

PROPOSED DRAFT
DECEMBER 2014

714.08 REFLECTIVE GLASS BEADS

~~Furnish glass beads for reflectorizing traffic pavement markings in accordance with AASHTO M 247. Gradation and roundness will be determined in accordance with AASHTO PP 74. In the event of a dispute, ASTM D1274 will be used for gradation determination and ASTM D1155 will be used for roundness determination.~~

COMMENTS

1. Will the beads for the waterborne paint be AASHTO M247 Type 1 and the beads for the Epoxy be the AASHTO M247 Type 2?

Response: Type 1 and Type 2 beads will be used for the same materials they have been in the past.

2. The AASHTO test method shows taking samples from the bags with a thief, at the meeting we were told all samples will be taken from the truck. The problem with taking them from the truck is that by the time a sample is run the whole lot will be applied on the projects. If a sample can be taken earlier and non-spec materials can be prevented from being used this seems like a better idea. The suppliers have offered to have an independent lab test the beads at the plant and submit them to the lab or we could have someone from the lab come and test the beads as soon as we get them in, before we are using them. We were told the lab found no difference in test results from samples taken from the bag and from the truck. If there is a reason to believe the contractor is somehow cheating you could still take random samples from the trucks. I believe it is our goal to use only in spec materials and not to give as many and as large of penalties as possible. We should pre test whenever we can.

Response: This specification modification doesn't modify the method the Department samples beads. The Department samples materials as close as possible to their final position to ensure the product applied meets specification.

3. Our suppliers are concerned with the penalties if a lot fails. If we used 6000 pounds of beads doing hand work the cost of the beads is about \$2,300 but the penalty at 10% would be around \$6,000 and a 25% penalty would be \$15,000.

Response: This specification modification doesn't modify the penalties assessed.

FINAL
EFFECTIVE APRIL 16, 2015

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Deleted: General. Provide

Deleted: that are spherical, transparent, have a smooth, lustrous surface, and

Deleted: except as modified below and the pavement marking manufacturer's recommendations. Ensure the delivered beads are free from extraneous material and bead clumps easily break up while handling and distributing onto the stripe

Deleted: ¶ Imperfections. Ensure the glass beads do not contain more than 25% irregularly shaped particles when tested in accordance with ASTM D1155. ¶

Color. Ensure the glass beads do not impart a noticeable daytime hue to white pavement markings. ¶

Chemical Stability. Ensure the beads can withstand refluxing in distilled water in a Soxhlet extractor for 90 hours without noticeable dulling of the surface luster and not more than 2.5% loss in weight. ¶

Gradation.

Deleted: Meet Table 714-6 gradations, tested in accordance with ASTM D1214. ¶

TABLE 714-6 ¶ REFLECTIVE GLASS BEAD GRADATION ¶ Percentage By Weight Passing Square Mesh Sieves ... [11]

74. In the event of a dispute, ASTM D1274 will be used for gradation determination and ASTM D1155 will be used for roundness determination.

Meet Table 714-6 gradations, tested in accordance with ASTM D1214.

TABLE 714-6

REFLECTIVE GLASS BEAD GRADATION

Percentage By Weight Passing Square Mesh Sieves		
Sieve Size	Montana Type 1	Montana Type 2
No. 20 (0.850 mm)	100	90 – 97
No. 30 (0.600 mm)	75 - 95	50 - 75
No. 40 (0.425 mm)	--	15 - 45
No. 50 (0.300 mm)	15 - 35	0 - 15
No. 80 (0.180 mm)	--	0 - 5
No. 100 (0.150 mm)	0 - 5	--

Packaging and Marking. Package glass beads in moisture-proof containers marked to identify the contents, manufacturer, lot number, batch number and net weight.

Samples. Furnish a sample of the beads upon request. The Department will furnish the containers.

Heavy Metals. Ensure the glass beads contain no more than 200 ppm of lead or arsenic when tested under EPA method 6010C. The beads will be prepared by EPA method 3052.