

INTERNATIONAL STANDARD

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Material declaration for products of and for the electrotechnical industry

Déclaration de matière pour des produits de et pour l'industrie électrotechnique

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Material declaration for products of and for the electrotechnical industry

Déclaration de matière pour des produits de et pour l'industrie électrotechnique

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

MATERIAL DECLARATION FOR PRODUCTS OF AND FOR THE ELECTROTECHNICAL INDUSTRY

FOREWORD

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International Standard IEC 62474 has been prepared by IEC Technical Committee 111: Environmental standardization for electrical and electronic products and systems.

A database associated with this document is available at: <http://std.iec.ch/iec62474>. It contains the list of

- Declarable substance groups and declarable substances
- Reference Substances
- Material classes
- XML schema for data format and exchange and the accompanying developer table

The text of this standard is based on the following documents:

FDIS	Report on voting
111/243/FDIS	111/245/RVD

Full information on the voting for the approval of this standard 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

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INTRODUCTION

The electrotechnical industry tracks and declares specific information about the material composition of its products for compliance and environmentally conscious design requirements. The electrotechnical industry needs to gather information about the composition of products and product parts that are purchased from suppliers for incorporation into their products. Currently material declarations are driven by individual product manufacturer's specifications and there is no internationally accepted standardization. This results in economic inefficiencies. To simplify requirements across the supply chain and to improve economic efficiencies, it is necessary to standardize the exchange of material composition data and provide requirements for material declarations.

This International Standard benefits the electrotechnical industry by establishing requirements for reporting of substances and materials, standardizing protocols, and facilitating transfer and processing of data.

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[IEC 62474-12](https://standards.iteh.ai/standards/iec/62474-12)

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62474-12-2012

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MATERIAL DECLARATION FOR PRODUCTS OF AND FOR THE ELECTROTECHNICAL INDUSTRY

1 Scope

This International Standard specifies the procedure, content, and form relating to material declarations for products of companies operating in and supplying the electrotechnical industry. Process chemicals and emissions during product use are not in the scope of this International Standard.

The main intended use of this International Standard is to provide data to downstream manufacturers that:

- allows them to assess products against substance restriction compliance requirements
- they can use in their environmentally conscious design process and across all product life cycle phases

Clause 4 specifies requirements for a material declaration.

Clause 5 specifies the criteria for declarable substances and material classes in the IEC 62474 database associated with this standard.

Clause 6 specifies the data format and exchange requirements to be included in the IEC 62474 database.

Clause 7 specifies the process to regularly update and maintain the IEC 62474 database.

Although this International Standard specifies base requirements, it offers flexibility to product manufacturers and suppliers in the selection of additional requirements or information.

This International Standard does not provide any specific method to capture material composition data. Organizations have the flexibility to determine the most appropriate method to capture material composition data without compromising data utility and quality. This International Standard is intended to allow reporting based on engineering judgment, supplier material declarations, or on sampling and testing.

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 61360-1, *Standard data element types with associated classification scheme for electric items – Part 1: Definitions – Principles and methods*

IEC 61360-2, *Standard data element types with associated classification scheme for electric components – Part 2: EXPRESS dictionary schema*

IEC 61360-5, *Standard data element types with associated classification scheme for electric components – Part 5: Extensions to the EXPRESS dictionary schema*

ISO/IEC Directives Supplement: 2011, *Procedures Specific to IEC*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

absence declaration

negative declaration

statement that materials, substances or substance groups are not present in the product above their respective, specified threshold

3.2

declarable substance and declarable substance group

substance and substance group that meet the criteria stated in this International Standard and are specified in the IEC 62474 database

Note 1 to entry Such substances and substance groups are listed in the IEC 62474 database with either a mandatory or optional reporting requirement above the specified threshold in the IEC 62474 database.

3.3

homogeneous material

one material of uniform composition throughout or a material, consisting of a combination of materials, that cannot be disjointed or separated into different materials by mechanical actions, such as unscrewing, cutting, crushing, grinding and abrasive processes

3.4

material

substance or mixture within a product or product part

3.5

material class

defined classification of materials that are established in referenced IEC 62474 database for purposes of inventorying aspects of a product, such that no two classes contain the same materials

3.6

mixture

preparation

mixture or solution composed of two or more substances in which they do not react

Note 1 to entry An alloy is treated as a mixture.

3.7

product

any goods or service

Note 1 to entry This general definition of product is in the context of this International Standard limited to any product of the product category "hardware" according to ISO 9000:2005 No. 3.4.2 of and for the electrotechnical and electronic industry (E&E).

