



**MATERIAL SPECIFICATION FOR CEMENTING MATERIALS**

TABLE OF CONTENTS

1301.01	SCOPE
1301.02	REFERENCES
1301.03	<del>Not Used</del> <u>DEFINITIONS</u>
1301.04	<u>DESIGN AND SUBMISSION</u> <del>AND DESIGN</del> REQUIREMENTS
<del>1301.04.01</del>	<del>Submissions</del>
<u>1301.04.01.01</u>	<u>Product Data</u>
1301.05	MATERIALS
<u>1301.05.01</u>	<u>Physical and Chemical Requirements</u>
1301.06	<u>EQUIPMENT</u> - Not Used
1301.07	PRODUCTION
<u>1301.07.01</u>	<u>Packaging and Delivery</u>
<u>.02</u>	<u>Marking</u>
<u>.03</u>	<u>Handling</u>
<u>.04</u>	<u>Storage</u>
<u>.05</u>	<u>Acceptance or Rejection</u>
1301.08	QUALITY ASSURANCE
<u>1301.08.01</u>	<u>Inspection, Sampling and Testing</u>
<u>.02</u>	<u>Acceptance or Rejection</u>
1301.09	<u>AUTHORITY</u> <u>OWNER</u> PURCHASE OF MATERIAL <u>BY PURCHASE ORDER</u>
<u>1301.09.01</u>	<u>Measurement and Payment</u>
<u>.02</u>	<u>Basis of Payment</u>
<u>1301.10</u>	<u>Not Used</u>

## 1301.01

## SCOPE

This specification covers the requirements for cementing materials together with the method of sampling, testing, delivery, handling and storage, prior to use.

## 1301.02 REFERENCES

This specification refers to the following standards, specifications or publications:

### Ontario Provincial Standard Specification, Material

OPSS 1350 Concrete - Materials and Production

Designated Sources for Materials (DSM)

### CSA The following types Standards

A3001-23 Cementitious Materials for Use in Concrete\*

\* [Part of cementing materials are covered by A3000-23- Cementitious Materials Compendium]

## 1301.03 DEFINITIONS

For the purpose of this specification, the following definitions apply:

### Portland Cements

GU – General use **Cementing Material** means a product having hydraulic or pozzolanic properties that is used as a binder to make concrete or mortar. ~~Portland cement (formerly Type 10 Portland cement)~~

MS – Moderate sulphate-resistant cement (formerly Type 20 Portland cement)

MH – Moderate heat of hydration hydraulic cement (formerly Type 20 Portland cement)

HE – High early strength hydraulic cement (formerly Type 30 Portland cement)

LH – Low heat of hydration hydraulic cement (formerly Type 40 Portland cement)

HS – High sulphate resistant hydraulic cement (formerly Type 50 Portland cement)

### Blended Hydraulic Cements

GUb – Blended general use hydraulic cement (formerly Type 10E, blended hydraulic cement)

MSb – Blended moderate sulphate-resistant cement (formerly Type 20E, Portland limestone cement, supplementary cementing materials and blended hydraulic cement) supplementary materials are examples of cementing materials.

MHb – Blended moderate heat of hydration hydraulic cement (formerly Type 20E blended hydraulic cement)

HEb – Blended high early strength hydraulic cement (formerly Type 30E blended hydraulic cement)

LHb – Blended low heat of hydration hydraulic cement (formerly Type 40E blended hydraulic cement)

HSb – Blended high sulphate resistant hydraulic cement (formerly Type 50E blended hydraulic cement)

### Supplementary Cementing Materials

Slag – ~~Ground~~ means ground granulated blast furnace slag, Type S.

Fly ash – **Ash** means the finely divided residue that results from the combustion of pulverized coal or a combination of pulverized coal blended with up to 30% by mass of petroleum coke and that is carried from the combustion chamber of a furnace by exhaust gases, Types F, CI or CH- except reclaimed fly ash

**Silica Fume** ~~—means~~ the finely divided residue, resulting from the production of silicon or ferrosilicon alloys, that is carried from the burning area of a furnace by exhaust gases. The silica fume shall contain a minimum of 80%  $\text{SiO}_2$ .

#### ~~1301.02~~ ~~REFERENCES~~

~~This specification refers to the following standards, specifications or publications:~~

#### ~~Canadian Standards Association Standards:~~

~~CSA A5/A8/A362-93 Portland Cement/Masonry Cement/Blended Hydraulic Cement  
CSA A23.5-M86 Supplementary Cementing Materials  
CAN/CSA A3000-03 Cementitious Materials Compendium~~

#### 1301.04 SUBMISSION AND DESIGN REQUIREMENTS AND SUBMISSION REQUIREMENTS

##### 1301.04.01 Submissions

##### 1301.04.01 Submissions

##### 1301.04.01.01 Product Data Cementing Materials

The following ~~product data~~ documentation shall be submitted to the ~~Owner~~ Contract Administrator a minimum of 7 Days prior to ~~approval~~.

a. ~~A test certificate from a laboratory, qualified according to the Materials Section, showing compliance use of the cementing material with all:~~

a) Product name;

b) The cementing material supplier's name;

c) The cementing material manufacturer's name;

d) Type of the cementing material;

e) Location of the mill;

f) A test report from a qualified laboratory, which includes the following:

i. All the physical and chemical test requirements of CAN/CSA A3000A3001, including the additional requirements of this specification and the optional test for false set if the product is Portland cement.

b. The manufacturer's and supplier's name.

c. Location of the mill.

d. A 5 kg composite sample of current production or Portland limestone cement. The test report shall be accompanied by a letter from the Technical Services Representative of the cementing material cement supplier certifying that the cementing materials are according to the physical and chemical requirements of CSA A3001.

e. Material Safety Data Sheet.

ii. The test requirements of this specification.

a) If non-agitating trucks are used, a certificate from the cementitious material supplier verifying the cement is free from early stiffening tendencies.

