

Idaho Standard Method of Test for

Evaluating Cleanness of Cover Coat Material

Idaho IT-72-08



1 Scope

- 1.1 The cleanness test indicates the relative amount, fineness and character of clay-like materials present in aggregate as coatings or otherwise.

2 References

- 2.1 AASHTO Standards
 - M 92– Wire Cloth Sieves for Testing Purposes.
 - M 231– Weighing Devices Used in the Testing of Materials.
 - [T 176](#)– Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test.
 - [T 248](#)– Reducing Field Samples of Aggregates to Testing Size.
- 2.2 California Test 227 – Method of Test for Evaluating Cleanness of Coarse Aggregate.

3 Apparatus

- 3.1 Balance – Capacity sufficient for the sample mass, accurate to 0.1 percent of the sample mass or readable to 0.1g. Meets the requirements of AASHTO M 231.
- 3.2 Sample Splitter – Meets the requirements of [AASHTO T 248](#).
- 3.3 Graduate assembly – Consists of:
 - 3.3.1 funnel large enough to hold 8 inch brass wire sieves at the large end and necked down to approximately 2 in. diameter at the other end,
 - 3.3.2 No. 8 (2.36mm) & No. 200 (0.75mm) 8 inch brass wire sieves, Meeting the requirements of AASHTO M 92.
 - 3.3.3 500 ml graduate cylinder.
- 3.4 Washing vessel (as described in [Figure 1](#)) or wide-mouth 3.8 L jar with lid and rubber gasket.
- 3.5 Mechanical shaker – Uses oscillation or orbital action capable of securely holding the washing vessel.
- 3.6 Sand equivalent (SE) cylinder – Conforming to [AASHTO T 176](#) with rubber stopper.
- 3.7 Graduate cylinders – 10 ml and 500 ml.

- 3.8 Sand equivalent (SE) solution (Stock) Conforming to AASHTO T 176
- 3.9 Syringe or spray attachment.
- 3.10 Potable water, i.e., tap water or bottled water at approximately the same temperature as the stock solution, but not at a higher temperature than the maximum temperature allowed by AASHTO T176.

4 Sample Preparation

- 4.1 Obtain a sample of cover coat material (CCM) in accordance with the FOP for [AASHTO T 2](#) and reduce to 1000 ± 50 grams in accordance with the FOP for [AASHTO T 248](#).

