Designation: D 5517 – 00

Standard Test Method for Determining Extractability of Metals from Art Materials[1]

This standard is issued under the fixed designation D 5517; 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 test method covers the extraction of metals from art materials using an extractant that simulates the acid potential of gastric juice. This test method is similar to the extraction method noted in Specification F 963 but involves conducting extraction steps at body temperature instead of at room temperature. The extraction procedure specified in this test method is more rigorous than that noted in Specification F 963.

1.2 This test method is adapted from the European Toy Safety Standard, EN 71-3:1988.

1.3 This test method differs from EN 71-3:1988 in that a solvent extraction step is not required for processing waxes or oil-based products. The rationale for this test method is discussed in Appendix X1.

1.4 This test method does not specify any specific acceptable metal level.

1.5 *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:*

D 4236 Practice for Labeling Art Materials for Chronic Health Hazards[2]

E 180 Practice for Determining the Precision of ASTM Methods for Analysis and Testing of Industrial Chemicals[3]

E 456 Terminology Relating to Quality and Statistics[4]

F 963 Consumer Safety Specification on Toy Safety[5]

2.2 *International Standards:*[6]

EN 71-3:1988 Safety of Toys

ISO 3696 Water for Laboratory Use—Specifications

ISO 3856 Paints and Varnishes—Determination of "Soluble" Metal Content Part 1: Determination of Lead Content—Flame Atomic Absorption Spectrometric Method and Dithiazone Spectrophotometric Method

Part 2: Determination of Antimony Content—Flame Atomic Absorption Spectrophotometric Method and Rhodamine B Spectrophotometric Method

Part 3: Determination of Barium Content—Flame Atomic Emission Spectrometric Method

Part 4: Determination of Cadmium Content—Flame Atomic Absorption Spectrometric Method and Polarographic Method

Part 5: Determination of Hexavalent Chromium Content of the Pigment Portion of the Liquid Paint or the Paint in Powder Form—Diphenylcarbazide Spectrophotometric Method

Part 6: Determination of Total Chromium Content of the Liquid Portion of Paint—Flame Atomic Absorption Spectrometric Method

2.3 *USEPA Standards:*[7]

USEPA Test Method SW-846

6010 Test Method for antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc

6020 Test Method for aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, nickel, silver, thallium, and zinc

7040 Test Method for antimony

7041 Test Method for antimony

7060 Test Method for arsenic

7061 Test Method for arsenic

7080 Test Method for barium

7090 Test Method for beryllium

7091 Test Method for beryllium

7130 Test Method for cadmium

7131 Test Method for cadmium

7190 Test Method for chromium

7191 Test Method for chromium

7200 Test Method for cobalt

7201 Test Method for cobalt

7210 Test Method for copper

7420 Test Method for lead

7421 Test Method for lead

[1] This test method is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.57 on Artist Paints and Related Materials.

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[2] *Annual Book of ASTM Standards*, Vol 06.02.

[3] *Annual Book of ASTM Standards*, Vol 15.05.

[4] *Annual Book of ASTM Standards*, Vol 14.02.

[5] *Annual Book of ASTM Standards*, Vol 15.07.

[6] Available from the Comite European de Normalisation, Central Secretariat, Rue Brederode 2, B–100 Brussels.

[7] Available from USEPA, Environmental Protection Agency, Alexander Drive, Research Triangle Park, NC 27709.