971000 TRAFFIC MARKING MATERIALS
COMMENTS FROM INDUSTRY REVIEW

****

Paul Gentry
850-414-4118
paul.gentry@dot.state.fl.us

Comments:
The test method ASTM D522, referred to in 971-3.3 and 971-4.3 shows up on the SMO IHS Standards Expert-search as being identified as "ASTM D522 Rev A"

Response: The ASTM's are issued under a fixed designation, i.e. D 522, the number immediately following the designation indicates the year of adoption or revision. We do not show this number as part of the reference. Our intent is that we are always referencing the latest edition unless otherwise indicated. No change made.

****

Paul Gentry
850-414-4118
paul.gentry@dot.state.fl.us

Comments:
971-8.3 Flexibility test "Fed-Spec TT-P-115D" is being replaced in 971-3.3 and 4.3 with D522. Does this not need to be change here also

Response: Flexibility is being removed as one of the physical properties to be tested for two component reactive materials.

****

Paul Gentry C.P.M.
Phone: (850)414-4118
paul.gentry@dot.state.fl.us

Comments:
The new test method for Bleed Ratio in 971-3.3 and 971- 4.3 is ASTM D969. Section 3.1 in ASTM D969-85 (Reapproved 2003), as found on the State Materials Office IHS Standards Expert search, states the following:

3. Significance and Use

3.1 Solvents in a traffic paint may cause bleeding of pavement constituents into the traffic marking, thereby rendering the traffic marking less effective as a lane or directional indicator. This test method describes how to prepare a panel for evaluation. **The very subjective method of evaluating the degree of bleeding raises questions as to the usefulness of the result for specification compliance.**

Following the procedure of ASTM 969 Section 6.4, the degree of bleeding is to be rated numerically in accordance with the "nearest photographic reference standard in Method D868." When one reads D868, Section 4.1 (Significance and Use) states the following:

4.1 Solvents in a traffic paint may cause bleeding of pavement constituents into the traffic marking, thereby rendering the traffic marking less effective as a lane or directional indicator. This test method in conjunction with the method for panel preparation in Test Method D 969 is used to evaluate such bleeding properties. **The evaluation is very subjective and raises questions as to the usefulness of the results for specification compliance.**

When reading the precision of ASTM D868, this is what is stated:

ASTM D868-85 (Reapproved 2003) states in 6.1 Precision "**Due to the poor precision of this test method, if it is used in a specification, the permissible deviation from the maximum specified value should be agreed upon between the purchaser and the seller.**

I have 2 questions pertaining to this method:\

1. Why use this test method to evaluate Bleeding when ASTM even states that it is not a reliable test to be used within a specification?

2. If this test method is used, how does the minimum of .95 equate into the below requirement from D969-85 (Reapproved 2003) Section 6.4 stated below? Is this a percentage, value, etc?

6.4 Immediately after completion of 48-h drying, observe the contrast in color between the portion of the film over the tape and that portion that is in direct contact with the test panels. Rate the degree of bleeding numerically in accordance with the nearest photographic reference standard in Test Method D 868.

Response to Question 1: The test method we are currently using for bleed ratio is Fed Spec TT-P-85D. The most current Fed Spec. for traffic paints is TT-P-1952E. This specification requires the ASTM D 969 as the method for determining the bleed ratio. By referencing the ASTM D 969, we are bypassing an additional reference. There is no real change in the method. Even though subjective, the bleed ratio needs to be evaluated and this ASTM is the test method. No changes made.

Response to Question 2: The photographic references depict values ranging from 1.0 in decreasing increments of 0.05, i.e. 1.0, 0.95, 0.90, 0.85, etc. The subjectivity of the method comes when the laboratory compares the sample with the references and interpolates a value between one of the references shown. Our requirement is 0.95, which is not an interpolated value, is compared to the reference to determine if the sample is lighter or darker than the reference. The only subjectivity is the observer is determining if the color is lighter or darker than the reference. No changes made.

****

Paul Vinik
352-955-6649
paul.vinik@dot.state.fl.us

Comments:
The changes made are well warranted. The only question I have is the set to bear traffic time for 2 component materials. This specification change has given 10 mins for durable paints, which I assume will only be used on new roadways and therefore the 10 min constraint is not too arduous for reasonable application. Can the set to bear for 2 component be extended, to say 5 mins without causing application issues? Most or all of the 2 component products tested do not meet the 2 min requirement?

Response: We recognize that only one polyurea manufacturer can meet the 2 minute set to bear time. Other materials which fall under this specification, i.e. epoxies, methacrylates, etc. do not have a problem meeting this requirement. We would rather leave the specification the way it is and accept polyureas that do not meet the set to bear time under QPL limitations. This is beyond the proposed changes. No changes made.

****

Duane Brautigam

Comments:
Please cross check the renumbering of the Articles in 971 caused by the elimination of current 971-6 Hot Spray Thermo Material. I suspect there are numerous cross references to the old 971-7 through 971-10 (new 971-6 through 971-9) that would need affected. As an example, the 701-2.1 of the current Supplemental Spec still shows a reference to 971-10, and that has not been changed in the current proposed revision to 701.

Response: Agree. All references will be changed in current revisions.

