
Standard Method of Test for Glass Beads Used in Pavement Markings

AASHTO Designation: T 346-22¹

Technically Revised: 2022

Technical Subcommittee: 4c, Markings and Coatings



**American Association of State Highway and Transportation Officials
555 12th Street NW, Suite 1000
Washington, D.C. 20004**

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1. SCOPE

- 1.1. The procedures for testing glass beads used in traffic markings are described in this method. This includes the method for obtaining a representative test sample, preparation of the test specimens, and performing the specified tests.
- 1.2. *This test method is divided into the following parts:*
 - 1.2.1. Section 3, Sampling Glass Beads during Production;
 - 1.2.2. Section 4, Sampling Shipments of Glass Beads Vertically from Bulk Containers;
 - 1.2.3. Section 5, Gradation;
 - 1.2.4. Section 6, Roundness;
 - 1.2.5. Section 7, Refractive Index;
 - 1.2.6. Section 8, Flow Characteristics Test—Referee Method;
 - 1.2.7. Section 9, Moisture Resistant Coating Test—Referee Method;
 - 1.2.8. Section 10, Flotation Test—Referee Method;
 - 1.2.9. Section 11, Adherence Coating Oven Test—Referee Method;
 - 1.2.10. Section 12, Alternative Flotation Test—As Permitted by Purchasing Agency;
 - 1.2.11. Section 13, Alternative Moisture Resistance Test—As Permitted by Purchasing Agency; and
 - 1.2.12. Section 14, Alternative Adherence Test—As Permitted by Purchasing Agency.
- 1.3. The values stated in SI units are to be regarded as the standard.
- 1.4. *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety concerns associated with its use. It is the responsibility of the user of this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*
- 1.5. *The quality of the results produced by this standard are dependent on the competence of the personnel performing the procedure and the capability, calibration, and maintenance of the*

equipment used. Agencies that meet the criteria of R 18 are generally considered capable of competent and objective testing/sampling/inspection/etc. Users of this standard are cautioned that compliance with R 18 alone does not completely assure reliable results. Reliable results depend on many factors; following the suggestions of R 18 or some similar acceptable guideline provides a means of evaluating and controlling some of those factors.

2. REFERENCED DOCUMENTS

2.1. AASHTO Standards:

- < M 339M/M 339, Thermometers Used in the Testing of Construction Materials
- < R 18, Establishing and Implementing a Quality Management System for Construction Materials Testing Laboratories
- < R 98, Standard Practice for Determination of Size and Shape of Glass Beads Used in Traffic Markings by Means of Computerized Optical Method

2.2. ASTM Standards:

- < C1648, Standard Guide for Choosing a Method for Determining the Index of Refraction and Dispersion of Glass
- < D1155, Standard Test Method for Roundness of Glass Spheres
- < D1214, Standard Test Method for Sieve Analysis of Glass Spheres
- < E1, Standard Specification for ASTM Liquid-in-Glass Thermometers
- < E230/E230M, Standard Specification for Temperature-Electromotive Force (emf) Tables for Standardized Thermocouples
- < E2877, Standard Guide for Digital Contact Thermometers

2.3. International Electrotechnical Commission Standard:

- < IEC 60584-1: 2013 Thermocouples - Part 1: EMF Specifications and Tolerances

2.4. Other Standards:

- < ANSI/ASQ Z1.4, Sampling Procedures and Tables for Inspection by Attributes
- < ANSI/ASQ Z1.9, Sampling Procedures and Tables for Inspection by Variables for Percent Nonconforming

3. SAMPLING GLASS BEADS DURING PRODUCTION

- 3.1. The sampling shall be random in the following ratios: 45 kg (100 lb) of sample (in full bags) per 4535 kg (10,000 lb). ASQ Z1.4 and Z1.9 may be used to monitor the quality of the product so that it meets the requirement of the applicable detail specification. The supplier shall state in a Declaration of Conformity the sampling plans and test methods used. Accumulation of large quantities during the production sampling process shall be reduced to appropriate size by use of a splitter.

Note 1—The use of splitters to reduce the large sample of glass beads to the appropriate testing quantity is critical in minimizing sampling errors.

4. SAMPLING SHIPMENTS OF GLASS BEADS VERTICALLY FROM BULK CONTAINERS