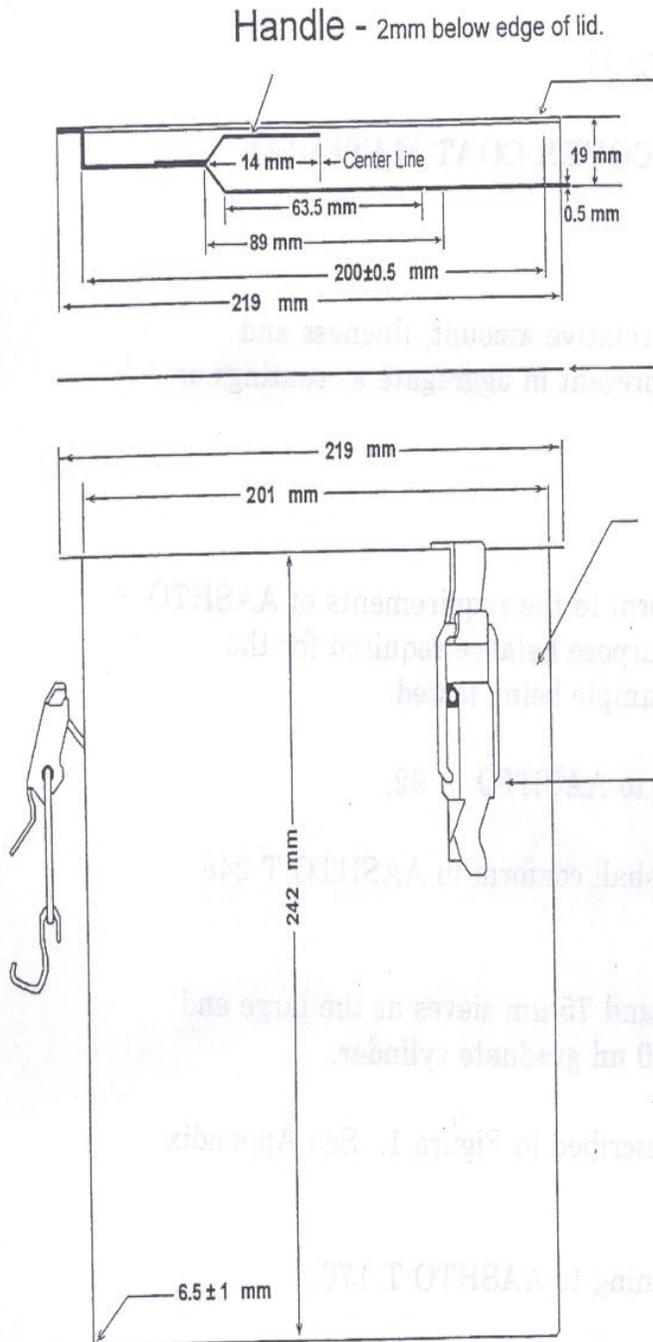
Note 2: Sample shall be placed in a sealed container, such as concrete cylinder mold, to prevent loss of moisture. Sample shall be run in condition of placement on roadway i.e. moist. Sample shall not be allowed to dry.

- 4.2 Using a 10 ml graduate cylinder obtain 7 ml of SE solution.
- 4.3 Pour the 7 ml of SE solution into the SE cylinder.
- 4.4 Assemble the graduate assembly (#8 (2.36mm) sieve, #200 (0.75mm) sieve, funnel, 500 ml graduate cylinder).

5 Procedure

- 5.1 Place the 1000 ± 50 gram CCM sample in the washing vessel or wide-mouth jar. Spread the material evenly across the bottom of the vessel or jar. Add only enough water to cover the aggregate.
- 5.2 Allow the sample to soak for one (1) minute from the introduction of wash water into the vessel or jar.
- 5.3 Agitate the sample by either mechanical or hand method
- 5.4 Mechanical Method
 - 5.4.1 Seal and secure the wash vessel in the mechanical shaker.
 - 5.4.2 Agitate the vessel for two (2) minutes, without using the hammer if the shaker has one.

Figure 1—Washing Vessel



1. LID

2. GASKET-3mm neoprene rubber

I.D. - To be such dimensions so snug fit on lid wall will result when gasket is in place.

O.D.-----216.5mm ± 0.5mm

3. POT

A flat bottom, straight sided, cylindrical vessel with a capacity of approx. 7.6 liters. The top edge shall be flared outward to form a seat for the gasket and lid.

4. TRUNK CLAMPS

3 Req. - placed at one-third intervals. The clamps shall be attached to the pot by rivets or welds so that the pot remains water tight. When fitted with the 3mm gasket and clamped in place the lid shall form a watertight seal with the flared edge of the pot. 16 gauge stainless steel.

Material

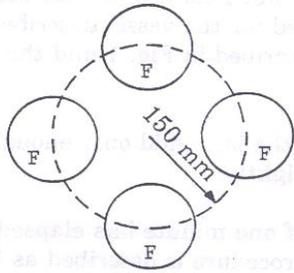
0.9mm(20 gauge) stainless steel unless otherwise noted.

All dimensions ± 1mm unless otherwise noted.

5.5 Hand Method

5.5.1 Seal the jar with lid and rubber gasket.

5.5.2 Hold the jar vertical with both hands either by the sides or by the top and bottom. Agitate the sample in the vessel, creating an arm motion that causes the jar to describe a circle with at least a 6 in. (150 mm) radius. See the sketch showing the path of the jar during the agitation period. Use of a countertop with a 6 in (150 mm) radius drawn on the surface will help in this operation.



