

Sample Procurement Specifications for Aluminum Traffic Control Signs and Components

These sample procurement Specifications were prepared by the American Traffic Safety Services Association (ATSSA) Sign Committee as a tool that can be used by any agency, at its discretion, involved in writing procurement specifications covering the purchases of aluminum traffic signs and sign fabrication supplies.

Specifications that properly identify the material and performance requirements are important for many reasons. Good specifications encourage competition and enable the agency to purchase what it needs, when it needs it. When the specifications are clear, less time is spent addressing questions raised by bidders and issuing addendums, helping to keep procurement on schedule. Good specifications benefit bidders by clearly defining requirements, which in turn enables efficient use of resources when preparing and submitting bids, and ultimately supplying goods under contract. Finally, good specifications are the basis for maintaining trust and integrity of all procurement systems.

It should be noted that these sample procurement Specifications are based on federal standards and do not reflect any new standards developed or endorsed by ATSSA. Furthermore, ATSSA does not provide any warranty or assume any liability that may result from use of these sample Specifications.

This document is divided into two parts:

Part I contains the material performance specifications for the following sign components:

- Aluminum Sign Blanks
- Aluminum Sign Blanks with Retroreflective Sheeting Applied – No Sign Legend or Symbol
- Retroreflective Sheeting – Roll Goods
- Retroreflective Sheeting – Precut Sheets – No Sign Legend or Symbol
- Transparent Colored & Protective Overlay Films
- Preprinted Traffic Sign Faces – Ready to Apply
- Finished Traffic Signs on Aluminum

We encourage agencies to use the specification wording provided to preserve the integrity of the description, and eliminate potential confusion which is the basis for the tool. By providing the information in Word 2007 format, information may easily be cut and pasted into your own agency's procurement documentation. Because agencies may have additional performance requirements specific to their locale, blank space has intentionally been reserved at the end of each material section for inclusion of special requirements. It is important to note that the specifications provide for a broad range of aluminum alloys and sheeting grades, or types. Selection of aluminum alloy, sheeting types, as well as specific requirements including thickness, hole-punching, color, and variable messaging are made using the Bid Tabulation templates explained below.

Part II contains the Bid Tabulation templates for each component. Templates showing item measurements in units of rolls and square feet are provided to provide flexibility in accommodating agency purchasing preferences. These templates have been prepared in Excel 2007, allowing the user complete flexibility to add additional agency information, as well as additional line items as necessary.

Part I

Material Performance Specifications

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MATERIALS SPECIFICATION

ALUMINUM SIGN BLANKS

1. DESCRIPTION

This specification covers the requirements and processing of flat sheet aluminum sign blanks to which a chemical conversion treatment coating has been applied. Size, shape, thickness, and weight shall be in accordance with the current edition of the MUTCD Standard Highway Signs book, Section 7.

2. MATERIALS

2.1 Aluminum. Blanks shall conform to ASTM B-209. Alloy shall be 5052-H38 (virgin alloy), or recycled alloy, as specified on the Bid Tabulation Sheet(s).

3. CHEMICAL CONVERSION COATING

Aluminum sign blanks shall be conversion coated to comply with the requirements of ASTM B-921 or ASTM B-449. All procedures used in the conversion coating process must comply with the recommendations of the manufacturers of retroreflective sheeting materials to assure proper adhesion.

4. FABRICATION

4.1. General. Blanks shall be a continuous section of the length, width, and thickness, with required mounting holes as show on (FHWA referenced layout from above). They shall conform to commercial tolerances with regard to length, width, thickness, flatness, hole spacing, hole diameter, corners and corner radii in accordance with ANSI-H35-2 (tables 2.1, 3.1, 3.2, 3.3, 7.1, and 7.6 through 7.14). Blanks shall be free of buckles, dents, and burrs prior to the application of the chemical conversion treatment. All shearing shall be from the same side of the blanks, the sheared side shall be placed and packaged face up.

4.2. Warp. When aluminum sign blank is resting on a flat, level surface with either side down, all parts of the underside of the sign blank shall be within 0.25 inch of the flat surface without any external pressure.

5. INSPECTION

During fabrication. The contractor shall provide sufficient testing and quality control throughout fabrication to insure good workmanship.

After receipt. Once the material has been received, it may be subject to random testing to ensure compliance with all requirements. If any test samples do not conform to the requirements of these specifications, the entire order may be returned at vendor expense.

