1. Scope

1.1. This method covers the blending and specimen preparation of hot mix asphalt (HMA) mortars to predetermine the physical characteristics of mortars used in HMA.

2. Referenced Documents

2.1. AASHTO Standards

2.1.1. M231, Weighing Devices used in the Testing of Materials

2.1.2. PP1, Accelerated Aging of Asphalt Binder Using a Pressurized Aging Vessel (PAV)

2.1.3. TP1, Determining the Flexural Creep Stiffness of an Asphalt Binder Using the Bending Beam Rheometer (BBR)

2.1.4. TP5, Determining the Rheological Properties of an Asphalt Binder Using the Dynamic Shear Rheometer (DSR)

2.1.5. T240, Effect of Heat and Air on a Moving Film of Asphalt (RTFO)

2.2. ASTM Standards

2.2.1. D4402, Viscosity Determinations of Unfilled Asphalts Using the Brookfield Thermosel Apparatus

2.2.2. D4753, Evaluating, Selecting, and Specifying Balances and Scales for use in Soil and Rock Testing

2.2.3. E11, Wire-Cloth Sieves for Testing Purposes

2.3. ALDOT PROCEDURES

2.3.1. ALDOT-395, Stone Matrix Asphalt Mix Design

3. Apparatus for Preparation

3.1. Balance, 2-kg capacity, sensitive to 0.1 g. The balance shall conform to the requirement of ASTM D4753, class GP2 or AASHTO M231, class G2.

3.2. Oven, capable of maintaining the needed temperature within ± 10°F (5°C).

3.3. Hot plate, at least 700-W capacity with adjustable temperature control.

3.4. Sample containers, capable of holding at least 100 g of filler and 200 g of liquid asphalt binder. A 6 oz. (0.18 L) seamless ointment tin is recommended.
3.5. Mixing tools, wooden tongue depressors, spatulas, and spoons.

3.6. Insulated gloves, for handling hot samples and equipment.

4. Procedure

4.1. Dry respective aggregate fractions containing material passing the No. 200 (0.075 mm) sieve (as per ASTM E11) to constant weight (mass) at 230 ± 10°F (110 ± 5°C). Dry sieve these aggregates and collect the dust from each aggregate. Blend the fillers to meet the percent by volume on the job-mix-formula. An example of how to blend by volume can be found in ALDOT-395.

4.2. Place a quart can of pre-aged liquid asphalt binder into an oven set at 330 ± 10°F (165 ± 5°C) (see paragraph 5.1).

4.3. Weigh 100 ± 0.1 g of minus No. 200 (0.075 mm) blended filler into the 6 oz. (0.18 L) seamless ointment tin and place into a 350 ± 10°F (175 ± 5°C) oven. The material should remain in the oven for at least 30 minutes.

4.4. Weigh into the filler the proper amount of liquid asphalt binder to the nearest 0.1 g.

4.5. Place the tin on the hot plate and hand mix with a spatula. Slowly add the proper amount of fiber (weighed to the nearest 0.1 g) and continue mixing until the mortar is homogeneous.

4.6. When asphalt-fiber pellets are used, either use loose fiber of the same type to create the mortar or use a high-shear mixer. Asphalt-pellet fibers will not blend into the filler under low-shear mixing conditions.

5. Testing of Mortars

5.1. When performing Superpave Liquid Asphalt Binder testing of the mortar, the liquid asphalt binder should be aged following AASHTO T240 and/or PP1 prior to blending with fillers and fibers.

5.2. Follow ASTM D4402; except that readings should be taken as soon as the temperature stabilizes because the fillers will sink to the bottom over time.

5.3. Follow AASHTO TP5; except use a higher preheat temperature of 136°F (58°C). This is to insure that the specimen will adhere strongly to both plates.

5.4. Follow AASHTO TP1; except, using aluminum molds:

5.4.1. Place the mold over the corner of the warm hot plate so that the mold is on the hot plate and the rubber O-rings are not.

5.4.2. Using a wooden tongue depressor, gently tamp the mortar into the mold. A light coating of release agent (glycerin and talc) will assist in this procedure.

5.4.3. Repeat step 5.4.2 until the mold is full of mortar.
5.4.4. Continue according to TP1.

6. **Reporting**