

9940000 RETROREFLECTIVE AND NONREFLECTIVE SHEETING FOR TRAFFIC
CONTROL DEVICES
RESPONSES TO COMMENTS FROM INDUSTRY REVIEW

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Comments:

Should 994-2 be expanded to mention Type V fluorescent pink sheeting? Its reflectivity requirements are in 994-3.6.

Suggest combining the last 2 sentences of 994-3, both deal with 'minimum reflectivity requirements listed below'. Suggest "Type VII (Special) sheeting and Type V fluorescent pink sheeting shall meet the minimum reflectivity requirements listed below."

The second table in 994-3.6 is for Type VI Sheeting. Either this should be Type V or 994-3.2 should refer to Type VI sheeting.

Response:

Grier Kirkpatrick
3M Company
Traffic Safety Systems Division
2562 Twain Drive
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Tel: 850-321-9925

Comments:

1. Section 1.2- Replace with the following:

994-1.2 Classification: Retroreflective sheeting materials Types III, IV, V, and VI shall be classified in accordance with ASTM D4956. In addition, a special classification, Type VII (Special) reflective sheeting is added for a super high intensity retroreflective sheeting with high performance angularity properties. This special classification shall include materials classified as Type VII and higher in accordance with ASTM D4956. **A fluorescent pink classification is also added.**

2. Section 2- Replace existing paragraph with the following:

994-2 Materials.

Retroreflective sign sheeting, screen processing inks, and film overlay materials used for

any of the applications described herein shall be one of the products included on the QPL, as specified in 6-1. The retroreflective sheeting shall meet the requirements of Types III, IV, V, VI in ASTM D4956 or Type VII (Special) or fluorescent pink listed below in accordance with their approved usage. Samples shall be taken in accordance with the Department's Sampling, Testing and Reporting Guide Schedule and on a random basis at the discretion of the Engineer.

3. **Section 3.2** - "V" should be replaced with "Fluorescent Pink". Replace sentence as follows: **994-3.2 Retroreflective Intensity:** ... Type ~~V~~ fluorescent pink sheeting shall meet the minimum retroreflectivity requirements also listed below.

4. Section 5- **minor issue:** "Table" may be added as follows for clarification.

The retroreflective sheeting and screen processed retroreflective sheeting shall have the minimum coefficient of retroreflection as shown in ASTM D4956, Outdoor Weathering Photometric Requirements for All Climates **Table** except fluorescent pink.

5. Section 5 - **Needs clarification** as to length of period in-service minimum requirements will be enforced.

6. Section 6 - **Remove** the following sentence. Manufacturers generally do not indicate ASTM type on box label, only model numbers which are cross referenced to an ASTM type - some models meeting numerous ASTM types. Additionally, FDOT Types are not 100% in alignment with current ASTM types.

REMOVE "Show the type designation of the sheeting in accordance with ASTM D4956 and this Specification."

7. Section 7- **REPLACE "certified test report" with "notarized certification"**. Manufacturers do not provide certified test report to contractors. We provide test reports to the department for qualification and recertification purposes. Manufacturers provide notarized certification to the contractors.

ADD - Certification shall not be required for signs **and devices** used in the work zone.

8. **Remove** title of table "Type VI Sheeting" and replace with "Type Fluorescent Pink".

Response: Made revisions to specification

Mark Kleinschmit
Mark.Kleinschmit@averydennison.com

Comments:

I just wanted to let you know that I have reviewed the proposed changes to section 994 and Avery supports the changes.

The only comment that I have is that in the first section you have the

statement:

"This special classification shall include materials classified as Type VII and higher in accordance with ASTM D4956."

As ASTM D4956 adds Types, they have been adding higher numbers (Type XI, XII, XIII, etc.). But there is no guarantee that later additions will require higher reflectivity or performance. If ASTM D4956 adds later Types, you may be required to change this section.

I would propose that this sentence be more specific. An example would be:

"This special classification shall include materials classified as Type VII, VIII, IX or X in ASTM D4956."

Response: As long as they meet the reflectivity requirements we are not concerned with type.

Karen Byram
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Comments:

Will the addition of night time color and the changes in physical characteristics require all existing QPL approved sign sheeting to be retested and given a new QPL number?

Response: No. As we go through recertification we will pick up the new ASTM requirements.

Karen Byram
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Comments:

The special requirements for FL pink are defined, but now is a good time to add the special requirements for yellow roll-up sheeting as requested by the Department of Agriculture. The color and other requirements are defined in the ASTM method. The only thing that needs to be added is mentioned of the elimination of the outdoor performance (same as FL pink).

Response: Added fluorescent yellow

Christopher Wood
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Comments:

1) Does this mean that they are doing away with the yellow green and orange sheeting for signs? They speak to a Type V, fluorescent pink and a Type VII (Special).

Response: No.

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Comments:

994-1.2

“FDOT Type VII does not conform to ASTM Type VII. The use of the word "higher" should be changed to "above" so as not to confuse ASTM classifications numerically higher as opposed to higher performing retroreflectivity properties. For example, although “X” is “higher” than “VII”, the ASTM Type X minimum at .2/-4 (White) is 560, which is lower than the retroreflectivity requirement for ASTM Type VII (White) of 750.”

994-3.2

“Pink sheeting is referred to as Type V, but the table in 994-3.6 is labeled as Type VI. ASTM does not classify pink sheeting. This is an FDOT table. This is either FDOT Type V or VI.”
-Table VII and VI English formula should read as **(cd/ft.ft²)**

994-5

The retroreflective sheeting, retroreflective sheeting using transparent overlay films and screen processed retroreflective sheeting shall have the minimum coefficient of retroreflection as shown in ASTM D4956.....

*In addition, Type VII (Special) classified sheeting materials shall have a minimum coefficient of retroreflection of 80% of the values listed in the above table. Only the observation angle of 0.2 degrees and an entrance angle of -4 degrees shall be used in measuring in-service minimums. The in-service life for **opaque** overlay films, black processing inks and **opaque** lettering shall equal the life of the reflective sheeting to which it is applied.*

994-6 Packaging and Labeling.

Shipment shall be made in containers which are acceptable to common carriers and packaged in such a manner as to ensure delivery is in perfect condition. Each package shall be clearly marked as to the name of the manufacturer, type, color, quantity enclosed and date of manufacture. **Show the type designation of the sheeting in accordance with ASTM D4956 and this**

Specification. (Do to the widespread distribution of sign fabricators across the country that supply finished signs into Florida, this not applicable. However, the appropriate information is provided on the material certifications collected in the field.)

994-7 Certification

For permanently installed signs, the Contractor shall be required to furnish to the Engineer one **material certification** from the sheeting manufacturer documenting that the retroreflective sheeting meets the requirements of this Section.

994-8.2 Other Requirements: Manufacturers seeking approval of sheeting material products shall submit an application, Material Safety Data Sheet (MSDS) (**if required by law**), and certification. Non-sheeting materials may be submitted under this Section with reference to specific equivalency of performance requirements of overall end product. Final acceptance will be based on tests and verification in accordance with this Specification, FM 5-571 and 6-1.

Response: Made revisions to specification.
