



Standard Test Methods for Chemical and Gravimetric Analysis of White and Yellow Thermoplastic Traffic Marking Containing Lead Chromate and Titanium Dioxide¹

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1. Scope

1.1 These test methods cover procedures for the chemical and gravimetric analysis of white and yellow thermoplastic traffic marking containing lead chromate and titanium dioxide pigment.

1.2 The analytical procedures appear in the following order:

	Sections
Percent Binder	10
Percent Glass Beads (Note 1)	11
Percent Titanium Dioxide	12
Percent Lead Chromate and Analysis of Chrome Yellow and Chrome Orange Pigments (Note 2)	13

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.*

NOTE 1—Test for 1.50 glass spheres only.

NOTE 2—This modified analysis of chrome yellow and chrome orange pigments must be used because the heat resistant chrome yellows in the thermoplastic cannot be analyzed by Test Method D 126.

2. Referenced Documents

2.1 ASTM Standards:

- D 126 Test Methods for Analysis of Yellow, Orange, and Green Pigments Containing Lead Chromate and Chromium Oxide Green²
- D 883 Terminology Relating to Plastics³
- D 1193 Specification for Reagent Water⁴
- D 1394 Test Methods for Chemical Analysis of White Titanium Pigments²
- F 412 Terminology Relating to Plastic Piping Systems⁵

3. Terminology

3.1 **Definitions**—Definitions are in accordance with Terminology D 883 and F 412, unless otherwise indicated.

¹ These test methods are under the jurisdiction of ASTM Committee D-1 on Paint and Related Coatings, Materials, and Applications and are the direct responsibility of Subcommittee D01.44 on Traffic Coatings.

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² Annual Book of ASTM Standards, Vol 06.03.

³ Annual Book of ASTM Standards, Vol 08.01.

⁴ Annual Book of ASTM Standards, Vol 11.01.

⁵ Annual Book of ASTM Standards, Vol 08.04.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 **ash**—the inorganic components of thermoplastic traffic marking including the pigment, glass spheres, and filler.

3.2.2 **binder**—the organic components of thermoplastic traffic marking that bind the pigments, glass spheres, and filler together as a unit.

3.2.3 **filler**—the inorganic components of thermoplastic traffic marking not including the pigments or glass spheres.

3.2.4 **pigment**—titanium dioxide and lead chromate colorants.

3.2.5 **thermoplastic**—See *thermoplastic traffic marking*.

3.2.6 **thermoplastic traffic marking**—a highly filled 100 % total solids highway marking system 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 Test Method

4.1 The thermoplastic material is prepared for the described test methods by melting a sample to its application temperature under continuous agitation. The specimen is then poured into round patties on a clean tin plate or baking pan. The patties are then broken into pieces for ignition in a muffle furnace. The percent binder is calculated from the ashed specimen and the various tests for glass spheres, titanium dioxide, and lead chromate pigment are performed on the ashed residue. The tests for pigment type or glass spheres may be run on the same ashed specimen. Specimen selection and preparation are the same for each sample tested.

5. Significance and Use

5.1 The function of these test methods is to define the percent of binder, glass, titanium dioxide, and lead chromate present in the composition of the thermoplastic traffic marking as defined by the applicable specification for the manufacture of a specific thermoplastic traffic marking.

6. Apparatus

6.1 **Balance**, analytical, accurate to 0.1 mg.

6.2 **Buret**, 10 mL, 0.1-mL divisions.

6.3 **Buret**, 50 mL, 0.1-mL divisions.

6.4 **Crucibles**, 30 mL, porcelain.

6.5 **Desiccator**.

6.6 **Erlenmeyer flask**, 500 mL.