This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

Designation: D8143 – 17

Standard Test Method for Determination of the EU-8 List of PAH Compounds in Carbon Black[1]

This standard is issued under the fixed designation D8143; 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 qualitative and quantitative determination of the EU-8 list of polycyclic aromatic hydrocarbons (PAH) on carbon black. The EU-8 list of PAH compounds is given in Table 1. The procedure involves Soxhlet extraction with toluene followed by extract analysis using gas chromatography with mass spectrometry (GC/MS). This method is not intended to test for U.S. Food and Drug Administration (FDA 21 CFR 178.3297) compliance of carbon blacks used for indirect food contact applications.

1.2 *Units*—The values stated in SI units are to be regarded as the standard. No other units of measurement are included in this 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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *Federal Standard:*[2]

21 CFR 178.3297 Indirect Food Additives: Adjuvants, Productions Aids, and Sanitizers, Colorants for Polymers

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *polycyclic aromatic hydrocarbon, PAH, n*—organic compound(s) that consist of chemical structures of alternating single and double bonds of a ring like nature (for example, benzene), with no heteroatom or other substituents; frequently the rings are fused to make larger chemical structures.

3.1.1.1 *Discussion*—PAH naturally occur in oil, coal, and tar deposits; are produced by the incomplete combustion of hydrocarbons; and occur in many other products and processes.

3.1.2 *EU-8 PAH compound list, n*—a list of eight polycyclic aromatic hydrocarbons that are specified by the Commission Regulation (EU) 1272/2013 (December 6, 2013)[3] amending Annex XVII to Regulation (EC) 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as regards polycyclic aromatic hydrocarbons (2013) OJ L328/69.

3.1.2.1 *Discussion*—Regulation (EU) No. 1272/2013 sets PAH concentration limits on finished products specified by their application. The regulation does not refer directly to carbon black, though in many instances and for formulation purposes there is a need to know the quantitative, extractable PAH content present in carbon black that will become part of the finished product. In addition, no specific test method has been defined by the regulation for testing finished products or raw materials used in the finished products.

4. Summary of Test Method

4.1 A portion of carbon black is Soxhlet-extracted with toluene for 48 h. The extract is concentrated and subsequently analyzed for specific PAH compounds by gas chromatography with mass spectrometry (GC/MS). Each PAH compound is quantified individually using internal and external standards.

5. Significance and Use

5.1 This test procedure is used to determine the individual concentrations of the PAH compounds in the EU-8 list extracted from carbon black by the means of a Soxhlet extraction apparatus with toluene.

[1] This test method is under the jurisdiction of ASTM Committee D24 on Carbon Black and is the direct responsibility of Subcommittee D24.66 on Environment, Health, and Safety.

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[2] Available from U.S. Government Printing Office, Superintendent of Documents, 732 N. Capitol St., NW, Washington, DC 20401-0001, http://www.access.gpo.gov.

[3] Commission Regulation (EU) No 1272/2013 of 6 December 2013. Available at http://eur-lex.europa.eu/eli/reg/2013/1272/oj.

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