



# 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 ± 5°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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