



Designation: ~~D 8-02~~ Designation: D8 - 11

Standard Terminology Relating to Materials for Roads and Pavements¹

This standard is issued under the fixed designation D 8; 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 standard is a compilation of terminology related to materials used in the highway industry, generally for the construction of bituminous pavements, and that are within the jurisdiction of Committee D04. Terms that are generally understood or that are adequately defined in other readily available sources are not included.

1.2 Other terminology under the jurisdiction of Committee D04 is included in two other standards. Terms relating to bridge deck and substructure protection are defined in Terminology D 3743C-125. Terms relating to sealants for joints and cracks are defined in Terminology D 5535D-3743.

1.3 When a term is used in an ASTM document for which Committee D04 is responsible, it is included herein only when judged, after review by Subcommittee D04.95, to be a term generally usable in a number of Committee D04 standards.

1.4 Definitions that are identical to those published by other ASTM committees or other standards organizations are identified with the ASTM designation (for example, Terminology C 125C-125) or with the abbreviation of the name of the organization.

1.5 A definition in this standard is a statement of the meaning of a word or word group expressed in a single sentence with additional information included in notes or discussion.

NOTE 1—The subcommittee responsible for this standard will review definitions on a five-year basis to determine if the definition is still appropriate as stated. Revisions will be made when determined necessary.

2. Referenced Documents

2.1 ASTM Standards:

C125 Terminology Relating to Concrete and Concrete Aggregates

D3743 Terminology Relating to Bridge Deck and Substructure Protection

D5535 Terminology Relating to Formed-in-Place Sealants for Joints and Cracks in Pavements³

2.2 AASHTO Standards:

MP2 Standard Specification for Superpave Volumetric Mix Design

3. Terminology

3.1 Definitions:

3.1.1 Bituminous Materials:

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BITUMINOUS MATERIALS

Relating in General to Bituminous Materials

anionic emulsion, *n*—a type of emulsion such that a particular emulsifying agent establishes a predominance of negative charges on the discontinuous phase.

asphalt, *n*—a dark brown to black cementitious material in which the predominating constituents are bitumens which occur in nature or are obtained in petroleum processing.

asphalt cement, *n*—a fluxed or unfluxed asphalt specially prepared as to quality and consistency for direct use in the manufacture

¹ This terminology is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.95 on Quality Control, Inspection and Testing Agencies.

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of bituminous pavements, and having a penetration at 25°C (77°F) of between 5 and 300, under a load of 100 g applied for 5 s.

asphaltenes, *n*—the high molecular weight hydrocarbon fraction precipitated from asphalt by a designated paraffinic naphtha solvent at a specified solvent-asphalt ratio.

DISCUSSION—The asphaltene fraction should be identified by the solvent and solvent-asphalt ratio used.

asphalt rock (rock asphalt), *n*—a naturally occurring rock formation, usually limestone or sandstone, impregnated throughout its mass with a minor amount of bitumen.

asphalt-rubber, *n*—a blend of asphalt cement, reclaimed tire rubber, and certain additives in which the rubber component is at least 15% by weight of the total blend and has reacted in the hot asphalt cement sufficiently to cause swelling of the rubber particles.

bitumen, *n*—a class of black or dark-colored (solid, semisolid, or viscous) cementitious substances, natural or manufactured, composed principally of high molecular weight hydrocarbons, of which asphalts, tars, pitches, and asphaltites are typical.

bituminous, *adj*—containing or treated with bitumen (also *bituminized*); for example: bituminous concrete, bituminized felts and fabrics, bituminous pavement.

bituminous emulsion, *n*—(1) a suspension of minute globules of bituminous material in water or in an aqueous solution, or (2) a suspension of minute globules of water or of an aqueous solution in a liquid bituminous material.

cationic emulsion, *n*—a type of emulsion such that a particular emulsifying agent establishes a predominance of positive charges on the discontinuous phase.

coal tar, *n*—a dark brown to black cementitious material produced by the destructive distillation of bituminous coal.

coke-oven tar, *n*—coal tar produced in by-product coke ovens in the manufacture of coke from bituminous coal.

cut-back asphalt, *n*—petroleum residuum (asphalt) which has been blended with petroleum distillates.

