

Test Method for Detection of Alkali-Silica Reactive Aggregate by Accelerated Expansion of Mortar Bars – CSA A23.2-25A-14

APPARATUS / SECTION 5

1. Conforming to the requirements of ASTM C490? _____

Note the following exceptions to ASTM C490:

2. Sieves: with square holes conforming to CAN/CGSB-8.2? _____
 3. Mixer, mixing bowl and paddle conforming to ASTM C305? _____

Note: Clearance between the end of the paddle and bottom of the bowl shall be 5.1 mm ± 0.3 mm.

4. Tamper and trowel conforms to ASTM C109? _____
 5. Ovens: Convection type maintaining 80° C ± 2.0°C? _____
 6. Containers:
 - Of durable material to withstand 80° C over an extended period? _____
 - Inert to 1 N NaOH solution? _____
 - Designed to allow total immersion of bars in either water or 1 N NaOH solution? _____
 - Containers equipped with tight fitting covers or other sealing methods to prevent loss of moisture? _____
 - Equipped with suitable supports that allow the bars to be completely surrounded by the solution and prevents the bars from touching the sides of the container? _____
 - Bars are not supported by metal studs when stood upright in the solution? _____

REAGENTS AND MATERIALS / SECTION 7

1. Sodium Hydroxide? _____

Note: Refer to Clause 6.1 and 6.3 in the use of USP or technical grade Sodium Hydroxide.

2. Water: Reagent water conforming to Type IV of ASTM D1193? _____
 3. Sodium Hydroxide Solution:
 - Each 1.0 L contains 40.0 g of NaOH dissolved in 900 mL of water – the solution is further diluted with distilled or deionized water to complete the 1.0 L solution? _____
 - Volume of sodium hydroxide solution to mortar bars in storage container – 4 ± 0.5 volumes of solution to 1 volume of mortar bars? _____

CEMENT / CLAUSE 7.4

1. Portland cement (Type GU) as specified in CSA A3001? _____
 2. Total alkali content 0.9% ± 0.10%? _____
 3. Autoclave expansion determined as per ASTM C 151 shall be less than 2.0 %? ... _____

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CONTROL AGGREGATE / CLAUSE 7.5

1. Available - a supply of Spratt alkali-silica reactive control aggregate ? _____
2. Use of Control Aggregate – as per CSA A23.2-25A / Section 12? _____

CONDITIONING / SECTION 8

1. Temperature of molding room, apparatus and dry materials – not less than 20°C and not more than 23°C ± 2.0°C? _____
2. Relative humidity of molding room – maintained at not less than 50%? _____
3. Oven used for storing specimens in containers – temperature maintained at 80°C ± 2.0°C? _____
4. Moisture room or closet conforms to ASTM C511? _____

SAMPLING AND PREPARATION OF TEST SPECIMENS / SECTION 9

1. Materials to be used as fine aggregate - processed as described in A23.2-25A / Clause 9.2 with a minimum of crushing – graded in accordance with Table 1? _____
2. Materials to be used as coarse aggregate – processed by crushing to meet grading specified in Table 1? _____

Table 1

Passing - Retained	Mass, %
P/5.0 mm – R/2.5 mm	10
P/2.5 mm – R/1.25 mm	25
P/1.25 mm – R/630 µm	25
P/630 µm – R/315 µm	25
P/315 µm – R/160 µm	15

3. Composition of CA must also be representative in the crushed product? _____

Note: Refer to Section 9.1 and 9.2 of A23.2-25A for further details on grading.

4. Cement passed through a 710 µm sieve to remove any lumps? _____

PREPARATION OF TEST SPECIMENS / CLAUSE 9.4

1. Moulds prepared in accordance with ASTM C490 – mould interior covered with a release agent? _____
2. Dried materials proportioned by mass using: 1 part cement to 2.25 part graded aggregate? _____
3. One batch (to make 3 specimens): 440 g of cement and 990 g of aggregate proportioned in accordance with grading specified in table 1? _____
4. W/C ratio for natural fine aggregates equal to 0.44 by mass? _____
5. W/C ratio for Crushed CA or manufactured sands equal to 0.50 by mass? _____

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PREPARATION OF TEST SPECIMENS / CLAUSE 9.4 (CONTINUED)

- 6. Mixed mortar in accordance with ASTM C305? _____
- 7. Filled the moulds with 2 approximately equal layers? _____
- 8. Each layer compacted with a tamper to obtain a homogeneous specimen? _____
- 9. Top layer completed – level and smooth the top layer with a few strokes of the trowel? _____
- 10. End of mixing to completion of moulding of test specimens not to exceed 2 min And 15s? _____

PROCEDURE / SECTION 10

- a. Immediately placed completed moulds in the moisture room/cabinet? _____
- b. Specimens left in the moulds for 24 h ± 2 h? _____
- c. Specimens removed from moulds, properly identified and measured while being protected from moisture loss? _____
- d. The initial and all subsequent measurements recorded to the nearest .002 mm? ... _____
- e. Specimens placed in storage container in sufficient tap water at room temp. to totally immerse them? _____
- f. Containers sealed and placed in oven at 80° C for a period of 24 h? _____
- g. Containers removed from oven one at a time? _____

Note: Remove the next container after the bars in the first container has been measured and returned to the oven.

- h. Bars removed one at a time from the water and surfaced dried with a towel? _____
- i. Zero measurements taken immediately after drying procedure? _____
- j. Process completed (drying and measuring) within 15 s ± 5 s? _____
- k. No more than 5 min of elapsed time shall occur between removal of container from the oven to the completion of measurements? _____
- l. Each bar placed on a damp towel until all the bars in container have been Measured? _____
- m. All 3 specimens (bars) placed totally immersed in a container with the 1 N NaOH, preheated at 80°C ± 2.0°C? _____
- n. Container sealed and returned to the oven set at 80° C? _____
- o. Subsequent measurements taken in accordance with Clause 10.2? _____

CALCULATION / SECTION 11

- 1. Expansion recorded to the nearest 0.001% / Refer to Section 11? _____
- 2. Average expansion recorded to the nearest 0.01% / Refer to Section 11? _____

COMMENTS
