



TECHNICAL SPECIFICATION



Material declaration for products of and for the electrotechnical industry – Part 1: Guidance on the implementation of IEC 62474

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 01.110; 13.020.01; 29.100.01

ISBN 978-2-8322-6052-4

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

CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	9
2 Normative references	9
3 Terms and definitions	9
4 Guidance on functionality of IEC 62474 material declaration.....	10
4.1 General information	10
4.2 Conformity to the IEC 62474 standard	11
4.3 Material declaration using alternate DSL(s).....	12
4.3.1 General information	12
4.3.2 Creating an alternate DSL	12
4.4 Business information.....	13
4.5 Product information.....	13
4.6 Conversion between ppm and mass percent	13
4.7 Guidance on the declaration for compliance.....	14
4.7.1 General information	14
4.7.2 Mass and mass percent fields in the declaration for compliance	14
4.7.3 Reporting using mass ranges	14
4.7.4 Use attribute for location information	15
4.7.5 Declaration of a DS that belongs to multiple different DSGs.....	15
4.8 Guidance on the composition declaration.....	15
4.8.1 General information	15
4.8.2 Mass and mass percent fields in the composition declaration	16
4.8.3 Product parts	16
4.8.4 Materials	16
4.8.5 Full material declaration (FMD).....	17
4.8.6 Explanation of DSG substances.....	17
4.8.7 Compounds, mixtures or materials with a CAS number consisting of substances with individual CAS numbers.....	17
4.8.8 Declaration of UVCB substance which constitutes ceramic or glass.....	17
4.8.9 Confidential business information (CBI).....	18
4.8.10 Identification of declarable articles with isArticle flag	19
4.9 Material class declaration	21
4.9.1 General information	21
4.9.2 Material class list (MCL)	21
4.10 Other information	22
4.10.1 Query lists	22
4.10.2 Attachments	22
4.10.3 Requester/responder and distribution modes	23
4.10.4 Safe use information.....	24
5 Guidance on the IEC 62474 database.....	24
5.1 Requirement of data fields in the developer's table	24
5.2 Threshold element	25
5.3 Exemption lists in the IEC 62474 database	25
5.3.1 General information	25
5.3.2 Benefits of exemptions lists	26
5.3.3 Initial set of exemption lists in the IEC 62474 database	26

5.3.4	Exemption lists in a material declaration	26
6	Material declaration for EU SCIP database requirements	27
6.1	Introduction to EU SCIP database	27
6.2	IEC 62474 support for SCIP	27
6.3	Product information for EU SCIP database	28
6.4	Declaration for compliance for EU SCIP database	29
6.4.1	Compliance element	29
6.4.2	ProductPartInformation for declarable articles	30
6.4.3	Data requirements considered as SCIP complete	31
6.5	Composition declaration for EU SCIP database	32
6.5.1	Declarable article reported as a product or product part	32
6.5.2	Material element	32
6.5.3	Material classification mapping to EU SCIP material categories	33
6.5.4	Data requirements considered as SCIP complete	34
7	Material declaration examples	35
7.1	Overview	35
7.2	General	35
7.3	Examples	36
7.3.1	General	36
7.3.2	Example of business and product information	37
7.3.3	Example of declaration for compliance	41
7.3.4	Example of composition declaration	46
7.3.5	Example of composition declaration including isFMD flag	55
7.3.6	Example of material class declaration	55
7.3.7	Example of declaration for compliance including the ECHA SCIP information	58
7.3.8	Example of composition declaration including the ECHA SCIP information	67
	Annex A (informative) Guidance on how to declare substances of unknown or variable composition, complex reaction products and biological materials (UVCBs)	78
	Bibliography	83
	Figure 1 – IEC 62474 principles	11
	Figure 2 – Example of a product part that is an article	19
	Figure 3 – Example of a material that is an article	19
	Figure 4 – Example of a product containing more than one SVHC	20
	Figure 5 – SafeUse element	24
	Figure 6 – SCIP data fields in ProductID	29
	Figure 7 – Compliance element	30
	Figure 8 – ProductPartInformation element for the declarable articles	31
	Figure 9 – Material element supporting SCIP information	33
	Figure 10 – Excerpt from IEC 62474 material class to SCIP mapping table (Version 1.0)	34
	Figure 11 – Material declaration capabilities	35
	Figure 12 – Product – Connector	39
	Figure 13 – Data model for a declaration for compliance	43
	Figure 14 – XML instance – Declaration for compliance requirements	46

