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Coaxial communication cables –
Part 1-212: Environmental test methods – UV stability

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COAXIAL COMMUNICATION CABLES –

Part 1-212: Environmental test methods – UV stability

FOREWORD

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IEC 61196-1-212 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/1452/CDV	46A/1487/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/standardsdev/publications.

A list of all 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- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

UV hazard assessment for synthetic compounds is possible using a number of UV sources. For the purposes of this document, three alternative methods are given.

1) Method A uses a xenon arc source to simulate the UV effect on cable sheath. The effect is measured by the variation of mechanical characteristics and/or change in colour after exposure.
2) Method B uses a fluorescent lamp to simulate the UV effect on cable sheath. Two different lamps may be used: type I (called UV-A lamps) and type II (called UV-B lamps). The effect is measured, as for method A, by the variation of mechanical characteristics and/or change in colour after exposure.
3) Method C uses a mercury vapour lamp to simulate the UV effect on cable sheath. As for methods A and B, the effect is determined by the variation of mechanical characteristics and/or change in colour after exposure. This test has been typically used for telecommunication cables.

For outdoor cable application only, the test specimens are periodically subjected to water attack, for methods A and B. A recent modification of method C now allows for a water immersion cycle.

For method C, the round robin tests made without water (see Annex B) indicate the method may be applicable to outdoor environments.

Other sources and determination methods are capable of detecting and analysing the UV hazard for a cable sheath. Examples of such methods are metal halide lamps or sunshine carbon arc lamps, in combination with proper filters in order to cut off most radiation having wavelengths lower than 290 nm. Contracting parties may agree to use such other methods, but such methods cannot claim conformity to this document. If used, it is recommended that such methods have at least equivalent sensitivity and detection levels as those in this document.

Informative Annex B gives guidelines for the use and interpretation of results.

NOTE It is useful to recall the introduction to ISO 4892-1:2016, which says, "*The relative durability of materials in actual-use exposures can be very different depending on the location of the exposure because of differences in UV radiation, time of wetness, temperature, pollutants and other factors. Therefore, even if results from a specific accelerated laboratory test are found to be useful for comparing the relative durability of materials exposed in a particular outdoor location or in particular actual-use conditions, it cannot be assumed that they will be useful for determining the relative durability of materials exposed in a different outdoor location or in different actual-use conditions.*"

COAXIAL COMMUNICATION CABLES –

Part 1-212: Environmental test methods – UV stability

1 Scope

This part of IEC 61196 describes three methods to determine the UV resistance of sheath materials for electric and optical fibre cables. These tests apply for outdoor and indoor cable applications according to the product standard. The samples of sheath are taken from the finished cables.

Although this test method is written principally for communication cables, it can be used for energy cables if called up by the relevant product standard.

Where a sheath is of cross-linked (thermosetting) material, it is recalled that the preparation of moulded plaques is made before crosslinking.

Methods differ by the nature of the UV source.

Due to the excessive time to failure, the methods described are inappropriate to products where UV resistance is conferred by ≥2,0 % carbon black content meeting the requirements defined in IEC 60708.

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 60708, *Low-frequency cables with polyolefin insulation and moisture barrier polyolefin sheath*

IEC 60811-202, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 202: General tests – Measurement of thickness of non-metallic sheath*

IEC 60811-501, *Electric and optical fibre cables – Test methods for non-metallic materials – Part 501: Mechanical tests – Tests for determining the mechanical properties of insulating and sheathing compounds*

ISO 4892-1:2016, *Plastics – Methods of exposure to laboratory light sources – Part 1: General guidance*

ISO 4892-2, *Plastics – Methods of exposure to laboratory light sources – Part 2: Xenon-arc lamps*

ISO 9370, *Plastics – Instrumental determination of radiant exposure in weathering tests – General guidance and basic test method*

EN 16472, *Plastics – Method for artificial accelerated photoageing using medium pressure mercury vapour lamps*