BS EN 62474:2012

BSI Standards Publication

Material declaration for products of and for the electrotechnical industry

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National foreword

This British Standard is the UK implementation of EN 62474:2012. It is identical to IEC 62474:2012. It supersedes DD IEC/PAS 61906:2005, which is withdrawn.

BSI, as a member of CENELEC, is obliged to publish EN 62474:2012 as a British Standard. However, attention is drawn to the fact that during the development of this European Standard, the UK committee voted against its approval as a European Standard.

The UK committee submitted a negative vote because the standard refers to the IEC 62474 database on material declaration, which will be maintained by IEC/TC 111. All elements relating to the maintenance of this database can be disregarded in the context of EN 62474. This applies in particular to Clause 7. The negative vote was not based on the technical content of this standard.

The UK participation in its preparation was entrusted to Technical Committee GEL/111, Electrotechnical environment committee.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62474

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English version

Material declaration for products of and for the electrotechnical industry
(IEC 62474:2012)

Déclaration de matière pour des produits de et pour l'industrie électrotechnique
(CEI 62474:2012)

Materialdeklaration für Produkte der elektrotechnischen Industrie und für die elektrotechnische Industrie
(IEC 62474:2012)

This European Standard was approved by CENELEC on 2012-04-26. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 62474:2012 E

Foreword

The text of document 111/243/FDIS, future edition 1 of IEC 62474, prepared by IEC/TC 111 "Environmental standardization for electrical and electronic products and systems" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62474:2012.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2013-01-26
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2015-04-26

This standard refers to a database that is associated with it and that will be maintained by IEC/TC 111. Hence all elements relating to this database are to be disregarded in the context of EN 62474. This applies in particular to Clause 7.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 62474:2012 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 62430	NOTE	Harmonized as EN 62430.
IEC 82045-1:2001	NOTE	Harmonized as EN 82045-1:2001 (not modified).
IEC 82045-2:2004	NOTE	Harmonized as EN 82045-2:2005 (not modified).
ISO 1043-1:2001	NOTE	Harmonized as EN ISO 1043-1:2001 (not modified).
ISO 1043-2:2000	NOTE	Harmonized as EN ISO 1043-2:2001 (not modified).
ISO 1043-3:1996	NOTE	Harmonized as EN ISO 1043-3:1999 (not modified).
ISO 1043-4:1998	NOTE	Harmonized as EN ISO 1043-4:1999 (not modified).
ISO 9000:2005	NOTE	Harmonized as EN ISO 9000:2005 (not modified).
ISO 14020:2000	NOTE	Harmonized as EN ISO 14020:2001 (not modified).
ISO 14024:1999	NOTE	Harmonized as EN ISO 14024:2000 (not modified).
ISO 14025:2006	NOTE	Harmonized as EN ISO 14025:2010 (not modified).
ISO 14040:2006	NOTE	Harmonized as EN ISO 14040:2006 (not modified).

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 61360-1	-	Standard data elements types with associated classification scheme for electric items - Part 1: Definitions - Principles and methods	EN 61360-1	-
IEC 61360-2	-	Standard data element types with associated classification scheme for electric components - Part 2: EXPRESS dictionary schema	EN 61360-2	-
IEC 61360-5	-	Standard data element types with associated classification scheme for electric components - Part 5: Extensions to the EXPRESS dictionary schema	EN 61360-5	-
ISO/IEC directives Supplement	2011	Procedures specific to IEC	-	-

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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.

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.

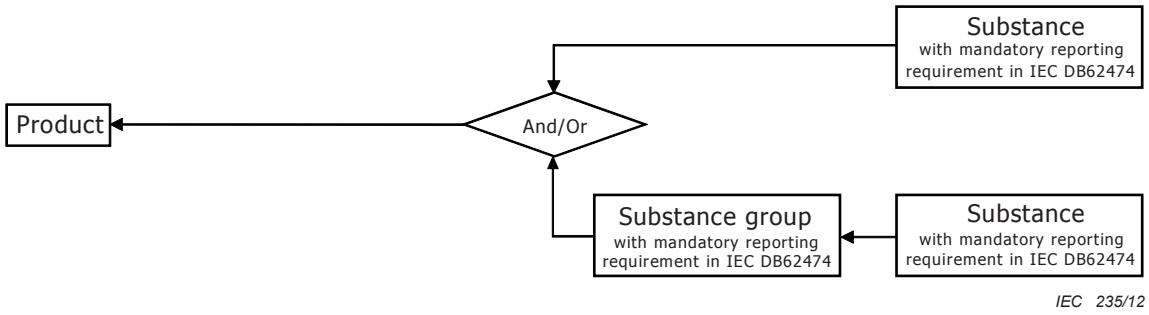
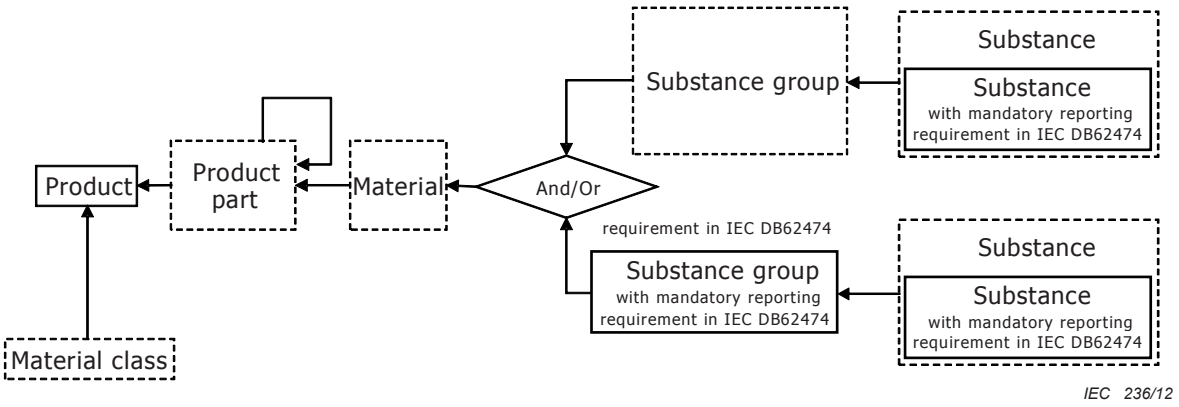


Figure 1 – Conceptual diagram for base requirements



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

the IEC 62474 database is applicable for that substance or substance group. Substances and substance groups with an optional reporting requirement in the IEC 62474 database may be declared if they are present in the product below the reporting 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. Substances listed in the IEC 62474 database as reference substances or substances or substance groups not listed in the IEC 62474 database may be declared.

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) or 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), to the material (if material is declared) or to the product part (if product part is declared) or otherwise to the product.

b) Substances or substance groups with an optional reporting requirement in the IEC 62474 database shall be named as given in the IEC 62474 database. Substances not listed in the IEC 62474 database shall be identified by an internationally recognized name (e.g. IUPAC name) and preferably also identified with CAS Registry Number, EC Commission Number etc. when these are available.

   NOTE 1 IUPAC Name: name assigned to a chemical compound according to recommendations by IUPAC Nomenclature of Organic (or Inorganic) Chemistry. IUPAC is the abbreviation for the International Union of Pure and Applied Chemistry.

   NOTE 2 CAS Registry Number (also referred to as CAS Number): unique numeric identifier assigned by the Chemical Abstracts Service, a division of the American Chemical Society.

   NOTE 3 European Commission Number (also referred to as EC Number, EC-No and EC#): unique numeric identifier assigned by the Commission of the European Union to chemical substances that are commercially available within the European Union.

c) Such substance groups or substances shall have a mass or percentage of the material mass (if material is declared) or percentage of the product part mass (if product part is declared) or otherwise percentage of the product mass assigned.

d) 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 declarable 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.

4.3.6 Other requirements

The following requirements are applicable to material declarations:

a) Material declarations may include statements relating to product parts, material, or substance content of products. These statements shall be designed so that they can be answered by True or False.

   NOTE For example, statements can provide information about the presence of product parts, such as batteries or product parts of interest for end-of-life (EOL) treatment facilities.

b) In the case of information provided regarding the absence of materials, substance groups or substances, the absence criteria shall be specified.

5 Criteria and thresholds for substances and material classes in the IEC 62474 database

5.1 General

This clause describes the criteria used to determine the substance groups, substances, and material classes to be included in the IEC 62474 database. This clause also specifies how

reporting threshold levels and reportable applications shown in the IEC 62474 database are determined.