Note: The jar itself does not turn on its vertical axis. The jar's vertical axis describes a circle with a 6 in. (150 mm) radius as near as possible. Note # 3: side F always faces the operator.

5.5.3 Continue this agitation at the rate of three (3) complete rotations per second for one (1) minute.

6 Measure for Cleanness

- 6.1 Remove the lid from the vessel or jar. Continue agitating the vessel by hand to keep the fine contents in suspension. Pour all contents over the graduate assembly.
- 6.2 Wash out the vessel or jar over the graduate assembly using the syringe or spray attachment until the graduate cylinder is filled to 500 ml. mark.
- 6.3 Remove the sieves and funnel portion for the graduate assembly from the 500 ml graduate cylinder. Bring the solids into suspension by capping the cylinder with the palm of the hand and turning the cylinder upside down then right side up, ten (10) times, through an 180° arc as rapidly as possible.
- 6.4 Immediately pour the thoroughly mixed liquid into the SE cylinder until the 15 inch mark is reached. Cap the SE cylinder with a rubber stopper.
- 6.5 Mix the contents of the SE cylinder by alternately turning the cylinder upside down and right side up, allowing the air bubble to completely traverse the length of the cylinder. Repeat this cycle 10 times. A cycle is from right side up to upside down to right side up.
- 6.6 On a worktable that is not subject to vibrations allow the SE cylinder and contents to stand undisturbed for 20 minutes \pm 15 seconds.

- 6.7 After 20 minutes, read and record to the nearest 0.1 inch the height of the column of sediment.
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7 Calculations

- 7.1 Compute the cleanness value to the nearest whole number.

$$CV = \frac{3.214 - (0.214 \times H)}{3.214 + (0.786 \times H)} \times 100$$

Where:

CV = Cleanness Value

H = Height of Sediment in
inches

QUALIFICATION CHECKLIST

CLEANNES VALUE – IDAHO T 72

Record the symbols “P” for passing or “F” for failing on each step of the checklist.

General	Procedure Element	Trial 1	Trial 2
1.	The sample was maintained moist in sealed container.	1	_____
2.	The sample is equal to 1000 ± 50 grams.	2	_____
3.	There is 7 ml of SE solution in SE tube.3	3	_____
4.	The graduate assembly including sieves, funnel and 500 ml graduate cylinder is properly put together.	4	_____
5.	CCM sample was placed in washing vessel or jar and water was added just covering the aggregate.	5	_____
Mechanical Method			
6.	The vessel was secure in the shaker.	6	_____
7.	Agitation was started after one (1) minute.	7	_____
8.	The vessel was agitated for two minutes.	8	_____
Hand Method			
9.	Agitation was started after one (1) minute.	9	_____
10.	The vessel was properly rotated with 150mm radius.	10	_____
11.	Vessel was agitated 3 complete rotations per second.	11	_____
12.	Vessel was agitated for one (1) full minute.	12	_____
Measure for Cleanness			
13.	All contents of vessel or jar were washed over sieves into the 500 ml graduate cylinder.	13	_____
14.	Cylinder was rapidly turned upside down at 180°, ten (10) times.	14	_____
15.	Mixture was poured into SE cylinder to 15 inch mark.	15	_____
16.	SE Cylinder was rotated at least ten (10) complete cycles. Bubble traveled full length of tube.	16	_____
17.	Cylinder was allowed to stand 20 minutes on work table free from vibrations.	17	_____
18.	The sediment reading was to the nearest 0.1 inch.	18	_____
19.	Calculations were accurate to the nearest whole number.	19	_____

Comments: First Attempt: Pass Fail Second Attempt: Pass Fail

Testing Technician’s Name: _____ WAQTC # : _____ Date: _____

Examiner’s Name: _____ Signature _____