



**MATERIAL SPECIFICATION FOR
CEMENTING MATERIALS**

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1301.01	SCOPE
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This specification covers the requirements for cementing materials together with the method of sampling, testing, delivery, handling and storage, prior to use.

The following types of cementing materials are covered by this specification:

a) Portland and Portland-limestone Cement Types;

Description of Hydraulic Cement	Designation
General Use	Type GU, GUL
Moderate sulphate-resistant	Type MS
Moderate heat of hydration	Type MH, MHL
High early strength	Type HE, HEL
Low heat of hydration	Type LH, LHL
High sulphate resistant	Type HS

b) Blended Hydraulic Cement Types

Description of Blended Hydraulic Cement	Designation
General Use	Type GUb, GULb
Moderate sulphate-resistant	Type MSb, MSLb
Moderate heat of hydration	Type MHb, MHLb
High early strength	Type HEb, HELb
Low heat of hydration	Type LHb, LHLb
High sulphate resistant	Type HSb, HSLb

Supplementary Cementing Materials

Slag - Ground granulated blast furnace slag, Type S

Fly Ash – 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.

Silica Fume – 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% SiO₂.

1301.01.01 Specification Significance and Use

This specification is written as a municipal-oriented specification. Municipal-oriented specifications are developed to reflect the administration, testing, and payment policies, procedures, and practices of many municipalities in Ontario.

Use of this specification or any other specification shall be according to the Contract Documents.

1301.01.02 Appendices Significance and Use

Appendices are not for use in provincial contracts as they are developed for municipal use, and then, only when invoked by the Owner.

Appendices are developed for the Owner's use only.

Inclusion of an appendix as part of the Contract Documents is solely at the discretion of the Owner. Appendices are not a mandatory part of this specification and only become part of the Contract Documents as the Owner invokes them.

Invoking a particular appendix does not obligate an Owner to use all available appendices. Only invoked appendices form part of the Contract Documents.

The decision to use any appendix is determined by an Owner after considering their contract requirements and their administrative, payment, and testing procedures, policies, and practices. Depending on these considerations, an Owner may not wish to invoke some or any of the available appendices.

1301.02 REFERENCES

When the Contract Documents indicate that municipal-oriented specifications are to be used and there is a municipal-oriented specification of the same number as those listed below, references within this specification to an OPSS shall be deemed to mean OPSS.MUNI unless use of a provincial-oriented specification is specified in the Contract Documents. When there is not a corresponding municipal-oriented specification, the references below shall be considered to be the OPSS listed, unless use of a provincial-oriented specification is specified in the Contract Documents.

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

Canadian Standards Association

CAN/CSA A3000-13 Cementitious Materials Compendium

1301.04 DESIGN AND SUBMISSION REQUIREMENTS

1301.04.01 Submission Requirements

1301.04.01.01 Product Data

When required, the following product data for each cementing material shall be submitted to the Owner for acceptance:

- a) A test certificate from a laboratory, qualified according to the Testing clause, showing compliance of the cementing material with all the physical and chemical test requirements of CAN/CSA A3000, including the Annex A-Optional Requirements and the optional test for early stiffening if the product is Portland or Portland-limestone cement.
- b) The name of the manufacturer and supplier.
- c) Location of mill.
- d) A 5 kg composite sample from current production of the cementing material.
- e) Material Safety Data Sheet.

1301.05 MATERIALS

1301.05.01 Physical and Chemical Requirements

Cementing materials shall conform to the physical and chemical requirements of CAN/CSA A3000. Fly ash, slag and silica fume shall also conform to the optional requirements of CAN/CSA A3000 with the exception of the requirements for "Control of Expansion Due to Alkali-Silica Reactivity".

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 or 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.

1301.07 PRODUCTION

1301.07.01 Packaging and Delivery

Bags used in the supply of packaged cement shall be of a 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 the weather and dampness during shipment.

Cementing materials delivered in bulk shall be transported in fully enclosed containers.

1301.07.02 Marking

The name of the supplier and the type of cementing material shall be printed on each bag.

Cementing material delivered in bags or in bulk shall be accompanied by a shipping invoice listing the following information:

- a) Name of supplier
- b) Type of cementing material
- c) Name of manufacturer
- d) Location of mill

1301.07.03 Handling

Equipment used for handling, weighing, and batching the cementing material shall be suitably protected against wind and weather.

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

1301.07.04 Storage

Cementing material shall be suitably protected from the weather and dampness during storage.

Bagged cementing material shall be stored in a weather-tight building. When storage is for less than one month, temporary protection by complete enclosure within tarpaulins, plastic sheets or the like shall be permitted, however storage in a weather-tight building is preferred for these periods. Bags shall be stacked above the ground or building floor on skids, to provide a space for air circulation. Bagged cement stored in a building shall not be closer than 600 mm to the roof or walls.

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

1301.07.05 Testing

Testing shall be done by a laboratory certified by the Standards Council of Canada or by a laboratory 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 and signature to the test report.

1301.07.06 Acceptance or Rejection

Where there is doubt as to the quality of the cementing material, it shall not be shipped or used in the work until testing has been completed by the supplier to prove the material is acceptable and results have been sent to the Owner and not until notice of acceptance of the results has been received by the supplier in writing from the Owner.

1301.08 QUALITY ASSURANCE

1301.08.01 Inspection, Sampling, and Testing

Inspection, sampling, and testing of the cementing materials shall be done according to the methods and procedures of CAN/CSA 3000 for the cementing material type.

The Owner reserves the right to perform inspections, sampling, and testing at times and locations necessary to determine the acceptability of the cementing material. Access shall be provided to the Owner for inspection and sampling purposes.

1301.08.02 Acceptance or Rejection

Material represented by a sample that does not meet the requirements of this specification shall be considered unacceptable and further material from the same source shall not be used until it is demonstrated by testing by the Owner that the material meets the requirements of this specification.

1301.09 OWNER PURCHASE OF MATERIAL

Cementing materials shall be measured in tonnes or number of bags, as specified in the purchasing order.

Payment at the price specified in the purchasing order shall be for the supply of cementing materials delivered to the destination on the date and time specified. Deductions shall not be made for Owner's samples.

The cost of all testing, except that performed in the Owner's laboratory, shall be included in the price.

**Appendix 1301-A, November 2018
FOR USE WHILE DESIGNING MUNICIPAL CONTRACTS**

Note: This is a non-mandatory Commentary Appendix intended to provide information to a designer, during the design stage of a contract, on the use of the OPS specification in a municipal contract. This appendix does not form part of the standard specification. Actions and considerations discussed in this appendix are for information purposes only and do not supersede an Owner's design decisions and methodology.

Designer Action/Considerations

The designer should ensure that the General Conditions of Contract and the 100 Series General Specifications are included in the Contract Documents.

Related Ontario Provincial Standard Drawings

No information provided here.