~~Designation:D8–11~~ Designation: D8 – 12

Standard Terminology Relating to Materials for Roads and Pavements[1]

This standard is issued under the fixed designation D8; 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. ~~BITUMINOUS MATERIALS *Relating in General to Bituminous Materials*~~

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 subclass of bitumen which occurs in nature or is obtained in petroleum processing.

asphalt binder, *n*—an asphalt that is produced from petroleum residue either with or without the addition of non-particulate, non-fibrous modifiers.

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 modifier, *n*—Organic or inorganic materials added to an asphalt binder to alter the properties or behavior of the binder.

DISCUSSION—Such materials include polymers, other chemical modifiers, rubber, and hydrated lime. With the exception of rubber, asphalt modifiers have a particle size of 250 µm or smaller.

asphalt pavement,, *n*—a structure consisting of one or more layers of asphalt mix resting on a subgrade.

asphalt rock (rock asphalt), *n*—rock froma naturally occurring formation, usually limestone or sandstone, impregnated throughout its mass with asphalt.

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.**

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*—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~~pitches are ~~typical.~~ subclasses.

bituminous, *adj*—containing or treated with bitumen (also *bituminized*). 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.

~~cut-back asphalt,~~ *clinker, 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.~~ —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.

[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.

Current edition approved ~~June 15, 2011.~~July 1, 2012. Published ~~July 2011.~~September 2012. Originally published as D 8 – 12. Last previous edition D 8 – 94, which was withdrawn in 2007 and reinstated in June, 2011. DOI: 10.1520/D0008–1~~1~~2.

cut-back products, *coal tar, n*—petroleum or tar residuums which have been blended with distillates. —a dark brown to black cementitious material produced by the destructive distillation of bituminous coal.

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

Relating Specifically to Petroleum or Asphalts

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 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. —(*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 asphaltene fraction should be identified by the solvent and solvent-asphalt ratio used. —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.

asphalt rock (rock asphalt), *coke-oven tar, n*—a naturally occurring rock formation, usually limestone or sandstone, impregnated throughout its mass with a minor amount of bitumen. —coal tar produced in by-product coke ovens in the manufacture of coke from bituminous coal.

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

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

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

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. —petroleum residuum (asphalt) which has been blended with petroleum distillates.

DISCUSSION—The polar-aromatics fraction should be identified by the solvent, the solvent-asphalt ratio and the absorbing medium. —Slow-curing materials may be made directly by distillation and are often referred to as road oils.

reclaimed asphalt pavement (RAP), *cut-back products, n*—asphalt pavement or paving mixture removed from its original location for use in recycled asphalt paving mixture. —petroleum or tar residuums which have been blended with distillates.

recycled asphalt paving mixture, *dense-graded aggregate, n*—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. —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.

recycling agent (RA), *dust binder, 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.** —a light application of bituminous material for the express purpose of laying and bonding loose dust.

saturates, *fine aggregate, n*—a mixture of paraffinic and naphthenic hydrocarbons that on percolation in a paraffinic solvent are not adsorbed on the adsorbing medium. Other compounds such as naphthenic and polar aromatics are adsorbed thus permitting the separation of the saturate fraction. —(*1*) aggregate passing the ⅜-in. (9.5-mm) sieve and almost entirely passing the 4.75-mm (No. 4) sieve and predominantly retained on the 75-µm (No. 200) sieve: or (*2*) that portion of an aggregate passing the 4.75-mm (No. 4) sieve and retained on the 75-µm (No. 200) sieve.

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

Relating Specifically to Tars and Pitches **—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.**

coal tar, *flux, n*—a dark brown to black cementitious material produced by the destructive distillation of bituminous coal. —a bituminous material, generally liquid, used for softening other bituminous materials.

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

~~**oil-gas tars,**~~ *macadam, dry-bound and water bound, n*~~—tars produced by cracking oil vapors at high temperatures in the manufacture of oil gas.~~ —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.

~~**pitches,**~~ *maintenance mix, 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.~~ —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.

~~**refined tar,**~~ *maltenes, 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 red-brown to black heavy oil material remaining after precipitation of asphaltenes from asphalt binder with selected solvents.

~~**straight-run pitch,**~~ *maximum size (of aggregate), n*~~—a pitch run to the consistency desired in the initial process of distillation and without subsequent fluxing.~~ —*in specifications for, or descriptions of aggregate*, the smallest sieve opening through which the entire amount of aggregate is required to pass.

~~**tar,**~~ *mesh, 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.~~

~~*Relating Specifically to Tests*~~ **—the square opening of a sieve.**

~~**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 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.~~

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.

~~**plant mix, cold-laid,**~~ *modified asphalt, 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.~~ —asphalt binder combined with one or more asphalt modifiers.

~~**plant mix, hot-laid bituminous emulsion mixtures,**~~ *mulch treatment, n*~~—a mixture of emulsion and heated mineral aggregate usually prepared in a conventional asphalt plant or drum mixer and spread and compacted at the job site at a temperature above ambient.~~ —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.

~~**slurry seal,**~~ *naphthene-aromatics, n*~~—an application of a fluid mixture of bituminous emulsion, fine aggregate, mineral filler, and water to an existing pavement. Single or multiple applications may be used.~~ —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.

~~**tar concrete, cold-laid,**~~ *native asphalt, n*~~—a plant mix containing a medium-viscosity grade of tar and a graded mineral aggregate, designed to be laid either shortly after mixing or when the mixture is at or near ambient temperature.~~ —asphalt occurring as such in nature.

~~**tar concrete, hot laid,**~~ *nominal maximum size (of aggregate), n*~~—a plant mix containing a high-viscosity grade of tar and a densely graded mineral aggregate designed to be laid at or near the elevated temperature of mixing.~~