ROCK SALT IN CRASH BARREL SAND

(An Arizona Method)

1. SCOPE

1.1 This test method is used to determine the amount of rock salt which has been mixed with sand for use in crash barrel cushions.

1.2 The method is a non-instrumental, gravimetric method, which involves removing the salt from the sand/salt mixture by dissolution and washing away the salt using demineralized water. The salt content is then determined by weight loss after drying.

1.3 See Appendix A1 of the Materials Testing Manual for information regarding the procedure to be used for rounding numbers to the required degree of accuracy.

2. APPARATUS

2.1 Requirements for the frequency of equipment calibration and verification are found in Appendix A3 of the Materials Testing Manual. Apparatus for this test procedure shall consist of the following:

2.1.1 1000 mL heavy-duty glass beaker, graduated; KIMAX No. 14005, or equivalent.

2.1.2 A balance or scale capable of measuring the maximum weight to be determined and conforming to the requirements of AASHTO M 231, except that the readability and sensitivity of any balance or scale utilized shall be at least 0.1 gram.

2.1.3 Stirring rod (glass, steel, or plastic).

2.1.4 Drying oven, capable of maintaining a constant temperature of 110 °C.

2.1.5 Spot plate (black).

3. REAGENTS

3.1 Silver Nitrate Test Solution, 1%. Weigh approximately 0.5 gram of Silver Nitrate crystals into a 100 mL beaker and dilute to 50 mL. Stir to dissolve, and transfer contents to an amber dropping bottle.

3.2 Demineralized water.

4. PROCEDURE

4.1 Weigh a clean beaker. Record the weight as "A" to the nearest 0.1 gram.

4.2 Weigh 500.0 ± 5.0 grams of sand/salt mixture into the beaker. Record the weight of the sand/salt mixture as "B" to the nearest 0.1 gram.

4.3 Add enough demineralized water to cover the specimen and fill the beaker to the 750 mL mark.

4.4 Stir the contents of the beaker vigorously and let the mix stand for one hour.

4.5 Decant and discard the supernatant extract solution.

4.6 Repeat Subsections 4.3 and 4.4, and then continue to Subsection 4.7.

4.7 Test two drops of the extract solution for the presence of chloride with two drops of the silver nitrate solution, in the spot plate.

4.8 If the test indicates the presence of chloride (by a white cloudy solution), repeat Subsections 4.3, 4.4, and 4.7. If the test indicates the absence of chloride, decant and discard the extract solution.

4.9 Place the beaker and wet sand residue into the drying oven. Dry thoroughly at 110 °C.

4.10 After drying, remove the beaker with dry sand residue from the oven and allow to cool to room temperature.

4.11 Weigh the beaker and contents. Record the weight as "C" to the nearest 0.1 gram.

5. CALCULATIONS AND REPORT

5.1 Calculate the salt content, in percent, using the following formula:

$$\text{Salt, \%} = \frac{(A + B) - C}{B} \times 100$$

5.2 Report as Percent Rock Salt, to the nearest 0.1%.