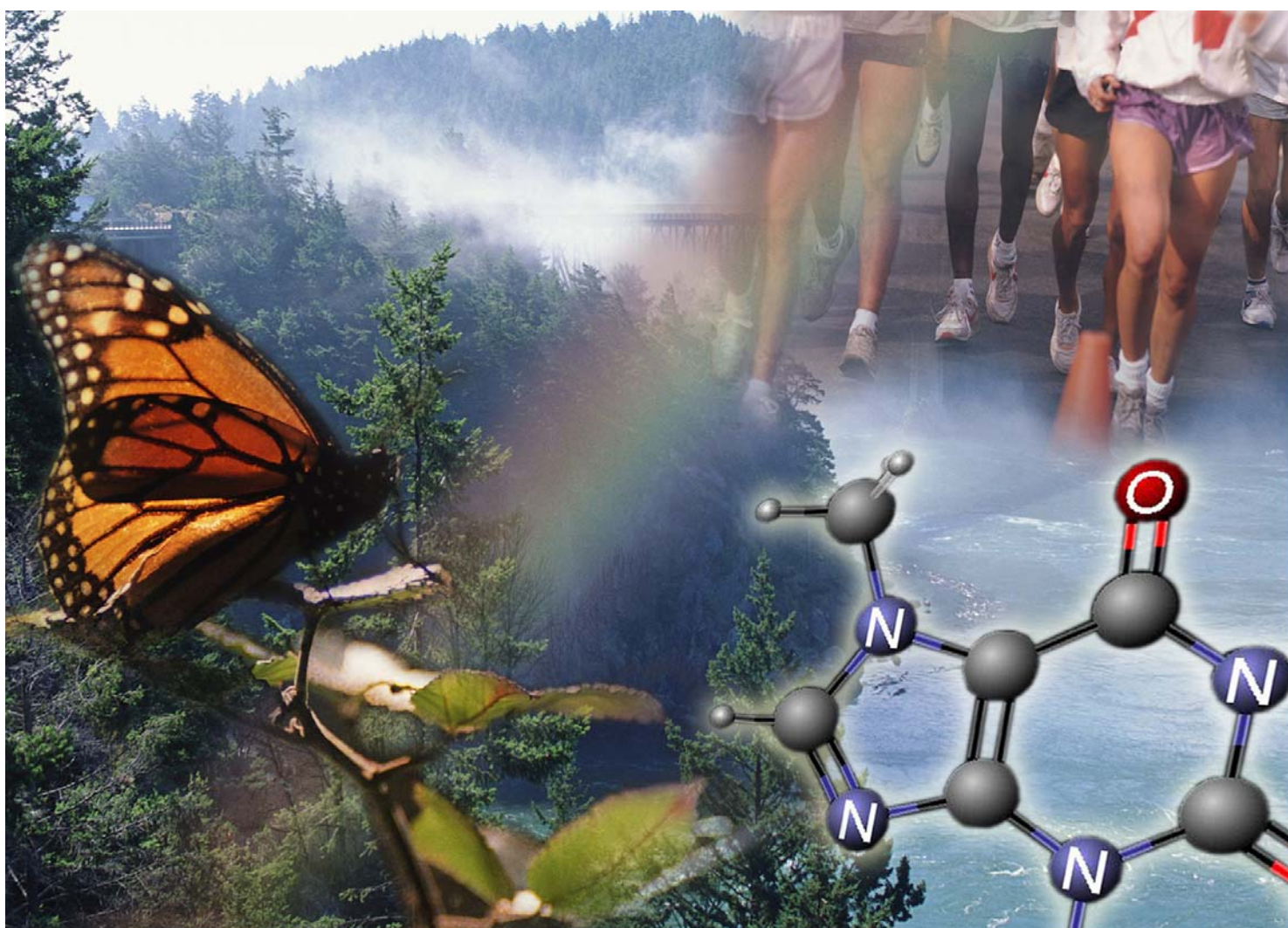


Guidance on information requirements and chemical safety assessment

Chapter R.12: Use descriptor system



..... **2009**
(DRAFT Version 2.0)

LEGAL NOTICE

This document contains guidance on REACH explaining the REACH obligations and how to fulfil them. However, users are reminded that the text of the REACH regulation is the only authentic legal reference and that the information in this document does not constitute legal advice. The European Chemicals Agency does not accept any liability with regard to the contents of this document.

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PREFACE

This document describes the information requirements under REACH with regard to substance properties, exposure, uses and risk management measures, and the chemical safety assessment. It is part of a series of guidance documents that are aimed at helping all stakeholders with their preparation for fulfilling their obligations under the REACH regulation. These documents cover detailed guidance for a range of essential REACH processes as well as for some specific scientific and/or technical methods that industry or authorities need to make use of under REACH.

The guidance documents were drafted and discussed within the REACH Implementation Projects (RIPs) led by the European Commission services, involving stakeholders from Member States, industry and non-governmental organisations. After acceptance by the Member States Competent Authorities the guidance documents had been handed over to ECHA for publication and further maintenance. Any updates of the guidance are drafted by ECHA and are then subject to a consultation procedure, involving stakeholders from Member States, industry and non-governmental organisations. For details of the consultation procedure, please see:

http://echa.europa.eu/doc/FINAL_MB_30_2007_Consultation_procedure_on_guidance.pdf

The guidance documents can be obtained via the website of the European Chemicals Agency (http://echa.europa.eu/reach_en.asp). Further guidance documents will be published on this website when they are finalised or updated.

This document relates to the REACH Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006¹

¹ Corrigendum to Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC (OJ L 396, 30.12.2006); amended by Council Regulation (EC) No 1354/2007 of 15 November 2007 adapting Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) by reason of the accession of Bulgaria and Romania (OJ L 304, 22.11.2007, p. 1).

DOCUMENT HISTORY

Version	Comment	Date
Version 1	First edition	May 2008
Version 1.1	<ul style="list-style-type: none"> – The process categories (PROC) related to processing of metals and other minerals were included into the PROC numbering system – SU 10 has been slightly re-phrased – “PC 39, personal care products” have been added – Pulp has been added in SU 6 and a subdivision has been made related to “other” production or services (0-1 for “other economic activities related to chemicals” and 0-2 for “other economic activities, not related to chemicals”) – The numbering system of the article categories has been technically streamlined – All “other” has been moved from the last position in the pick-list to the first position 	July 2008
Version 1.2	<ul style="list-style-type: none"> – Correction of numbering from PROC 22 in Appendix R.12-3. – Moving the misplaced <i>cameras and video cameras</i> from AC 9 to AC 3-4 in Appendix R.12-4. – Adaptation of the numbering system in Appendix R.12-4 to the structure of the categories. 	October 2008
Version 2	<ul style="list-style-type: none"> – Improving clarity and consistency of the introduction with regard to the purpose of the use descriptor system. – Making more explicit references to Article 37 (DU makes use known to supplier) in section R.12.1 – Inclusion of clarifications and definitions in R.12.2 <ul style="list-style-type: none"> ○ Streamlining the terminology regarding “chemical products” (= substances as such and in preparations) and articles ○ Dried/cured preparations are covered by Article Categories since they have a defined shape and surface. – Inclusion of updated examples on how to work with the descriptor system: See Section R.12.4 and R.12.5. – Introduction of a new table R.12.1 in order to better explain the relationship between use description and Tier 1 exposure estimates. – Adding a short paragraph in section 12.2.1 regarding the 	October 2009

Version	Comment	Date
	<p>different actors in the life cycle of a substance.</p> <ul style="list-style-type: none"> – Harmonisation of the structure of section 12.3.1 to 12.3.5. Inclusion of 3 subsections: definition and scope of the descriptor; guidance on assigning a suitable category; link to Tier 1 assessment. – Splitting of the <i>Sector of Use</i> descriptor list into two types of information: <i>Main User Groups</i> in the life cycle of a substance (SU 3, 21, 22) and <i>Sector of End-Use</i> (all entries), see Appendix R.12-1. – More clearly distinguishing of the two functions of the <i>Chemical Product Category</i> (PC) in section R.12.3.2: (i) describing the sectors formulating preparations by preparation type and (ii) consumer product types that can be assessed with the ECETOC Targeted Risk Assessment for consumers (see Appendix R.12-2.2). – More clearly distinguishing between the two functions of the <i>Article Category</i> (AC) in section 12.3.5: (i) Type of article related to service life and subsequent waste life stage of the substance (handling of article by workers and/or consumers) and (ii) consumer article types that can be assessed with the TRA. See Appendix R.12-5.1 and R.12-5.3. – Inclusion of a list of product sub-categories addressed in the ECETOC Targeted Risk Assessment (TRA) for Consumers. See Appendix R.12-2.2 and Appendix R.12-5.3 Explaining the link between use description and Tier 1 exposure estimates in section R.12.3.2 and R.12.3.5. – Removal of the reference to industrial or professional setting from most of the process categories. The choice can be made in the exposure estimation itself. At use description level, SU 3 or SU 21 indicate, whether a use is expected to occur under an industrial or non industrial setting. – Inclusion of examples related to processing of article by workers into section R.12.3.5. Restructuring of the AC list to allow consistent links to the TARIC system. Removal of definitive sub-categories in the AC list in order to leave it to the registrant and the downstream users to define the level of detail required to describe the service life stage of the substance. The previous subcategories have been converted into examples illustrating which kind of articles may be covered under the broad categories. – Introduction of the <i>Environmental Release Category</i> (ERC) as an additional descriptor (see section R.12.3.4). Explanation on the role of SPERCs in this context. – Introduction of a new category ERC 12 addressing proc- 	

Version	Comment	Date
	<p>essing of articles with abrasive techniques by workers in industrial setting. Expanding ERC 10b/11b to also cover removal of substances from article surfaces.</p> <ul style="list-style-type: none"> - Inclusion of a list of substance function categories (for section 1.2 of the eSDS and reporting in IUCLID) in Appendix R.12-6. The purpose of this list is explained in a short paragraph in section R.12.3.6 - Introduction of a new section R.12.5 with explanation of how the descriptor system can support i) the mapping of uses as the starting point for the CSA, ii) the building of titles for exposure scenarios and iii) the reporting on identified uses in IUCLID section 3.5. - Refinements in the pick-lists. - Include i) scientific research and ii) electricity, steam, gas, water supply and sewage treatment into the SU list. - Split out fillers and putties from PC 9 into PC 9b <ul style="list-style-type: none"> o Split out finger and face paint from PC 9 into PC 9c. o Clarification that PC14 refers to substances reacting with the metal surface o Remove automotive care products (PC6), artist’s supplies (PC5), lawn and garden products (PC22) since it largely duplicates other categories o Remove PC10 since this is covered under “others” anyway. o Clarification that PC20 refers to processing aids used in the chemical industry o Inclusion of bleaches and other processing aids into PC 26 and PC 34 o Covering metals and other minerals in PROC 21 to 25 plus adaptation of description o Splitting PROC 8 into PROC 8a and 8b o Introduction of PROC 26 and 27 referring to processes particularly relevant for the metal industry o Remove AC12 from the AC list since it leads to major inconsistencies with the material based categorisation and creates problems in compatibility with the TARIC system . - Editorial adaptation of the text to the changes listed above 	