IEC National Committees shall use these criteria when submitting change requests for modifying the IEC 62474 database and the validation team shall assess these requests as described in Clause 7.

5.2 Declarable substances criteria

The criteria to be used by the validation team for determining inclusion of substance groups and substances in the IEC 62474 database are provided in Table 1. The validation team shall determine that the substance groups and/or substances may be contained in electrotechnical products before applying the criteria. The process for validation team to remove or reclassify substance groups and substances is described in 7.2.

Table 1 – Declarable substances criteria

Category	Description
Criteria 1 “currently regulated”	A) A substance group or substance shall be added to the IEC 62474 database with a mandatory” reporting requirement if: 1. it is explicitly included within an existing national law or regulation in an IEC Member country; and 2. the law or regulation is applicable to electrotechnical products; and 3. the law or regulation either prohibits or restricts the presence of it in electrotechnical products; or due to its presence within electrotechnical products the law or regulation: • requires reporting or • requires labelling, and 4. the law or regulation cites a specific effective date (which may be in the future) for the requirements under statement 3 above for that substance group or substance. B) Additionally, a substance group or substance shall be considered for addition to the IEC 62474 database if it is included within an existing IEC Member country sub-national law or regulation that has significant impact on the global market place and meets statements 2, 3 and 4 in A) above. NOTE 1 A sub-national law or regulation is considered to be any existing law or regulation at a level of government below the national level of government. C) A law or regulation that restricts the levels of these substance groups or substances in leachate (or extract) or emissions from products shall not be used as a basis for including substance groups or substances in the IEC 62474 database with a “mandatory” reporting requirement.

Table 1 *(continued)*

Category	Description
Criteria 2 “for assessment”	A) A substance group or substance shall be considered for addition to the IEC 62474 database with a “mandatory” reporting requirement if: 1. the substance group or substance meets all the criteria 1 “currently regulated” requirements in A) 1, 2 and 3 above, except 4 and 2. the law or regulation does not cite a specific effective date for the requirements under criteria 1 statement 3 above for that substance group or substance B) Additionally, a substance group or substance shall be considered for addition to the IEC 62474 database if it is included within an existing IEC Member country sub-national law or regulation that has significant impact on the global market place and meets statements 1 and 2 in criteria 2 A) above. NOTE 2 A sub-national law or regulation is considered to be any existing law or regulation at a level of government below the national level of government. C) A law or regulation that restricts the levels of these substance groups or substances in leachate (or extract) or emissions from products shall not be used as a basis for including substance groups or substances in the IEC 62474 database with a “mandatory” reporting requirement.
Criteria 3 “for information only”	A) A substance group or substance shall be considered for addition to the IEC 62474 database with an “optional” reporting requirement if: 1. the substance group or substance is not included under the criteria 1 “currently regulated” or criteria 2 “for assessment”; and 2. there is a recognized industry-wide common market requirement for reporting this substance group or substance in electrotechnical products. NOTE 3 Examples of industry-wide common market requirements include: widely adopted industry agreements or standards; product design material content requirements; scarcity; end-of-life impacts; and/or environmental risk; and corporate responsibility. NOTE 4 Criteria 3 “for information only” are not intended to provide a competitive advantage or compromise trade secrets.

5.3 Material class criteria

The material classes, contained in the IEC 62474 database, shall be uniquely identified in order to effectively and efficiently describe products from a material perspective in order to support environmentally conscious design. See informative Annex D for a comparison of IEC 62474 database material classes to automotive industry material classes.

NOTE IEC 62430 provides additional information on environmentally conscious design.

5.4 Reporting threshold levels and reportable applications for declarable substance groups and declarable substances

For criteria 1 and 2 substance groups and substances, the reporting threshold value shall be based on the lowest applicable regulatory limit where it exists. Where different limits exist for different reportable applications, multiple reporting thresholds may be established for the different reportable applications. Reporting threshold levels and reportable applications are specified in the IEC 62474 database.

A default reporting threshold of 0,1 % of the product mass shall be used for criteria 3 substance groups and substances unless a lower value is necessary to meet stakeholder requirements.

5.5 Threshold levels for material classes

Material class reporting thresholds are not established for an individual material class.

5.6 Reference substances in the IEC 62474 database

For declarable substance groups listed in the IEC 62474 database, the database provides examples of individual substances belonging to those groups designated as “reference” on a separate worksheet named “Reference Substances-Informative”. The reference substance list for a particular declarable substance group is not intended to be an exhaustive list, unless otherwise stated in the IEC 62474 database.

When reporting individual reference substances, thresholds shall be sufficient to conform to the reporting threshold level for the substance group as specified in the IEC 62474 database. However, explicit reporting threshold levels for individual reference substances are not provided in the IEC 62474 database. Reporting of individual reference substances is optional under this International Standard and reference substances are included for informative purposes only.

6 Data format and exchange

6.1 General

This clause describes the specifics of how material declaration data is required to be formatted and exchanged, to support information transfer through the supply chain. Although hardcopy exchange may be used, this International Standard specifies criteria for the electronic exchange of material declarations. This clause provides instruction to users, but it is mainly focused to provide requirements to software developers. It is not intended to promote a specific software application.

Data format and exchange supports base requirements as well as additional requirements, so that data can be exchanged through the supply chain without interruption.

6.2 Data format

The data format and exchange shall support the requirements for declarable substances groups, declarable substances, substances, materials and material classes, as defined in Clause 4 of this International Standard. The lists of declarable substance groups, declarable substances, and material classes as described in Clause 5 are specified in the IEC 62474 database. IEC 62474 database shall conform to the requirements of IEC 61360 Parts 1, 2 and 5.

Material declaration data shall be in the eXtensible Markup Language (XML) and will be defined using the W3C (World Wide Web Consortium) XML schema as defined in the IEC 62474 database. See 7.1 for the IEC 62474 database update process. This XML schema defines the data elements (type of data and constraints) and structure (relationship between data) of a material declaration data file. Conforming XML files shall be the primary mechanism for exchanging data between parties in the supply chain. See informative Annex B for a description of major data exchange elements and examples of data element types in a material declaration.

Software solutions providing material declaration tools conforming to this International Standard shall support the XML representation defined here.

6.3 Data exchange

6.3.1 Two-way and one-way data exchange

The data exchange schema shall support two-way and one-way electronic data exchange. In the two-way scenario, the requester initiates an electronic data request; the responder then replies to the requester with the requested data. In the one-way scenario, the responder initiates the electronic data exchange.

6.3.2 Data exchange specification in the IEC 62474 database

The following requirements are applicable to data exchange specifications included in the IEC 62474 database:

a) The data exchange specification in the IEC 62474 database shall support the base requirements and additional requirements specified in Clause 4 of this International Standard.

b) The IEC 62474 database shall include a table that specifies the data elements, attributes and multiplicities to support material declaration data exchange.

NOTE For users, refer to informative Annex B for a summary representation.

c) The IEC 62474 database shall include the XML schema required to support material declaration data exchange.

6.3.3 Additional data exchange requirements

The data format and exchange methodology shall allow for the inclusion of supporting information and a text field for additional freeform comments or information, and shall provide for the attachment of supporting files.

6.3.4 XML file

An IEC 62474 material declaration exchange file shall be valid according to the XML schema included in the IEC 62474 database. An XML schema (as defined by W3C XML Schema Part 0,1,2) provides a set of rules to which an XML file shall conform in order to be considered correct or valid. See informative Annex E for declaration examples as XML files.

6.4 Criteria for the IEC 62474 database maintenance of data format and exchange information

The criteria to be used by the validation team for determining changes to the data format are provided below.

A change to the data format as specified in the IEC 62474 database “developer table” and “XML schema” (including data elements, relationships, multiplicities or schema) shall be considered if there is an industry-wide purpose for modifying data elements, relationships, multiplicities or schema to meet common stakeholder requirements, as long as it does not require a change to Clause 4, 5 or 6 of this International Standard. It may be based on revised regulatory requirements.

7 IEC 62474 database maintenance

7.1 IEC 62474 database update process

The IEC 62474 database shall be controlled and maintained according to the ISO/IEC Directives Supplement, Annex J, normal database process. The voting requirements are specified in Annex J. The IEC 62474 database shall be reviewed at least annually and updated as appropriate. National Committees can request the TC 111 Secretary to conduct an out-of-cycle review for an urgent request (e.g., errors in the IEC 62474 database that prevent the exchange of data as intended by this International Standard).