****

Paul Gentry C.P.M.
Phone: (850)414-4118
paul.gentry@dot.state.fl.us

Comments:
(1) By changing the specification requirement for 971-2.2, Roundness in the Type 1, 2, 3 and 5 beads to a minimum of 70% by weight, is this not “lowering” the standard we have required for beads? (2) Is there any long term supporting data to show that reflectivity values will not be affected and will stay at or above what we are currently seeing in the field? If this is accepted and products start showing lower reflectivity values and possibly failing on our test decks for the QPL, we hold the manufacturer responsible for the failure, not the producer of the beads. (3) At present, my understanding is that most contractors order 80% round beads for project installations, which exceeds what our present specification states now. By dropping the individual sieve sizes for true spheres, it would seem like there might be a possibility of a higher percentage of irregulars showing up, when the determination is done by weight. I would suggest changing the minimum suggested from 70% to 80% by weight, which is what is presently being done now by contractors.

Response: (1) Yes, this is a new requirement that is less stringent. (2) We don't anticipate any materials not meeting reflectivity requirements based on this change. There is no long term supporting data to confirm, but reflectometers cannot consistently measure values that could substantiate this minor change in roundness. (3) Contractors do not order 80% roundness by weight per sieve size. A manufacturer of Type 1 beads may choose to provide 80% round by total weight in order to meet the 70% roundness by sieve size. The revision changes the roundness requirement of Type 1beads to be consistent with the requirements of AASHTO M247. The current language requires a special Type 1 bead for Florida and a standard M247 bead may not meet that requirement.

No changes made.

****

Scott Pantall
904-998-8114
scott.pantall@swarco.com

Comments:
Dear Chester, Regarding the proposed High Index Glass Bead Spec, I would like to suggest the following: All of the feedback from my company suggest that the gradation proposed is acceptable. We would like to suggest that the minimum refractive index be changed from 1.9 to 1.65. This would allow manufacturers the opportunity to supply glass beads that are more durable and can achieve comparable retroreflectivity values by using different chemistries. Basically, this would give manufacturers greater flexibility in offering the contractor glass beads that achieve the required higher retroreflectivity values. Making this change would also benefit the State by allowing contractors to use a more durable glass bead that not only achieves high initial values but maintains those values for a greater length of time. Regards, Scott Pantall Swarco PH# 904-998-8114 FX# 904-998-9702

Response: We do not see the benefit in allowing a refractive index below 1.9 for these beads because the system must satisfy the service life requirements. No changes made.

****

Karen Byram
414-4353
karen.byram@dot.state.fl.us

Comments:
In 971-2.2 Glass Spheres, by removing the true spheres per sieve size it will reduce the total roundness of the material with lower reflectivity as a consequence. Was this the intented outcome? If so, how is that justified? I suggest that this requirement should not be changed.

Response: See response to Paul Gentry above on this issue. No changes made.

****

Karen Byram/Paul Gentry

The originator (Chester Henson) met with Karen and Paul on 6/25/09 and the following changes were made as a result of this meeting.

1. **Subarticle 971-1.7 was revised as follows:**

SUBARTICLE 971-1.7 WITH PROPOSED REVISIONS AS OF **6/23/09 (9710000.D01)**:

971-1.7 Additional Requirements: Traffic stripe materials shall be characterized as non-hazardous as defined by Resource Conservation and Recovery Act (RCRA) Subarticle C rules, Table 1 of 40 CFR 261.24 "Toxicity Characteristic". Traffic stripe materials shall ~~contain no more than 3.0 ppm lead by weight~~*not exceed the regulatory limits for arsenic, barium, cadmium, chromium, lead, mercury, selenium or silver* in a cured state when tested by EPA method~~s 3050 and 6010~~ *TCLP 1311. The method used for determining the concentrations of the above stated contaminants shall be capable of measuring the detection limits stated in 40 CFR 261.24.*

The material shall not exude fumes which are hazardous, toxic or detrimental to persons or property.

SUBARTICLE 971-1.7 WITH PROPOSED REVISIONS AS OF **6/26/09 (9710000.D02)**

971-1.7 Additional Requirements: Traffic stripe materials shall be characterized as non-hazardous as defined by Resource Conservation and Recovery Act (RCRA)~~ Subarticle C rules, Table 1 of~~ 40 CFR 261~~.24~~ *and the material shall not exude fumes which are hazardous, toxic or detrimental to persons or property. Provide supporting independent analytical data or product Material Safety Data Sheets (MSDS) identifying nonhazardous designations.*

Additionally, traffic stripe materials shall contain no more that 5.0 ppm lead by weight when tested in accordance with the RCRA reference above. Provide supporting independent analytical data.~~"Toxicity Characteristic". Traffic stripe materials shall contain no more than 3.0 ppm lead by weight~~~~*not exceed the regulatory limits for arsenic, barium, cadmium, chromium, lead, mercury, selenium or silver*~~ ~~in a cured state when tested by EPA methods 3050 and 6010~~ ~~*TCLP 1311. The method used for determining the concentrations of the above stated contaminants shall be capable of measuring the detection limits stated in 40 CFR 261.24.*~~

~~The material shall not exude fumes which are hazardous, toxic or detrimental to persons or property.~~

The following revisions were made as well:

1. **Subarticle 971-1.1**: The word "LOT" in the first sentence was deleted and the word "lot" in the last sentence was changed to "batch".

2. **Subarticle 971-2.1**: The last sentence "The glass spheres shall conform to the requirements of AASHTO M 247 and FP 96" was deleted.

3. **Subarticle 971-2.2**: In the last line of the second chart, "NO. 100" was changed to "No. 100".

4. **Subarticle 971-4.2:** In the footnote to the chart, the words “cross-linking” were deleted as well as the “H” after Fastrack.

5. **Subarticle 971-8.3:** For “Adhesion to Concrete” the minimum was changed from “Pass” to “Concrete Failure”.

6. **Subarticles 971-9.2 and 971-9.4:** The text was centered in the charts.