Convention for citing the REACH regulation

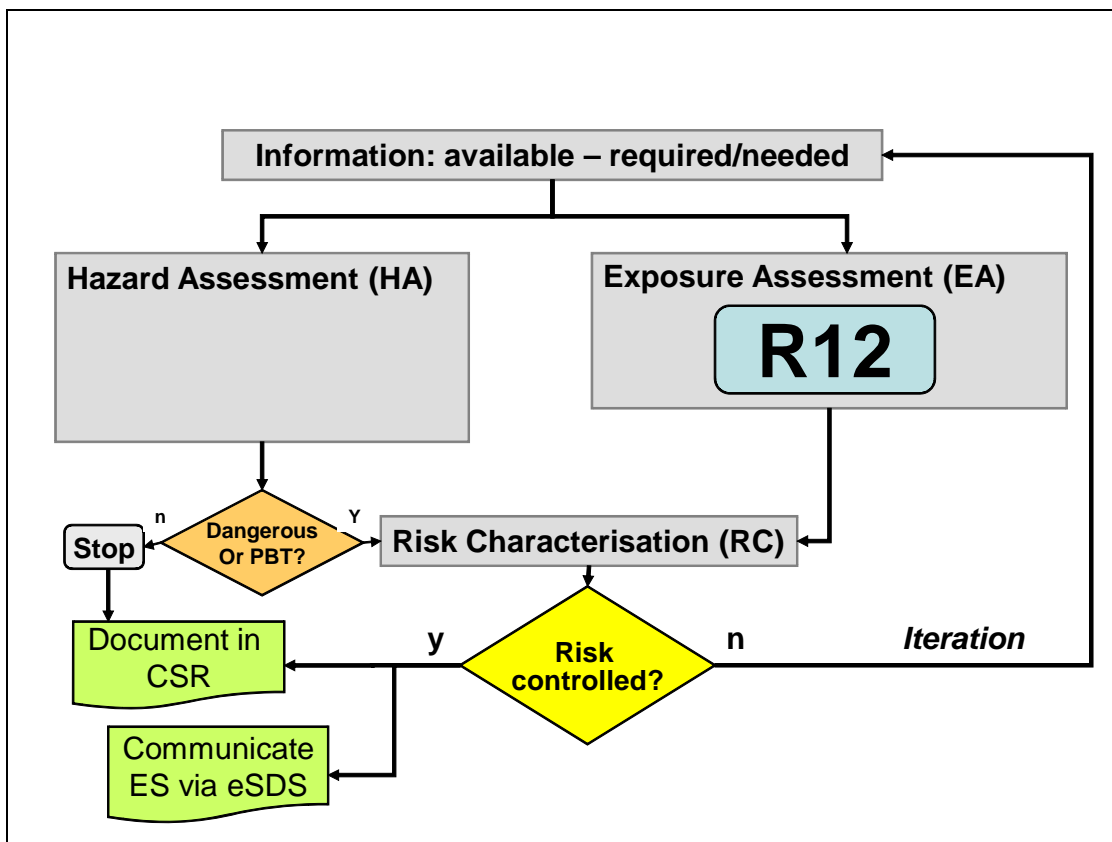
Where the REACH regulation is cited literally, this is indicated by text in italics between quotes.

Table of Terms and Abbreviations

See Chapter R.20

Pathfinder

The figure below indicates the location of chapter R.12 within the Guidance Document



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R.12 USE DESCRIPTOR SYSTEM

R.12.1 Aim of this module

Under REACH each manufacturer and importer of substances which require an exposure assessment will have to develop, assess and communicate exposure scenarios, covering the entire life cycle of the substance. For these purposes he needs to map out all the uses of his substance. Such a mapping of uses within a market sector can often be reused for a range of substances, or can even be collectively created by several manufacturers/importers. It is therefore important to standardise the mapping of uses and to enable linking to exposure scenarios. For downstream users it is essential to receive standardised short titles of exposure scenarios (meant to flag the scope and applicability of an ES) for the relevant applications of the substances in their sector, and not a wide range of different scenarios from different suppliers.

This guidance therefore provides a system of use descriptors to standardise the description of the use of substances. This will facilitate:

- the identification of uses to be provided in the registration dossiers
- the building of an ES by suppliers, based on communication up and down the supply chain
- the building of *short titles* for exposure scenarios

The use descriptors will help suppliers and users to structure their communication with each other. Based on the short titles, the DU should be able to quickly establish whether a received exposure scenario may cover his uses. Also vice versa, the use descriptors may also help the downstream user to describe in a structured way a use that he wishes to make known to the supplier (see Article 37(2)). NOTE: In order to build appropriate exposure scenarios, in many cases the registrant will need more information on the conditions of use than just a list of use descriptors.

Each registrant is also obliged to include a *brief general description of all identified uses* in his Technical Dossier (see chapter 3.5 of IUCLID) and in Section 2 of the CSR. It is recommended to base the *brief general description of use* on the descriptor system in this guidance. This is to ensure that the description of identified uses and the title and content of the exposure scenarios are **consistent** with each other. Note: This consistency is a legal requirement laid down in Annex I of REACH.

Some of the use descriptors reflect exposure related use characteristics. They can therefore be used as input parameters to some of the existing exposure estimation tools.

This chapter aims to explain in more detail the background and the application of the descriptor system. The pick-lists with the categories for briefly describing the use are contained in [Appendix R.12-1](#) to R.12-6.

R.12.2 The Use Descriptor system

R.12.2.1 Description of the system

Seven main groups of actors play a role during **the life cycle** of the substance: Manufacturers and importers of chemical substances (including metals and minerals), companies mixing and blending chemicals (formulators) to produce preparations (mixtures), distributors², industrial end-users, professional end-users and consumers. Importing and distributing are not further addressed in this guidance.

The **use descriptor system** is based on five separate descriptor-lists which in combination with each other form a brief description of use or an exposure scenario title:

- The *sector of use category* (SU) describes in which sector of the economy the substance is used. This includes mixing or re-packing of substances at formulator's level as well as industrial, professional and consumer end-uses³.
- The *chemical product category* (PC) describes in which types of chemical products (= substances as such or in preparations [mixture])⁴ the substance is finally contained when it is supplied to end-uses (by industrial, professional or consumer users).
- The *process category* (PROC) describes the application techniques or process types defined from the occupational perspective
- The *environmental release category* (ERC) describes the broad conditions of use from the environmental perspective.
- The *article category* (AC) describes the type of article into which the substance has eventually been processed. This also includes preparations [mixtures] in their dried or cured form (e.g. dried printing ink in newspapers; dried coatings on various surfaces).

Please also note: In order to achieve harmonisation across the markets, the number of categories in the 5 descriptor lists should be kept limited. Sector organisations or single registrants may be well advised to only define additional categories if the existing ones really do not fit for a type of process, product or sector to be briefly described. If further relevant details of an activity need to be described, they can also be addressed within the exposure scenario itself.

R.12.2.2 Link to exposure estimation tools

In addition to their description function, some of the descriptor-lists support identification of the suitable exposure estimation entry in one of the available Tier 1 exposure estimation tools (see Sec-

² Distribution as such is not a *use* under REACH. However, if distribution includes substance transfers (e.g. refilling) it is a use.

³ The *end-use* of a substance as such or in a preparation is the last use before the substance becomes part of an article matrix, reacts on use (and hence disappears) and/or enters into waste, waste water or air emission. Uses which exclusively aim at making the substance a component in a preparation [mixture] are not end-uses.