3.8

product family

group of products each of which contains the same substances or material at a similar concentration level

Note 1 to entry A common case would be an electrical component supplier having many products of the same substance content that have different electrical values, such as a capacitor, resistor, inductor or an integrated circuit.

3.9

product part

sub-unit of a product or another (product) part

Note 1 to entry This is a recursive definition.

3.10

reference substance

individual substance designated as “reference” in the IEC 62474 database

3.11

reportable application

intended use of a substance which determines its relevance to a given scope and the threshold for disclosure

Note 1 to entry This use is defined in the scope of the underlying law or industry standard. Examples are batteries, textiles and wood.

3.12

reporting threshold level

concentration limit at or above which the presence of a substance in a material or product is declared if declaration of the substance is mandatory according to the IEC 62474 database, or if it is agreed on to be declared

3.13

substance

a chemical element and its compounds in the natural state or obtained by any manufacturing process, including any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition

[SOURCE: Globally Harmonized System of Classification and Labelling (GHS):2003, Chapter 1.2, Definitions and Abbreviations]

3.14

substance group

one or more substances, where in the case of multiple substances they share at least one chemical sub-structure, or chemical or physical property under a generic name

3.15

validation team

permanent, “executive”, group of experts appointed by and acting as delegates on behalf of their National Committees to validate proposed items and vote for their release as part of a database standard

Note 1 to entry All P-members have the right and duty to appoint their own member of the team. The validation team evaluates proposals and votes, using the normal database procedure, on items on behalf of their National Committees. The validation team reports to the technical committee or subcommittee.

Note 2 to entry The described procedure asks for very short response times from the validation team members. For this reason, the National Committees should appoint one or more deputies that can take over the task when the designated person, for any reason, is absent (travel, business, etc.).

Note 3 to entry It is up to the National Committee to decide for how long time a member should be appointed, and also to organize the possible supporting network of experts on National level.

Note 4 to entry The secretariat manages the validation team.

[SOURCE:ISO/IEC Directives Supplement:2011, Annex J]

4 Requirements for material declaration

4.1 General

This clause describes the base requirements and additional requirements for a material declaration. Subclause 4.2 describes the base data requirements and Subclause 4.3

describes additional requirements, should the manufacturer and supplier agree to declare more.

Clause 4 is organized in the order of the conceptual diagrams (see Figures 1 and 2) for ease of understanding. Required information is shown with solid boxes and arrows. Options are shown within dotted boxes. Product, substance groups or substances with a mandatory reporting requirement in the IEC 62474 database are mandatory objects in this approach. Product parts, material classes, materials, and substance groups or substances without a mandatory reporting requirement in the IEC 62474 database are optional objects in this approach. Substance groups and substances not listed in the IEC 62474 database are also optional objects. Further mandatory requirements apply without being displayed in the diagrams (e.g. mass or mass percent).

See informative Annex A for examples related to requirements for material declaration.

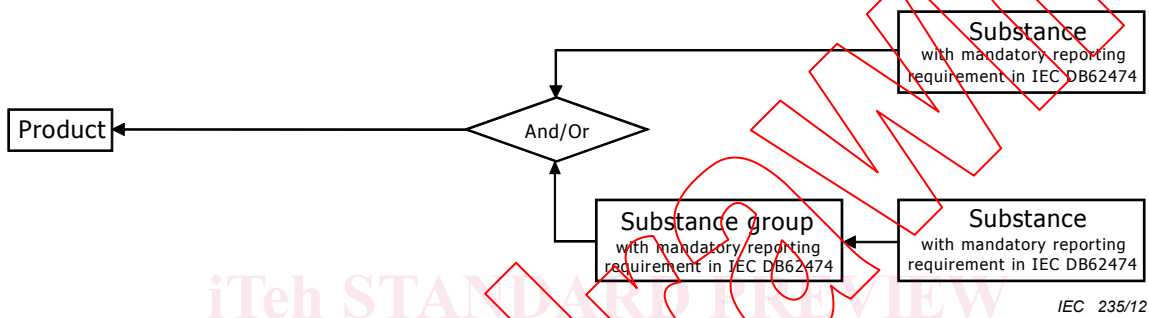
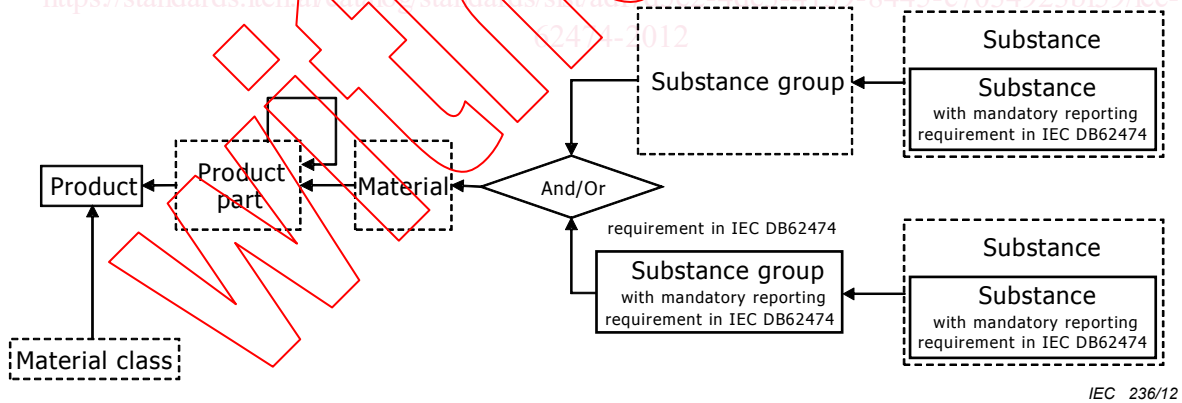


