

SOUNDNESS OF AGGREGATE BY USE OF SODIUM SULPHATE OR MAGNESIUM SULPHATE

LS-606 \_\_\_\_\_  
C88 \_\_\_\_\_

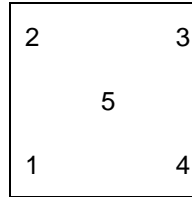
APPARATUS

1. Ovens:

	Oven # 1	Oven # 2
Manufacturer?		
Identification #?		
Dimensions?		
Type?		
Maintains temp. of $110 \pm 5^\circ\text{C}$ ?		
Good physical condition?		

RATE OF EVAPORATION TEST:

Rate is at least 25 g/hour for 4 hours with 500 g of water at  $21 \pm 2^\circ\text{C}$ . Rate applies to each beaker position. Oven temperature is  $110 \pm 5^\circ\text{C}$ . Oven must be empty except for beakers, and doors kept closed during entire 4 hour period. **Test commenced with oven cold.** Place beakers as shown in diagram:



Oven # 1

Beaker #	# 1	# 2	# 3	# 4	# 5	Start time:
Beginning weight?						End time:
Ending weight?						Oven temp:
Amount lost?						
Loss per hour?						
Loss at least 25 g/hour?						

Oven # 2

Beaker #	# 1	# 2	# 3	# 4	# 5	Start time:
Beginning weight?						End time:
Ending weight?						Oven temp:
Amount lost?						
Loss per hour?						
Loss at least 25 g/hour?						

\*\* Apparatus cont. on next page.

COMMENTS:

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APPARATUS (CONT.)

2. Sieves:  
 63.0 mm? ..... \_\_\_\_\_ 16.0 mm? ..... \_\_\_\_\_ 2.36 mm? .....  
 $\pm$   
 53.0 mm? ..... \_\_\_\_\_ 13.2 mm? ..... \_\_\_\_\_ 1.18 mm? .....  
 $\pm$   
 37.5 mm? ..... \_\_\_\_\_ 9.5 mm? ..... \_\_\_\_\_ .600 mm? .....  
 $\pm$   
 31.5 mm? ..... \_\_\_\_\_ 8.0 mm? ..... \_\_\_\_\_ .300 mm? .....  
 $\pm$   
 26.5 mm? ..... \_\_\_\_\_ 4.75 mm? ..... \_\_\_\_\_ .150 mm? .....  
 $\pm$   
 19.0 mm? ..... \_\_\_\_\_ 4.00 mm? ..... \_\_\_\_\_
3. Sample containers (Wire Baskets)  
 (a) Containers are perforated to allow solution access and drainage without sample loss?.... \_\_\_\_\_
4. Sulphate solutions:  
 A. Solution Containers:  
 (1) Have suitable covers or protected from evaporation and foreign matter?..... \_\_\_\_\_  
 (2) Hold volume of solution sufficient to cover samples to a depth of 1 cm? ..... \_\_\_\_\_  
 (3) Are solutions clear prior to use (not discoloured)?..... \_\_\_\_\_  
 B. Regulation of Temperature of Solution:  
 (1) Method for controlling temperature of Sulphate solution for 48 hr. before use:.....  
     (a) Solution temperature is  $21 \pm 1^\circ\text{C}$  per AMRL thermometer? ..... \_\_\_\_\_  
 (2) Method for controlling temperature of Sulphate solution during test: .....  
     (a) Solution temperature is  $21 \pm 1^\circ\text{C}$  per AMRL thermometer? ..... \_\_\_\_\_  
 C. Suitable device for measuring specific gravity of solution to within 0.001?..... \_\_\_\_\_  
     Hydrometer? \_\_\_\_\_ Pycnometer? \_\_\_\_\_ Other? \_\_\_\_\_  
 (1) For Sodium Sulphate, specific gravity is 1.151 to 1.174? ..... \_\_\_\_\_  
 (2) For Magnesium Sulphate, specific gravity is 1.295 to 1.308? ..... \_\_\_\_\_
5. Balance:  
 (a) For fine aggregate, accurate to 0.1 g?..... \_\_\_\_\_  
 (b) For coarse aggregate, accurate to 1 g or 0.1%, (greater)? ..... \_\_\_\_\_
6. Barium chloride, 5% solution by weight?..... \_\_\_\_\_

COMMENTS:



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PROCEDURE (CONT.)

Procedure

1. Salt cake in bottom of solution container broken up and stirred? \_\_\_\_\_
2. Specific gravity of solution checked? \_\_\_\_\_
3. Each sample immersed to a depth of **15mm** above its top? \_\_\_\_\_
4. Kept immersed for 16 to 18 hours **at 21 ± 1 C°**? \_\_\_\_\_
5. After removal from solution, each sample drained **30 ± 5 minutes**? \_\_\_\_\_
6. Dried to constant weight at 110 ± 5°C? \_\_\_\_\_
7. Cooled to room temperature? \_\_\_\_\_
8. Re-immersed and process continued until required number of cycles is completed? \_\_\_\_\_
9. After final cooling, sample washed by circulating water at **approximately 50°C** through the samples in their containers? \_\_\_\_\_
10. Impact or abrasion of samples avoided during washing? \_\_\_\_\_
11. Barium chloride used to check completeness of washing? \_\_\_\_\_  
**Note:** If barium chloride reacts with lab water, the cloudiness of a solution of lab water and the barium chloride solution should be judged so that the tested wash water with the same degree of cloudiness can be assumed to be free of sulphates from the test.
12. Each fraction dried to constant weight at 110 ± 5°C? \_\_\_\_\_
13. Fine Aggregate: Sieved over same sieves used before test and in the same manner? \_\_\_\_\_
14. Coarse Aggregate: Hand sieved over:  
 (a) MTO LS-606: Sieved over same sieves used before test and in the same manner? \_\_\_\_\_  
 (b) ASTM C88:  
 31.5 mm sieve for 63.0 to 37.5 mm? \_\_\_\_\_      8.0 mm for 19.0 to 9.5 mm? \_\_\_\_\_  
 16.0 mm sieve for 37.5 to 19.0 mm? \_\_\_\_\_      4.00 mm for 9.5 to 4.75 mm? \_\_\_\_\_
15. Material retained on each sieve weighed? \_\_\_\_\_

Use of Laboratory Control Aggregate ( Control required for Coarse Aggregate only)

1. Laboratory has a supply of control aggregate? Source: Brechin \_\_\_\_\_
2. Control sample tested every 10 samples or at least every week when samples tested? \_\_\_\_\_
3. Control sample mean loss is 11.5%, range is 8.0 to 15.0%? \_\_\_\_\_
4. Control chart showing data for last 20 samples of reference material? \_\_\_\_\_  
 Mean for last 20 samples \_\_\_\_\_  
 Low for last 20 samples \_\_\_\_\_  
 High for last 20 samples \_\_\_\_\_

COMMENTS: