



Proper Field Testing Of Ready Mixed Concrete



Summaries of Canadian Standards Association CSA A23.2-04 "Methods of Test and Standard Practices for Concrete"

- **A23.2-1C – Sampling**
- **A23.2-3C – Cylinders**
- **A23.2-4C – Air Test**
- **A23.2-5C – Slump of Concrete**

Prepared for the Test Laboratories, Contractors, Owners, Architects, Engineers, Government Agencies, and Concrete Producers

Sampling of Plastic Concrete

A23.2-1C

General

- avoid segregation
- complete diversion of concrete from chute
- between 10 and 90% of load

Sampling for Cylinders, etc.

- one grab sample

Sampling for Uniformity

- three samples, widely separated

Sample Size - Strength, Uniformity

- For three 100 x 200 mm cylinders = minimum 20 L each
- For three 150 x 300 mm cylinders = minimum 30 L each
- complete remix prior to test

Protection

- protect sample from sun, wind, and other sources of evaporation or contamination

Making and Curing of Concrete Compression and Flexural Specimens

A23.2-3C

Time Constraint

- complete within 20 min after sampling

Place of Moulding

- near as practicable to storage and immediately placed there

Cover

- immediately covered to prevent moisture loss

Rodding

- 10 mm diam. rod for 100 mm cylinders
- 20 x per 3 layers
- 16 mm diam. rod for 150 mm cylinders
- 25 x per 3 layers

Consolidation

- sides of mould tapped to close voids

Curing

- rigid horizontal surface
- cylinders stored in controlled environment that maintains temperature at $20 \pm 5^{\circ}\text{C}$
- cover cylinders
- record maximum and minimum temperatures within curing enclosure

Demoulding

- normal 28 ± 8 hrs
- extended to maximum 76 hrs for concrete <35 MPa provided that:
 - stored in controlled environment that maintains temperature at $20 \pm 5^\circ\text{C}$
 - cover cylinders
 - record maximum and minimum temperatures

Transport

- after proper time with protection

Air Content of Plastic Concrete by the Pressure Method

A23.2-4C

Time Constraint

- complete within 10 min after sampling

Calibration and Operation of Air Meter

- as per manufacturers' specifications

Rodding

- 25 x per 3 layers normal

Consolidation

- Tapped smartly 10 times per layer

Strikeoff, Cleaning, Measuring

- ensure a complete seal and prevent leakage

Air Content

- measure within the nearest 0.1%



Photo courtesy of RMCAO

Slump of Concrete

A23.2-5C

Time Constraint

- complete within 10 min after sampling

Location

- flat, moist, non-absorbent (rigid) surface

Filling

- 3 layers, 1/3 by volume each

Rodding

- 25 x per 3 layers
- 16 mm diam. rod

Consolidation

- NONE ALLOWED

Cone Lift/Removal

- approximately 5 x by steady straight upward lift

Slump

- record in millimetres to nearest 5 mm
- middle of original concrete specimen

FIELD TESTING CERTIFICATION

To comply to CSA A23.1/2, all field testing personnel shall be certified.

A **CSA or ACI certificate** clearly stating name of individual, certified company of employment, date of expiry, and the tests for which the individual is certified shall identify all field test personnel.

IMPORTANT NOTE:

*Concrete tests not sampled, made, cured and handled in accordance to CSA A23.1/2 shall not be considered valid and **will not be accepted by the Ready Mixed Concrete Producer.***

If there are any questions, or any occurrences of improper field-testing of concrete, please contact your Concrete Supplier or the Ready Mixed Concrete Association of Ontario.

Distribution of Cylinder Reports as per CSA A23.1 Clause 4.4.1.4.

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Technical information prepared by

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