P-members in the IEC Technical Committee 111 may designate persons to the Material Declaration validation team (VT). Validation team members representing a National Committee (NC) have a single vote regardless of how many members the National Committee designates to the validation team. Validation team members are expected to have the necessary expertise regarding chemical content in electronic industry products and/or information technology to effectively evaluate the change requests. If the VT members do not have the appropriate expertise, they shall consult with the appropriate experts to evaluate the technical aspects of the change requests.

The TC 111 Secretary or his designee shall send out a notice to National Committees to submit their change requests for the annual update of the IEC 62474 database. A change request form is used in order to provide the validation team with sufficient information to make its determinations. See informative Annex C that describes the database update process and instructions for VT members.

A schedule including dates and major milestones for the IEC 62474 database update process is included in the IEC 62474 database.

7.2 Reclassification and removal of substance groups and substances from the IEC 62474 database

The validation team is responsible for developing the screening methodology for substance applicability to electrotechnical products. Annex C provides an example process that may be used by the validation team.

A criteria 2 “for assessment” substance group or substance shall be reclassified as criteria 1 “currently regulated” once the effective date of a regulatory requirement is specified.

A criteria 3 “for information only” substance group or substance shall be reclassified as criteria 1 or criteria 2 if one of those criteria become applicable.

If a substance group or substance is included in the IEC 62474 database under criteria 1 or 2, and the applicable law or regulation is withdrawn, the validation team shall remove listing according to criteria 1 or 2 and shall consider if criteria 3 applies. If criteria 3 does not apply, such substance group or substance shall be removed from IEC 62474 database.

If a substance group or substance is included in the IEC 62474 database under criteria 3, and the recognized industry-wide common market requirement is no longer applicable, such substance group or substance shall be removed from IEC 62474 database.

7.3 Maintenance of data format part of the IEC 62474 database

The validation team is responsible for developing a methodology to consider requests for changes to the data format. Change requests involving the data exchange information and format shall be handled according to the expedited or standard process as described below:

a) Expedited processing

   Change requests intended to solve critical problems or limitations in the data exchange shall be processed through the change request system as soon as they are entered into the system rather than waiting for the annual update process.

b) Standard processing

   Change requests suggesting improvement of the data exchange model and format and that are in line with the intended function of the data exchange shall be considered by the validation team for compilation and consideration for future upgrades.

Annex A
(informative)

Examples corresponding to Clause 4 – Requirements for material declaration

A.1 General

This annex illustrates several examples of material declaration. For examples 1 and 2, the minimum requirements of 4.2 “base data requirements” are illustrated as well as one declaration showing “additional requirements” as described in 4.3. Example 3 just illustrates a declaration following the “additional requirements”. For presentation purposes, these declarations are separated into i) business information (mandatory and optional information) ii) product part/material/substance/substance group declaration (mandatory and optional information) and iii) a declaration of the material classes (entirely optional).

The examples show selected information from the material declaration. For a complete list of information required for material declaration according to this International Standard, see Clauses 4 and 6 and the XML schema in the IEC 62474 database.

A.2 Example 1 - component

A.2.1 General

A product (electronic component) weighing 0,12 grams consists of three product parts. One of those product parts contains four materials, two of which contain ‘lead/lead compounds’ above the reporting threshold level.

Subclause A.2.2, and Tables A.1 and A.2 illustrate the material declaration based on the “base data requirements” of 4.2. The declarable substance group “lead/lead compounds” shall be declared separately for each homogenous material that contains lead/lead compounds above the reporting threshold level; thus two declarations of ‘lead/lead compounds’ are shown.

Subclause A.2.3 illustrates the material declaration reporting optional information that goes beyond the base requirements. This declaration is based on “additional requirements” of 4.3, showing information on selected product parts, materials, substance groups and substances. All information is provided as mass percent of the next level in the product hierarchy except those substance groups where 4.2.3 c) requires declaration of material mass percent. For the two occurrences of lead present in different materials, the information on applicable exemptions is provided (see Table A.4). Subclause 4.3.2 d) recommends that material classes declared represent at least 95 % of the product, in this example the information is more precise and 100 % of the product composition is declared.

When optional information is being declared, the supplier and requester may determine what information is reported and what information is not included.

A.2.2 Material declaration reporting “base data requirements”

Table A.1 – Base data requirements – Business information

BusinessInfo	Business information is provided as specified in this International Standard
ProductID.identifier	ABC4523
ProductID.effectiveDate	23-Nov-09
ProductID.Mass	0,12 (g)
ProductFamilyName	-
QueryList	-
unitType	Each
Comment	-

Table A.2 – Example 1 – Base data requirements – Substance/substance group information

Substance Group[a]				Substance[a]			
	Mass[b] g	Mass[b] %	Material mass[b] %	Name	Mass[b] g	Mass[b] %	Material mass[b] %
Lead/lead Compounds [c]			9,30				
Lead/lead Compounds [c]			97				

a Substance Groups or substances with mandatory reporting requirements shall be reported.

b See 4.2.3 c) for details on reporting requirements.

c The declarable substance group ‘lead/lead compounds’ shall be declared separately for each homogenous material that contains lead or lead compounds above the reporting threshold level; thus two declarations of ‘lead/lead compounds’ are shown, see 4.2.3 d).

A.2.3 Material declaration reporting “additional information”

Table A.3 – Additional requirements – Business information

BusinessInfo	Business information is provided as specified in this International Standard
ProductID.identifier	ABC4523
ProductID.effectiveDate	23-Nov-09
ProductID.Mass	0,12 (g)
ProductFamilyName	-
QueryList	-
unitType	Each
Comment	-

In this example, just the identical business information as under the base requirements is provided.

Table A.4 – Additional requirements – Product part/material/substance group/substance information

Product part			Material			Substance group[a]					Substance[a]			
Name	**Mass[b]** g	**Mass[b]** %	**Name**	**Mass[c]** g	**Mass[c]** %	**Name**	**Mass[d]** g	**Mass** % [d]	**Material mass** %[d]	**Exemption[e]**	**Name**	**Mass[d]** g	**Mass[d]** %	**Material mass[d]** %
Active part		6,50	Ceramics		100						Mn_3O_4		64	
											NiO		17	
											Co_3O_4		15	
Termination		73,50	Metal/ Plating		0,65						Ag		100	
			Glass		0,03						SiO_2		90	
						Lead/Lead Compounds			9,3	RoHS exemption 5 lead in glass of electronic components	PbO		10	
			Metal/sol-der		1,36	Lead/Lead Compounds			97,0	RoHS exemption 7a Lead in high melting temperature type solders	Pb		97	
											Sn		1	
											Ag		2	
			Metal/ Leads		97,96						Cu		96	
											Sn		4	
Encapsula-tion		20,00	Organic Polymer		100						Epoxy		100	

a Substance Groups or substances with mandatory reporting requirements shall be reported; reporting of all other substance groups or substances is optional

b See 4.3.1 c) for details on reporting requirements.

c See 4.3.3 c) for details on reporting requirements.

d See 4.3.4 c) and 4.3.5 c) for details on reporting requirements.

e See 4.3.4 e) for details on reporting exemptions.

In addition to the base data requirements product parts, materials, substances and exemptions are declared in this example.

Table A.5 – Additional requirements – Material class information

Material class ID	Mass g	Mass %	Material class
M-004		72,0	Copper and its alloys
M-008		0,5	Precious metals
M-009		1,0	Other non-ferrous metals and alloys
M-010		6,5	Ceramics /Glass
M-014		20,0	Other Plastics and rubber

A.3 Example 2 - Electrical appliance (toaster)

A.3.1 General

This example is a material declaration of a finished product, a toaster. The toaster weighs 1 600 g.

Subclause A.3.2 illustrates the material declaration based on the “base data requirements” of 4.2. The declarable substance group “lead/lead compounds” shall be declared separately for each homogenous material that contains lead and lead compounds above the reporting threshold level. In this example, there is only one instance of lead which is contained within the printed circuit board. The presence of the substance Di(2-ethylhexyl)phthalate (DEHP) is also declared as this substance with mandatory reporting requirements in the IEC 62474 database exceed the reporting threshold levels specified in the IEC 62474 database.