⁴ The term *chemical product* covers both substances as such or in a preparation [mixture]. This is meant to allow for both description of supplied products only containing a substance as such, as well as for products being preparations. In the context of this guidance, the term also covers metals (including alloys) in their primary form (e.g. bars, powder).

tion D.5 in Guidance Chapter D)⁵. Table R.12.1 provides an overview of the different elements of the use descriptor system and their relationship to entries for Tier 1 exposure estimates.

Table R.12-1 - Use description and tier 1 exposure estimates

	Name of descriptor list	Aspect of use described	Categories matching the entries of one of the available Tier 1 tools for exposure estimation
SU	Sector of use category	Three main user groups (separate table in Appendix R.12-1), relevant for all uses of the substance.	Targeted Risk Assessment for worker exposure (TRA)
		Industry and service sectors of end-use	
PC	Chemical product category ⁶	Chemical product type in which the substance is supplied to end use. These categories can also be used to describe the market sectors (formulating sectors) to which the manufacturer potentially supplies his substance.	
		Consumer product categories, for which a Tier 1 exposure estimate can be generated.	TRA for consumer exposure for selected product types
PROC	Process category	Application techniques or process types defined from the occupational perspective	TRA for worker exposure
ERC	Environmental release category	Broad conditions of use defined from the environmental perspective, relevant for all uses of the substance and the subsequent service life in articles	Environmental release categories (ERC)
AC	Article Category	Article types in subsequent service and waste life, potentially relevant for consumers, workers and environment exposure.	
		Consumer article types for which Tier 1 exposure estimates can be generated.	TRA for consumer exposure for selected article types.

Please note: When a certain use description category serves as an entry to a Tier 1 exposure estimation tool (e.g. PROCs for occupational exposure estimation), the exposure estimation also depends on other parameters not reflected in the category description itself (e.g. availability of local exhaust ventilation, concentration of substance, duration of use, application of PPE). Thus one PROC may relate to various exposure scenarios and the related exposure estimations. The same applies to consumer preparation/article categories and the environmental release categories.

⁵ Tier 1 exposure estimation means a modelled, conservative exposure prediction, based on substance properties and a few easily accessible and easy to interpret input parameters. Various tools exist to carry out such estimates. One of these is the *Targeted Risk Assessment* Tool for occupational exposure and consumer exposure developed by ECETOC (update published in July 2009, <http://www.ECETOC.org>). For the environment, the environmental release categories (ERCs) can be used to drive a tier 1 release estimate. Those release estimates enable exposure estimation based on EUSES. The release calculation module required for this will be described in the updated Guidance Chapter R.16 on environmental exposure estimation.

⁶ The same PC categories can fulfil both functions of PC described here (see R.12.3.2 for more details)

R.12.3 Definition of the five descriptor-lists

R.12.3.1 Sector of use [SU]

Definition and scope

Appendix R.12-1 provides a list of *Sectors of Use*. The 3 main user groups are included in an extra table. They represent the minimum level of detail a registrant is expected to provide in describing the sector of use and are important to the assessor as they help in directing the exposure assessment (e.g. selecting the appropriate tools). The reporting on uses in IUCLID and in the CSR is structured according to these main groups.

Appendix R.12-1 also contains a selection of internationally harmonized NACE (Nomenclature générale des Activités économiques dans les Communautés Européennes) categories for classifying activities in industry and services. These categories are meant to support a Manufacturer/Importer (M/I) in mapping his market beyond his customers in the formulating sectors. Such a map may help to develop suitable exposure scenarios covering all end-uses of the substance as such or in preparations, and the subsequent life-cycle stages. It may for example be relevant to flag the sectors of industry for which an ES is applicable, e.g. “closed processing of gases *in the semiconductor industry*” or “immersion [dipping] operations *in textile finishing*”. Linking a certain application process (PROC) to a certain sector (SU) may in particular be useful, when a higher tier exposure assessment is needed to demonstrate control of risk, and when the conditions of use in the exposure scenario are specifically related to a process in a certain industry. Also, the sector of use can be a reference to “advise against” certain uses.

Guidance on assigning the relevant category

The number of categories has been limited to broad sectors known to represent the largest users of chemicals. If a manufacturer or importer considers it necessary to describe the use in more detail or to describe uses in a sector not listed, he should apply NACE codes (and the corresponding phrasing), accessible via the internet link at the bottom of Appendix R.12-1. If he considers that it is sufficient to be less specific regarding the use in industry, he may assign the main user group only, e.g. *industrial end use*, indicating that the substance is meant to be broadly used in industry under the conditions specified in the exposure scenario. When the user decides to describe his use by assigning a sector of end use, he should select a category of Appendix R12-1 in addition to a category describing the main user group.

Link to Tier 1 exposure estimation

The main user groups “industrial end-use” (SU 3) and “professional end-use” (SU 22) can be used as an input parameter to Tier 1 exposure estimation in the TRA for workers. The other categories do not directly link to available exposure estimation tools. However, for many sectors of industry OECD *Emission Scenario Documents* are available, describing the conditions of use of certain types of chemicals (and corresponding release factors) from the environmental perspective.

R.12.3.2 Chemical product category [PC]

Definition and scope

A manufacturer or importer can identify the main uses of a substance based on his customer database or the market sectors he supplies. In many cases his direct customers will be formulators

and/or re-packers⁷, or distributors supplying various downstream users. However, it may also occur that the substance manufacturer himself produces preparations and/or supplies his substance as such or in a preparation directly to larger end-use customers.

The *Chemical Product Category* characterizes the use of a substance by the type of end-use product (e.g. lubricant, cleaner, adhesive) in which the substance is known to be used. It does not aim to characterise the specific technical function of the substance as such (e.g. UV stabilizer, corrosion inhibitor, pigment, flame retardant). The reason for this is that the product category includes more information on potential exposure than the substance function as such. It will, for example, make a difference in terms of exposure whether a substance (e.g. solvent) is used in air-care products (PC3) or in cleaning products (PC35). The product categories are useful for mapping supply chains. This includes, for example, following the mass flow of a substance through the market for the purpose of environmental assessment.

Appendix R.12-2.1 provides a list of product categories⁸. The categories listed are meant to structure the market of a substance according to product types.