Testing of cementing materials shall be carried out by a laboratory that has participated successfully in the Cement and Concrete Reference Laboratory's (CCRL) Laboratory Inspection Program (LIP) and CCRL's Proficiency Sample Program (PSP) for Portland Cement and Portland limestone cement (PLC). The CCRL Inspection Report shall be provided to the Owner upon request.

## **1301.05 MATERIALS**

### **1301.05.01 Cementing Materials**

Cementing materials shall be from the Ministry's DSM list and according to CSA A3001 requirements unless otherwise specified in Contract Documents.

Physical and ~~Chemical Requirements~~ chemical requirements of cementing materials shall be according to CSA A3001 including the optional requirements of CSA A3001 with the exception of the requirements for "Control of Expansion Due to Alkali-Silica Reactivity".

The cementing material shall be free of lumps or partially hydrated material.

At the time of delivery to the concrete producer and at the time of use, the temperature of cementing material shall not exceed 65 °C.

Where Portland cement, and Portland limestone cement is required to be certified as being free from early stiffening tendencies, the penetration shall be 50% or greater when determined ~~by the method specified in the Annex A of CAN/CSA A3000~~ according to CSA A3001.

~~The cementing material shall be free of undue lumps or partially hydrated material.~~

~~At the time of delivery to the concrete producer and at the time of use, the temperature of cementing material shall not exceed 65°C.~~

~~Where Portland cement is required to be certified as being free from early stiffening tendencies, the penetration shall be 50% or greater when determined by the method specified in the Annex A of CAN/CSA A3000.~~

~~The testing shall be done by an organization certified by the Standard Council of Canada or by an organization participating in the Cement and Concrete Reference Laboratory at the National Institute of Standards and Technology correlation and inspection programs. When the laboratory is the manufacturer's laboratory, an Engineer employed by an independent certified organization shall witness the testing and affix their Engineer's stamp to the test report.~~

## **1301.07 PRODUCTION**

### **1301.07.01 Packaging and Delivery**

Bags used in the supply of packaged ~~cement~~ cementing materials shall be of such composition and quality as to provide ~~adequate~~ protection from the elements and to withstand normal handling procedures.

~~Bagged cementing material shall be suitably protected against weather and dampness during shipment.~~

### **1301.07.02 Marking**

Cementing materials, delivered in ~~bulk, shall be transported in totally enclosed containers.~~  
~~bags shall have the~~

**1301.07.02** — **Marking**

~~The~~ name of the supplier, and type of cementing material ~~shall be~~ plainly marked on each bag.

Cementing material delivered in bags or in bulk shall be accompanied by a shipping invoice ~~which shall detail, in addition to the name of the supplier and the type of cementing material, the name of the manufacturer and the mill, listing the following information:~~

**1301.07.03** — **Handling**

All equipment used for handling, weighing and batching

a) Product name:

b) Type of cementing material shall be suitably protected against wind and weather.;

c) Name of the cementing material supplier;

d) Name of manufacturer; and

e) Location of mill.

~~1301.07. Cementing material delivered in bulk shall be unloaded directly into the storage silo, enclosed bin or weigh hopper and shall be batched directly there from without rehandling other than by fully enclosed elevators, conveyors, chutes or pipes.~~

**1301.07.04** — **Storage**

All cementing material ~~03~~ **Delivery and Storage**

Cementing material shall be ~~suitably~~ protected from ~~the weather~~moisture and ~~from dampness~~precipitation during delivery and storage.

Bagged cementing material shall be stored within a weather-tight building except that when the period of storage will not exceed ~~one~~1 month, temporary protection by complete enclosure within tarpaulins, ~~or~~ plastic sheets ~~or the like will~~shall be permitted. -Bags shall be stacked, clear of the ground, ~~so as~~ to provide a space for air circulation. -Bagged ~~cement~~cementing material stored in a building shall not be closer than 600 mm to the roof or walls.

~~Bulk or bagged cementing material shall be stored separately to prevent contamination and to permit ready identification of the cementing material at all times.~~

**1301.07.05** — **Acceptance or Rejection**

~~Where there is doubt as to the quality of any cementing material, it shall be neither shipped to nor used in any work until testing to prove the material is acceptable, has been done by the supplier and notice of acceptance has been received from the purchaser.~~

**1301.08** **QUALITY ASSURANCE**

**1301.08.01** **Inspection, Acceptance of Cementing Materials**

## Sampling, acceptance, and **Testing**

~~Inspection, sampling and testing of the cementing materials will be done according to the methods and procedures of the CSA Standard for the cementing material type.~~

~~The Owner reserves the right to perform such inspection, sampling and testing at such times and locations, as may be deemed necessary to determine the acceptability of the cementing material. Free and unhampered access shall be provided to the Owner's representative for inspection and sampling purposes.~~

### **1301.08.02** ~~Acceptance or Rejection~~

~~Failure of any quality assurance sample to comply with the requirements of this specification shall be sufficient cause to prohibit the use of the material represented by the sample.~~

### **1301.09** ~~AUTHORITY PURCHASE OF MATERIAL BY PURCHASE ORDER~~

~~When material is obtained by the Owner by purchase order, the following requirements will apply.~~

#### **1301.09.01** ~~Measurement and Payment~~

~~Measurement for payment of cementing materials shall be by bags or tonnes as specified.~~

#### **1301.09.02** ~~Basis of Payment~~

~~Payment at the price specified in the purchase order shall be for the supply and delivery of the cementing material to the destination and at the times specified. The cost of all testing, except that performed in the Owner's laboratory, shall be included in the price. referee testing shall be according to OPSS 1350.~~