Subclause A.3.3 illustrates a declaration showing optional elements that go beyond the base data requirements. Selected product parts, substance groups and substances are shown based on the “additional requirements” of 4.3. The toaster is divided into eleven product parts; however, no materials have been declared. In this example, quantification is typically using mass in grams. For the one occurrence of lead present in the printed circuit board, optional information on the applicable exemption is provided. In addition, the presence of substance groups beryllium/beryllium compounds and shortchain chlorinated paraffins (C10-C13) as well as of the substance nickel is declared. The declaration of nickel in this specific case is optional even if nickel is intentionally added but the top plate of a toaster is generally not considered to match the reportable application “All, where prolonged skin contact is expected” that is specified in the IEC 62474 database. The declaration of shortchain chlorinated paraffins (C10-C13) is optional too, as the content in the product does not exceed the reporting threshold level specified in the IEC 62474 database. The material class information is specified using mass (in grams) rather than the percentage of the product mass, representing just the recommended 95 % of the total mass of the toaster.

When optional information is being declared, the supplier and requester may determine what information is reported and what information is not included.

A.3.2 Material declaration reporting “base data requirements”

Table A.6 – Base data requirements – Business information

BusinessInfo	Business information is provided as specified in this International Standard
ProductID.name	ToasterX
ProductID.effectiveDate	14-Feb-10
ProductID.Mass	1 600 (g)
ProductFamilyName	-
QueryList	-
unitType	Each
Comment	

Table A.7 – Example 2 – Base data requirements – Substance/substance group information

Substance group [a]				Substance [a]			
	Mass[b] g	Mass[b] %	Material mass[b] %	Name	Mass[b] g	Mass[b] %	Material mass[b] %
Lead/lead Compounds			88,0				
				Di(2-ethylhexyl)phthalate (DEHP)	7		

a Substance groups or substances with mandatory reporting requirements shall be reported.

b See 4.2.3 c) for details on reporting requirements.

A.3.3 Material declaration reporting “additional information”

Table A.8 – Additional requirements – Business information

BusinessInfo	Business information is provided as specified in the International Standard
ProductID.identifier	ToasterX
ProductID.effectiveDate	14-Feb-10
ProductID.Mass	1 600 (g)
ProductFamilyName	-
QueryList	“The product contains a battery", "false"
unitType	Each
Comment	-

In this example, in addition to the business information provided under the base requirements, the query list information is provided.

Table A.9 – Additional requirements – Product part/material/substance group/substance information

Product part			Material			Substance group [a]					Substance [a]			
Name	**Mass[b] g**	**Mass[b] %**	**Name**	**Mass g**	**Mass %**	**Name**	**Mass[c] g**	**Mass[c] %**	**Material mass[c] %**	**Exemptions[d]**	**Name**	**Mass[c] g**	**Mass[c] %**	**Material mass[c] %**
Body	372,6													
Stop/ selection button	2,1													
Base pan	210													
Top cover plate	155					nickel	15				nickel	15		
Heat shield	83,5													
Power cord	82					shortchain chlorinated paraffins (C10 – C13)	1							
						phthalates	7				Di(2-ethylhexyl) phthalate (DEHP)	7		
Spring	16													
Heating tube	24													
Heating tube fixing	15													
Body (internal part)	534,5													
Printed Circuit Board	48,6					beryllium/ beryllium compounds	2							
						lead/lead Compounds			85	RoHS exemption 7a): Lead in high melting temperature type solders				

a Substance groups or substances with mandatory reporting requirements shall be reported; reporting of all other substance groups or substances is optional.

b See 4.3.1 c) for details on reporting requirements.

c See 4.3.4 c) and 4.3.5 c) for details on reporting requirements.

d See 4.3.4 e) for details on reporting exemptions.

In addition to the base data requirements, the optional product parts and some optional substance group/substance information are provided in this example.

Table A.10 – Additional Requirements – Material class information

Material class ID	Mass g	Mass %	Material class
M-001	778		Stainless steel
M-002	31		Other ferrous alloys, non-stainless steels
M-004	60		Copper and its alloys
M-010	39		Ceramics /Glass
M-012	24		Polyvinylchloride (PVC)
M-013	590		Other thermoplastics

A.4 Example 3 - Product family - capacitor

A.4.1 General

Subclause A.4.2 provides an example of how product families which use like materials, but with differing masses, could be defined.

The use of percentage of the product mass for each substance and the total mass for the product provide the capability to calculate the specific mass for each substance. The example exceeds the minimum declaration requirements as described in 4.2 (base data requirements), as it reports substances and substance groups not listed in the IEC 62474 database except nickel. The declaration of nickel in this specific case is not mandatory, even if nickel is intentionally added but a capacitor typically being an internal component would not be considered to match the reportable application “All, where prolonged skin contact is expected” that is specified in the IEC 62474 database. Thus the declaration is based on the “additional requirements” of 4.3. The optional Material class information is specified using percentage of the product mass percent adding up to 100 % in this example.

When optional information is being declared, the supplier and requester may determine what information is reported and what information is not included.

A.4.2 Material declaration reporting additional information

Table A.11 – Additional requirements – Business information

BusinessInfo	Business information is provided as specified in this International Standard
ProductID[0].identifier	CAP2345-10
ProductID[0].effectiveDate	1-Jul-06
ProductID[0].Mass	0,0014 (g)
ProductID[1].identifier	CAP2345-20
ProductID[1].effectiveDate	1-Jul-06
ProductID[1].Mass	0,006 (g)
ProductID[2].identifier	CAP2345-50
ProductID[2].effectiveDate	1-Jul-06
ProductID[2].Mass	0,21 (g)
ProductFamilyName	CAP2345-xx
QueryList	
unitType	Each
Comment	

In this example, only the business information mandated under the base requirements is provided.

Table A.12 – Additional requirements – Product part/material/substance group/substance information

Product part			Material			Substance group [a]					Substance [a]			
Name	**Mass** g	**Mass** %	**Name**	**Mass** g	**Mass** %	**Name**	**Mass**[b] g	**Mass**[b] %	**Material mass**[b] %	**Exemptions**	**Name**	**Mass**[b] g	**Mass**[b] %	**Material mass**[b] %
						Barium and its compounds		75			Barium-titanate		75	
						Bismuth and its compounds		11			Bismuth titanium oxide		11	
						Silver and its compounds		3			Silver		3	
						Palladium and its compounds		1			Palladium		1	
						Gold and its compounds		2			Gold		2	
						Nickel and its compounds		3			Nickel		3	
						Tin and its compounds		5			Tin		5	

a Substance groups or substances with mandatory reporting requirements shall be reported; reporting of all other substance groups or substances is optional.

b See 4.3.4 c) and 4.3.5 c) for details on reporting requirements.

In addition to the base data requirements, optional substance information is provided.

Table A.13 – Additional requirements – material class information

Material class ID	Mass g	Mass %	Material class
M-006		3	Nickel and its alloys
M-008		6	Precious metals
M-009		5	Other non-ferrous metals and alloys
M-010		86	Ceramics /Glass

A.5 Product assembly along the supply chain

A product supplied by an upstream supplier becomes a product part for the downstream manufacturer. This is shown in Figure A.1.