6. ADDITIONAL AGENCY REQUIREMENTS

Insert if applicable

MATERIALS SPECIFICATION

ALUMINUM SIGN BLANKS WITH RETROREFLECTIVE SHEETING APPLIED – NO SIGN LEGEND OR SYMBOL

1. DESCRIPTION

This specification covers the requirements and processing of flat sheet aluminum sign blanks with retroreflective sheeting applied.

2. MATERIALS

2.1. Aluminum. Blanks shall conform to ASTM B-209. Alloy shall be 5052-H38 (virgin alloy), or recycled alloy, as specified on the Bid Tabulation Sheet(s). Size, shape, thickness, and weight shall be in accordance with the current edition of the MUTCD Standard Highway Signs book, Section 7.

2.2. Chemical Conversion Coating. Aluminum sign blanks shall be conversion coated to comply with the requirements of ASTM B-921 or ASTM B-449. All procedures used in the conversion coating process must comply with the recommendations of the manufacturers of retroreflective sheeting materials to assure proper adhesion.

2.3. Aluminum Fabrication. General. Blanks shall be a continuous section of the length, width, and thickness, with required mounting holes as show on (FHWA referenced layout from above). They shall conform to commercial tolerances with regard to length, width, thickness, flatness, hole spacing, hole diameter, corners and corner radii in accordance with ANSI-H35-2 (tables 2.1, 3.1, 3.2, 3.3, 7.1, and 7.6 through 7.14). Blanks shall be free of buckles, dents, and burrs prior to the application of the chemical conversion treatment. All shearing shall be from the same side of the blanks. After application of the retroreflective sheeting, sign blanks shall be stacked and packaged face to face, back to back, and protected in accordance with the sheeting manufacturer's recommendations.

Warp. When aluminum sign blank is resting on a flat, level surface with either side down, all parts of the underside of the sign blank shall be within 0.25 inch of the flat surface without any external pressure.

2.4. Reflective sheeting. Retroreflective sheeting shall consist of white or colored sheeting having a smooth outer surface and that essentially has the property of a retroreflector over its entire surface. Retroreflective sheeting shall conform to all requirements of the current version of ASTM D 4956 "Standard Specification for Retroreflective Sheeting for Traffic Control". The retroreflective sheeting shall be classified as shown in the Tables 1 & 2, FHWA Publication Number FHWA-SA-11-14, "2011 Traffic Sign Retroreflectivity Sheeting Identification Guide", or more current version, and may be of any construction providing that those requirements are met. Type designation is provided as a means for differentiating functionality (the type sequence is not indicative of performance level). Precovered aluminum sign blanks shall be fabricated using retroreflective sheeting of the Type specified on the Bid Tabulations Sheet(s).

3. FABRICATION

Retroreflective sheeting shall be applied to a properly cleaned and prepared aluminum sign blank in accordance with the retroreflective sheeting manufacturer's recommendations. Precovered sign blanks shall be free of ragged edges, and must be supplied clean and free of scratches, grease, oil, lubricants, or other contaminants. Precovered blanks shall be securely packaged to prevent damage during transit or storage according to the sheeting manufacturer's recommendations.

4. INSPECTION

During fabrication. The contractor shall provide sufficient testing and quality control throughout fabrication to insure good workmanship.

After receipt. Once the material has been received, it may be subject to random testing to ensure compliance with all requirements. If any test samples do not conform to the requirements of these specifications, the entire order may be returned at vendor expense.

5. RETROREFLECTIVE SHEETING PERFORMANCE WARRANTY PROVISIONS

Based on the ASTM Type of sheeting specified on the Bid Tabulation Sheet(s), the precut retroreflective sheets shall be warranted for the duration shown in Table 3. Full product terms and conditions are as established by each sheeting manufacturer, and may contain certain limitations based on sheeting and ink colors, and geographic exposure of the sign. Bidder shall supply a copy of the warranty document with complete details of terms and conditions upon request of the agency.

6. ADDITIONAL AGENCY REQUIREMENTS

Insert if applicable

MATERIALS SPECIFICATION

RETROREFLECTIVE SHEETING – ROLL GOODS

1. DESCRIPTION

This specification covers the requirements of flexible, non-exposed glass bead lens and microprismatic, retroreflective sheeting designed for use on traffic control signs, delineators, barricades, and other devices.

