TECHNICAL REPORT

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Environmental characterization of solid insulating materials

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ENVIRONMENTAL CHARACTERIZATION OF SOLID INSULATING MATERIALS

FOREWORD

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IEC 62422, which is a technical report, has been prepared by IEC technical committee 15: Solid electrical insulating materials.

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

Enquiry draft	Report on voting
15/346/DTR	15/356/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 maintenance result 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- withdrawn,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

Production, use and disposal of products may cause serious environmental problems. Electrical and electronic products are among those that are suspected to have major impacts to the environment due to their use of energy, the variety of hazardous substances included and their volume on the market. It has to be noticed that the environmental performance of these products is related to the characteristics of the insulating materials.

Environmental aspects are present in each phase of the life cycle of these materials. For example, in some thermosetting resins, volatile hazardous chemical compounds are used in production phase and spread during processing. On the other hand sometimes these additives allow a better insulation performance with a lower indirect impact due to lower electrical losses. Regarding the end of life, if these polymers are deposited at a landfill site, the complete degradation of the material may take more than a century, and during this time span harmful additives may be leached from the landfill site.

In order to minimize adverse environmental impacts of electrotechnical products, insulating materials selection should be conducted by engineers and designers including environmental considerations. The environmental information related to the investigated insulating materials should be collected and processed, by suppliers, according to this document. The evaluation should be developed at the design stage, in respect of specific uses and with a life cycle perspective in mind. This means that the environmental characteristics of the materials used, which are collected and processed according to this document, should be compared with the environmental impacts due to the performance of the product and/or the system, with the product before making material selection, product design, and so on.

In order to optimize the necessary trade-offs between fitness for use and environmental impact minimization, it is important to have appropriate and comparable, i.e. standardized, information on environmental aspects and impacts (direct and indirect) connected with insulating materials entire life cycle. In particular, it is fundamental to have standardized information concerning

– the production phase, such as information related to the consumption of resources and the environmental impact, incurred during intermediate products manufacturing;
– the usage phase, such as information about harmful substances actually released and the insulation performances;
– the end-of-life phase, such as the recyclability, the recoverability, the reusability, and cautions to be taken into account when landfilling or chemically recycling.

The methodological framework for the environmental characterization of insulating materials should be drafted in accordance with Life Cycle Assessment (LCA) (ISO 14040 standard) principles.

ENVIRONMENTAL CHARACTERIZATION OF SOLID INSULATING MATERIALS

1 Scope

This technical report gives framework guidelines for collecting environmental data of insulating materials useful to engineers and designers of electrotechnical products for evaluating environmental impacts.

It also provides a guideline for common format in environmental data reporting. This will enable producers to more easily evaluate the potential environmental impacts of those electrotechnical products using solid insulating materials.

Moreover, it will allow a quick assessment of conformity to relevant electrotechnical product-related environmental regulations.

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.

ISO 14020, *Environmental labels and declarations – General principles*