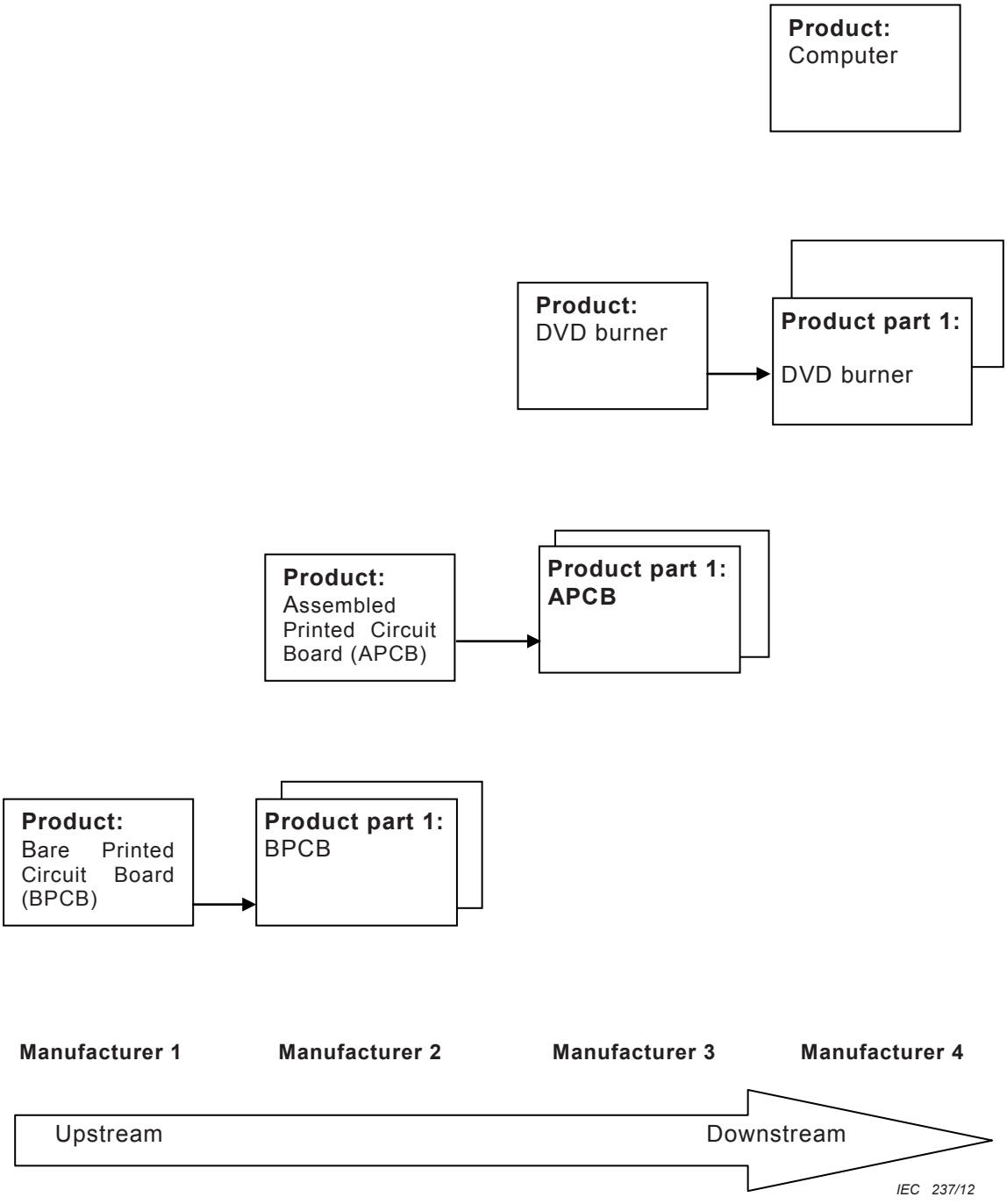


Figure A.1 – Schematic representation of products versus product parts along the supply chain

A.6 Statements to be implemented in material declaration questionnaire (examples)

Various statements may be posed to the responder in addition to the request for material data to be answered as true or false. These statements may be used to supplement material data to assess one's compliance status or to gather relevant information that may be helpful for environmentally conscious design. Below are example statements.

Example statements:

- The product contains a battery.
- The product needs special treatment during recycling.
- There are special risks or hazards in the product.
- The product contains printed circuit boards.
- One or more exemptions of the EU RoHS directive apply.

Annex B
(informative)

Examples corresponding to Clause 6 – Data format and exchange

Table B.1 describes the major mandatory and optional data elements in material declarations.

The data elements in Table B.1 represent a simplified view of the data fields in the XML schema. This provides a useful overview for the declaration user. For implementation or development purposes, please refer to the detailed declaration data fields and the XML schema in the IEC 62474 database.

Data elements are grouped into categories that correspond to the boxes in the conceptual diagrams (Figures 1 and 2), with the addition of business information (see 4.2.4). The description provided for each category in Table B.1 indicates whether or not declaration of the category is mandatory (included in the declaration) or optional. For example, ‘Business Info’, and ‘Product’ shall always be declared in a completed materials declaration. The declaration of product parts, material classes and materials is usually optional.

For each category that is present in a completed materials declaration, the “Obligation” column in Table B.1 indicates which data elements are mandatory (data provided in the category declaration), which data elements are optional and which data elements are conditional. Note that some data elements are conditional based on reporting requirements and on information provided in other data elements. For example, generally only one of the data elements mass or mass percent needs to be completed.

The following additional notes apply to Table B.1:

- Each data element type contains one or more pieces of data. For example, the data element “Supplier company” contains multiple data such as company name, company address and company ID.
- Links between objects are defined in the conceptual diagrams (see Figures 1 and 2) and are not included as data elements in Table B.1.

In a completed material declaration, the data elements are organized in a hierarchy containing the data of the actual declaration. The top level of the declaration includes “BusinessInfo”, “Product” (referred to as product or product family in Table B.1), and “DatabaseVersion”, the version of the IEC 62474 database on which the XML schema is based.

Table B.1 – Data element types of a material declaration (1 of 6)

Category	Data element type	Obligation	Description
Main (top level object to be included in every material declaration)	schemaDatabaseVersion	Mandatory	Version of the IEC database which contains the XML schema on which the declaration is based
	substanceDataBaseVersion	Mandatory	Version of the IEC database which contains the list of reportable substances
	Signature	Optional	Digital signature
Business Info (to be included in every material declaration)	Supplier company	Mandatory	Name, identifier, and address of the supplier company
	Supplier contact	Mandatory	Name, title, phone, email of the supplier contact person
	Supplier authorizer	Mandatory	Name, title, phone, and email of the supplier person authorizing the accuracy of this material declaration
	Request company	Conditional (mandatory if request-response mode)	Name and identifier of the requesting company
	Request contact	Conditional (mandatory if request-response mode)	Name, title, phone, email of the contact person from the requesting company
	Mode	Mandatory	An indicator that conveys whether the declaration is a request-response declaration or a distribute declaration
	Request date	Conditional (mandatory if request is made)	Date of declaration request
	Respond by date	Optional	Date specifying when the response is expected
	Response date	Mandatory	Date that declaration is completed. This date can be either a date that a company has responded or distributed a declaration
	Field lock	Optional	Lock flag for requester defined information which should not be changed by responding company.
	Attachment	Optional	Supplementary file added to the declaration

Table B.1 (2 of 6)

Category	Data element type	Obligation	Description
Product or Product family (to be included in the Material declaration)	Responder Product Name	Optional	Product name used by the supplier
	Responder Identifier	Mandatory	An identifier for the product
	productFamilyName	Optional	Name of product family being declared
	Manufacturing Site	Optional	Manufacturing site of the product
	Effective Date	Mandatory	Date that the material declaration is applicable and valid
	Version	Optional	Product version (if applicable)
	Requester Name	Optional	Product name used by the requester
	Requester Identifier	Optional	Product identifier used by the requester
	Mass	Mandatory	The total mass of the product
	Unit of Measure	Mandatory	The unit of measure for the mass of the product
	Unit Type	Mandatory	A unit type describes the units used to measure a product or product family. Eg. each, g, kg, cm^2, m^2, cm^3
	Query List	Optional	List of questions to be answered by supplier and responses to the questions
	Attachment	Optional	Supplementary file added to the declaration
	Comment	Optional	Comment field for any additional information

Table B.1 (3 of 6))

Category	Data element type	Obligation	Description
Product part (this category is optional - if product part is declared, these data element types are applicable; if product part is not declared, these data elements types are not applicable)	Product Part Name	Optional	The name of the product part
	Identifier	Optional	The identifier of the product part; for example manufacturer's part number
	Version	Optional	Product part version (if applicable)
	Mass	Conditional (either mass or mass percent is mandatory)	The mass of the product part
	Unit of Measure	Mandatory	The unit of measure for the mass of the product part
	Mass Percent	Conditional (either mass or mass percent is mandatory)	The mass percent of the product part to the product
	Number of Units	Mandatory	Number of identical instances of product part in the product (this allows a single product part declaration for a product part that exists multiple times in the product). The default value will be 1.
	Comment	Optional	Comment field for any additional information
Material class (this category is optional in the material declaration)	Material class Name	Mandatory	The name of the material class as it appears on the material class list in the IEC 62474 database
	Mass	Conditional (either mass or mass percent is mandatory)	The mass of the sum of materials in the material class in the product
	Unit of Measure	Conditional (mandatory if mass is specified)	The unit of measure for the mass of the material class in the product
	Mass Percent	Conditional (either mass or mass percent is mandatory)	The mass percent of the material class relative to the product

Table B.1 (4 of 6)