2. MATERIALS

Retroreflective sheeting shall consist of white or colored sheeting having a smooth outer surface and that essentially has the property of a retroreflector over its entire surface. Retroreflective sheeting shall conform to all requirements of the current version of ASTM D 4956 “Standard Specification for Retroreflective Sheeting for Traffic Control”. The retroreflective sheeting shall be classified as shown in Tables 1 & 2, FHWA Publication Number FHWA-SA-11-14, “2011 Traffic Sign Retroreflectivity Sheeting Identification Guide”, or more current version, and may be of any construction providing that those requirements are met. Type designation is provided as a means for differentiating functionality (the type sequence is not indicative of performance level). The retroreflective sheeting shall have a pressure-sensitive adhesive protected by an easily removable protective liner. Roll goods shall be the Type specified on the Bid Tabulations Sheet(s).

3. FABRICATION

All retroreflective sheeting shall be of new manufacture. Material shall be packaged with the rolls suspended by plastic or cardboard end-plugs and placed in sturdy packaging to prevent damage while in transit or storage. When requested, the sheeting manufacture shall provide the agency with independent testing certification, or a manufacturer’s certificate of compliance to demonstrate compliance with all requirements of ASTM D 4956.

4. INSPECTION

During fabrication. The contractor shall provide sufficient testing and quality control throughout fabrication to insure good workmanship.

After receipt. Once the material has been received, it may be subject to random testing to ensure compliance with all requirements. If any test samples do not conform to the requirements of these specifications, the entire order may be returned at vendor expense.

5. RETROREFLECTIVE SHEETING PERFORMANCE WARRANTY PROVISIONS

Based on the ASTM Type of sheeting specified on the Bid Tabulation Sheet(s), the precut retroreflective sheets shall be warranted for the duration shown in Table 3. Full product terms and conditions are as established by each sheeting manufacturer, and may contain certain limitations based on sheeting and ink colors, and geographic exposure of the sign. Bidder shall supply a copy of the warranty document with complete details of terms and conditions upon request of the agency.

6. ADDITIONAL AGENCY REQUIREMENTS

Insert if applicable

MATERIALS SPECIFICATION

RETROREFLECTIVE SHEETING – PRECUT SHEETS (NO SIGN LEGEND OR SYMBOL)

1. DESCRIPTION

This specification covers the requirements and processing of pressure-sensitive retroreflective sheeting precut into sheets that are intended for further processed through the application of sign legend, then applied to a sign substrate by the agency after shipment from the supplier.

2. MATERIALS

Retroreflective sheeting shall consist of white or colored sheeting having a smooth outer surface and that essentially has the property of a retroreflector over its entire surface. Retroreflective sheeting shall conform to all requirements of the current version of ASTM D 4956 “Standard Specification for Retroreflective Sheeting for Traffic Control”. The retroreflective sheeting shall be classified as shown in Tables 1 & 2, FHWA Publication Number FHWA-SA-11-14, “2011 Traffic Sign Retroreflectivity Sheeting Identification Guide”, or more current version, and may be of any construction providing that those requirements are met. Type designation is provided as a means for differentiating functionality (the type sequence is not indicative of performance level). The retroreflective sheeting shall have a pressure-sensitive adhesive protected by an easily removable protective liner. Cut sheets shall be fabricated using retroreflective sheeting of the Type specified on the Bid Tabulations Sheet(s).

3. FABRICATION

Precut sheets shall be free of ragged edges, and must be supplied clean and free of scratches, grease, oil, lubricants, or other contaminants. Precut sheets shall be supplied square or rectangular in shape, in standard width dimensions of 6”, 12”, 18”, 24”, 30”, 36”, or 48” and in lengths specified by the agency. Unless specified as exact size, precut sheets shall be oversized 1/32” to 9/16” in each dimension to allow for trimming after application to the substrate. Precut sheets shall be securely packaged to prevent damage during transit or storage according to the sheeting manufacturer’s recommendations.

4. INSPECTION

During fabrication. The contractor shall provide sufficient testing and quality control throughout fabrication to insure good workmanship.

After receipt. Once the material has been received, it may be subject to random testing to ensure compliance with all requirements. If any test samples do not conform to the requirements of these specifications, the entire order may be returned at vendor expense.