DISCUSSION—Slow-curing materials may be made directly by distillation and are often referred to as road oils.

cut-back products, *n*—petroleum or tar residuums which have been blended with distillates.

flux, *n*—a bituminous material, generally liquid, used for softening other bituminous materials.

Relating Specifically to Petroleum or Asphalts

“free-carbon” in tar, *asphalt*, *n*—the hydrocarbon fraction that is precipitated from a tar by dilution with carbon disulfide or benzene.—a dark brown to black cementitious material in which the predominating constituents are bitumens which occur in nature or are obtained in petroleum processing.

gas-house coal tar, *asphalt cement*, *n*—coal tar produced in gas-house retorts in the manufacture of illuminating gas from bituminous coal.—a fluxed or unfluxed asphalt specially prepared as to quality and consistency for direct use in the manufacture of bituminous pavements, and having a penetration at 25°C (77°F) of between 5 and 300, under a load of 100 g applied for 5 s. <https://standards.iteh.ai/catalog/standards/sist/0e248297-d01e-4cc3-8251-39343fcbd27a/astm-d8-11>

asphaltenes, *n*—the high molecular weight hydrocarbon fraction precipitated from asphalt by a designated paraffinic naphtha solvent at a specified solvent-asphalt ratio.

DISCUSSION—The asphaltene fraction should be identified by the solvent and solvent-asphalt ratio used.

asphalt rock (rock asphalt), *n*—a naturally occurring rock formation, usually limestone or sandstone, impregnated throughout its mass with a minor amount of bitumen.

asphalt-rubber, *n*—a blend of asphalt cement, reclaimed tire rubber, and certain additives in which the rubber component is at least 15 % by weight of the total blend and has reacted in the hot asphalt cement sufficiently to cause swelling of the rubber particles.

naphthene-aromatics, *n*—a mixture of naphthenic and aromatic hydrocarbons which are adsorbed from a paraffinic solvent on an adsorbent during percolation and then desorbed with an aromatic solvent such as toluene.

DISCUSSION—The naphthene-aromatics fraction should be identified by the solvent, the solvent-asphalt ratio and the absorbing medium.

native asphalt, *n*—asphalt occurring as such in nature.

oil-gas tar, *n*—tar produced by cracking oil vapors at high temperatures in the manufacture of oil gas.

pitch, *n*—black or dark-brown solid cementitious material which gradually liquefies when heated and which is obtained as residua in the partial evaporation or fractional distillation of tar.

polar-aromatics, *n*—a polar aromatic hydrocarbon fraction that is adsorbed on an adsorbing medium from a paraffinic solvent during percolation and then desorbed with a chlorinated hydrocarbon solvent such as trichloroethylene.

DISCUSSION—The polar-aromatics fraction should be identified by the solvent, the solvent-asphalt ratio and the absorbing medium.

recycling agent (RA), *reclaimed asphalt pavement (RAP)*, *n*—a blend of hydrocarbons with or without minor amounts of other materials that is used to alter or improve the properties of the aged asphalt in a recycled asphalt paving mixture.—asphalt pavement or paving mixture removed from its original location for use in recycled asphalt paving mixture.

refined tar, *recycled asphalt paving mixture, n*—tar freed from water by evaporation or distillation which is continued until the residue is of desired consistency; or a product produced by fluxing tar residuum with tar distillate.—a mixture of reclaimed asphalt pavement with the inclusion, if required, of asphalt cement, emulsified asphalt, cut-back asphalt, recycling agent, mineral aggregate, and mineral filler.

recycling agent (RA), *n*—a blend of hydrocarbons with or without minor amounts of other materials that is used to alter or improve the properties of the aged asphalt in a recycled asphalt paving mixture.

rock asphalt—see **asphalt rock**.

saturates, *n*—a mixture of paraffinic and naphthenic hydrocarbons that on percolation in a paraffinic solvent are not adsorbed on the adsorbing medium; other medium. Other compounds such as naphthenic and polar aromatics are adsorbed thus permitting the separation of the saturate fraction.