Figure 1 – Conceptual diagram for base requirements



NOTE The arrow around the product part indicates that any product part could be broken down into further product parts and thus it indicates that the product assembly is not just limited to two levels (product – product part) as displayed in this conceptual diagram.

Figure 2 – Conceptual diagram for additional requirements

4.2 Base data requirements

4.2.1 Products

The following requirements shall apply to products:

- a) A material declaration shall be provided for a product or product family.

NOTE 1 Only the supplier is likely to know the appropriate product family groupings for material declaration purposes based on their technical knowledge of product material content.

- b) The product shall have an identification and a mass assigned. In the case of a product family, the identification and mass of each product within the product family shall be specified.

NOTE 2 When each product in the product family has the same mass, it is sufficient to provide this mass just once.

4.2.2 Product parts

Product parts shall be declared if a substance group or substance in the IEC 62474 database refers to this part in the reporting threshold level and its reporting threshold level is exceeded.

NOTE Examples for such product parts are when batteries are incorporated into a printed circuit board assembly.

If such product parts need to be declared, the following shall apply:

- a) Product parts shall be assigned to the product;
b) Product parts shall have an identification assigned;
c) Product parts shall have a mass or percentage of the product mass assigned.

4.2.3 Substances or substance groups listed in the IEC 62474 database with a mandatory reporting requirement

Substances or substance groups listed in the IEC 62474 database with a mandatory reporting requirement shall be declared if they are present in the product at or above the reporting threshold level given in the IEC 62474 database and if the reportable application as listed in the IEC 62474 database is applicable for that substance or substance group.

NOTE 1 When such substances or substance groups are not declared in a material declaration, they are not present over the specified threshold, but could be present below this threshold or the reportable application as listed in the IEC 62474 database is not applicable.

If such substances or substance groups are present above the reporting threshold level given in the IEC 62474 database and if the reportable application as provided in the IEC 62474 database is applicable, the following requirements shall apply:

- a) Such substance groups shall be assigned to the product part (if 4.2.2 applies) or otherwise to the product. Such substances shall be assigned to the substance group (if the substance group has a mandatory reporting requirement) or otherwise to the product part (if 4.2.2 applies) or otherwise to the product.
b) Such substances or substance groups shall be named as given in the IEC 62474 database.
c) In general, such substance groups or substances shall have a mass or percentage of the product part mass (if 4.2.2 applies) or otherwise a percentage of the product mass assigned. If such substance groups or substances have reporting threshold levels specified in the IEC 62474 database, referring to the material, they shall have a material mass percent assigned.

NOTE 2 The IEC 62474 database lists some substance groups that require reporting as percentage of the material mass.

NOTE 3 The reporting requirement as percentage of the material mass can differ e.g. the numerator for this percentage can be the sum of the masses of all substances belonging to this substance group present or just the mass of a specific element. Details are given in the IEC 62474 database.

- d) Such substance groups and substances with a reporting threshold level in the IEC 62474 database at the material or the product part level shall be declared separately for each occurrence in the product exceeding the threshold.

4.2.4 Other requirements

The following requirements shall apply to material declarations:

- a) Business information that is needed to exchange material declarations shall be provided (see the IEC 62474 database).
- b) In the case that the product manufacturer requests more than base requirements as specified in this International Standard and the IEC 62474 database, the contracting parties shall agree to details, such as safeguards protecting supplier trade secrets at the request of the supplier.
- c) The International System of Units (SI) shall be used.