5. RETROREFLECTIVE SHEETING PERFORMANCE WARRANTY PROVISIONS

Based on the ASTM Type of sheeting specified on the Bid Tabulation Sheet(s), the precut retroreflective sheets shall be warranted for the duration shown in Table 3. Full product terms and conditions are as established by each sheeting manufacturer, and may contain certain

limitations based on sheeting and ink colors, and geographic exposure of the sign. Bidder shall supply a copy of the warranty document with complete details of terms and conditions upon request of the agency.

6. ADDITIONAL AGENCY REQUIREMENTS

Insert if applicable

MATERIALS SPECIFICATION

TRANSPARENT COLORED & PROTECTIVE OVERLAY FILMS

1. DESCRIPTION

This specification covers the requirements of durable, transparent acrylic colored films and protective overlay films for manufacturing traffic control devices and signage. Overlay film is often used instead of screened inks where air quality regulations prohibit the use of solvent based inks, or short production runs make its use more economical. Protective, or “anti-graffiti”, overlay film is used as an effective means of protecting a sign face from vandalism, acting as a cleanable barrier between the sign face and spray paint, stickers, and other forms of graffiti which might otherwise require sign replacement. Protective overlay films are available in standard and premium grades as detailed below.

2. MATERIALS

Transparent Colored Overlay Film: The overlay film shall consist of dimensionally stable, transparent, colored acrylic film that is coated with a transparent, pressure sensitive adhesive that is protected by a removable liner. The overlay film shall be designed for kiss-cutting on electronic cutting machines, and allow for weeding, application, and adhesion to the surface of retroreflective sheeting. Colored overlay film shall meet the current applicable daytime and nighttime color requirements for ASTM D 4956 “Standard Specification for Retroreflective Sheeting for Traffic Control”.

Protective Overlay Films: Overlay films used as protective barrier are not traditionally subjected to electronic cutting or weeding during application, but are used as a full sign face overlaminant. Protective overlay film is coated with a transparent, pressure sensitive adhesive that is protected by a removable liner.

Standard overlay film shall consist of a dimensionally stable, transparent film allowing limited capacity for cleaning with the use of solvents or other chemicals as recommended by the manufacturer.

Premium overlay film shall consist of a highly durable, transparent fluoropolymer film, dimensionally stable, with chemical composition hampering adhesion to its surface by marking pens, lipstick, stickers, decals, and many spray paints. Premium overlay film shall exhibit solvent resistance allowing for increasingly stronger solvents to clean spray paint without damaging the film.

3. FABRICATION

All overlay film shall be of new manufacture. Material shall be packaged with the rolls suspended by plastic or cardboard end-plugs and placed in sturdy packaging to prevent damage while in transit and storage. Rolls of overlay film shall be available prepunched for sprocket fed cutters, or unpunched for friction fed cutters. Protective overlay films shall be available with or without a paper premask tape to aid in application. Color, punching, and application tape preference shall be as specified on the Bid Tabulations Sheet(s).

4. INSPECTION

During fabrication. The contractor shall provide sufficient testing and quality control throughout fabrication to insure good workmanship.

After receipt. Once the material has been received, it may be subject to random testing to ensure compliance with all requirements. If any test samples do not conform to the requirements of these specifications, the entire order may be returned at vendor expense.

5. OVERLAY FILMS PERFORMANCE WARRANTY PROVISIONS

Overlay films shall be warranted for the same duration of the retroreflective sheeting to which it is applied, with the exception of a three-year warranty for the color orange. This warranty may be provided by either the overlay film manufacturer or the sheeting manufacturer. Full terms and conditions are established by each manufacturer, and may contain certain limitations based on sheeting type and color, and geographic exposure of the sign. Bidder shall supply a copy of the warranty document with complete details of terms and conditions upon request of the agency.

6. ADDITIONAL AGENCY REQUIREMENTS

Insert if applicable

MATERIALS SPECIFICATION

PREPRINTED TRAFFIC SIGN FACES – Ready to Apply

1. DESCRIPTION

This specification covers the requirements and processing of pressure-sensitive Traffic Sign Faces intended to be applied to a sign substrate by the customer after shipment from the supplier.

2. MATERIALS

Retroreflective sheeting shall consist of white or colored sheeting having a smooth outer surface and that essentially has the property of a retroreflector over its entire surface. Retroreflective sheeting shall conform to all requirements of the current version of ASTM D 4956 “Standard Specification for Retroreflective Sheeting for Traffic Control”. The retroreflective sheeting shall be classified as shown in Tables 1 & 2, FHWA Publication Number FHWA-SA-11-14, “2011 Traffic Sign Retroreflectivity Sheeting Identification Guide”, or more current version, and may be of any construction providing that those requirements are met. Type designation is provided as a means for differentiating functionality (the type sequence is not indicative of performance level). The retroreflective sheeting shall have a pressure-sensitive adhesive protected by an easily removable protective liner. Traffic sign faces shall be fabricated using retroreflective sheeting of the Type specified on the Bid Tabulations Sheet(s).

