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Guidelines for end-of-life information provided by manufacturers and recyclers and for recyclability rate calculation of electrical and electronic equipment

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

GUIDELINES FOR END-OF-LIFE INFORMATION PROVIDED BY MANUFACTURERS AND RECYCLERS AND FOR RECYCLABILITY RATE CALCULATION OF ELECTRICAL AND ELECTRONIC EQUIPMENT

FOREWORD

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IEC/TR 62635, which is a technical report, has been prepared by IEC technical committee 111: Environmental standardization for electrical and electronic products and systems.

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

Enquiry draft	Report on voting
111/252/DTR	111/267/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- withdrawn,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.

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INTRODUCTION

All electrical and electronic equipment (EEE) have an effect on the environment throughout their life cycle. As increasingly higher volumes of EEE reach their end-of-life (EoL) and become wastes of EEE (WEEE), it is essential for manufacturers to implement environmentally conscious design (ECD) as described in IEC 62430 [1][1], taking into account the optimization of resource efficiency.

One aspect of ECD is an evaluation of potential for recycling of an EEE at the product design phase, hereinafter called the recyclability rate. As described in ISO 22628 [2], this covers road vehicles. The recyclability rate of EEE is dependent on the parts and materials used in the products and also on the EoL treatment process implemented by recyclers where the product is being recycled, as with to road vehicles. It is recognized that the calculation of the recyclability rate based on the product mass approach is not the only criteria to ensure a material efficient design (e.g. for rare materials), yet it is considered an important parameter for ECD.

It has also become increasingly important for manufacturers and recyclers to exchange certain specific information to implement both effective ECD and EoL treatment operations, while complying with regional and national regulations and recognizing that actual practices vary throughout the world.

The purpose of this technical report is to provide sufficient data:

to provide developers with data to consider improvements in recyclability, within the context of the environmentally conscious design process, and accurately calculate and inform downstream manufacturers and customers of recyclability rates;

to allow recyclers to safely recycle and to improve their processes.

This technical report covers three main aspects:

1) a description of EoL principles including the scope, terms and definitions and description of a generic treatment process of WEEE. It is recognized that the generic treatment process described in this report is but one of many potential scenarios and is intended to be as generic as possible. Actual recycling processes may include or exclude portions of the generic process presented here;
2) a description of key product information which is useful when considering the product EoL and exchange of EoL treatment scenario information for manufacturers and recyclers. In order to improve ECD and potentially improve the EoL handling of WEEE, manufacturers need to know the processes taking place at the recyclers and recyclers need to know some specific information such as parts which may need to be treated selectively to carry out effective treatment;
3) a description of the method of recyclability and recoverability calculation.

This technical report provides examples of EoL treatment scenario and data in Annex D. It should be noted that each region, nation or enterprise may have their own data. For example, Annex D contains parts or materials and their respective recycling rates (actual rates) and recovery rates (actual rates) which might differ from the examples given. In addition, some enterprises conduct such calculation based on their internal data which are proprietary and cannot be disclosed. Therefore, when implementing recyclability rate calculation according to this technical report, it should be noted that this report provides methodology to document the calculation of recyclability and recoverability and examples of data that can be used but does not intend to cover all scenarios.

As practices within the recycling industry can change quickly, the sample data should be reviewed to assure it adequately describes current practices.

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[1] References in square brackets refer to the Bibliography.

By using this technical report, manufacturers can use a common format and method to document and report on the EoL aspect of resource efficiency for ECD. Eventually, this will result in common methodologies for the recyclability rate calculation and effective information exchange between manufacturers and recyclers. The potential also exists to provide relevant stakeholders with more resource efficiency EEE.

GUIDELINES FOR END-OF-LIFE INFORMATION PROVIDED BY MANUFACTURERS AND RECYCLERS AND FOR RECYCLABILITY RATE CALCULATION OF ELECTRICAL AND ELECTRONIC EQUIPMENT

1 Scope

IEC/TR 62635, which is a technical report, provides a methodology for information exchange involving EEE manufacturers and recyclers, and for calculating the recyclability and recoverability rates to

- provide information to recyclers to enable appropriate and optimized EoL treatment operations,
- provide sufficient information to characterize activities at EoL treatment facilities in order to enable manufacturers to implement effective ECD,
- evaluate the recyclability and recoverability rates based on product attributes and reflecting real end-of-life practices.

Furthermore this technical report includes:

- criteria to describe EoL treatment scenarios;
- criteria to determine product parts that might require removal before material separation and related information to be provided by manufacturers (location and material composition);
- a format for information describing EoL scenarios and the results of EoL treatment activities;
- a method for calculating the recyclability and recoverability rate of EEE. The calculation is limited to EoL treatment and does not cover collection. The recyclability rate is expressed as a percentage of the mass of the product that can be recycled or reused, whereas the recoverability rate in addition includes a portion derived from energy recovery. This techncial report can be applied to all electrical and electronic equipment;
- some example data corresponding to identified scenarios provided in Annex D.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62474, *Material declaration for products of and for the electrotechnical industry*