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Optical fibres – Guidance for nuclear radiation tests

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FOREWORD

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IEC 62283, which is a technical report, has been prepared by subcommittee 86A: Fibres and cables, of IEC technical committee 86: Fibre optics.

This second edition cancels and replaces the first edition of IEC/TR 62283 published in 2003 and constitutes a technical revision.

The main changes with respect to the previous edition are listed below:

– Clause 5 now also covers Industrial environment.
– a new Clause 9 has been added to deal with "Measurement techniques and quality assurance of attenuation measurements".

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
86A/1312/DTR	86A/1327/RVC

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

In order to restrict the test method of IEC 60793-1-54, *Optical fibres – Part 1-54: Measurement methods and test procedures – Gamma irradiation* to a clear, concise listing of instructions, the background knowledge that is necessary to perform correct, relevant and expressive irradiation tests as well as to limit measurement uncertainty is presented here separately as a "guidance document".

OPTICAL FIBRES – GUIDANCE FOR NUCLEAR RADIATION TESTS

1 Scope

This technical report gives a short summary of the radiation exposure in certain environments and applications and the different radiation effects on fibres. It also describes the most important radiation effect, i.e. the increase of transmission loss, and its strong dependence on a variety of fibre properties and test conditions. These dependencies need to be known in order to perform appropriate tests for each specific application as well as to understand, compare and qualify the test results obtained at different laboratories when performed according to IEC 60793-1-54, *Optical fibres – Part 1-54: Measurement methods and test procedures – Gamma irradiation.*

2 Normative references

The following referenced documents are indispensable for the application 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 60793-1-40, *Optical fibres – Part 1- 40: Measurement methods and test procedures – Attenuation*

IEC 60793-1-46, *Optical fibres – Part 1-46: Measurement methods and test procedures – Monitoring of changes in optical transmittance*

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