Guidance on assigning the relevant category

Based on in-house knowledge and possibly additional information from customers, the M/I assigns one or more product categories reflecting the type of end-use preparations in which the substance is known to be used. Uses the manufacturer is not aware of, for example those supplied through distributors or a longer chain of formulators, may be communicated to him from downstream during the REACH implementation process. Several downstream user associations have mapped the main areas of use and published tables of uses on their websites (e.g. CEPE , A.I.S.E. , COLIPA , FEICA). This is also a useful reference for the M/I.

If the M/I or the DU is unable to identify a suitable product category in Appendix 12-2.1, the use could be described under “others”. If possible, a code (and the corresponding phrasing) from the UCN system should be selected to describe such use (see internet link at the bottom of [Appendix R.12-2](#)). It is also possible that one of the product or article sub-categories used as entries to the TRA is more suitable, and hence is described under “others”.

Link to Tier 1 exposure estimation

For a number of product categories it is possible to derive Tier 1 exposure estimates for consumers based on the ECETOC TRA tool.

Appendix R.12-2.2 gives an overview of these product categories and product sub-categories for which the ECETO TRA provides an exposure estimate for consumers. Besides the product (sub) category itself other input parameters may be needed as well, like for example the concentration of the substance in the product, or the amount of product used per event.

R.12.3.3 Process category [PROC]

Definition and scope

⁷ Re-packers are companies transferring substances as such or in preparations from large containers into smaller containers for end-use. This activity is considered a “use” under REACH.

⁸ The list has been derived on the basis of the existing UC 55 system, the Nordic UCN system, the product categories used in the TRA as well as ConsExpo. Basically, the most frequently used categories based on data from the Nordic Product Registers have been used.

Application techniques or process types have a direct impact on the exposure to be expected and hence on the risk management measures needed. Appendix R.12-3 provides a list of process categories reflecting the general occupational exposure potential of the techniques and processes covered. The categorization is driven by i) the amount and form of energy applied in a process (e.g. heat, mechanical energy, radiation) ii) the surface of the substance available for exposure (dustiness of material or thickness of layers of material), and iii) the principal level of containment and engineering controls to be expected.

Guidance on assigning the relevant category

Once the registrant and/or the downstream users have mapped out the uses and conditions of use of a substance, the suitable process categories can be assigned to the identified processes and application techniques. Please note that it requires sufficient expertise in occupational hygiene to identify the best fitting PROC for a given process or application technique. It is advisable to briefly describe the identified processes and techniques in sector specific terminology before assigning a category, in order to keep the category selection transparent.

If none of the activity/process categories seems applicable, the manufacturer, importer or downstream user may describe the nature of the application process in his own words, instead of assigning one of the defined categories. It may however be useful to include an explanation in the CSR, which of the existing categories in Appendix R.12-3 were considered and why these did not cover the particular case. Such explanation would enable modification of existing categories or the definition of additional categories in the next guidance update.

Link to Tier 1 exposure estimation

With two exceptions only, all process categories listed in Appendix R.12-3 can be used as an input parameter to the ECETOC TRA tool⁹ to derive a Tier 1 exposure estimation for workers. Besides the process category itself other input parameters are needed as well, for example: the concentration of the substance in products used by workers, whether the use takes place under industrial conditions, the duration of exposure, or the presence or absence of local exhaust ventilation.

R.12.3.4 Environmental Release Category (ERC)

Definition and scope

Environmental release categories [ERC] label the characteristics of a use based on six aspects relevant from the environmental perspective, including those characteristics enabling mass flow analysis along the life cycle of a substance:

- a) The intended technical fate (purpose) of the substance during use determines to what extent a substance is consumed on use, is expected to be released with discharges, air emissions or waste, or is expected to enter into the next life cycle stage. In general, there are three possibilities:
 - The substance is intended to become part of an article (including dried/cured preparations), either because it has a function in the article or because it remains (from a preceding life cycle stage) in the article without function.
 - The substance is meant to react on use, thus it is no longer available for further life cycle steps or emission to the environment.

⁹ Targeted Risk Assessment by ECETOC, revised version published in July 2009.

- The substance is meant to act as a processing aid, and as such is released from an industrial process (e.g. surfactant in textile finishing, solvent from spray painting) or a non industrial use (e.g. solvents or surfactants from cleaners) to waste water, air emission and/or waste.
- b) The life cycle stage at which a use takes place (manufacture, formulation or end-use), determines the extent to which minimisation of losses can be expected (driven by the economic interest of the actor not to lose products he could sell, and the use of specialised equipment to process chemicals).
- c) The dispersiveness of use (use at industrial sites [point sources] and/or wide dispersive use in professional and consumer applications) determines the distribution of emissions in time and space.
- d) Contained application systems during end-use (e.g. hydraulic systems with the contained functional fluids; closed systems for textile or metal parts cleaning) limit the potential releases to air and water.
- e) Indoor or outdoor use of a substance determines to which extent releases to air and water can be potentially captured for treatment, and to which extent weathering conditions increase the release of substances from articles.
- f) For articles used under release-promoting conditions (such as abrasion from tyres or brake pads) it can be expected that the fraction released to the environment is relatively high. This also applies to articles where the release of substances is even intended (e.g. from scented articles). Also processing of articles with abrasive techniques (e.g. sanding or high pressure de-coating) is covered under this criterion.

The listed characteristics give a first indication of the potential of the substance to be released to the environment. Appendix 12-4.2 provides an overview of which of the different combinations of the six aspects correspond to each *Environmental Release Category* (ERC). Appendix R.12-4.1 provides a list of 23 *Environmental Release Categories* including the corresponding narrative definitions. These categories cover manufacture, formulation and use of the substance in industrial sites (ERC 1 to 7), wide disperse indoor or outdoor use (ERC 8 and ERC 9) and service life (ERC 10 to ERC 12). The service life categories also include activities by workers leading to high releases from processing of articles (ERC 10b, 11b and 12).

Guidance for assigning the relevant category

Once the registrant has mapped out the uses and conditions of use of a substance (including the subsequent service life in articles), the corresponding environmental release categories can be assigned to the uses relevant for the different life cycle stages and main user groups. The environmental release categories, together with the product categories, may help the registrant to break down the market volume to groups of uses at a sufficient level of detail.

