



**MATERIAL SPECIFICATION FOR
ADMIXTURES FOR CONCRETE**

TABLE OF CONTENTS

1303.01	SCOPE
1303.02	REFERENCES
1303.03	DEFINITIONS
1303.04	DESIGN AND SUBMISSION REQUIREMENTS
1303.05	MATERIALS
1303.06	EQUIPMENT - Not Used
1303.07	PRODUCTION - Not Used
1303.08	QUALITY ASSURANCE
1303.09	OWNER PURCHASE OF MATERIALS - Not Used

APPENDICES

1303-A	Commentary
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1303.01 SCOPE

This specification covers the materials for use as air entraining, chemical, and superplasticizing admixtures for concrete.

1303.01.01 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.

1303.01.02 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.

1303.02 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:

Ministry of Transportation Publications

Laboratory Testing Manual:

- LS-413 Method of Test for Non-volatile Content of Chemical Admixtures, Latex Admixtures and Curing Compounds
- LS-422 Method of Test for Evaluation of Air Entraining Admixtures for Concrete
- LS-423 Method of Test for Evaluation of Chemical Admixtures for Concrete
- LS-424 Method of Test for Evaluation of Superplasticizing Admixtures

ASTM International

- C 494-17 Chemical Admixtures for Concrete
- E 70-97 (2002) Test Method for pH of Aqueous Solutions with the Glass Electrode

1303.03 DEFINITIONS

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

Air Entraining Admixture means an admixture that causes development of a system of microscopic air bubbles in concrete during mixing to increase its workability and resistance to freezing and thawing.

Chemical Admixture means Types A, B, C, D, and E admixtures.

Non-Chloride Admixture means an admixture that contains not more than 0.01% chloride by mass of cement.

Superplasticizer means a high range water reducing admixture such as Types F and G.

Type A means a water reducing admixture that reduces the quantity of mixing water required to produce concrete of a given consistency.

Type B means a retarding admixture that retards the setting of concrete.

Type C means an accelerating admixture that accelerates the setting and early strength development of concrete.

Type D means a water reducing and retarding admixture that reduces the quantity of mixing water required to produce concrete of a given consistency and retards the setting of concrete.

Type E means a water reducing and accelerating admixture that reduces the quantity of mixing water required to produce concrete of a given consistency and accelerates the setting and early strength development of concrete.

Type F means a superplasticizing admixture that reduces the quantity of mixing water required to produce concrete of a given consistency by 12% or greater.

Type G means a superplasticizing and retarding admixture that reduces the quantity of mixing water required to produce concrete of a given consistency by 12% or greater and retards the setting of concrete.

1303.04 DESIGN AND SUBMISSION REQUIREMENTS

1303.04.01 Submission Requirements

1303.04.01.01 Admixtures

The supplier shall submit documentation verifying that each admixture used on the Contract is included on the Owner's pre-qualified products list.

1303.05 MATERIALS

Admixtures shall be non-chloride, with the exception of admixtures used for fast track full depth repairs to concrete pavements.

Admixtures shall be in liquid form.

Admixtures shall be according to LS-422, LS-423, or LS-424.

1303.08 QUALITY ASSURANCE

1303.08.01 Sampling

Samples of the admixtures may be taken by the Owner from the concrete batching plant. The frequency of sampling shall be determined by the Owner.

1303.08.02 Testing

Testing for the relative density shall be according to ASTM C 494, Section 18.4.

Testing for non-volatile content shall be according to LS-413.

Testing for pH shall be according to ASTM E 70.

1303.08.03 Acceptance or Rejection

Admixture properties shall be according to the product data information submitted to the Owner at the time of material evaluation for inclusion on the Owner's pre-qualified products list.

Material represented by the sample that fails to meet the requirements of this specification shall be rejected.

Acceptance tolerances shall be $\pm 2.5\%$ for non-volatile content and ± 1.0 for pH.

Where relative density is 1.050 or less, the acceptance tolerance shall be ± 0.005 .

Where relative density is greater than 1.050, the acceptance tolerance shall be calculated according to the following formula:

$$\text{Tolerance} = (\text{relative density of acceptance sample} - 1.000) / 10$$

Appendix 1303-A, April 2019
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.