Category	Data element type	Obligation	Description
Material (this category is optional - if material is declared, these data element types are applicable)	Name	Mandatory	Name or unique identifier of the material within the product
	Unique ID	Optional	A unique identifier of the material (if applicable) and the applicable reference standard
	Mass	Conditional (either mass or mass percent is mandatory)	The mass for the material
	Unit of Measure	Conditional (mandatory if mass is specified)	The unit of measure for the mass of the material
	Mass Percent	Conditional (either mass or mass percent is mandatory)	The nominal mass percent of the material relative to the product part (if declared) or otherwise the product
	Material class Name	Optional	The name of the material class to which this material belongs
	Comment	Optional	Comment field for any additional information

Table B.1 (5 of 6)

Category	Data element type	Obligation	Description
Substance group (this category is declared for all substance groups with mandatory reporting requirement - if substance group is declared, these data element types are applicable)	Name	Mandatory	The name of the substance group; for declarable substance groups, this shall correspond to the IEC DB
	Mass	Conditional (either mass or mass percent is mandatory unless material level reporting is required by the IEC 62474 database)	The mass of the substance group
	Unit of Measure	Conditional (mandatory if mass is specified)	The unit of measure for the mass of the substance group
	Mass Percent	Conditional (either mass or mass percent is mandatory unless material level reporting is required by the IEC 62474 database)	The mass of the substance group as a percent (%) of the mass as specified in the declaration requirements
	Material Mass Percent	Conditional (mandatory if listed in the IEC 62474 database with reporting threshold level at material level)	The substance group concentration in mass percent of the homogeneous material mass. The mass percent is calculated as specified in the IEC 62474 database if a reporting requirement is provided.
	Above Threshold Level	Optional	Yes/No response stating substance group contained in product is above reporting threshold level or not
	Reportable Application	Optional	The reportable application specified in the IEC 62474 database of the reporting threshold level, which triggered declaration of the substance group
	Exemptions	Optional	List of any exemptions applicable to this substance group in the specified material
	Comment	Optional	Comment Field for any additional information
	Descriptions of Use	Optional	Field to describe where substance group is found if used in product or product part being declared. This can be used to describe the material (or homogeneous material) for this substance group and/or exemption

Table B.1 (6 of 6)

Category	Data element type	Obligation	Description
Substance (this category is declared for all substances with a mandatory reporting requirement - if substance is declared, these data element types are applicable)	Name	Mandatory	The name of the substance; for declarable substances, this corresponds to the IEC 62474 database entry.
	Unique ID	Conditional	A unique identifier of the substance (e.g. CAS number)
	Mass	Conditional (either mass or mass percent is mandatory unless material level reporting is required by the IEC 62474 database)	The mass of the substance
	Unit of Measure	Conditional (mandatory if mass is specified)	The unit of measure for the mass of the substance
	Mass Percent	Conditional (either mass or mass percent is mandatory unless material level reporting is required by the IEC 62474 database)	The mass of the substance as a percent (%) of the mass as specified in the declaration requirements
	Material Mass Percent	Conditional (mandatory if listed in the IEC 62474 database with reporting requirement at material level)	The substance concentration in mass percent of the homogeneous material mass. The mass percent is calculated as specified in the IEC 62474 database if a reporting requirement is provided.
	Above Threshold Level	Optional	Yes/No response stating substance contained in product is above reporting threshold level or not
	Reportable Application	Optional	The reportable application specified in the IEC 62474 database of the reporting threshold level, which triggered declaration of the substance
	Exemptions	Optional	List of any exemptions applicable to this substance in the specified material
	Comment	Optional	Comment field for any additional information
	Descriptions of Use	Optional	Field to describe where the substance is found if used in product or product part being declared. This field can be used to describe the material (or homogeneous material) for this substance and/or exemption
NOTE The Data Element Types ‘Mass’ and ‘Mass Percent’ in Table B.1 include optional data fields for the responder to specify the tolerance in the mass or mass percent. Positive tolerance and negative tolerance could be individually specified.			

Annex C
(informative)

Examples corresponding to Clause 7 – IEC 62474 database management

C.1 Description of IEC 62474 database update

National Committees can nominate multiple VT members to provide experts on chemical content in electrotechnical industry products, information technology or other necessary discipline.

The ISO/IEC Directive Supplement Annex J controls the process for the IEC 62474 database update and maintenance. Below is a reprint of Figure J.1.

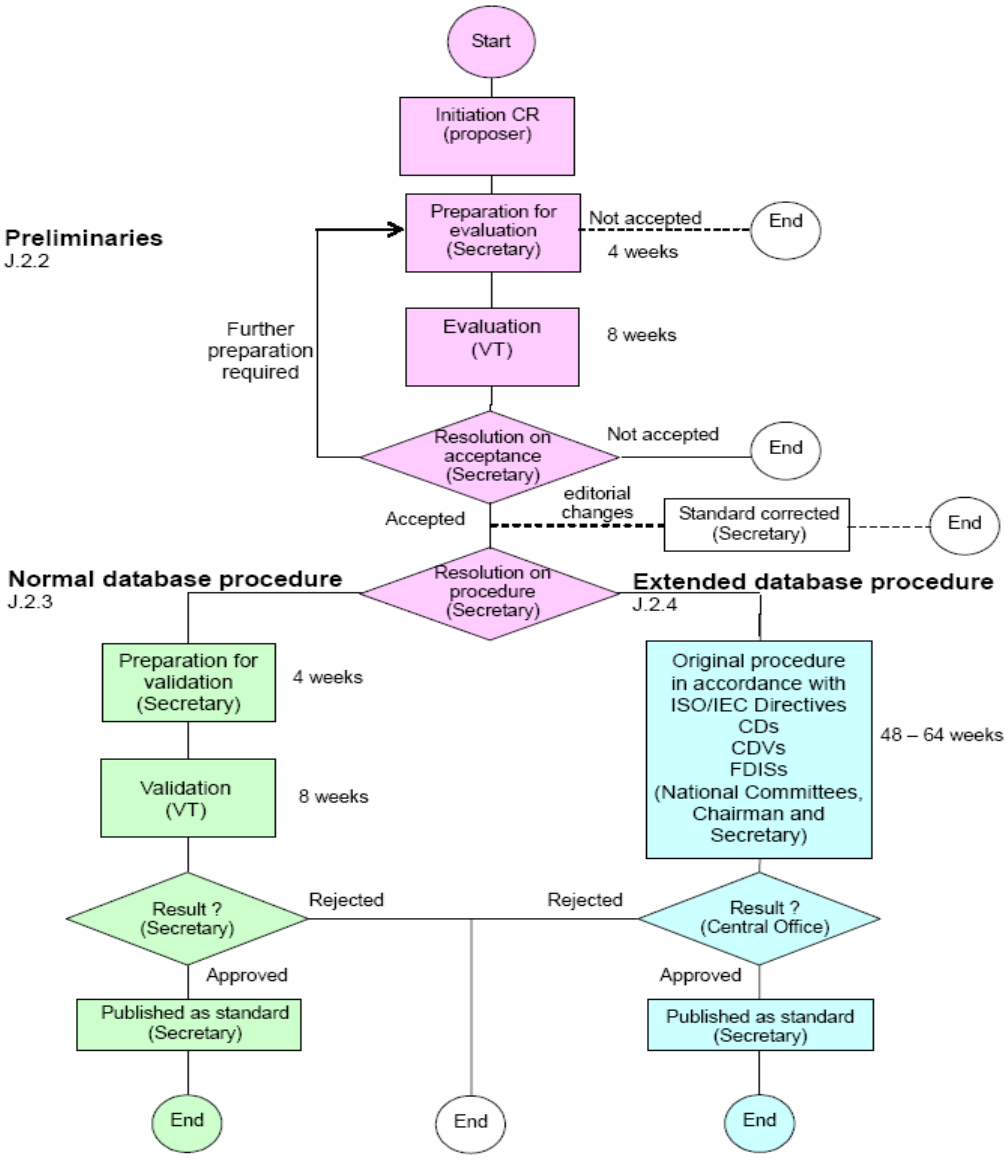


Figure J.1 – Overview of the procedures

Adapted for the IEC 62474 database, this process consists of the following basic steps:

1) A change request is entered by an NC, specifying the minimum information needed for the validation team to consider the request. Forms C1 and C2 below show the information that is expected to be included with a substance/substance group or data exchange change request.

