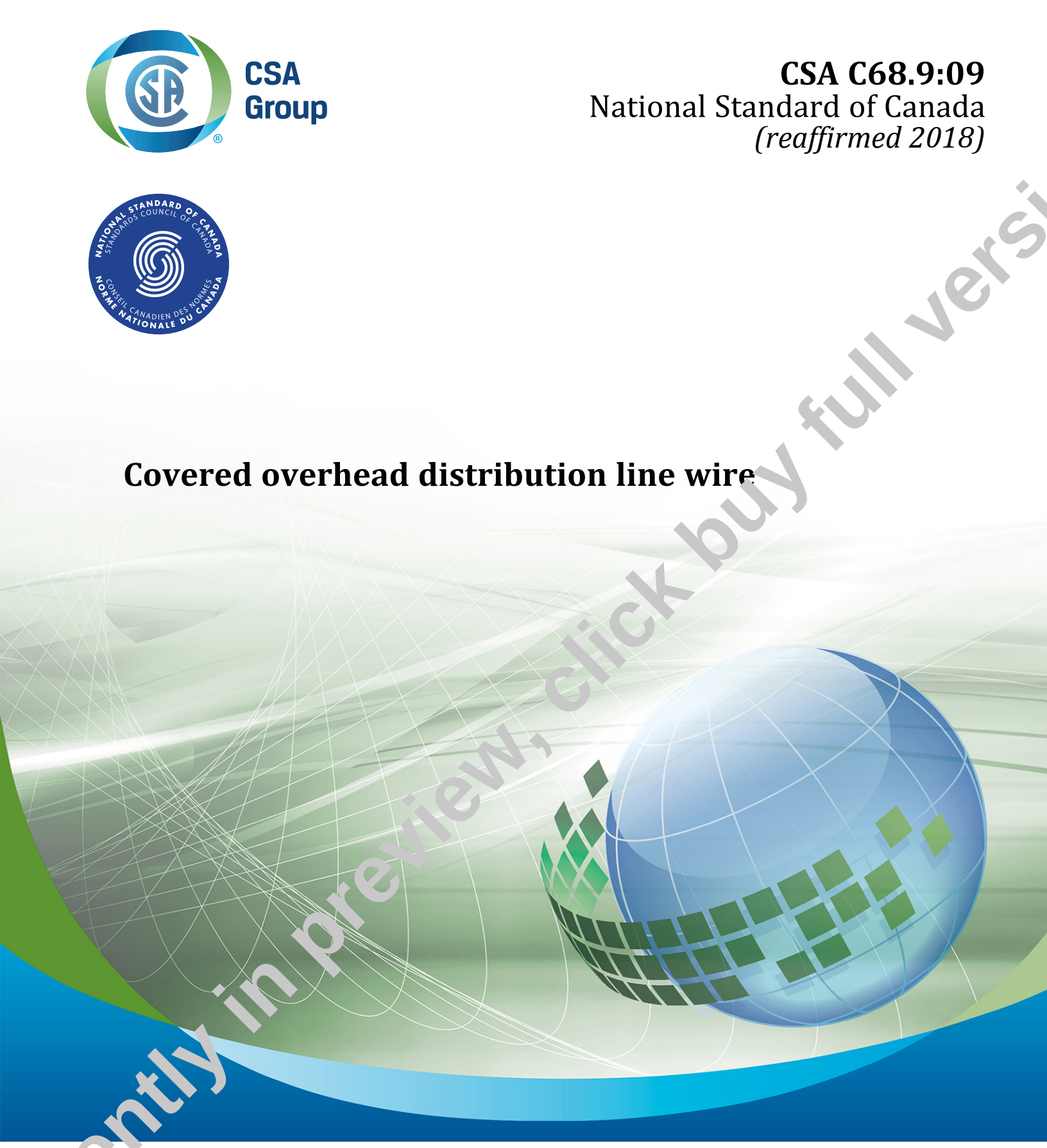
CSA Group

CSA C68.9:09
National Standard of Canada
(reaffirmed 2018)

Covered overhead distribution line wire



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CSA Group

Update No. 2
CAN/CSA-C68.9-09
August 2012

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Title: *Covered overhead distribution line wire* — originally published December 2009

Revisions issued: Update No. 1 — November 2011

The following revisions have been formally approved and are marked by the symbol delta (Δ) in the margin on the attached replacement pages:

Revised	Tables 3 and 5
New	None
Deleted	None

- Update your copy by inserting these revised pages.
- Keep the pages you remove for reference.

Table 2
Covered medium-hard-drawn copper conductors — Construction requirements
(See Clause 5.1.)

