



IEC 61196-13

Edition 1.0 2023-08

INTERNATIONAL STANDARD

**Coaxial communication cables –
Part 13: Sectional specification for semi-rigid cables with silicon dioxide
dielectric**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 33.120.10

ISBN 978-2-8322-7371-5

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD.....	4
1 Scope.....	6
2 Normative references	6
3 Terms and definitions	7
4 Materials and cable construction	8
4.1 General.....	8
4.2 Inner conductor.....	8
4.2.1 Conductor material	8
4.2.2 Conductor construction.....	8
4.3 Dielectric	8
4.4 Outer conductor	8
4.5 Sheath (when applicable).....	9
5 Type name and identification of cable.....	9
5.1 Type	9
5.2 Variants	9
5.3 Cable marking.....	9
6 Identification, marking and labelling.....	10
6.1 Cable identification	10
6.2 Cable marking (when required)	10
6.3 Labelling	10
7 Standard rating and characteristics.....	10
7.1 Nominal characteristic impedance.....	10
7.2 Rated temperature and humidity range	10
7.3 Operating frequency	10
7.4 Average and peak power	10
7.5 Bending radius.....	10
8 Requirements for finished cables.....	11
8.1 General.....	11
8.2 Electrical requirements	11
8.3 Environmental requirements	12
8.4 Mechanical requirements	13
9 Quality assessment	13
10 Delivery and storage.....	13
Annex A (normative) Performance requirements of typical cables	14
A.1 Performance requirements.....	14
A.2 Attenuation	14
Annex B (normative) Gamma irradiation.....	16
B.1 General.....	16
B.2 Apparatus	16
B.2.1 General	16
B.2.2 Radiation source.....	16
B.2.3 Attenuation testing equipment	16
B.2.4 Radiation dosimeter.....	16
B.2.5 Temperature-controlled container	16
B.2.6 Test reel	17
B.3 Preparation of specimens	17

B.3.1	Test sample length	17
B.3.2	Test reel	17
B.4	Procedure	17
B.4.1	General	17
B.4.2	Calibration of radiation source	17
B.4.3	Preparation and pre-conditioning	17
B.4.4	Attenuation measurement for environmental background radiation	18
B.4.5	Attenuation measurement for adverse nuclear environment	18
B.5	Calculations	18
B.6	Results	19
B.6.1	Information to be provided	19
B.6.2	Information available upon request	19
Annex C (normative)	Thermal shock	20
C.1	General.....	20
C.2	Test samples	20
C.3	Test equipment.....	20
C.4	Procedure	20
C.4.1	Initial measurements	20
C.4.2	Thermal shock.....	20
C.4.3	Final measurements	21
Annex D (informative)	Quality assessment.....	22
D.1	General.....	22
D.2	Qualification approval and its maintenance	22
D.2.1	Qualification approval	22
D.2.2	Capability approval	22
D.2.3	Quality conformance inspection	22
Bibliography.....		26
Figure 1 – Cable marking.....		9
Table 1 – Rated temperature and humidity.....		10
Table 2 – Electrical requirements.....		11
Table 3 – Environmental requirements		12
Table 4 – Mechanical requirements.....		13
Table A.1 – Performance requirements of typical cables		14
Table A.2 – Maximum attenuation		15
Table C.1 – Test condition		21
Table C.2 – Exposure time at temperature extremes.....		21
Table D.1 – Qualification inspection.....		23
Table D.2 – Quality conformance inspection		25

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COAXIAL COMMUNICATION CABLES –

**Part 13: Sectional specification for semi-rigid cables
with silicon dioxide dielectric**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 61196-13 has been prepared by subcommittee 46A: Coaxial cables, of IEC technical committee 46: Cables, wires, waveguides, RF connectors, RF and microwave passive components and accessories. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
46A/1623/CDV	46A/1637/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

This document is to be read in conjunction with IEC 61196-1:2005.

A list of all the parts in the IEC 61196 series published under the general title *Coaxial communication cables* can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

COAXIAL COMMUNICATION CABLES –

Part 13: Sectional specification for semi-rigid cables with silicon dioxide dielectric

1 Scope

This part of IEC 61196 specifies the materials and cable construction for semi-rigid coaxial communication cables with silicon dioxide dielectric, IEC type designation, identification, marking and labelling, standard rating and characteristics, requirements of finished cables, quality assessment, delivery and storage, etc.

This part of IEC 61196 applies to semi-rigid coaxial communication cables with silicon dioxide dielectric and tubular outer conductor. These cables are intended for use in applications requiring extreme environments as well as in nuclear power plants, oil rigs and aircraft engines.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60068-1:2013, *Environmental testing – Part 1: General and guidance*

IEC 60068-3-4, *Environmental testing – Part 3-4: Supporting documentation and guidance – Damp heat tests*

IEC 60793-1-54, *Optical fibres – Part 1-54: Measurement methods and test procedures – Gamma irradiation*

IEC 61196-1:2005, *Coaxial communication cables – Part 1: Generic specification – General, definitions and requirements*

IEC 61196-1-1, *Coaxial communication cables – Part 1-1: Capability approval for coaxial cables*

IEC 61196-1-101, *Coaxial communication cables – Part 1-101: Electrical test methods – Test for conductor d.c. resistance of cable*

IEC 61196-1-102, *Coaxial communication cables – Part 1-102: Electrical test methods – Test for insulation resistance of cable dielectric*

IEC 61196-1-103, *Coaxial communication cables – Part 1-103: Electrical test methods – Test for capacitance of cable*

IEC 61196-1-105, *Coaxial communication cables – Part 1-105: Electrical test methods – Test for withstand voltage of cable dielectric*

IEC 61196-1-108, *Coaxial communication cables – Part 1-108: Electrical test methods – Test for characteristic impedance, phase and group delay, electrical length and propagation velocity*

IEC 61196-1-110, *Coaxial communication cables – Part 1-110: Electrical test methods – Test for continuity*

IEC 61196-1-111, *Coaxial communication cables – Part 1-111: Electrical test methods – Stability of phase test methods*

IEC 61196-1-112, *Coaxial communication cables – Part 1-112: Electrical test methods – Test for return loss (uniformity of impedance)*

IEC 61196-1-113, *Coaxial communication cables – Part 1-113: Electrical test methods – Test for attenuation constant*

IEC 61196-1-116, *Coaxial communication cables – Part 1-116: Electrical test methods – Test for impedance with time domain reflectometry (TDR)*

IEC 61196-1-119, *Coaxial communication cables – Part 1-119: Electrical test methods – RF average power rating*

IEC 61196-1-301, *Coaxial communication cables – Part 1-301: Mechanical test methods – Test for ovality*

IEC 61196-1-302, *Coaxial communication cables – Part 1-302: Mechanical test methods – Test for eccentricity*

IEC 61196-1-305, *Coaxial communication cables – Part 1-305: Mechanical test methods – Solderability and resistance to soldering*

IEC 61196-1-314:2015, *Coaxial communication cables – Part 1-314: Mechanical test methods – Test for bending*

IEC 61196-1-316, *Coaxial communication cables – Part 1-316: Mechanical test methods – Test of maximum pulling force of cable*

IEC 61196-1-318, *Coaxial communication cables – Part 1-318: Mechanical test methods – Heat performance tests*

IEC 62153-4-4, *Metallic communication cable test methods – Part 4-4: Electromagnetic compatibility (EMC) – Test method for measuring of the screening attenuation as up to and above 3 GHz, triaxial method*