



**ONTARIO
PROVINCIAL
STANDARD
SPECIFICATION**

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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
1303.01	SCOPE

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

1303.02 REFERENCES

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

Ontario Ministry of Transportation Publications

Designated Sources for Materials (DSM)

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

C494 Chemical Admixtures for Concrete
E70-97 (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 a type of admixture according to ASTM C260 that causes development of a system of microscopic air bubbles in concrete during mixing, to increase the workability of the concrete and its resistance to freezing and thawing.

Chemical Admixture means Types A, B, C, D, E, and S admixtures according to ASTM C494.

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

Superplasticizer means Types F and G admixtures according to ASTM C494.

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.

Type S Admixture means a specific performance admixture that provides desired performance characteristics, other than reducing water content or changing the time of setting of concrete or both, without any adverse effects on fresh, hardened, and durability properties 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 ministry's DSM.

1303.05**MATERIALS**

All admixtures shall be in liquid form.

All admixtures shall be non-chloride, with the exception of admixtures used in fast-track full-depth repairs to concrete pavements or concrete base.

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

In addition, required performance characteristics of each Type S chemical admixture shall be demonstrated on Owner approved field trials prior to use in the work.

1303.08**QUALITY ASSURANCE**

Admixtures shall be sampled and tested as specified in the Contract Documents.

Relative density and pH of air entraining admixtures, and non-volatile content and relative density of chemical and superplasticizing admixtures shall be according to the product data shown on the DSM, within the following tolerances:

a) Relative density:

- i. Where relative density is 1.050 or less, the tolerance shall be ± 0.005 .
- ii. Where relative density is greater than 1.050, the tolerance shall be calculated according to the following formula:

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

b) Non-volatile content $\pm 2.5\%$.

c) pH ± 1.5 .