If none of the activity/process categories seems applicable, the manufacturer, importer or downstream user may describe the environmental characteristics of the use in his own words, instead of assigning one of the defined categories. It may however be useful to include an explanation in the CSR, which of the existing categories in Appendix R.12-4 were considered and why these did not cover the particular case. Such explanation would enable modification of existing categories or the definition of additional categories in the next guidance update.

Link to Tier 1 release estimation

For all environmental release categories it is possible to derive a Tier 1 default (worst case) release estimate (to air, water, soil) based on the release calculation module and the default release factors

defined in Guidance R.16. The calculated release can be converted into an exposure estimate at local and regional level (see Guidance R.16).

It is expected that various sectors of industry will develop more specific descriptions of the conditions of use related to the environment (*Specific Environmental Release Categories* [SPERCs]), resulting in refined release factors. Once available, the SPERCs can be used to derive sector or product specific release estimates. Appendix R.12.4-3 provides an overview on available SPERCs.

R.12.3.5 Article Categories [AC]

Definition and scope

A chemical safety assessment shall cover not only the uses of a substance, but also the subsequent life cycle stages of substances incorporated into or onto an article matrix. Thus, for dangerous substances processed into articles, the manufacturer or importer of the substance may find it necessary to specify which types of articles are covered in the CSA and the ESs. Two examples may illustrate the relevance of the service life stage: i) For consumer and environmental exposure it makes a difference whether a substance is used in textile-finishing of clothes (dermal contact, frequent washing) or as a component in insulation sheets for construction purposes. ii) For worker and environmental exposure it will make a difference whether a substance enters into the coated surface of a ship or outdoor steel constructions (dust formation during paint removal by outdoor abrasive techniques as a regular maintenance activity), or whether it becomes part of the coated surface of household appliances (paint removal at end of service life takes place in an industrial milling process).

Appendix R.12-5.1 provides a list of broad article types with no intended release, including examples of which articles may be covered under the broad category. The focus is on material based characterisation. In order to also enable description of service life in complex multi-material articles, categories for vehicles and machinery have been included into the list as well. The article categories correspond to specific categories of the TARIC¹⁰ system, and thus further specification within the CSA can be made based on the TARIC catalogue, if the registrant or downstream user sees the need for this. Also, some of the article types listed as examples may help to describe articles from which particular exposure of workers may occur, e.g. wearing of leather and rubber gloves, articles for abrasive polishing works, removal of coatings from large vehicles, wearing of impregnated protective clothing.

Appendix R.12-5.2 provides a list of examples of articles with intended release. Substances intended for release are to be registered under REACH and thus have a specific status in the use descriptor systems. This list is open to additions during the REACH implementation process, it is however expected that it will remain a relatively short list of specific cases.

Guidance for assigning the relevant category

Based on in-house knowledge and possibly additional information from customers, the M/I assigns one or more article categories reflecting the type of articles in which the substance is known to be included on end-use (by the last downstream user in the chain or by consumers). If a substance is not expected to be included into articles during use, no article category is to be assigned (e.g. for solvents, cleaners, laundry detergents).

¹⁰ Categories/codes for groups of goods under the integrated customs tariff database of the European Communities (Taric); http://ec.europa.eu/taxation_customs/dds/tarhome_en.htm

It will not be possible or necessary to list in detail all article types in which the substance may end up. However, the registrant needs to assess in his CSA potential risks from the substance during article service life (and subsequent waste life stages), and he may need to communicate down the supply chain measures to limit releases/exposure from articles, e.g. releases of dyeing and finishing chemicals from textiles. Thus the registrant will need to develop exposure scenario information for representative article types relevant for his substance.

If the M/I or the DU is unable to identify a suitable article category in Appendix 12-5.1 or wishes to be more specific, the use could be described under “others”. If possible, a code (and the corresponding phrasing) from the TARI system should be selected (see internet link at the bottom of [Appendix R.12-5.1](#)).

Link to Tier 1 release estimation

For a number of article categories it is possible to derive a Tier 1 exposure estimate for the consumers based on the ECETOC TRA consumer exposure estimation tool. Appendix R.12-5.3 specifically lists those article categories that can be assessed with the ECETOC TRA tool.

R.12.3.6 Specifying the technical function of a substance for the safety data sheet

Specifying the technical function of the substance as such (*what it actually does*) is required for section 1.2 of the Safety Data Sheet. For this, the registrant may make use of the substance types listed in Appendix R.12-6. Such specification may also be useful for flagging that an exposure scenario (or a series of exposure scenarios) has been worked out for a particular substance type (e.g. solvent, pigment).

R.12.4 Exemplification

R.12.4.1 Examples for assigning uses to a category of the descriptor system

Table R.12-2 illustrates for a number of processes/activities which category to assign and which generic characteristics of the use conditions the category encodes. The example is related to workers' indoor uses (industrial or professional), and covers substances i) included into articles or ii) not included. The examples show that various types of activities can be expressed by one category for workers' exposure and one category for environmental exposure.

Table R.12-2: Examples for assigning categories to workers' indoor uses

Examples for process/activity	Process category from Appendix R.12-3 and environmental release category from Appendix R.12-4	Pattern of exposure "encoded" in the process category and the environmental release category.
Spraying of paints, cleaners, lubricants, adhesives	Air dispersive techniques, like e.g. Spraying (PROC 7 or PROC 11) Industrial use or wide dispersive professional use of substance intended to become part of an article (ERC 5/ ERC 8c) or not ERC 4/ ERC 8a).	Substances can be inhaled as vapour and aerosols. The energy of the aerosol particles may require particular exposure controls; in case of coating, overspray may lead to waste water and waste solvent may be emitted to air.
Dyeing and finishing of textiles, leather or paper;	Immersion operations such as dipping and pouring (PROC 13) Industrial use of substances intended to become part of an article or not (ERC 4 or 5)	Substance is applied to a surface by dipping the article into a bath and is intended to become part of the article. Formation of dust and aerosols usually low, releases can be easily controlled. Discharge or waste disposal of waste water and/or exhausted baths may be relevant.
Coating of floors, painting walls by brushing or rolling, cleaning/polishing of surfaces by wiping	Low energy spreading such as rolling, brushing (PROC 10) Wide dispersive professional use (ERC 8a or 8c,)	Exposure during spreading of the substance is mainly driven by the substance properties (e.g. vapour pressure) or direct skin contact. Formation of dust and aerosols unlikely; cleaning of devices and machinery may lead to waste water and/or waste. Solvents may be emitted to air.
Mechanical cutting, grinding drilling or sanding of articles	High mechanical work up of massive metals, substances bound in materials or articles (PROC 24). Industrial or dispersive processing of articles by workers under release promoting conditions (ERC 11b or 12).	Substantial thermal or kinetic energy applied to substance by grinding, mechanical cutting, drilling or sanding. Release of solids (dust) or fumes to be expected. Fall-out to be disposed of as waste.
Mixing of solids and liquids in batch formulation of coatings, cleaners, plastic compounds, textile dyes	Use in closed batch process (PROC 3) or mixing and blending in batch process (multistage and/or significant contact) (PROC 5); related transfers of substances (PROC 8a, 8b and 9). Formulation of/into preparations (ERC2 or ERC 3)	Predominant handling in contained manner (e.g. through enclosed transfers), but some opportunity of contact (e.g. during sampling) Solid or liquid materials can be released as vapour or dust, significant contact possible Waste or waste water from equipment cleaning to be expected.

