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Standard Terminology of Aromatic Hydrocarbons and Related Chemicals[1]

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1. Referenced Documents

1.1 *ASTM Standards:*[2]

D835 Specification for Refined Benzene-485[3]
D841 Specification for Nitration Grade Toluene
D843 Specification for Nitration Grade Xylene
D846 Specification for Ten-Degree Xylene[3]
D847 Test Method for Acidity of Benzene, Toluene, Xylenes, Solvent Naphthas, and Similar Industrial Aromatic Hydrocarbons
D848 Test Method for Acid Wash Color of Industrial Aromatic Hydrocarbons
D1015 Test Method for Freezing Points of High-Purity Hydrocarbons
D1016 Test Method for Purity of Hydrocarbons from Freezing Points
D1129 Terminology Relating to Water
D1298 Test Method for Density, Relative Density (Specific Gravity), or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method
D1492 Test Method for Bromine Index of Aromatic Hydrocarbons by Coulometric Titration
D1840 Test Method for Naphthalene Hydrocarbons in Aviation Turbine Fuels by Ultraviolet Spectrophotometry
D2031 Test Method for Reducing Substances in Refined Pyridine[3]
D2121 Test Methods for Polymer Content of Styrene Monomer and AMS (α–Methylstyrene)
D2147 Method of Test for Detection and Estimation of Water-Insoluble Impurities in Refined Phenol by Cloud Point Depression[3]
D2269 Test Method for Evaluation of White Mineral Oils by Ultraviolet Absorption
D2279 Method of Test for Acid Wash Color of Refined Naphthalene[3]
D2323 Specification for Refined Pyridine (1 Degree)[3]
D2359 Specification for Refined Benzene-535
D2403 Specification for Refined Phthalic Anhydride-1308[3]
D2777 Practice for Determination of Precision and Bias of Applicable Test Methods of Committee D19 on Water
D2827 Specification for Styrene Monomer
D2908 Practice for Measuring Volatile Organic Matter in Water by Aqueous-Injection Gas Chromatography
D2935 Test Method for Apparent Density of Industrial Aromatic Hydrocarbons[3]
D3980 Practice for Interlaboratory Testing of Paint and Related Materials[3]
D4053 Test Method for Benzene in Motor and Aviation Gasoline by Infrared Spectroscopy
D4734 Specification for Refined Benzene-545
E12 Terminology Relating to Density and Specific Gravity of Solids, Liquids, and Gases[3]

2. Terminology

absorbance, *n*—the logarithm to the base 10 of the reciprocal of the relative transmittance, *T*, expressed as:

$$A = \log_{10}(1/T) = -\log_{10} T \quad (1)$$

D1840, D2269, D4053; D02

accuracy, *n*—the agreement between the mean of a series of repeated measurements of a property and the accepted reference value of the property. **D3980; D01**

acidity, *n*—the number of milligrams of sodium hydroxide consumed when 100 mL of the sample are titrated under the conditions prescribed in this method. **D847; D16**

acid reaction, *n*—a characteristic of materials producing the acid-color of the indicator used under the conditions prescribed in this method. **D847; D16**

acid wash color, *n*—the color developed in the separated acid when a sample is agitated with sulfuric acid under the condition prescribed in this method. **D848; D2279; D16**

aldehydes, *n*—a broad class of organic compounds having a generic formula RCHO, and characterized by a carbonyl group.

alkaline or basic reaction, *n*—a characteristic of the materials producing the alkalicolor of the indicator used under the

[1] This terminology is under the jurisdiction of ASTM Committee D16 on Aromatic Hydrocarbons and Related Chemicals and is the direct responsibility of Subcommittee D16.05 on Editorial and Nomenclature.

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The boldface designations refer to the original source of the definition and the ASTM Technical Committee having jurisdiction. DOI: 10.1520/D4790-07.

[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.

[3] Withdrawn. The last approved version of this historical standard is referenced on www.astm.org.

conditions prescribed in this method. **D847; D16**

alpha-methylstyrene, *n*—2-phenylpropene (C_9H_{10}) mol weight 119.16; colorless liquid; subject to polymerization by heat or catalysts; freezing point, −23.21°C; boiling point, 165.38°C.

apparent density, *n*—the density calculated when the pycnometer is calibrated with water, weighed in air, and when the sample is weighed in air and no air buoyancy correction is used for either weighing, even though the density in vacuum of water is used in calculating the apparent volume of the pycnometer.

apparent density at 60°F, *n*—the weight in air of a unit volume of sample at 60°F; in this method, the weight is in pounds and the volume in U.S. liquid gallons. Average air in this method is assumed to have a density of 0.0012 g/cm^3.