3. FABRICATION

The sign legend shall be produced using products and processes that comply with the reflective sheeting manufacturer’s recommendation. After processing, sign faces shall be, packaged, shipped, and stored according to the sheeting manufacturer’s recommendations. The width and length of sign faces shall be oversized 1/32” to 9/16” to allow for trimming after application to the substrate. All sign faces must be clean and free of scratches, grease, oil, lubricants, or other contaminants. Minor blemishes (dirt speck, dust, etc.) may settle on the fresh ink surface, or become entrapped between the sheeting surface and transparent overlay film due to static charge within the sign shop environment. Any blemish must be minor and not interfere with the communication of the sign message to the motorist. The blemish must not be visible to the naked eye when viewed from a distance of 30 feet or greater. Preprinted sign faces shall be securely packaged to prevent damage during transit or storage according to the sheeting manufacturer’s recommendations.

4. INSPECTION

During fabrication. The contractor shall provide sufficient testing and quality control throughout fabrication to insure good workmanship.

After receipt. Once the material has been received, it may be subject to random testing to ensure compliance with all requirements. If any test samples do not conform to the requirements of these specifications, the entire order may be returned at vendor expense.

5. TRAFFIC SIGN PERFORMANCE WARRANTY PROVISIONS

Based on the ASTM Type of sheeting specified on the Bid Tabulation Sheet(s), traffic control signs shall be warranted for the duration shown in Table 3. Full product terms and conditions are as established by each sheeting manufacturer, and may contain certain limitations based on sheeting and ink colors, and geographic exposure of the sign. Bidder shall supply a copy of the warranty document with complete details of terms and conditions upon request of the agency.

6. ADDITIONAL AGENCY REQUIREMENTS

Insert if applicable

MATERIALS SPECIFICATION

FINISHED TRAFFIC SIGNS ON ALUMINUM

1. DESCRIPTION

This specification covers the requirements for finished retroreflective traffic control signs on flat sheet aluminum sign blanks.

2. MATERIALS

2.1. Aluminum. Blanks shall conform to ASTM B-209. Alloy shall be 5052-H38 (virgin alloy), or recycled alloy, as specified on the Bid Tabulation Sheet(s). Size, shape, thickness, and weight shall be in accordance with the current edition of the MUTCD Standard Highway Signs book, Section 7.

2.2. Chemical Conversion Coating. Aluminum sign blanks shall be conversion coated to comply with the requirements of ASTM B-921 or ASTM B-449. All procedures used in the conversion coating process must comply with the recommendations of the manufacturers of retroreflective sheeting materials to assure proper adhesion.

2.3. Aluminum Fabrication. General. Blanks shall be a continuous section of the length, width, and thickness, with required mounting holes as show on (FHWA referenced layout from above). They shall conform to commercial tolerances with regard to length, width, thickness, flatness, hole spacing, hole diameter, corners and corner radii in accordance with ANSI-H35-2 (tables 2.1, 3.1, 3.2, 3.3, 7.1, and 7.6 through 7.14). Blanks shall be free of buckles, dents, and burrs prior to the application of the chemical conversion treatment. All shearing shall be from the same side of the blanks. After application of the retroreflective sheeting, sign blanks shall be stacked and packaged face to face, back to back, and protected in accordance with the sheeting manufacturer's recommendations.

Warp. When aluminum sign blank is resting on a flat, level surface with either side down, all parts of the underside of the sign blank shall be within 0.25 inch of the flat surface without any external pressure.

2.4. Retroreflective sheeting shall consist of white or colored sheeting having a smooth outer surface and that essentially has the property of a retroreflector over its entire surface. Retroreflective sheeting shall conform to all requirements of the current version of ASTM D 4956 "Standard Specification for Retroreflective Sheeting for Traffic Control". The retroreflective sheeting shall be classified as shown in Tables 1 & 2, FHWA Publication Number FHWA-SA-11-14, "2011 Traffic Sign Retroreflectivity Sheeting Identification Guide", or more current version, and may be of any construction providing that those requirements are met. Type designation is provided as a means for differentiating functionality (the type sequence is not indicative of performance level). Traffic signs shall be fabricated using retroreflective sheeting of the Type specified on the Bid Tabulations Sheet(s).

