

Appendix F

Module 2, Lesson 1

Equipment List for AMPT Specimen Fabrication

Aggregate and Binder Processing

- Appropriate safety equipment:
 - Ear protection during sieving
 - Dust mask
 - Gloves for handling hot pans of aggregate
 - Hand carts for moving heavy pans of aggregate
 - Assistance for lifting heavy pans of aggregate
- Square shovels and scoops for sampling aggregate
- Large pans for drying aggregate
- Large capacity oven capable of maintaining $230 \pm 9^\circ\text{F}$ ($110 \pm 5^\circ\text{C}$) for drying aggregates
- Large sieve shaker for separating coarse aggregate into individual sizes
The following sieves are needed for this shaker:
 - 1.5 in (37.5 mm)
 - 1.0 in (25 mm)
 - 0.75 in (19 mm)
 - 0.50 in (12.5 mm)
 - #4 (4.75 mm)
 - #8 (2.36 mm)
- Appropriate containers for storing dried and sieved aggregates
- 3/8 in hand held electric drill with helix impellers for mixing 5 gallon and 1 gallon containers of binder
- Oven capable of maintaining $275 \pm 5^\circ\text{F}$ ($135 \pm 3^\circ\text{C}$) for heating 5 gallon and 1 gallon containers of binder
- Quart cans for breaking down and storing binder for specimen fabrication

Batching

- Appropriate safety equipment:
 - Dust mask
- Minimum 5kg balance meeting the requirements of AASHTO M231, Class G5 for batching aggregate
- Square scoop for transferring aggregate to the weighing pan
- Appropriate pan for weighing sized aggregate
- Appropriate containers for heating nominal 18 lb (8 kg) batches of aggregate

Gyratory Specimen Preparation

- Appropriate safety equipment:
 - Safety glasses
 - Gloves for handling hot materials
- Gyratory compactor, molds, and accessories meeting the requirements of AASHTO T 312 and capable of fabricating specimens that are 6.7 to 7.1 in (170 to 180 mm) tall
- Oven for heating aggregates to approximately 17 °F (30 °C) above the required mixing temperature. The oven should have temperature control of $\pm 5^{\circ}\text{F}$ (3°C) over the range of 215 to 375 °F (100 to 390 °C)
- Oven for heating binder to approximately 10 °F (5 °C) above the required mixing temperature. The oven should have temperature control of $\pm 5^{\circ}\text{F}$ (3°C) over the range of 215 to 375 °F (100 to 390 °C)
- Forced draft oven meeting the requirements of AASHTO R30 for short-term conditioning at 275 °F (135 °C) for performance property measurements
- Minimum 10 kg balance meeting the requirements of AASHTO M231, Class G5 for weighing aggregates and adding binder
- Mechanical mixer capable of mixing 18 lb (8 kg) batches of asphalt concrete.
- Dial or digital thermometer for measuring the temperature of aggregates, binder, and asphalt concrete over the temperature range of 215 to 375 °F (100 to 390 °C) to an accuracy of $\pm 5^{\circ}\text{F}$ (3°C)
- Flat bottom pans of sufficient size for conditioning asphalt concrete in accordance with AASHTO R30
- Equipment meeting the requirements of AASHTO T166 or AASHTO T331 for measuring the bulk specific gravity of the gyratory specimens
Use AASHTO T331 when specimens absorb more than 2 percent water when tested in accordance with AASHTO T166.
- Equipment meeting the requirements of AASHTO T209 for measuring the maximum specific gravity of asphalt concrete mixtures
- Fan for cooling gyratory specimens
- Appropriate hand tools:
 - Small medium spatula for stirring heated quart cans of binder
 - Large spoon or small trowel for scraping the mixer
 - Large spatula or small trowel for stirring asphalt concrete during short-term conditioning

Test Specimen Preparation

- Appropriate safety equipment:
 - Safety glasses
 - Gloves
 - Ear protection
- Core drill
An air or water cooled diamond bit core drill capable of cutting nominal 100 mm diameter cores meeting the dimensional requirements of in AASHTO PP60

The core drill shall be equipped with a fixture for holding nominal 150 mm diameter gyratory specimens.

- **Masonry Saw**

An air or water cooled diamond bladed masonry saw capable of cutting specimens to a nominal length of 150 mm and meeting the tolerances for end perpendicularity and end flatness given in AASHTO PP60

The masonry saw shall be equipped with a fixture for holding nominal 100 mm diameter specimens.

Specimen Assessment

- Equipment meeting the requirements of AASHTO T166 or AASHTO T331 for measuring the bulk specific gravity of the gyratory specimens
Use AASHTO T331 when specimens absorb more than 2 percent water when tested in accordance with AASHTO T166.
- Digital caliper with 50 mm jaw and 200 mm length for measuring the diameter and height of test specimens
- Precision square with 8 in beam and 12 in blade for checking the end flatness and end perpendicularity of test specimens
McMaster Carr Pro-Value Square, Catalog Number 2278A21
(<http://www.mcmaster.com/#2278a21/=859bss>) or equivalent
- 0.039 in (1 mm) diameter Carbon Steel Wire for checking the end perpendicularity of test specimens
McMaster Carr Catalog Number 8907K42
(<http://www.mcmaster.com/#8907k42/=859ao7>) or equivalent
- 0.020 in (0.05 mm) diameter Carbon Steel Wire for checking the end flatness of test specimens
McMaster Carr Catalog Number 8907K21
(<http://www.mcmaster.com/#8907k21/=859b98>)