DISCUSSION—This definition is not in conflict with that given in the current version of Definitions E12. **D2935; D16**

aromatic hydrocarbon, *n*—an organic chemical containing a benzene ring. Committee D16 scope includes moncyclic and polycyclic carbon-ring structures recovered or synthesized form any source, and which are intended primarily for use as solvents or raw materials for chemical synthesis..

aromatic hydrocarbon derivatives and related chemicals, *n*—Committee D16 scope includes chemicals such as: cycloalkanes such as cyclohexane which are intended primarily for use in chemical synthesis; phenols, arylthiols, and their homologs; heterocyclics such as pyridine and quinoline; and other chemicals synthesized from ring structures. Excluded from the scope are paraffinic and olefinic hydrocarbons, and those aromatic and cyclic aliphatic hydrocarbons that are intended primarily for fuels and lubricants.

at-line analysis, *n*—analytical procedure performed in a process environment using manually entered samples.

benzene, *n*—cyclohexatriene, benzol (obsolete) (C_6H_6) mol weight 78.11; clear, colorless, highly flammable liquid; characteristic odor; solidification point +5.5°C; boiling point 80.1°C.

benzene, carbon disulfide-free, *n*—benzene treated with alcoholic sodium hydroxide and used as a spectrophotometric reference standard.

benzene-535, refined, *n*—benzene with impurities limited to trace amounts by a solidification point of 5.35°C and having a total distillation range of no more than 1.0°C. Refer to Specification D2359 for complete specifications.

benzene-545, refined, *n*—benzene with impurities limited to trace amounts by a solidification point of 5.45°C and having a total distillation range of no more than 1°C. Refer to Specification D4734.

benzene-485, refined (nitration grade), *n*—benzene with impurities limited by a solidification point of 4.85°C and having a total distillation range of no more than 1.0°C. Refer to Specification D835 for complete specifications.

benzene, thiophene-free, *n*—benzene refined by special treatment and used as a reagent in ASTM standards.

bias, *n*—a persistent positive or negative deviation of a test method average value from the assumed or accepted true value. **D1129; D2777; D19**

bromine index, *n*—the number of milligrams of bromine consumed by 100 g of sample under given conditions. **D1492; D16**

carbon disulfide (CS_2), *n*—mol weight 76.14; clear, colorless, flammable, volatile liquid; boiling point, 45.6°C; freezing point, 111.6°C.

clear, *n*—free of turbidity.

cloud point of phenol, *n*—the temperature at which a separate phase forms when a homogeneous solution of phenol in water is allowed to cool at a prescribed rate from a temperature above that at which phase separation occurs. It may precisely be defined as follows: when a homogeneous solution of phenol and water is allowed to cool at a prescribed rate with stirring, the solution will show a slight cloudiness or turbidity as the cloud point is approached. On further cooling, the cloudiness will increase rapidly and the thermometer bulb, which is centrally located in the test tube, will suddenly become invisible. The temperature at which the thermometer bulb becomes invisible is taken as the cloud point. **D2147; D16**

cloudy, *n*—qualitative expression of turbidity.

confidence limits, *n*—the limits on either side of the mean value of a group of observations which will, in a stated fraction or percent of the cases include the expected value. Thus the 95 % confidence limits are the values between which the population mean will be situated in 95 out of 100 cases. **D3980; D01**

copper corrosion, *n*—a qualitative indication of reactive impurities in aromatic hydrocarbons. An iridescent, gray, or black discoloration of polished copper strip is considered cause for rejection.

corrosive substance, *n*—*in Committee D16 Standards*, material in industrial aromatic hydrocarbons that discolors or tarnishes polished copper.

cresol(s), *n*—methyl phenol, hydroxymethyl benzene (C_7H_8O) mol weight 108.13; colorless, yellowish, brownish, yellow, or pinkish liquid; phenolic odor. Three isomeric cresols exist.

cresylic acids, *n*—commercial mixtures of phenolic materials which may include phenol, cresols, xylenols, and other alkylated phenols.

cumene, *n*—(C_9H_{12}) mol weight 120.19; clear, flammable liquid; melting point, −96.0°C; boiling point, 152.4°C.

cyclohexane-995, *n*—cyclohexane with a purity of 99.5 weight % minimum determined by analysis by gas chromatography. Refer to proposed specifications for complete requirements.

degrees of freedom, *n*—the number of observations minus the number of constraints imposed upon the system. In general, only one constraint (for example, the mean value) is imposed and the total degrees of freedom are one less than the number