Conductor size, AWG	Class	Stranding	Conductor nominal diameter, mm	Covered line wire nominal overall diameter, mm	Covered line wire rated tensile strength, kN
6	Solid	1	4.11	5.6	4.5
4	B Concentric	7	5.89	7.4	7.4
	B Compressed		5.72	7.2	
2	B Concentric	7	7.42	9.7	11.6
	B Compressed		7.19	9.5	
1/0	A Concentric	7	9.35	12.4	18.2
	A Compressed		9.19	12.2	
2/0	B Concentric	19	10.6	13.6	23.7
	B Compressed		10.3	13.3	
4/0	B Concentric	19	13.4	16.4	37.0
	B Compressed		13.0	16.0	

Table 3
Line wire with compact round A1F cores — Construction requirements
(See Clause 5.1 and Annex C.)

	Bare conductor				Covered line wire			
	Bare conductor reference, CSA C49.5	Code word	Number of wires	Conductor nominal diameter, mm	Code word	Nominal overall diameter, mm	Rated tensile strength, kN	Conductor size, AWG or kcmil
Δ	8.4-A1F-7-34	—	7	3.40	—	4.92	1.7	8
Δ	13-A1F-7-43	Toad	7	4.29	Bay	5.81	2.6	6
Δ	21-A1F-7-54	Dragon	7	5.41	Hop	6.93	4.1	4
	34-A1F-7-68	Moloch	7	6.81	Sloe	9.10	6.2	2
	42-A1F-7-76	Monitor	7	7.59	Alder	9.90	7.4	
	54-A1F-7-85	Tuatara	7	8.53	Aspen*	11.6	9.1	1/0
	67-A1F-7-96	Alligator	7	9.55	Thorn	12.6	11.	2/0
	85-A1F-7-107	Crocodile	7	10.7	Barwood	13.c	14.0	3/0
	85-A1F-18-107	Anoli	18 or 19	10.7	Camwood	13.8	15.7	3/0
	107-A1F-7-121	Salamander	7	12.1	Dogwood	15.1	17.7	4/0
	107-A1F-18-121	Clayman	18 or 19	12.1	Oakwood	15.1	18.8	4/0
	127-A1F-7-132	—	7	13.2	—	16.3	20.9	250
	135-A1F-7-136	—	7	13.6	Redwood	16.7	22.3	266.8
	135-A1F-18-136	Komodo	18 or 19	13.6	Cedarwood	16.7	23.0	266.8
	152-A1F-18-145	Tadpole	18 or 19	14.5	Hornbeam*	17.5	25.8	300
	170-A1F-18-153	Basilisk	18 or 19	16.3	Ironwood*	18.4	29.0	336.4
	201-A1F-18-167	Hatteria	18 or 19	16.7	Beachwood	19.8	33.2	397.5
	242-A1F-18-183	Chockwalla	18 or 19	18.3	Buttonwood	22.4	39.9	477
	253-A1F-18-187	—	18 or 19	18.7	—	22.8	41.8	500

**The same code word is used in the United States for different covered conductor constructions. See Annex C.*

Table 4
Covered line wire with compact round A1F/S1A cores — Construction requirements
(See Clause 5.1.)

Bare conductor				Covered line wire			
Bare conductor reference, CSA C49.2	Code word	Nominal diameter, mm	Type, %*	Code word	Nominal overall diameter, mm	Rated tensile strength, kN	Conductor size, AWG or kcmil
8.4-A1F/S1A-6/1-37	Cod	3.68	17	Acacia	5.2	3.3	8
8.4-A1F/S1A-6/1-39	Minnow	3.91	34	Banyan	5.4	4.9	8
8.4-A1F/S1A-6/1-42	Sardine	4.19	53	—	5.7	6.7	8
13-A1F/S1A-6/1-46	Bass	4.62	17	Gum	6.1	5.2	6
13-A1F/S1A-6/1-49	Mullet	4.90	34	Solah	6.4	7.1	6
13-A1F/S1A-6/1-53	Herring	5.28	53	—	6.8	10.1	6
21-A1F/S1A-6/1-58	Pike	5.82	17	Teak	7.3	8.1	4
21-A1F/S1A-6/1-62	Pollock	6.17	34	—	7.7	12.1	4
21-A1F/S1A-6/1-67	Flounder	6.71	53	—	8.2	16.4	4
34-A1F/S1A-6/1-74	Carp	7.37	17	Ebony	9.6	12.4	2
34-A1F/S1A-6/1-78	Haddock	7.82	34	—	10.1	18.4	2
34-A1F/S1A-6/1-84	Pickerel	8.41	53	—	10.7	25.7	2
42-A1F/S1A-6/1-83	Shad	8.28	17	Lima	10.6	15.5	1
42-A1F/S1A-6/1-88	Lamprey	8.79	34	—	11.1	23.0	1
54-A1F/S1A-6/1-93	Sole	9.27	17	Bamboo	12.3	18.9	1/0
54-A1F/S1A-6/1-99	Sculpin	9.86	34	—	12.9	28.8	1/0
77-A1F/S1A-6/1-104	Hake	11.4	17	Corypha	13.5	23.5	2/0
85-A1F/S1A-6/1-117	Cusk	11.7	17	Mahogany	14.7	29.6	3/0
107-A1F/S1A-6/1-131	Scup	13.1	17	Eucalyptus	16.2	37.3	4/0
135-A1F/S1A-18/1-142	—	14.2	6	—	17.2	31.2	266.8
170-A1F/S1A-18/1-160		16.0	6	—	19.0	39.4	336.4

**The type is the ratio, expressed as a percentage, of the area of steel over the area of aluminum.*

Table 5
Conductor covering requirements
(See Clause 5.2.)