3. FABRICATION

Retroreflective sheeting shall be applied to a properly cleaned and prepared aluminum sign blank in accordance with the retroreflective sheeting manufacturer's recommendations. Unless otherwise specified by the agency, sign legend shall be applied using silk screen process inks, overlay films, or other conversion methods at the option of the supplier. In all cases, conversion method will conform to the recommended processes of the sheeting manufacturer. Finished signs shall be free of ragged edges, and must be supplied clean and free of scratches, grease, oil, lubricants, or other contaminants. Minor blemishes (dirt speck, dust, etc.) may settle on the fresh ink surface, or become entrapped between the sheeting surface and transparent overlay film due to static charge within the sign shop environment. Any blemish must be minor and not interfere with the communication of the sign message to the motorist. The blemish must not be visible to the naked eye when viewed from a distance of 30 feet or greater. Finished signs shall be securely packaged to prevent damage during transit or storage according to the sheeting manufacturer's recommendations.

4. INSPECTION

During fabrication. The contractor shall provide sufficient testing and quality control throughout fabrication to insure good workmanship.

After receipt. Once the material has been received, it may be subject to random testing to ensure compliance with all requirements. If any test samples do not conform to the requirements of these specifications, the entire order may be returned at vendor expense.


5. TRAFFIC SIGN PERFORMANCE WARRANTY PROVISIONS

Based on the ASTM Type of sheeting specified on the Bid Tabulation Sheet(s), traffic control signs shall be warranted for the duration shown in Table 3. Full product terms and conditions are as established by each sheeting manufacturer, and may contain certain limitations based on sheeting and ink colors, and geographic exposure of the sign. Bidder shall supply a copy of the warranty document with complete details of terms and conditions upon request of the agency.

6. ADDITIONAL AGENCY REQUIREMENTS






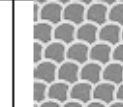
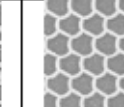
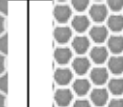
Insert if applicable

Table 1.

2011 Traffic Sign Retroreflective Sheeting Identification Guide 

This document is intended to help identify sign sheeting materials for rigid signs and their common specification designations. It is not a qualified product list. FHWA does not endorse or approve sign sheeting materials. Many other sheeting materials not listed here are available for delineation and construction/work zone uses.

Retroreflective Sheeting Materials Made with Glass Beads

Example of Sheeting (Shown to scale)								
ASTM D4956-04	I	II	II	III	III	III	III	III
ASTM D4956-09	I	II	II	III	III	III	III	III
AASHTO M268-10	(1)	(1)	(1)	A	A	A	A	A
Manufacturer	Several companies	Avery Dennison®	Nippon Carbide	3M™	ATSM, Inc.	Avery Dennison®	Nippon Carbide	Oracal
Brand Name	Engineer Grade	Super Engr Grade	Super Engr Grade	High Intensity	High Intensity	High Intensity	High Intensity	High Intensity
Series	Several	T-2000	15000	2800 3800	ATSM HI	T-5500	N500	5800
NOTES:	(2)	(3) (4)	(4)	(3) (4)	(4)	(4)	(4)	(4)
<p>(1) – Sheeting material does not meet minimum AASHTO classification criteria. (2) – Glass Bead Engineer Grade sheeting is uniform without any patterns or identifying marks. Section 2A.08 of the 2009 MUTCD (http://mutcd.fhwa.dot.gov) does not allow this sheeting type to be used for new yellow or orange signs, or new legends on green signs. (3) – Material no longer sold in the United States as of the date of this publication. (4) – Section 2A.08 of the 2009 MUTCD (http://mutcd.fhwa.dot.gov) does not allow this sheeting type to be used for new legends on green overhead signs.</p>								

- ASTM D4956-04 is referenced in Table 2A-3 of the 2009 MUTCD.
- ASTM D4956-09 is the most current ASTM sign sheeting specification (the 2009 version is designated by "-09").
- AASHTO M268-10 Types for this Guide are based only on retroreflective properties and not other unique AASHTO requirements such as color.

