

# **Steel wire rope for general purpose and for mine hoisting and mine haulage**



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# Preface

This is the eighth edition of CSA G4, *Steel wire rope for general purpose and for mine hoisting and mine haulage*. This edition combines and supersedes the requirements of the previous editions of the following:

- CSA G4, *Steel wire rope for general purpose and for mine hoisting and mine haulage*, published in 2009, 2000, and 1992;
- CSA G4-M, *Steel wire rope for mine hoisting and haulage purposes*, published in 1977;
- CSA G4, *Steel wire rope for general purpose and for mine hoisting and for mine haulage*, published in 1976;
- CSA G4, *Steel wire rope: General purpose*, published in 1967, 1958, and 1921; and
- CSA G18, *Steel wire rope for mine hoisting and haulage purposes*, published in 1965.

Changes to this edition include the following:

- a) Clause [15.3.2.3](#): Seizing and/or clamping has been updated;
- b) Clause [15.4.4.5](#): Test validation has been updated;
- c) Clause [15.6.5](#): Condition requirement on the Test Certificate has been updated;
- d) Clause [15.8.2](#): Critical extension has been added;
- e) Clause [15.10](#): Special considerations for high-tensile wire ropes in shaft sinking applications have been added;
- f) Table [1](#): Tensile strength requirements for bright and galvanized wire have been updated;
- g) Figure [1](#): Seizing requirements for 6 and 8 strand ropes have been updated;
- h) Figure [2](#): Seizing requirements for rotation-resistant ropes have been updated; and
- i) Figure [3](#): Seizing requirements for half and full locked coil ropes have been updated.

To comply with current administrative requirements various Clauses throughout the Standard have been updated.

CSA gratefully acknowledges the financial assistance provided by the Ontario Ministry of Labour in the development of this Standard.

This Standard was prepared by the Technical Committee on Wire Rope, under the jurisdiction of the Strategic Steering Committee on Occupational Health and Safety.

## Notes:

- 1) *Use of the singular does not include the plural (and vice versa) when the sense allows.*
- 2) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*
- 3) *This Standard was developed by consensus, which is defined by CSA Policy governing standardization — Code of good practice for standardization as “substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity”. It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this Standard.*
- 4) *To submit a request for interpretation of this Standard, please send the following information to [inquiries@csagroup.org](mailto:inquiries@csagroup.org) and include “Request for interpretation” in the subject line:*
  - a) *define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;*
  - b) *provide an explanation of circumstances surrounding the actual field condition; and*
  - c) *where possible, phrase the request in such a way that a specific “yes” or “no” answer will address the issue.*

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- a) *Standard designation (number);*
  - b) *relevant clause, table, and/or figure number;*
  - c) *wording of the proposed change;*
  - d) *rationale for the change.*

# G4-15

## ***Steel wire rope for general purpose and for mine hoisting and mine haulage***

### **1 Scope**

#### **1.1**

This Standard covers mine hoisting, mine haulage, and ski-lift ropes, and ropes for general applications. It includes requirements for raw materials and construction features for

- a) round strand and flattened strand rope;
- b) locked coil rope;
- c) plastic impregnated and jacketed rope; and
- d) compacted strand rope in bright and galvanized finish.

**Note:** Although Tables specifying physical properties for a number of the more common classifications of wire rope are provided in this Standard, this Standard is not limited to those specified and may be used to evaluate non-typical wire rope constructions within the wire rope grades specified in Clause [4.1.3.1](#).

#### **1.2**

The Standard also includes requirements for in-service destructive testing of steel wire ropes for mine hoisting applications.

#### **1.3**

This Standard is not intended for use in the manufacture and purchase of

- a) aircraft cable;
- b) elevator rope;
- c) tiller rope;
- d) swaged rope;
- e) marlin-covered rope;
- f) marine or shipping ropes;
- g) bridge rope, and strand;
- h) galvanized sash cord;
- i) zinc-coated strand; or
- j) galvanized guard rail cable.

#### **1.4**

The values given in SI units are the units of record for the purposes of this Standard. The values given in parentheses are for information and comparison only.

#### **1.5**

In this Standard, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the Standard.