

METHOD OF SAMPLING AND TESTING
MT 332-17
GYRATORY COMPACTION OF BITUMINOUS MIXTURES
(Modified AASHTO T 312)

MT 332 is identical to AASHTO T 312 except for the following additions:

- Section 11 – Include the following calculations.

% Air Voids (V_a)

$$V_a = 100 \times \left(\frac{G_{mm} - G_{mb}}{G_{mm}} \right)$$

Where:

G_{mm} = Maximum specific gravity of paving mixture (Rice)

G_{mb} = Bulk specific gravity of compacted mixture

Record and round to the nearest 0.1%

Voids in the Mineral Aggregate (VMA)

$$VMA = 100 - \left(\frac{G_{mb}(100 - P_s)}{G_{sb}} \right)$$

Where:

G_{mb} = Bulk specific gravity of compacted mixture

P_s = Aggregate content, percent by total mass of mixture

G_{sb} = Bulk specific gravity of aggregate

Record and round to the nearest 0.1%

Voids Filled with Asphalt (VFA)

$$VFA = 100 \times \left(\frac{VMA - V_a}{VMA} \right)$$

Record and round to the nearest 0.1%

Dust/Asphalt Ratio

$$DA = \left(\frac{P_{200} - 1}{P_b} \right)$$

Where:

DA = Dust to Asphalt Ratio,

P_{200} = Aggregate content passing the 0.075mm sieve, the percent by mass of aggregate ([MT 320](#))

P_b = Asphalt Content, percent by total mass of mixture ([MT 319](#))

Record and round to the nearest 0.1%

Note – The Dust/Asphalt ratio is used during mix design and field production.

Dust Proportion

$$DP = \left(\frac{P_{200} - 1}{P_{be}} \right)$$

Where:

DP = Dust Proportion,

P₂₀₀ = Aggregate content passing the 0.075mm sieve, the percent by mass of aggregate
(MT 320)

P_{be} = Effective asphalt content, percent by total mass of mixture

Note – The Dust Proportion is used during mix design.

Effective Asphalt Content

$$P_{be} = - (P_s \times G_b) \times \left(\frac{G_{se} - G_{sb}}{G_{se} \times G_{sb}} \right) + P_b$$

Where:

P_{be} = Effective asphalt content, percent by total mass of mixture

P_s = Aggregate content, percent by total mass of mixture

G_b = Specific gravity of asphalt

G_{se} = Effective specific gravity of aggregate

G_{sb} = Bulk specific gravity of aggregate

P_b = Asphalt Content, percent by total mass of mixture

Record and round to the nearest 0.1%.