Conductor size, AWG or kcmil	Minimum point covering thickness, mm	Nominal covering thickness (for reference only), mm
8	0.68	0.76
6	0.68	0.76
4	0.68	0.76
2	1.03	1.14
Δ 1	1.03	1.14
1/0	1.37	1.52
2/0	1.37	1.52
3/0	1.37	1.52
4/0	1.37	1.52
250	1.37	1.52
266.8	1.37	1.52
300	1.37	1.52
336.0	1.37	1.52
Δ 397.5	1.37	1.52
477	1.83	2.03
500	1.83	2.03

6 Tests and test procedures

Note: *See Annex A for a sample of a production testing certificate of compliance.*

6.1 Bare conductors

Bare conductors shall meet the requirements given in Clause 4, as applicable.

6.2 Covering

The covering shall meet all the test requirements given in CSA C22.2 No. 129 except the dielectric strength test.

6.3 Spark test

Line wire shall withstand a spark test voltage of 10 kV ac for sizes No. 2 AWG and smaller, and a spark test voltage of 12.5 kV ac for sizes larger than No. 2 AWG, when tested in accordance with the spark test in CAN/CSA-C22.2 No. 2556.

7 Product identification

The covered line wire shall be identified at intervals of approximately 1 m by the
(a) manufacturer's identification;
(b) year and month of manufacture;
(c) designation "LINE WIRE";
(d) conductor size and material;
(e) covering material (LDPE, MDPE, HDPE, or XLPE);
(f) sunlight resistance marking "SUN RES" or "SR"; and
(g) conductor corrosion inhibitor marking, "INH", if applicable.

Update No. 1
C68.9-09
November 2011

Note: *General Instructions for CSA Standards are now called Updates. Please contact CSA Information Products Sales or visit* ***www.ShopCSA.ca*** *for information about the* ***CSA Standards Update Service****.*

Title: *Covered overhead distribution line wire* — originally published December 2009

The following revisions have been formally approved:

Revised	Outside front cover and title page
New	National Standards of Canada text
Deleted	None

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Standards Update Service

CSA C68.9:09
December 2009

Title: *Covered overhead distribution line wire*

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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 to judge its suitability for their particular purpose.

National Standard of Canada

CSA C68.9:09
Covered overhead distribution line wire

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Contents

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Preface

This is the first edition of CSA C68.9, *Covered overhead distribution line wire*.

This Standard is based on Canadian Electricity Association (CEA) WCWG-06 (95), *Covered Overhead Lines Wire* (used with permission from CEA).

This Standard specifies requirements for covered overhead distribution line wire.

The co-operation of CEA and the contribution of its members are gratefully acknowledged. Funding in support of the preparation of this Standard was provided by CEA.

This Standard was prepared by the Technical Committee on Overhead Electrical Conductors, under the jurisdiction of the Strategic Steering Committee on Power Engineering and Electromagnetic Compatibility, and has been formally approved by the Technical Committee. It will be submitted to the Standards Council of Canada for approval as a National Standard of Canada.

December 2009

Notes:

(1) *Use of the singular does not exclude 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 publication 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 publication.*

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Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization *and are published in CSA's periodical* Info Update*, which is available on the CSA Web site at www.csa.ca.*

C68.9-09
Covered overhead distribution line wire

1 Scope

1.1
This Standard specifies requirements for covered overhead distribution line wire. These conductors are intended for overhead installation as single conductors on single-phase or three-phase electrical distribution systems.

1.2
This Standard does not cover conductors intended for field-spun applications.

1.3
In CSA Standards, "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; "may" is used to express an option or that which is permissible within the limits of the standard; and "can" is used to express possibility or capability. Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material. Notes to tables and figures are considered part of the table or figure and may be written as requirements. Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

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.

2 Reference publications
This Standard refers to the following publications, and where such reference is made, it shall be to the edition listed below, including all amendments published thereto.

CSA (Canadian Standards Association)
C22.2 No. 129 (under development)
Neutral-supported cables

CAN/CSA-C22.2 No. 2556-07
Wire and cable test methods

C49.2 (under development)
Compact round aluminum conductors steel reinforced (ACSR)

C49.5 (under development)
Compact round aluminum stranded conductors (compact ASC)