Form C.1 IEC 62474 database change request – Substances and substance groups

Change request name:		**Revision:**	**Replaces:**
Comments pertain to section(s) checked.			
☐	Part I	Chemical description and identification	
☐	Part II	Criteria for presence on list	
☐	Part III	Reporting threshold level and reportable application	
☐		Delete entry (see Part 1/Current/comments for justification)	
☐		Addition of a new substance (enter in Part 1/Proposed)	

Part I – Chemical description and identification of declarable substance / substance group

New entry:

Substance name	
Substance group name	
CAS number(s)	
Multiple CAS exists?	☐ No ☐ Yes ☐ (Please fill out Reference list section below)
Examples of use in electrotechnical products	
Comment:	

Change of a current entry:

Database identification #	
Substance/ substance group name	
CAS number(s)	
Multiple CAS exists?	☐ No ☐ Yes ☐ (Please fill out Reference list section below)
Examples of use in electrotechnical products	
Comment:	

Part II – Criteria for presence of chemical(s) on declarable substance list

	Criteria – please check most appropriate criterion below	**Justification (mandatory)** Please give citations and explanations, for justification of your proposal. Criteria 1 and 2: Name of legislation, country/region, effective date. Criteria 3 has to give reasons like "recycling problems", environmental relevance etc. Exemptions should be mentioned. Attach document if additional space needed.
☐	Criteria 1: R = Currently regulated	
☐	Criteria 2: FA = For assessment	
☐	Criteria 3: FI = For information	
☐	Reference substance	Please fill out Attachment 1 reference substance list

Part III – Reporting threshold level and reportable application

Threshold	Reportable threshold level will be based on the lowest level required by regulation or reasonably required by scientific evaluation. Show current threshold and rationale for proposed change. Check "new" in the column marked "current" if this is a new entry for database.
Current ☐ New	Proposed
Reportable application	Reportable application will be based on the regulation or industry agreement/standard setting the reporting threshold level. Show current reporting threshold level and rationale for proposed change. Check "new" in the column marked "current" if this is a new entry for database.

Current ☐ New	Proposed (Note: Attach document if additional information is needed)
☐ All	☐ All
☐ Specific reportable application:	☐ Specific reportable application: (please clarify)

Part IV – Change request submitters to contact for further information

CR form submittal date		
Submitter name	National Committee	Email or phone

Part V – Result

		Preliminary voting of VT (if needed)	Reason for decision of VT	Database evaluation voting of VT
Status:				
Date:				
Rationale:				
Comments:				

Attachment 1 (For reference substances list)

IEC DB identification# (See Note below)	Substance *group*	Specific substance	CAS #	Common synonym(s)

NOTE The IEC database identification number column is not used for new substances.

Form C2. IEC 62474 database change request – data exchange

Change request name:		**Revision:**	**Replaces:**
Comments pertain to section(s) checked.			
☐	Part I	Correction in current version	
☐	Part II	Improvement suggestion	

Part I – Corrections

Correction suggestion:

IEC 62474 database identification #	
Name (slogan):	
Description:	
Proposed solution:	
Comment:	

Part II – Improvements

Improvement suggestion:

IEC 62474 database identification #	
Name (slogan):	
Description:	
Motivation:	
Comment:	

Part III – Change request submitters to contact for further information

CR form submittal date		
Submitter name	National Committee	Email or phone

Part IV – Result

		Preliminary voting of VT (if needed)	Reason for decision of VT	Database evaluation voting of VT
Status:				
Date:				
Rationale:				
Comments:				

2) The TC 111 Secretary or his designee has a maximum of four weeks to ensure that all mandatory entries and data required of each change request have been included with the change request.

3) The TC 111 Secretary or his designee circulates each change request to validation team (VT) members.

   The VT discusses applicable changes, and has up to eight weeks to evaluate each individual change request. The VT reviews each change request and uses the criteria according to Clauses 5 and 6 of this standard as the basis for rejecting or moving each change request to the next step in the process.

   If any change request needs to be improved, step 3 is repeated after the revised change request is submitted. The TC 111 Secretary has one additional week to conduct final resolution on change request acceptance.

4) Once the change request has been accepted for review, the TC 111 Secretary or his designee has up to four weeks to prepare a formal proposal for validation based on any changes received during step 3. Unless the extended database procedure is specifically requested by the NC, all change requests will be processed through the normal Annex J database procedure.

5) The formal voting of the VT for each change request has to be executed within eight weeks (one vote per represented NC). The criteria applied are the same as for a normal FDIS. Abstentions from voting mean that the vote is not counted.

6) The TC 111 Secretary or his designee has one additional week to record the result of validation and publish any approved change, if the vote on any specific substance was approved according to the voting rules.

Any NC may appeal a decision of the validation team by filing a new change request. This would trigger a new review at the next review period according to the above process. National Committees may request the use of the extended database process of ISO/IEC Directives Supplement Annex J. The VT will consider this at step 3 above. Previously approved changes remain in effect through any appeal. See ISO/IEC Directives Supplement Annex J for more details on the database update and resolution procedures.

C.2 Guidance to validation team on step #5 (review of C-1 substance/substance group change requests)

The validation team will need to apply chemical and scientific judgment when reviewing the C-1 Substance/Substance group change requests submitted by National committees. However, the VT assessment based on this approach shall produce a result that is logical and sensible. The VT will be responsible for establishing their review process. Figure C.1 below gives guidance on how the VT screening process may be used to complete step 5 in the IEC 62474 database annual update process.

Figure C.1 – Guidance to validation team on C-1 substance/ substance group change request review

The first task of the VT review is to determine whether or not the substance and/or substance group are within the scope of this International Standard. Manufacturing process chemicals that do not remain in the final product are outside the scope of this International Standard. The VT will need to apply chemical and scientific judgement to determine whether the substance will be present in the product identified by the CAS number (or other published unique identifier if CAS number is not available); to differentiate between additive and reactive uses and to ensure that the substance does not get converted or removed during the manufacturing conditions. Consideration shall be made for the possibility that although not intentionally added, some substances may be produced and incorporated into the product during the manufacturing process (e.g. Cr+3 compound may get oxidized to Cr+6 during manufacturing and end up in product as Cr+6 (reportable)).

NOTE The VT will be responsible for establishing a methodology to determine applicability to electrotechnical products. The Joint Industry Guide (JIG) 101 established a process to screen for REACH substances of very high concern (SVHC). The first step is to gather information from public databases relating to chemical substances which are readily accessible. Then, the technical knowledge of industry chemical experts is applied to determine known historical and/or existing uses of the substance in electrotechnical products. Several common use categories in electronics include:

- colorant/dye
- surface finish (ink, paint, plating)
- Surfactant/lubricating
- wood (preservative)
- metal/metal alloy (additive)
- textiles (additive or fibers)
- glass/ceramic (additive or fibers)
- additives of plastic, rubber or other polymers (photo degradation prevention; flame retardants; plasticizers; fillers; other additive (e.g. curing agents, etc.)).

The VT will need to apply technical judgment to the above applications as some substances have very specific uses or are used only with certain materials. For example, HBCDD is a flame retardant used in polystyrenes; metallic applications would not be expected to contain significant amounts of organic substances; only certain phthalates are incorporated into PVC for reasons of chemical compatibility and for imparting desired properties to PVC. Some substances may have more than one use across the horizontal electrotechnical industry. VT should include in the “examples of use” column in the IEC 62474 database the primary uses to ensure industry focuses reporting on the most common applications.

Only substances and/or substance groups that pass Task 5.1 and 5.2 screening should be reviewed against the Criteria 1, 2, or 3 in Clause 5 of this International Standard.

C.3 Description of the IEC 62474 database data format and exchange clause maintenance

The purpose of the Data exchange change request is to fix errors that prevent the data exchange from being implemented, to fix errors where the data exchange format does not match what is specified in this International Standard, or to improve the efficiency of data exchange. An example of an in-scope change is fixing the multiplicity of an attribute in the XML schema to match the requirements defined in Clause 4.

Issues that would change the requirements of IEC 62474 are not in scope for this process.

