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**Standard Method of Test for**

**Determination of Heavy Metal  
Content of Glass Beads Using  
X-Ray Fluorescence (XRF)**

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**AASHTO Designation: TP 106-20<sup>1</sup>**

**Technical Subcommittee: 4c, Markings and Coatings**

**Release: Group 2 (June)**



**American Association of State Highway and Transportation Officials  
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## Standard Method of Test for

# Determination of Heavy Metal Content of Glass Beads Using X-Ray Fluorescence (XRF)

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## 1. SCOPE

- 1.1. This test method covers the determination of the total heavy metal content of glass beads using X-ray fluorescence (XRF). Heavy metals include lead, antimony, and arsenic.
- 1.2. The values stated in SI units are to be regarded as the standard.
- 1.3. *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

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## 2. REFERENCED DOCUMENT

- 2.1. *AASHTO Standard:*
  - M 247, Glass Beads Used in Pavement Markings

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## 3. SUMMARY OF TEST METHOD

- 3.1. This test method is used to determine the total concentration of heavy metals using XRF testing. Testing may be performed with a handheld portable XRF or a laboratory XRF.
- 3.2. For a handheld XRF, the glass beads to be tested are placed in a loose state in a sample cup with or without a helium flush.
- 3.3. For a laboratory model XRF, the glass beads can be tested either in a loose state in a sample cup, using helium flush or as a pressed pellet under vacuum.

**Note 1**—Testing the glass beads in a loose state using a helium flush is the preferred method.

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## 4. SIGNIFICANCE AND USE

- 4.1. This method is designed to identify the presence and concentration of heavy metals in samples of glass beads. The method determines the total concentration and may be used to determine compliance with total concentration limits in M 247.