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Standard Practice for Sampling of Thermoplastic Traffic Marking Materials[1]

This standard is issued under the fixed designation D7307; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers the proper field sampling of thermoplastic traffic marking materials to ensure test results are representative of the material being tested.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

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.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D346 Practice for Collection and Preparation of Coke Samples for Laboratory Analysis

D2013 Practice for Preparing Coal Samples for Analysis

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *thermoplastic traffic marking material, n*—a highly filled 100 % total solids highway marking material that when heated to a molten state can be extruded or sprayed onto a road surface and when cooled forms a solid, durable delineator.

4. Summary of Practice

4.1 A random selection of three bags of thermoplastic traffic marking material is made from a manufactured lot. Using one of the three size reduction methods outlined in this procedure a small, representative sample of the manufactured lot is obtained. This sample may then be used for the testing of the chemical and physical properties of the marking material.

5. Significance and Use

5.1 It is important to obtain a truly representative sample of the thermoplastic traffic marking material prior to performing any tests. This can be difficult due to the wide ranges of sizes, shapes, and densities of the individual components that are used in the manufacture of these types of materials. The sample that is obtained using this guide should be representative of the manufactured lot from which it was obtained and can be used for the testing of the chemical and physical properties of the material as required by the governing specification.

6. Apparatus (See Note 1)

6.1 *Quartering Method:*

6.1.1 *1.2 by 1.2 m (4 by 4 ft) Section of Cardboard, Smooth Plywood, or Metal.*

6.1.2 *Metal Scooping Pan.*

6.1.3 *Metal Splitting Device,* consisting of four panels separated from each other at a 90 degree angle and joined at the center.

6.1.4 *Unlined 3.78 L (1 gal) Metal Cans.*

6.2 Splitter Method*:*

6.2.1 *1:1 Splitter Apparatus,* with pans with a minimum capacity of 28.3 L (1 cubic foot).

6.2.2 *Unlined 3.78 L (1 gal) Metal Cans.*

6.3 Thieving Method*:*

6.3.1 *5 cm (2 in.) ID Metal Pipe,* approximately 1 m (3 ft) long.

6.3.2 *Unlined 3.78 L (1 gal) Metal Cans.*

NOTE 1—The quartering procedure for reducing bulk samples, to obtain representative test samples, is described and illustrated in Practice D346. Various types of riffle samplers are illustrated in Practice D2013.

7. Hazards

7.1 Consult the material safety data sheet for the material being tested and follow the recommendations for the handling of the material. Minimum safety equipment should be safety glasses, dust mask for nuisance dust, and gloves.

7.2 Use proper lifting techniques when handling the containers of thermoplastic traffic marking materials.

8. Procedure

8.1 *Quartering Method:*

[1] This practice is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.44 on Traffic Coatings.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

8.1.1 Randomly select three bags of thermoplastic traffic marking material from the lot that is to be sampled. The lot size should not exceed 18 662 kg (50 000 lb).

8.1.2 Place the section of cardboard, plywood, or metal on a level floor surface.

8.1.3 Empty the contents of one of the bags onto the sampling area. Using the metal scoop mix the material, breaking up any large lumps. Shape the pile of material into as high of pile as possible forming a symmetrical inverted cone.

8.1.4 Take the metal splitting device and center it over the apex of the inverted cone of thermoplastic material. Lower the device into the material, thus splitting the sample into four equal quarter sections.

8.1.5 Take the material from any two opposing quarters and return it to the empty bag. The two remaining quarters are to be mixed, the inverted cone reformed, and split in the same manner as explained in 8.1.4, rotating between the two quarters that are retained at the end of each step. Repeat the process for a total of four times. Retain the final two opposing quarters as a part of the composite sample and place in the unlined 3.78 L (1 gal) can.

8.1.6 Perform the same procedure as outlined in 8.1.3 – 8.1.5 for the two remaining bags of material. When the final quarters are taken from these two containers the sum of the three should fill the 3.78 L (1 gal) container (or 4.08 to 4.54 kg (9 to 10 lb)).

8.1.7 Label the outside of the one-gallon sample can with adequate identification markings including: manufacturer, product number, batch number, date of manufacture, color, and specification.

8.1.8 The entire composite sample should be melted down.

8.2 *Splitter Method:*

8.2.1 Randomly select 3 bags of thermoplastic traffic marking material from the lot that is to be tested. The lot size should not exceed 18 662 kg (50 000 lb).

8.2.2 Empty the contents of one of the bags into one of the pans and place on top of the 1:1 splitter.

8.2.3 Place a pan underneath each of the two discharge sections of the splitter.

8.2.4 Empty the contents in the top pan such that the material passes through the splitter.

8.2.5 Take each half and split individually to form quarters. Return the two opposing pans, or quarter, to the empty container. Split the two remaining pans individually to form quarters. Repeat the above step by splitting the two opposing pans while returning the others to the material container. This splitting procedure is performed four times.

8.2.6 After the final split place the two opposing quarters into the 3.78 L (1 gal) container.

8.2.7 Repeat steps 8.2.2 – 8.2.6 for the two remaining bags of thermoplastic that were selected for testing. When the final quarters are taken from the two containers, the sum of the three containers should fill the 3.78 L (1 gal) sample container (4.08 to 4.54 kg (9 to 10 lb)).

8.2.8 Label the outside of the 3.78 L (1 gal) sample can with adequate identification markings including: manufacturer, product number, batch number, and date of manufacture, color, and specification.

8.2.9 The entire composite sample should be melted down.

8.3 *Thieving Method:*

8.3.1 Randomly select three bags of thermoplastic pavement marking material from the lot that is to be tested. The lot size should not exceed 18 662 kg (50 000 lb).

8.3.2 Place a bag on a flat surface.

8.3.3 Carefully cut the bag at the top or bottom to allow the pipe to be inserted in the bag.

8.3.4 Insert the sampling pipe into the bag and push through the thermoplastic material across the entire length of the bag.

8.3.5 Carefully remove the pipe and empty the thermoplastic material that is retained inside the pipe into the 3.78 L (1 gal) sample container.

8.3.6 Repeat the process, pushing the pipe through a different area of the container. Continue the process until an approximate 1.4 kg (3 lb) sample has been obtained from the container.

8.3.7 Repeat steps 8.3.2 – 8.3.6 for the other two remaining bags of thermoplastic that were selected for testing. The sum of the samples taken from the three containers should fill the 3.78 L (1 gal) or 4.08 to 4.54 kg (9 to 10 lb) container.

8.3.8 Label the outside of the 3.78 L (1 gal) sample with adequate identification markings including: manufacturer, product number, batch number, and date of manufacture, color, and specification.

8.3.9 The entire composite sample should be melted down.

9. Keywords

9.1 sampling; thermoplastic traffic markings