



Designation: D5505 – 14

## Standard Practice for Classifying Emulsified Recycling Agents<sup>1</sup>

This standard is issued under the fixed designation D5505; 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 reappraisal. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

### 1. Scope

1.1 This practice identifies emulsified petroleum products that may be used as recycling agents in recycled mixes. These materials are classified by viscosity or by low temperature penetration after aging.

1.2 This practice addresses emulsified materials designed specifically for use in recycling. The use of emulsified materials for recycling shall not be limited to this practice. For instance, the emulsified asphalts specified in Specifications [D977](#) and [D2397](#) may be used.

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.4 *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 consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

### 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

- [D5](#) Test Method for Penetration of Bituminous Materials
- [D140](#) Practice for Sampling Bituminous Materials
- [D977](#) Specification for Emulsified Asphalt
- [D1754](#) Test Method for Effects of Heat and Air on Asphaltic Materials (Thin-Film Oven Test)
- [D2042](#) Test Method for Solubility of Asphalt Materials in Trichloroethylene
- [D2170](#) Test Method for Kinematic Viscosity of Asphalts (Bitumens)
- [D2397](#) Specification for Cationic Emulsified Asphalt
- [D2872](#) Test Method for Effect of Heat and Air on a Moving Film of Asphalt (Rolling Thin-Film Oven Test)

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee [D04](#) on Road and Paving Materials and is the direct responsibility of Subcommittee [D04.41](#) on Emulsified Asphalt Specifications.

Current edition approved June 1, 2014. Published July 2014. Originally approved in 1994. Last previous edition approved in 2006 as D5505 – 06. DOI: 10.1520/D5505-14.

<sup>2</sup> 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.

- [D4124](#) Test Method for Separation of Asphalt into Four Fractions
- [D6930](#) Test Method for Settlement and Storage Stability of Emulsified Asphalts
- [D6933](#) Test Method for Oversized Particles in Emulsified Asphalts (Sieve Test)
- [D6937](#) Test Method for Determining Density of Emulsified Asphalt
- [D6997](#) Test Method for Distillation of Emulsified Asphalt
- [D7402](#) Practice for Identifying Cationic Emulsified Asphalts
- [D7496](#) Test Method for Viscosity of Emulsified Asphalt by Saybolt Furol Viscometer
- [D7553](#) Test Method for Solubility of Asphalt Materials in N-Propyl Bromide

### 3. Significance and Use

3.1 Recycling of deteriorated asphalt pavements is being used as a routine method of maintenance and rehabilitation. Utilization of existing materials as the major component of this procedure may yield benefits in quality, economy, and preservation of natural resources. Recycling takes many forms; hot, cold, in-situ, central plant and surface. This practice may be used for various recycling methods.

3.2 This practice describes emulsified recycling (ER) agents as belonging to three groups; ER-1, ER-2, and ER-3 as shown in [Table 1](#). The range of recycling methods demands several emulsified recycling agents. The groups should provide adequate freedom of selection for most recycling methods.

3.2.1 ER-1 is a material whose main function is to rejuvenate aged asphalt. The material is a petroleum derivative, and highly compatible with asphalts. It is classified by viscosity.

3.2.2 ER-2 and ER-3 are materials that combine rejuvenators and asphalt components in one emulsified asphalt. These soft residues are classified by low temperature penetration after aging. They are typically used in recycling where there is an increased demand for asphalt as when new aggregates are added, or where immediate cohesiveness is desired.

3.3 The choice of ER will be determined by the properties of the asphalt binder in the aged pavement, the methods of recycling planned, the amount, if any, of new aggregates, and other design needs.