

1219**MAGNESIUM SULFATE (Soundness)**
AASHTO Designation T 104 (MN/DOT Modified)**1219.1** SCOPE

This is a test procedure used to determine an aggregates resistance to disintegration by saturated solutions of magnesium sulfate or sodium sulfate. This test is performed in accordance with AASHTO protocol except as follows.

1219.2 PROCEDURE MODIFICATIONS

- A. Only the magnesium sulfate solution is allowed.
- B. All containers used to immerse the aggregate in the magnesium sulfate solution shall be made from 2.36mm (#8) mesh or be 2.36 (#8) sieves.
- C. For all materials use only new solution prepared in accordance with AASHTO T 104, Section 4.1.2.
- D. Run the test through five cycles using the same solution the test was started with initially. Do not change the solution between cycles.
- E. Should the initial test on any aggregate fail to meet the requirements of the specifications for that aggregate type re-run the test with new aggregates and new, fresh solution.

NOTE 1: No test or retest with a used or "battered" solution is allowed.

- F. No combining of the size fractions and mass quantities shown in AASHTO T 104, Table 1 is allowed for testing or calculations.
- G. Report the percent loss to the nearest 0.1 for each individual size fraction. If there was a re-test report the better of the two results.
- H. Calculate and report the composite percent loss to the nearest 0.1 based on the gradation of the material.

- I. Size fractions and mass quantities from AASHTO T 104, Table 1 are as shown in the table below.

2 1/2 – 2"	3000 ± 300g
2 – 1 1/2"	2000 ± 200g
1 1/2 – 1"	1000 ± 50g
1 – 3/4"	500 ± 30g
3/4 – 1/2"	670 ± 10g
1/2 – 3/8"	330 ± 5g
3/8" - #4	300 ± 5g

- J. When separating the material for this test the last sieving shall be hand sieving for both the initial and final refusal.
- K. Sieving to refusal (Both initial and final).
1. Initial sieving shall continue until not more than 0.5 percent by mass of the total sample passes any sieve during one minute of sieving.
 2. For final sieving use a rolling action over the specified sieve sufficient only to separate undersized particles. Take care not to degrade the particles in this process.
 3. All material shall be exposed to the wire mesh.
 4. If overloading of the sieve occurs the material for that size fraction shall be split and each portion of the split material shall be processed separately and then combined.
- L. Rinse water temperature shall meet the requirements of AASHTO T 104.
- M. Barium chloride shall be used to determine if sufficient washing has occurred.
- N. Do not perform the "Qualitative Examination" described in AASHTO T 104, Section 9.