DISCUSSION—The saturates fraction should be identified by the solvent, the solvent-asphalt ratio and the absorbing medium.

Relating Specifically to Tars and Pitches

straight-run pitch, *coal tar, n*—a pitch run to the consistency desired in the initial process of distillation and without subsequent fluxing.—a dark brown to black cementitious material produced by the destructive distillation of bituminous coal.

tar, *coke-oven tar, n*—brown or black bituminous material, liquid or semisolid in consistency, in which the predominating constituents are bitumens obtained as condensates in the destructive distillation of coal, petroleum, oil-shale, wood, or other organic materials, and which yields substantial quantities of pitch when distilled.

3.1.2 Bitumen-Aggregate Mixtures and Applications:

—coal tar produced in by-product coke ovens in the manufacture of coke from bituminous coal.

crack filler, *“free-carbon” in tars, n*—bituminous material used to fill and seal cracks in existing pavements.—the hydrocarbon fraction that is precipitated from a tar by dilution with carbon disulfide or benzene.

dust binder, *gas-house coal tar, n*—a light application of bituminous material for the express purpose of laying and bonding loose dust.—coal tar produced in gas-house retorts in the manufacture of illuminating gas from bituminous coal.

fog seal, *oil-gas tars, n*—a light application of bituminous material to an existing pavement as a seal to inhibit raveling, or to seal the surface, or both; medium and slow-setting bituminous emulsions are usually used and may be diluted with water.—tars produced by cracking oil vapors at high temperatures in the manufacture of oil gas.

maintenance mix, *pitches, n*—a mixture of bituminous material and mineral aggregate applied at ambient temperature for use in patching holes, depressions, and distress areas in existing pavements.

DISCUSSION—Appropriate hand or mechanical methods are used in placing and compacting the mix. These mixes may be designed for immediate use or for use out of a stockpile at a later time without further processing.—black or dark-brown solid cementitious materials which gradually liquefy when heated and which are obtained as residua in the partial evaporation or fractional distillation of tar.

mixed-in-place (road mix), *refined tar, n*—a bituminous surface or base course produced by mixing mineral aggregate and cut-back asphalt, bituminous emulsion, or tar at the job-site by means of travel plants, motor graders, drags, or special road-mixing equipment; open or dense-graded aggregates, sand, and sandy soil may be used.—tar freed from water by evaporation or distillation which is continued until the residue is of desired consistency; or a product produced by fluxing tar residuum with tar distillate.

mulch treatment, *straight-run pitch, n*—a spray application of bituminous material used to temporarily stabilize a recently seeded area; the bituminous material can be applied to the soil or to straw or hay mulch as a tie-down, also.—a pitch run to the consistency desired in the initial process of distillation and without subsequent fluxing.

penetration macadam, *tar, n*—a pavement layer containing essentially one-size coarse aggregate, penetrated in place by a heavy application of bituminous material, followed by an application of a smaller size coarse aggregate, and compacted; multiple layers containing still smaller coarse aggregate may be used.—brown or black bituminous material, liquid or semisolid in consistency, in which the predominating constituents are bitumens obtained as condensates in the destructive distillation of coal, petroleum, oil-shale, wood, or other organic materials, and which yields substantial quantities of pitch when distilled.

Relating Specifically to Tests

normal temperature, *n*—as applied to laboratory observations of the physical characteristics of bituminous materials, 25°C (77°F).

penetration, *n*—the consistency of a bituminous material expressed as the distance in tenths of a millimetre (0.1 mm) that a standard needle penetrates vertically a sample of the material under specified conditions of loading, time, and temperature.

BITUMEN-AGGREGATE MIXTURES

Relating in General to Combinations of Bituminous Material and Aggregate that are Mixed, Spread on the Job-site, and Compacted

maintenance mix, *n*—a mixture of bituminous material and mineral aggregate applied at ambient temperature for use in patching