Figure 15 – Data model for a composition declaration	49
Figure 16 – XML instance of the composition declaration	55
Figure 17 – Structure of the material class declaration	56
Figure 18 – Material classes declaration – XML instance for 100 % of the product composition	58
Figure 19 – XML instance – Declaration for compliance including ECHA SCIP database information	67
Figure 20 – XML instance – Composition declaration with 'declarable article' including the ECHA SCIP database information	77
Table 1 – Conversion table from ppm to mass percent	13
Table 2 – Use of query list	22
Table 3 – Initial set of exemption lists in the IEC 62474 database	26
Table 4 – Product level SCIP information	28
Table 5 – Example of business information	38
Table 6 – Configuration and main ingredient of a connector	40
Table 7 – Example of product information	41
Table 8 – Conformity assessment of the main ingredient of a connector	42
Table 9 – Mapping between declaration for compliance requirements and DSs and DSGs information	44
Table 10 – Assessment of hierarchical structure and composition of connector	47
Table 11 – Mapping between composition declaration requirements and DSs and DSGs information	50
Table 12 – Composition declaration – Material class information for 100 % of the product composition	56
Table 13 – Mapping between product information and the ECHA SCIP database	58
Table 14 – Mapping between declaration for compliance requirements and the ECHA SCIP database	61
Table 15 – Mapping between composition declaration requirements including 'declarable article' and the ECHA SCIP database	68
Table A.1 – Example of simple glass declaration by the JEITA method	79
Table A.2 – Example of glass prepared with B2O3 by the JEITA method	79
Table A.3 – Example of glass prepared with PbO by the JEITA method	79
Table A.4 – Example of simple ceramic by the JEITA method	80
Table A.5 – Example of ceramic containing PZT by the JEITA method	80
Table A.6 – Example of simple glass by the IMDS method	81
Table A.7 – Example of specific glass by the IMDS method	81
Table A.8 – Example of glass containing lead by the IMDS method	82

INTERNATIONAL ELECTROTECHNICAL COMMISSION

MATERIAL DECLARATION FOR PRODUCTS OF AND FOR THE ELECTROTECHNICAL INDUSTRY –

Part 1: Guidance on the implementation of IEC 62474

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) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

IEC TS 62474-1 has been prepared by IEC technical committee 111: Environmental standardization for electrical and electronic products and systems. It is a Technical Specification.

This first edition of IEC TS 62474-1 cancels and replaces IEC TR 62474-1:2015.

This edition includes the following significant technical changes with respect to IEC TR 62474-1:2015:

- a) IEC TR 62474-1:2015 was revised and converted to a Technical Specification in accordance with the requirements of the ISO/IEC Directives;
- b) the introduction and scope have been updated to better align with the requirements of IEC 62474:2018;
- c) by defining an authority, list identity and list version, the standard data exchange format can be used for lists other than the IEC 62474 database;
- d) two types of material declarations, declaration for compliance and composition declaration, and their requirements are defined;

- e) the material classes and exemption list capabilities have been improved;
- f) guidance is provided on how to use data fields in the declaration of compliance and composition declaration to collect the information required for the European Chemical Agency (ECHA) Substances of Concern In articles, as such or in complex objects (Products) (SCIP) database;
- g) six examples of material declaration are given to show how IEC 62474 meets various industry needs.

The text of this Technical Specification is based on the following documents:

Draft	Report on voting
111/654/DTS	111/671/RVDTS

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 Technical Specification 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.

A list of all parts in the IEC 62474 series, published under the general title *Material declaration for products of and for the electrotechnical industry*, 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.

IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

There are ever increasing legal regulations around the world along with supply chain requirements that either restrict or require reporting or labeling the use of certain substances in products. To determine a product compliance status, manufacturers need information about the substances in the product that can be passed down the supply chain. This can include data about materials as well as product parts used in products. This information can also be used as one of the inputs in an environmentally conscious design process throughout the product life cycles.

To make material declaration data readily available, the supply chain (including organizations providing products to the electrotechnical industry) needs a standardized method to exchange this type of data. The IEC 62474 standard is flexible for, not only identifying base requirements, but also allowing all levels of additional reporting under defined rules, so that the data is properly exchanged through the supply chain. The IEC 62474 standard uses a single format for data exchange rather than relying on each customer's own format.

Broad implementation by electrotechnical industry and organizations can result in:

- material declaration data being available as part of the contract sales of products in the electrotechnical industry,
- availability of material declaration data that is not dependent on an organization's size or purchase volume,
- improvement of data quality, reduction of compliance costs and reduction of inefficiencies, and
- faster assessments of products and materials compliance status.

Material declarations meeting the IEC 62474 standard provide data needed to make a substance compliance assessment. They can also be used as part of the technical documentation required to place products on the market in different regions. Examples are:

- the EU Restriction of Hazardous Substances (RoHS) Directive;
- the EU Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH);
- the EU Eco-design Directive;
- the Administrative Measures for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products (China RoHS 2).

Government authorities that issue substance restriction regulations need to have economic methods to obtain substance data to conform to these requirements that allow for international trade. IEC standards such as IEC 62474 are recognized by the World Trade Organization (WTO). This means that government authorities can adopt IEC 62474 to provide an economically feasible standard to its resident companies to get needed data from a supply chain in order to achieve the substance restrictions and be assured that such rules facilitate international trade and are in conformance with WTO standards.

Also, restricted substance regulations usually include exemptions for certain products based on available technology or other issues. Exemptions are dynamic and often based on changes to technology and products. This requires government resources to evaluate exemptions from product suppliers and exemptions issued by other government authorities to determine suitability. It is possible governments are not able to update exemptions based on a direct referral to exemptions issued by other governments. This results in significant costs and time lags to do analyses and grant updated exemptions, especially if government authorities lack expertise or adequate funding to perform these tasks. If an exemption approved by a government authority is not adopted in a timely manner, this can put the local economy at a disadvantage because certain products cannot then be placed on the local market. In the case of some product sectors, such as medical devices, this also can prevent access to life-saving technologies.

IEC 62474 now allows government authorities to adopt exemptions from other government authorities by referencing the international IEC 62474 database. Since the IEC 62474 database maintains current exemption lists, governments may rely on this database without additional resources or time.

MATERIAL DECLARATION FOR PRODUCTS OF AND FOR THE ELECTROTECHNICAL INDUSTRY –

Part 1: Guidance on the implementation of IEC 62474

1 Scope

This part of IEC 62474 is a guidance document to help organizations properly implement IEC 62474. These organizations can be the ones creating tools for material data exchange and those who submit and receive material declarations.

This document supports consistent implementation of IEC 62474, including how the procedures, content, and form relating to material declarations for products can be further specified. It also illustrates how to apply IEC 62474 to non-electrotechnical industries.

This document:

- illustrates the flexibility and functionality of the IEC 62474 standard including examples,
- illustrates how to achieve conformity with IEC 62474, including guidance on preparing a declaration for compliance and a composition declaration, including mandatory and optional declaration requirements,
- illustrates how IEC 62474 can be applied to non-electrotechnical industries by preparing material declarations using an alternate declarable substance list (DSL),
- supports organizations that create software to exchange substance and material data to implement IEC 62474 in their tools, and
- supports users that submit and receive material declarations.

Following the IEC 62474 standard scope, process chemicals, emissions during product use and product packaging material are not in the scope of this document.

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 62474:2018, *Material declaration for products of and for the electrotechnical industry*
IEC 62474:2018/AMD1:2020

NOTE The requirements of IEC 62474:2018 were not changed substantially by IEC 62474:2018/AMD1:2020. IEC 62474:2018/AMD1:2020 mainly explains certain requirements of IEC 62474:2018 more clearly and corrects some editorial errors.