Manufacturer Contact Information

3M - http://www.3m.com/tss	ATSM, Inc. - http://www.atsminc.com
Avery Dennison - http://www.reflectives.averydennison.com	Nippon Carbide - http://www.nikkalite.com
Oracal - http://www.oracal.com	Reflexite - http://www.reflexite.com

FHWA Publication Number: FHWA-SA-11-14. For additional copies of this document, please send request to report.center@dot.gov

Table 2.

2011 Traffic Sign Retroreflective Sheeting Identification Guide



This document is intended to help identify sign sheeting materials for rigid signs and their common specification designations. It is not a qualified product list. FHWA does not endorse or approve sign sheeting materials. Many other sheeting materials not listed here are available for delineation and construction/work zone uses.

Retroreflective Sheeting Materials Made with Prisms

Example of Sheeting (Shown to scale)								
D4956-04	(5)	III, IV	III, IV, X	(5)	(5) / X	(5)	VIII	VII, VIII, X
D4956-09	I	III, IV	III, IV	IV	IV / VIII	VIII	VIII	VIII
M268-10	(6)	B	B	B	B	B	B	(9)
Manufacturer	3M™	Avery Dennison®	3M™	Reflexite®	Nippon Carbide	3M™	Avery Dennison®	3M™
Brand Name	Engr Grade Prismatic	High Intensity Prismatic	High Intensity Prismatic	High Intensity Prismatic	Crystal Grade	Reflective Sheeting	MVP Prismatic	Diamond Grade™ LDP
Series	3430	T-6500	3930	IC400	94000 / 92000	3940	T-7500	3970
NOTES:	(7)				(8)			(10)

Example of Sheeting (Shown to scale)						NOTE: The watermarks have been enhanced in this ID Guide. They are shown to scale but are not as visible on actual sheeting materials. It helps to view the sheeting materials at different angles to see the watermarks. The spacing of the watermarks varies and therefore watermarks may not be present on small pieces of sheeting.
D4956-04	IX	IX	(5)	(5)	(5)	
D4956-09	IX	IX	IX	XI	XI	
M268-10	B	B	B	D	D	
Manufacturer	3M™	Avery Dennison®	Nippon Carbide	3M™	Avery Dennison®	
Brand Name	Diamond Grade™ VIP	OmniView™	Crystal Grade	Diamond Grade™ DG3	OmniCube™	
Series	3990	T-9500	95000	4000	T-11500	
NOTES:						

- (5) – Material was either unavailable in 2005 (previous version of this Guide) or unassigned in the 2004 version of ASTM D4956.
- (6) – Sheeting material does not meet minimum AASHTO classification criteria.
- (7) – Section 2A.08 of the 2009 MUTCD (<http://mutcd.fhwa.dot.gov>) does not allow this sheeting type to be used for new yellow or orange signs, or new legends on green signs.
- (8) – These two materials (94000 and 92000) are visually indistinguishable from one another.
- (9) – Material has been discontinued prior to AASHTO M268-10.
- (10) – Material no longer sold in the United States as of the date of this publication.

Resources

Federal Highway Administration – <http://www.fhwa.dot.gov/retro>
 Manual on Uniform Traffic Control Devices (MUTCD) – <http://mutcd.fhwa.dot.gov>
 ASTM – <http://www.astm.org> AASHTO – <http://www.transportation.org>
 Texas Transportation Institute – <http://tti.tamu.edu/visibility>

Table 3.

ASTM Type	Term - Years	Retained Retroreflectivity % of ASTM Minimum	General Warranty Conditions¹
I	7	50%	Pro-rated replacement of failed sheeting only
II	12	80%	Failure between 1-7 years = full sign and labor replacement, Failure between 8-12 years = sheeting replacement only
III	10	80% 70%	Failure between 1-7 years = full sign and labor replacement, Failure between 8-10 years = sheeting replacement only
IV	10	80% 70%	Failure between 1-7 years = full sign and labor replacement, Failure between 8-10 years = sheeting replacement only
VIII	10	80%	Failure between 1-7 years = full sign and labor replacement, Failure between 8-10 years = sheeting replacement only
IX	12	80% 70%	Failure between 1-7 years = full sign and labor replacement, Failure between 8-12 years = sheeting replacement only
XI	12	80% 70%	Failure between 1-7 years = full sign and labor replacement, Failure between 8-12 years = sheeting replacement only

¹Refer to sheeting manufacturer's written warranty statement for complete terms and conditions.