

OHD L-64

ODOT Standard method for AASHTO Precision Statements.

1. SCOPE

- 1.1 This method covers the procedures for AASHTO Precision / Bias Statements.

2. REFERENCED DOCUMENTS

2.1. AASHTO Standards

- R 47-19, Reducing Samples of Hot Mix Asphalt (HMA) to Testing Size
- R 76-16, Reducing Samples of Aggregate to Testing Size
- R 90-18, Sampling Aggregate Products
- T 11-05 (2018), Materials Finer Than 75- μm (No. 200) Sieve in Mineral Aggregates by Washing
- T 19M-T 19-14, Standard Method of Test for Bulk Density (“Unit Weight”) and Voids in Aggregate
- T 21M-T 21, Organic Impurities in Fine Aggregates for Concrete
- T 27-14 (2018), Sieve Analysis of Fine and Coarse Aggregates
- T 30-19, Standard Method of Test for Mechanical Analysis of Extracted Aggregate
- T 84-13 (2017), Specific Gravity and Absorption of Fine Aggregate
- T 85-14 (2018), Specific Gravity and Absorption of Coarse Aggregate
- T 96-02 (2019), Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
- T 112-00 (2017), Clay Lumps and Friable Particles in Aggregate
- T 164-14(2018), Quantitative Extraction of Asphalt Binder for Hot Mix Asphalt (HMA)
- T 166-16, Bulk Specific Gravity (Gmb) of Compacted Asphalt Mixtures Using Saturated Surface-Dry Specimens
- T 176-17, Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test
- T 209-19, Theoretical Maximum Specific Gravity (Gmm) and Density of Asphalt Mixtures
- T 210-15 (2019), Aggregate Durability Index
- T 255-00 (2017), Total Evaporable Moisture Content of Aggregate by Drying
- T 269-14(2018), Percent Air Voids in Compacted Dense and Open Asphalt Mixtures

- T 283-14, Resistance of Compacted Hot Mix Asphalt (HMA) to Moisture-Induced Damage
- T 304-17, Uncompacted Void Content of Fine Aggregate
- T 308-18, Determining the Asphalt Binder Content of Hot Mix Asphalt (HMA) by the Ignition Method
- T 312-19, Preparing and Determining the Density of Asphalt Mixture Specimens by Means of the Superpave Gyrotory Compactor
- T 324-17, Hamburg Wheel-Track Testing of compacted Hot-Mix Asphalt (HMA)
- T 327-12 (2016), Resistance of Coarse Aggregate to Degradation by Abrasion in the Micro-Deval Apparatus
- T 329-15 (2019), Moisture Content of Asphalt Mixtures by Oven Method
- T 331-13 (2017), Bulk Specific Gravity (Gmb) and Density of Compacted Asphalt Mixtures Using Automatic Vacuum Sealing Method

3. Procedure

- 3.1. Use the appropriate Precision / Bias Statement tables below to validate test results.
- 3.2. Use the example in Section 5 for Guidance

4. Tables

Table 4.1.1: T-11 Materials Finer Than 75- μm (No. 200) Sieve in Mineral Aggregates by Washing		
Coarse Aggregate		
Single Operator		0.28
Multiple Laboratory		0.62
Fine Aggregate		
Single Operator		0.43
Multiple Laboratory		0.82

Table 4.1.2: T-19 Standard Method of Test for Bulk Density ("Unit Weight") and Voids in Aggregate		
Coarse Aggregate		
Single Operator		2.5 lb/ft ³
Multiple Laboratory		5.3 lb/ft ³
Fine Aggregate		
Single Operator		2.5 lb/ft ³
Multiple Laboratory		7.8 lb/ft ³

Table 4.1.3: T-27 Sieve Analysis of Fine and Coarse Aggregates			
Coarse Aggregate			
Single Operator	100	≥95	0.9
	<95	≥85	2.3
	<85	≥80	3.8
	<80	≥60	6.4
	<60	≥20	3.7
	<20	≥15	2.7
	<15	≥10	2.8
	<10	≥5	2.1
	<5	≥2	1.5
	<2	≥0	0.8
Multiple Laboratory	100	≥95	1.0
	<95	≥85	3.9
	<85	≥80	5.4
	<80	≥60	8.0
	<60	≥20	5.6
	<20	≥15	4.5
	<15	≥10	4.2
	<10	≥5	3.4
	<5	≥2	3.0
	<2	≥0	1.3
Fine Aggregate			
Single Operator	<100	≥95	0.7
	<95	≥60	1.6
	<60	≥20	2.4
	<20	≥15	1.5
	<15	≥10	1.0
	<10	≥2	1.1
	<2	≥0	0.4
Multiple Laboratory	<100	≥95	0.6
	<95	≥60	2.2
	<60	≥20	4.0
	<20	≥15	3.1
	<15	≥10	2.1
	<10	≥2	1.8
	<2	≥0	0.9

Table 4.1.4: T-30 Standard Method of Test for Mechanical Analysis of Extracted Aggregate			
Extracted Aggregate			
Single Operator	100	≥95	1.4
	<95	≥40	3.0
	<40	≥25	1.8
	<25	≥10	1.3
	<10	≥5	0.8
	<5	≥2	0.6
	<2	≥0	0.5
Multiple Laboratory	100	≥95	1.6
	<95	≥40	3.3
	<40	≥25	2.4
	<25	≥10	2.3
	<10	≥5	1.6
	<5	≥2	1.2
	<2	≥0	0.9