NOTE For the purpose of presentations and communications among computers, the SI units together with relevant SI prefixes are preferred. For example, small product parts could be best represented in grams rather than kilograms.

- d) If the supplier is uncertain on the applicability of the reportable application to their product, then the presence of the substance shall be declared if it exceeds the reporting threshold in the supplied product.

4.3 Additional requirements

4.3.1 Product parts

The following requirements apply to product parts when they are declared:

- a) Product parts shall be assigned to another product part (if a higher level product part is declared) or otherwise to the product.
- b) Product parts shall have an identification assigned.
- c) Product parts shall have a mass or otherwise the percentage of another product part mass (if a higher level product part is declared) or otherwise the percentage of the product mass assigned.
- d) For identical product parts occurring multiple times, the information may be given only once. In this case, the number of identical product parts shall be provided.

4.3.2 Material classes (optional)

The following requirements apply to material classes when declared:

- a) Material classes shall be assigned to the product.
- b) Material classes shall be named according to the IEC 62474 database.
- c) Material classes shall have a mass or percentage of the product mass assigned.
- d) The sum of the mass of the declared material classes should represent at least 95 % of the product mass.

4.3.3 Materials (optional)

The following requirements apply to materials when declared:

- a) Materials shall be assigned to a product part (if product part is declared) or otherwise to the product.
- b) Materials should be characterized by names as defined in a standard (e.g., ISO 1043, parts 1 through 4 for plastics) or by internationally recognized names.
- c) Materials shall have a mass or percentage of the product part mass (if product part is declared) or otherwise percentage of product mass assigned.
- d) Materials shall be allocated to material classes as specified in the IEC 62474 database.

NOTE 1 The definitions to use when determining the material class applicable to a specific material are contained in the IEC 62474 database.

NOTE 2 When allocating a material to a material class, this does not trigger the conditions of 4.3.2(d)

4.3.4 Substances or substance groups listed in the IEC 62474 database with a mandatory reporting requirement

Substances or substance groups listed in the IEC 62474 database with a mandatory reporting requirement shall be declared if they are present in the product at or above the threshold level given in the IEC 62474 database and if the reportable application as listed in the IEC 62474 database is applicable for that substance or substance group. Substances and substance groups with a mandatory reporting requirement in the IEC 62474 database may be declared if they are present in the product below the threshold level given in the IEC 62474 database or if the reportable application as listed in the IEC 62474 database is not applicable for that substance or substance group.

NOTE 1 When such substances or substance groups are not declared in a material declaration, they are not present over the specified threshold, but could be present below this threshold or the reportable application as listed in the IEC 62474 database is not applicable.

The following requirements apply to such substances or substance groups when declared:

- a) Such substance groups shall be assigned to the material (if material is declared), to the product part (if product part is declared) or otherwise to the product. Such substances shall be assigned to the substance group (if substance group is declared) or to the material (if material is declared) or to the product part (if product part is declared) or otherwise to the product.
- b) Such substances or substance groups shall be named as given in the IEC 62474 database.
- c) In general, such substance groups or substances shall have a mass or percentage of the material mass (if material is declared) or a percentage of the product part mass (if product part is declared) or otherwise a percentage of the product mass assigned. If such substance groups or substances have reporting threshold levels specified in the IEC 62474 database, referring to the material they shall have a material mass percent assigned.

NOTE 2 The IEC 62474 database lists some substance groups that require reporting as percentage of the material mass.

NOTE 3 The reporting requirement as a percentage of the material mass can differ e.g. the numerator for this percentage can be the sum of the masses of all substances belonging to this substance group present or just the mass of a specific element. Details are given in the IEC 62474 database.

- d) Such substance groups and substances with a reporting threshold level in the IEC 62474 database at the material or the product part level shall be declared separately for each occurrence in the product exceeding the threshold.
- e) Such substance groups and substances may have information on the reportable application. If such information is provided, it shall be named as in the IEC 62474 database.

NOTE 4 Reportable applications for all declarable substance groups and substances are listed in the IEC 62474 database.

NOTE 5 For those substances groups or substances with more than one reportable application, this information supports the downstream manufacturer in the assessment against substance restriction compliance requirements.

- f) Such substances or substance groups may have information on applicable exemptions pertaining to the allowed use. If such information is provided, it shall be carried through the supply chain.

4.3.5 Substances or substance groups listed in the IEC 62474 database with an optional reporting requirement, as reference substances or substances or substance groups not listed in the IEC 62474 database

Substances or substance groups listed in the IEC 62474 database with an optional reporting requirement should be declared if they are present in the product at or above the reporting threshold level given in the IEC 62474 database and if the reportable application as listed in