R.12.4.2 Example for systematically describing the uses of a substance

Table R.12-3 illustrates the descriptor system from a life cycle perspective. In the example, the substance is a pigment used in paints for wooden articles (indoor and outdoor uses). The paint (includ-

ing the pigment) is produced in a multistage batch process. It is applied by workers through spraying and brushing. Consumers also use paints containing the pigment. Eventual removal of paint for renovation purposes is also covered in this example. Table R.12-3 lists a sequence of questions a registrant may need to answer when mapping the uses of his substance.

Table R.12-3: Example for briefly describing some uses of a pigment

Questions for briefly describing a use in general terms	Category	Exemplification for a pigment
Which sectors of the formulating industry buy the substance? In which categories of chemical products is it used?	PC 9a	Paints and coatings
Which processes are applied during mixing/formulation of substance?	PROC 3, 8b, 9 ERC 2	Mixing of liquid preparation in closed batch process, incl. transfers of substance
Is the substance as such or in preparations used by industrial workers, professionals or consumers?	SU 3, 21, 22	Industrial workers, professionals outside industrial sites, and consumers
In which type of processes is the substance applied on end-use (worker perspective)?	PROC 7, 10, 11, 13	Spraying, brushing, dipping
What are the broad environmental characteristics of these uses: indoor/outdoor use; use at industrial site or wide dispersive use; substance intended to become part of an article matrix or intended to serve as a processing aid or intended to react on use?	ERC 5 ERC 8c/f	Industrial sites and wide disperse use, indoor and outdoor uses. Substance becomes part of articles.
In which consumer products is the substance used? What are the broad environmental characteristics of these uses?	PC 9a ERC 8c/f	Paints and coatings for consumer use
If substance becomes part of an article: In which articles is it contained during service life (and subsequent waste life stage)?	AC 11	Wooden articles
If substance becomes part of an article: What are the broad environmental characteristics of the substance during service life: indoor/outdoor use of the article; low or high release of substance from the article?	ERC 10a/11a	Indoor and outdoor use, low release of substance from article;
If the substance becomes part of an article: Are there foreseeable activities with the article that lead to removal of substances from the surface on processing or maintenance by abrasive techniques (e.g. paint stripping)	ERC 10b/11b	Indoor and outdoor use, high release of substance from article;

R.12.5 Describing identified uses and forming exposure scenario titles

The use descriptor system can support the description of identified uses in section 3.5 of IUCLID (as part of the Registration Dossier), the corresponding description of uses in section 2 of the CSR, and the inclusion of harmonised, structured information into the short title of exposure scenarios. ECHA's CSA tool *Chesar*¹¹ includes a use description module, providing a standard life-cycle tree structure to map the uses of a substance.

¹¹ ECHA is at the moment developing a tool, called *Chesar* (Chemical Safety Assessment and Reporting tool) to support registrants preparing their CSA and CSR. ECHA aims at releasing an initial version of that tool early 2010.

R.12.5.1 Mapping uses based on the life cycle structure

Documenting the map uses of a substance in a hierarchical life cycle tree structure facilitates the reporting and communication of uses in a supply chain perspective, and it enables the connection of uses to the mass flows of the substance (necessary for environment assessment).

The use descriptor system supports documentation in a hierarchical structure such that it basically represents 16 combinations between life cycle **stages** and main **user groups**¹². In addition, the formulating sectors to which M/I supplies a certain substance can be specified as **market sectors**.

Figure R. 12-1: Default structure of tree representation of the identified uses

- **Manufacture/Import**
 - **Manufacturing stage** [by ERC]
 - *Process during manufacturing [by PROC]*
- **Market sector** [by PC]
 - **Formulation stage** [by ERC]
 - *Uses for formulation¹[by PROC]*
 - **Industrial end- use stage** [by ERC and SU]
 - *Industrial uses [by PROC]*
 - **Professional end-use stage** [by ERC and SU]
 - *Professional uses [by PROC]*
 - **Consumer end-use stage** [by ERC]
 - *Consumer use[by PC]*
 - **Service life stage (consumer)** [by ERC and AC]
 - *Article “uses” (by consumers)[by AC]*
 - **Service life stage (industrial workers)** [by ERC, AC, SU]
 - *Article “uses”¹ (by industrial workers)¹[by AC and PROC]*
 - **Service life stage (professional workers)** [by ERC, AC]

A registrant may structure his market according to his customers in the different formulating sectors or end-use sectors. He may make use of the PC and SU pick-lists for this. If he directly sells the substance to end-users the market sector and the formulation stage may be left out. It is recommended to start with a description of market sectors (by PC), for which the uses are to be described in the subsequent process.

Under a *stage* all the relevant activities with the substance by workers and consumers can be listed and described by assigning a PROC (workers activities) or PC (consumer products). Please note: The pick-list for product categories (PC) also includes products that are not relevant for consumer uses.

¹² “Uses” are defined by a worker’s activities or consumers’ activities with a substance (including handling of articles in which a substance is contained). “Stages” include one or more uses at a certain life cycle stage which are being characterised by similar conditions of use with i) regard to the environment and ii) the main user group.

