.410
	0.470	0.490
	0.480	0.520

The four pairs of chromaticity coordinates determine the acceptable color in terms of the CIE 11931 Standard Colorimetric System measured with CIE Standard Illuminant A with  $\beta_1 = 5^\circ$ ,  $\beta_2 = 0^\circ$ .

### Warranted Photometric Performance:

Minimum Coefficient of Retroreflection (RA)

(cd / lx / m<sup>2</sup>)

Observation Angle	Entrance Angle	T-7511 Fluorescent Yellow	T-7513 Fluorescent Yellow/Green
0.1 <sup>°B</sup>	-4 °	600	800
	30 °	280	370
0.2 °	-4 °	420	560
	30 °	200	260
0.5 °	-4 °	100	200
	30 °	69	92

**NOTE:** 0.1° Observation angle is a "Supplemental Requirement" in ASTM D-4956. It represents long highway viewing distances of about 275 Meters (900 ft.) and greater.

## W-7514 Fluorescent Orange Work Zone

**American Traffic Safety Materials, Inc.'s™ VDB W-7514 Fluorescent Orange** prismatic grade reflective sheeting is a super-high performance, Microprismatic retroreflective material. Its bright fluorescent orange color provides daytime visibility from dusk to dawn. It provides nighttime brightness with the highest level of reflectivity. W-7514 Fluorescent Orange meets and exceeds the requirements for (Type VIII) sheeting as set forth on ASTM D4956 specifications.

### Construction:

<b>Reflective Layer:</b>	Proprietary polymer composite
<b>Adhesive:</b>	Permanent Pressure Sensitive ( Class 1)
<b>Liner:</b>	Poly Liner

### Photometric Performance:

Minimum Coefficient of Retroreflection (RA)

(cd / lx / m<sup>2</sup>)

Observation Angle	Entrance Angle	W-7514 Fluorescent Orange
0.1 <sup>°B</sup>	-4 °	300

	30 °	135
0.2 °	-4 °	210
	30 °	95
0.5 °	-4 °	75
	30 °	35

**NOTE:** 0.1° Observation angle is a "Supplemental Requirement" in ASTM D-4956. It represents long highway viewing distances of about 275 Meters (900 ft.) and greater.

### Colors & Specifications<sup>1</sup> limits (daytime):

W-7514 Fluorescent Orange sheeting will meet the color specifications below when tested as noted.\*

Color	1		2		3		4	
	x	y	x	y	x	y	x	y
Fluorescent Orange	0.583	0.416	0.535	0.400	0.595	0.351	0.645	0.355

<sup>1</sup> The four pairs of chromaticity coordinates determine the acceptable color in terms of CIE 1931 Standard Colorimetric System measured with CIE Standard Illuminant D65.

### Daytime Luminance: \*

Luminance (Y %)	
Min	x
25	-

\* The color and fluorescence must be tested with equipment having proper geometry. "VDB" W-7514 sheeting also meets the ASTM D4956 specification for (Type VIII).

**"VDB" W-7514 prismatic sheeting does not require a special orientation for mounting and thus does not require an orientation arrow datum mark.**