



Designation: ~~D8~~—~~13a~~ **D8 – 13b**

Standard Terminology Relating to Materials for Roads and Pavements¹

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1. Referenced Documents

1.1 *ASTM Standards*:²

[D4124 Test Method for Separation of Asphalt into Four Fractions](#)

[D4552 Practice for Classifying Hot-Mix Recycling Agents](#)

[D5505 Practice for Classifying Emulsified Recycling Agents](#)

2. Terminology

aggregate, *n*—a granular material of mineral composition such as sand, gravel, shell, slag, or crushed stone, used with a cementing medium to form mortars or concrete, or alone as in base courses, railroad ballasts, etc.

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 cement-like residuum obtained from the distillation of suitable crude oils.

¹ This terminology is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.91 on Terminology.

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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.

DISCUSSION—

The distillation processes may involve one or more of the following: atmospheric distillation, vacuum distillation, steam distillation. Further processing of distillation residuum may be needed to yield a material whose physical properties are suitable for commercial applications. These additional processes can involve air oxidation, solvent stripping or blending of residua of different stiffness characteristics. In Europe asphalt is called *bitumen*.

asphalt binder, *n*—asphalt which may or may not contain an asphalt modifier (see *asphalt modifier*).

DISCUSSION—

this term is often used in the Performance Graded Binder system.

asphalt cement, *n*—See *asphalt*

asphalt concrete, *n*—See *asphalt mix*.

asphalt mix (asphalt mixture), *n*—a mixture of asphalt binder, emulsified asphalt, or cutback asphalt and aggregates. The mixture may also include other materials.

asphalt pavement, *n*—a structure consisting of one or more prepared layers of asphalt mix atop one or more supporting layers of unbound, modified, or treated subgrade, subbase or base materials..

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.

asphaltenes, *n*—insoluble materials that are precipitated by use of selected solvents, such as n-heptane. ~~selected solvents, such as n-heptane.~~

DISCUSSION—

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

bank gravel, *n*—gravel found in natural deposits, usually more or less intermixed with fine material, such as sand or clay, or combinations thereof; gravelly clay, gravelly sand, clayey gravel, and sandy gravel indicate the varying proportions of the materials in the mixture.

bitumen, *n*—dark brown to black cement-like residuum obtained from the distillation of suitable crude oils.

DISCUSSION—

The distillation processes may involve one or more of the following: atmospheric distillation, vacuum distillation, steam distillation. Further processing of distillation residuum may be needed to yield a material whose physical properties are suitable for commercial applications. These additional processes can involve air oxidation, solvent stripping or blending of residua of different stiffness characteristics. In North America bitumen is called asphalt.

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

DISCUSSION—

Examples: 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, (2) a suspension of minute globules of water or of an aqueous solution in a liquid bituminous material.

blast-furnace slag, *n*—the nonmetallic product, consisting essentially of silicates and alumino-silicates of lime and of other bases, that is developed simultaneously with iron in a blast furnace.

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

clinker, *n*—generally a fused or partly fused by-product of the combustion of coal, but also including lava and portland-cement clinker, and partly vitrified slag and brick.

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

coarse aggregate, *n*—(1) aggregate predominantly retained on the 4.75-mm (No. 4) sieve; or (2) that portion of an aggregate retained on the 4.75-mm (No. 4) sieve.

DISCUSSION—

The definitions are alternatives to be applied under differing circumstances. Definition (1) is applied to an entire aggregate either in a natural condition or after processing. Definition (2) is applied to a portion of an aggregate. Requirements for properties and grading should be stated in the specification.

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

crack filler, *n*—bituminous material used to fill and seal cracks in existing pavements.

crusher-run, *n*—the total unscreened product of a stone crusher.

cutback 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.

dense-graded aggregate, *n*—an aggregate that has a particle size distribution such that when it is compacted, the resulting voids between the aggregate particles, expressed as a percentage of the total space occupied by the material, are relatively small.

dust binder, *n*—a light application of bituminous material for the express purpose of laying and bonding loose dust.

fine aggregate, *n*—(1) aggregate passing the $\frac{3}{8}$ -in. (9.5-mm) sieve and almost entirely passing the 4.75-mm (No. 4) sieve and predominantly retained on the 75- μ m (No. 200) sieve; or (2) that portion of an aggregate passing the 4.75-mm (No. 4) sieve and retained on the 75- μ m (No. 200) sieve.

DISCUSSION—

The definitions are alternatives to be applied under differing circumstances. Definition (1) is applied to an entire aggregate either in a natural condition or after processing. Definition (2) is applied to a portion of an aggregate. Requirements for properties and grading should be stated in the specifications.

fog seal, *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.

fractured face, *n*—an angular, rough, or broken surface of an aggregate particle created by crushing, by other artificial means, or by nature.

“free-carbon” in tars, *n*—the hydrocarbon fraction that is precipitated from a tar by dilution with carbon disulfide or benzene.

gas-house coal tar, *n*—coal tar produced in gas-house retorts in the manufacture of illuminating gas from bituminous coal.

macadam, dry-bound and water bound, *n*—a pavement layer containing essentially one-size coarse aggregate choked in place with an application of screenings or sand; water is applied to the choke material for water-bound macadam. Multiple layers must be used.

maintenance mix, *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 using appropriate hand or mechanical methods 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.

maltenes, *n*—a red-brown to black heavy oil material remaining after precipitation of asphaltenes from asphalt binder with selected solvents.

maximum size (of aggregate), *n*—*in specifications for, or descriptions of aggregate*, the smallest sieve opening through which the entire amount of aggregate is required to pass.

mesh, *n*—the square opening of a sieve.

mixed-in-place (road mix), *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.

mulch treatment, *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.

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

nominal maximum size (of aggregate), *n*—*in specifications for, or descriptions of aggregate*, the smallest sieve opening through which the entire amount of the aggregate is permitted to pass.

DISCUSSION—

Specifications on aggregates usually stipulate a sieve opening through which all of the aggregate may, but need not, pass so that a stated maximum proportion of the aggregate may be retained on that sieve. A sieve opening so designated is the *nominal maximum size*.

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

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

open-graded aggregate, *n*—an aggregate that has a particle size distribution such that when it is compacted, the voids between the aggregate particles, expressed as a percentage of the total space occupied by the material, remain relatively large.

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.

penetration macadam, *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.

pitches, *n*—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.

plant mix, cold-laid, *n*—a mixture of cut-back asphalt, bituminous emulsion, or tar and mineral aggregate prepared in a central bituminous mixing plant and spread and compacted at the job-site when the mixture is at or near ambient temperature.