Table 4.1.5: T-84 Specific Gravity and Absorption of Fine Aggregate	
Single Operator	
Bulk Gravity, dry	0.032
Bulk Gravity, SSD	0.027
Apparent Gravity	0.027
Absorption, Percent	0.31
Multiple Laboratory	
Bulk Gravity, dry	0.066
Bulk Gravity, SSD	0.056
Apparent Gravity	0.056
Absorption, Percent	0.66

Table 4.1.6: T-85 Specific Gravity and Absorption of Coarse Aggregate	
Single Operator	
Bulk Gravity, dry	0.025
Bulk Gravity, SSD	0.020
Apparent Gravity	0.020
Absorption, Percent	0.25
Multiple Laboratory	
Bulk Gravity, dry	0.038
Bulk Gravity, SSD	0.032
Apparent Gravity	0.032
Absorption, Percent	0.41

Table 4.1.7: T-112 Clay Lumps and Friable Particles in Aggregate
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Multiple Laboratory	1.7
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Table 4.1.8: T-164 Quantitative Extraction of Asphalt Binder for Hot Mix Asphalt (HMA)	
Single Operator	0.52
Multiple Laboratory	0.81

Table 4.1.9: T-166 Bulk Specific Gravity (Gmb) of Compacted Asphalt Mixtures Using Saturated Surface-Dry Specimens	
Single Operator	0.006
Multiple Laboratory	0.017

Table 4.1.10: T-209 Theoretical Maximum Specific Gravity (Gmm) and Density of Asphalt Mixtures	
Method A, Mechanical Shaking	
Single Operator	0.014
Multiple Laboratory	0.024
Method B, Hand Shaking	
Single Operator	0.018
Multiple Laboratory	0.029

Table 4.1.11: T-210 Aggregate Durability Index		
Coarse Aggregate		
Single Operator	60	10.1
	65	8.7
	70	7.2
	75	5.8
	80	4.3
	85	2.9
Multiple Laboratory	60	12.3
	65	10.5
	70	8.8
	75	7.0
	80	5.2
	85	3.5
Fine Aggregate		
Single Operator	50	6.8
	55	6.3
	60	5.9
	65	5.4
	70	5.0
	75	4.5

Multiple Laboratory	50	14.4
	55	13.5
	60	12.5
	65	11.6
	70	10.6
	75	9.7

Table 4.1.12: T-255		
Single Operator		0.79
Multiple Laboratory		0.79

Table 4.1.13: T-269 Total Evaporable Moisture Content of Aggregate by Drying		
Single Operator		
T166/209, Method A		0.59
T166/209, Method B		0.74
T275/209, Method A		0.96
T275/209, Method B		1.05
T331/209, Method A		1.50
T331/209, Method B		1.56
Multiple Laboratory		
T166/209, Method A		1.13
T166/209, Method B		1.30
T275/209, Method A		-
T275/209, Method B		-
T331/209, Method A		1.75
T331/209, Method B		1.87

Table 4.1.14: T-304 Uncompacted Void Content of Fine Aggregate		
Single Operator		0.37
Multiple Laboratory		0.93

Table 4.1.15: T-308 Determining the Asphalt Binder Content of Hot Mix Asphalt (HMA) by the Ignition Method		
Single Operator		0.196
Multiple Laboratory		0.330

Table 4.1.16: T-312 Preparing and Determining the Density of Asphalt Mixture Specimens by Means of the Superpave Gyratory Compactor		
Single Operator		
12.5mm NMA		0.9
19.0mm NMA		1.4
Multiple Laboratory		

12.5mm NMA	1.7
19.0mm NMA	1.7

Table 4.1.17: T-331 Bulk Specific Gravity (Gmb) and Density of Compacted Asphalt Mixtures Using Automatic Vacuum Sealing Method	
Single Operator	0.035
Multiple Laboratory	0.038

5. Examples

Example #1: T 308 Standard Method of Test for Determining the Asphalt Binder Content of Hot Mix Asphalt (HMA) by the Ignition Method

JMF	5.60
ODOT Results	5.10
Contractor Results	5.33

'Acceptable Range of Two Test Results, Multi-laboratory precision' 0.330
(From AASHTO T 308 Precision Statement)

Range between ODOT and Contractor results, $5.33 - 5.10 = 0.23$. These results are acceptable and therefore don't qualify for referee testing.

NOTE: Department's results are out of specification and are subject to Pay Factor Deductions.

Example #2: T 166 Standard Method of Test for Bulk Specific Gravity (Gmb) of Compacted Hot Mix Asphalt (HMA) Using Saturated Surface-Dry Specimen.

Mix Design	2.351
ODOT Results	2.355
Contractor Results	2.380

'Acceptable Range of Two Test Results, Multi-laboratory precision' 0.017
(From AASHTO T 166 Precision Statement)

Range between ODOT and Contractor results, $2.380 - 2.355 = 0.025$. These results are not acceptable and could qualify for referee testing.

6. Examples

Revision Date	Revision Description
07/07/2020	New

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