Annex D
(informative)

Additional information

Table D.1 – Comparison of IEC 62474 material classes to automotive industry material classes[1]

			ID	Material class	Definitions of IEC 62474 Material classes	Automotive material class mapping
Inorganic materials	Metals and metal alloys	Ferrous alloys	M-001	Stainless steel	A group of corrosion resisting ferrous alloys containing minimum 10 % chromium content be present	1A - Iron and steel including alloys
			M-002	Other ferrous alloys, non-stainless steels	Iron and any alloy whose defining component is iron and is not stainless steel	1A - Iron and steel including alloys
		Non-ferrous metals and alloys	M-003	Aluminium and its alloys	Aluminium and any alloy whose defining component is aluminium	1B - Light metals and alloys
			M-004	Copper and its alloys	Copper and any alloy whose defining component is copper	1C - Heavy metals and alloys
			M-005	Magnesium and its alloys	Magnesium and any alloy whose defining component is magnesium	1B - Light metals and alloys
			M-006	Nickel and its alloys	Nickel and any alloy whose defining component is nickel	1C - Heavy metals and alloys
			M-007	Zinc and its alloys	Zinc and any alloy whose defining component is zinc	1C - Heavy metals and alloys
			M-008	Precious metals	Any metal or alloy whose defining component is ruthenium, rhodium, palladium, silver, osmium, iridium, platinum and/or gold	1D - Noble metals
			M-009	Other non-ferrous metals and alloys	Other non-ferrous metals and alloys that do not contain iron and that are not included in M-003 through M-008	1B - Light metals and alloys or 1C - Heavy metals and alloys
	Non-metals		M-010	Ceramics / glass	An inorganic, non-metallic solid prepared by the action of heat and subsequent cooling. Materials in this category may have a crystalline or partly crystalline structure (e.g. ceramics), or may be amorphous (e.g. glass)	3A - Ceramics/ 3B - glass
			M-011	Other inorganic materials	Inorganic materials which are not included in M-001 through M-010	4A - Inorganic, solid

1 * WERKSTOFF-KLASSIFIZIERUNG IM KRAFTFAHRZEUGBAU (Material classification in the automotive engineering); VDA (Verband der Automobilindustrie) 231-106 (available in German only).

Table D.1 *(continued)*

			ID	Material class	Definitions of IEC 62474 Material classes	Automotive material class mapping
Organic materials	Plastics and rubber		M-012	PolyVinylChloride (PVC)	A thermoplastic material composed of polymers of vinyl chloride	2A - Thermoplastics
			M-013	Thermoplastics	Resin or plastic compounds that has the potential to be remelted and remolded. Poly Vinyl Chloride (PVC) is excluded from this category	2A - Thermoplastics
			M-014	Other plastics and rubber	All polymers and rubbers whose main matrix is other than thermoplastic are included in this material class. Note that even if the filler content is high, material will be grouped into this class if main matrix considered “Other plastics and rubber”	2B - Elastomer or 2C - Duromer
	Other organics		M-015	Other organic materials	Other organic materials which are not included under any other material class M-012 through M-014	Bio-materials

Annex E
(informative)

Declaration examples as XML files

This annex illustrates example material declarations represented as XML files. Example 1 in Annex A is used for illustrative purposes. The data needed to create a valid XML file according to the IEC 62474 database requirements are shown below and contain some additional information not represented in Annex A.

The XML description below represents the material declaration of Example 1 reporting “base data requirements” shown in A.2.2:

```
<?xml version="1.0" encoding="UTF-8"?>
<Main                                    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="www.iec.org/62474/cdv1"
 schemaDatabaseVersion="cdv1"
 substanceDatabaseVersion="cdv1">
   <BusinessInfo fieldLock="false" mode="Distribute">
      <Response date="2010-02-19" docID="001">
         <Contact email="john.doe@supco.com" name="John Doe" phone="301-555-2345"
title="Quality Assurance Manager"/>
         <SupplyCompany name="Supco"/>
      </Response>
   </BusinessInfo>
   <Product unitType="each">
      <ProductID effectiveDate="2009-11-23" identifier="ABC4523" name="">
         <Mass mass="0.12" unitOfMeasure="g"/>
      </ProductID>
            <SubstanceGroup name="Lead/Lead Compounds">
               <MatMassPercent massPercent="9.3"/>
            </SubstanceGroup>
            <SubstanceGroup name="Lead/Lead Compounds">
               <MatMassPercent massPercent="97.0"/>
            </SubstanceGroup>
   </Product>
</Main>
```

The XML description below represents the material declaration of Example 1 reporting “additional Information” shown in A.2.3:

```
<?xml version="1.0" encoding="utf-8"?>
<Main                                    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="www.iec.org/62474/cdv1"                                    schemaDatabaseVersion="cdv1"
substanceDatabaseVersion="cdv1">
  <BusinessInfo fieldLock="false" mode="Distribute">
    <Response date="2010-02-19" docID="001">
      <Contact email="john.doe@supco.com" name="John Doe" phone="301-555-2345"
title="Quality Assurance Manager" />
      <SupplyCompany name="Supco" />
    </Response>
  </BusinessInfo>
  <Product unitType="each">
    <ProductID effectiveDate="2009-11-23" identifier="ABC4523" name="">
      <Mass mass="0.12" unitOfMeasure="g" />
    </ProductID>
    <MaterialClass id="M-004" name="Copper and its alloys">
      <MassPercent massPercent="72.0" />
    </MaterialClass>
    <MaterialClass id="M-008" name="Precious metals">
      <MassPercent massPercent="0.5" />
    </MaterialClass>
```

```
<MaterialClass id="M-009" name="Other non-ferrous metals and alloys">
 <MassPercent massPercent="1.0" />
</MaterialClass>
<MaterialClass id="M-010" name="Ceramics / Glass">
 <MassPercent massPercent="6.5" />
</MaterialClass>
<MaterialClass id="M-014" name="Other Plastics and Rubber">
 <MassPercent massPercent="20.0" />
</MaterialClass>
<ProductPart numberOfUnits="1">
 <ProductID name="Active part">
  <MassPercent massPercent="6.5" />
 </ProductID>
 <Material materialClassID="M-010" name="Ceramics">
  <Substance name="Mn3O4">
   <MassPercent massPercent="64" />
  </Substance>
  <Substance name="NiO">
   <MatMassPercent massPercent="17" />
  </Substance>
  <Substance name="Co3O4">
   <MassPercent massPercent="15" />
  </Substance>
  <MassPercent massPercent="100" />
 </Material>
</ProductPart>
<ProductPart numberOfUnits="1">
 <ProductID name="Termination">
  <MassPercent massPercent="73.5" />
 </ProductID>
 <Material materialClassID="M-008" name="Metal/Plating">
  <Substance name="Ag">
   <MassPercent massPercent="100" />
  </Substance>
  <MassPercent massPercent="0.65" />
 </Material>
 <Material materialClassID="M-010" name="Glass">
  <SubstanceGroup name="Lead/Lead Compounds">
   <Substance name="PbO">
    <MassPercent massPercent="10" />
   </Substance>
   <MatMassPercent massPercent="9.3" />
   <Exemptions>
    <Exemption description="Lead in glass of electronic components" identity="5" />
    <UniqueID authority="EU" identity="RoHS" />
   </Exemptions>
  </SubstanceGroup>
  <Substance name="SiO2">
   <MassPercent massPercent="90" />
  </Substance>
  <MassPercent massPercent="0.03" />
 </Material>
 <Material materialClassID="M-009" name="Metal/solder">
  <SubstanceGroup name="Lead/Lead Compounds">
   <Substance name="Pb">
    <MassPercent massPercent="97.0" />
   </Substance>
   <MatMassPercent massPercent="97.0" />
   <Exemptions>
    <Exemption description="Lead in high melting temperature type solders" identity="7a"
/>
    <UniqueID authority="EU" identity="RoHS" />
   </Exemptions>
  </SubstanceGroup>
  <Substance name="Ag">
   <MassPercent massPercent="2" />
  </Substance>
  <Substance name="Sn">
   <MassPercent massPercent="1" />
```

```
        </Substance>
        <MassPercent massPercent="1.36" />
      </Material>
      <Material materialClassID="M-009" name="Metal/Leads">
        <Substance name="Sn">
          <MassPercent massPercent="4" />
        </Substance>
        <Substance name="Cu">
          <MassPercent massPercent="96" />
        </Substance>
        <MassPercent massPercent="97.96" />
      </Material>
    </ProductPart>
    <ProductPart numberOfUnits="1">
      <ProductID name="Encapsulation">
        <MassPercent massPercent="20" />
      </ProductID>
      <Material materialClassID="M-014" name="Organic Polymer">
        <Substance name="Epoxy Resin">
          <MassPercent massPercent="100" />
        </Substance>
        <MassPercent massPercent="100" />
      </Material>
    </ProductPart>
  </Product>
</Main>
```

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