At *stage* level, the appropriate environmental release category can be assigned, which then applies to all workers or consumer uses listed below that stage.

If it turns out that the environmental conditions of use differ widely between sectors within one life cycle stage, the assessor can create the same life cycle stage again for a different sector of industry. Thus combination of ERC and SU at the end-use stage may support the identification and description of conditions of use related to the environment characteristic for certain sectors of industry.

If it turns out that the occupational conditions related to workers' uses differ widely between sectors within one life cycle stage, the assessor can create the same life cycle stage again for a different sector of industry.

The service life *stage* can be characterised with environmental release categories (ERC) and the relevant article categories (AC).

Under the service life stages, activities of workers and consumers with certain articles can be described. These activities are not “uses” in the meaning of REACH (and thus no downstream user duties are connected with these), however the registrant is obliged to describe the conditions during service life in his CSR. Consumer “use” of articles can be described with an AC, while workers' activities with articles would be described as a combination between a process category (PROC) and the relevant article categories (AC)

If it turns out that the environmental conditions during service life differ widely between different types of articles, the assessor can create the same life cycle stage again for a different article (or group of articles). Thus combination of ERC and AC at the service life stage may support the identification and description of conditions related to the environment characteristics for certain (groups of) articles.

Please note: Experience shows that the description of uses based purely on the use descriptor system is usually insufficient for building and communicating exposure scenarios. Thus, further explanations will usually also be needed as a complementary element in the description of uses.

Figure R.12-2 illustrates the uses of a substance described in a life cycle tree structure

To be included

Figure R. 12-2: Exemplification of use description in a life cycle tree view

R.12.5.2 Building titles of exposure scenarios

The registrant will give each exposure scenario contained in the CSR and attached to the extended safety data sheet a short title, indicating which uses are covered in the ES. Since exposure scenarios can be broad (covering various uses) or specific (covering only one or few uses), the title of the ES may vary accordingly:

- One use (as defined by the registrant) may take place under very different conditions in different sectors of the market, thus different exposure scenarios may be needed. In such cases, different exposure scenarios may include the same PROC and the same ERC in the title, each combined with a different sector of use (SU). For the same category of consumer products (PC), different exposure scenarios may be needed, if the exposure assessment indicates for example that the

concentration of the substance needs to be limited to a lower concentration in certain consumer products within the same category¹³.

- Different uses (as defined by the registrant) can potentially be addressed in the same exposure scenario, if the same operational conditions and risk management measures apply to all these uses. In such case the ES title would list various process categories, product categories, article categories and/or environmental release categories.
- For communication purposes the registrant may choose to list all the activities with a substance relevant in a particular supply chain in one exposure scenario only. Thus the ES may contain different sets of operational conditions and risk management measures related to the different activities.

Table R.12-4: Title section of an exposure scenario addressing workers activities¹⁴

<i>Exposure Scenario Format (1) addressing uses carried out by workers</i>	
1. Title	
Free short title	
Systematic title based on use descriptor	
Processes, tasks activities covered	

R.12.5.3 Description of identified uses in IUCLID

The CSA tool *Chesar* will include a functionality to report the identified uses and the related exposure scenarios after the assessments have been finalised and the exposure scenarios have been built. Such a *reporting view* of the uses can be included in section 2 of the CSR and in section 3.5 of IUCLID. The information reported in section 3.5 of IUCLID will differ in one aspect from what is included into the CSR: The description of subsequent life cycle stages (service life and waste life stage) will not be part of IUCLID 3.5. The reason is that Annex VI of REACH refers to identified uses but not to subsequent service life. The information required in IUCLID 3.5 will be limited to i) an indication that service life is relevant and ii) listing of which article categories are expected to contain the substance. Reporting of identified uses in the IUCLID structure will be based on the following principles:

- The report on identified uses is split into three blocks, in line with the main user groups: workers in industrial settings (industrial use); workers in non-industrial settings (professional use), consumers (consumer use).
- A unique name/title of the identified use¹⁵ is to be reported per line. Each identified use is characterised by a number of use descriptors.
 - It is possible to report several process categories (PROC) for worker or product categories (PC) for consumer per line. This may for example be reasonable if a sequence of

¹³ See product subcategories that can be assessed with the ECETOC TRA for consumers.

¹⁴ See draft update of section D.2.2 (Exposure Scenario Format) in Part D of the Guidance on Information Requirements and Chemicals Safety Assessment.

¹⁵ “Free-text” name of the use

processes is covered by one exposure scenario and one exposure estimate (based on a set of measured data that corresponds to such sequence of processes. It is nevertheless recommended to only report one category per line in most cases, in order to ensure consistency with the exposure estimation and risk characterisation in the chemical safety assessment.

- For each identified use, one or more environmental release categories (ERC) are to be reported. If for example no relevant differences between indoor and outdoor use are identified, both ERCs may be covered under one use. It is nevertheless recommended to only report one category per line in most cases, in order to ensure consistency with the exposure estimation and risk characterisation in the chemical safety assessment.
- If the market sector(s) constitutes an element in the exposure scenario title, also this descriptor needs to be reported (single or multiple in each line). In addition, each identified use can be described by one or more “sector of end uses” (SU) if needed. As a consequence, multiple entries for market sector (PC) and sector of end-use (SU) are allowed.
- When an identified use leads to the inclusion of a substance into an article (and/or a substance remains in a dried preparation), this will be flagged as this leads to the need to assess the service life of the relevant articles (or dried or cured preparations). The expected article categories (AC) for the subsequent service life are to be reported. Further description of service life conditions is not needed in the report on identified uses¹⁶.
- For each identified use, it is possible to make a reference to the exposure scenario numbers (one or more ES) relevant for that use. This link ensures that all identified uses are covered by at least one ES, when relevant.

Table R.12-5 presents the columns available in section 3.5 of IUCLID to describe the identified uses of a substance with regard to industrial workers’ activities. Two similar tables are available for workers in non industrial conditions (professional use) and consumers.

IU no	Identified use name	Process category (PROC)	Environmental Release Category (ERC)	Substance supplied to that use in form of ..	Market sector by type of chemical product (PC)	Sector of End Use (SU)	Subsequent service life relevant for that use?	Article category (AC) related to subsequent service life	Exposure scenario reference in the CSR
				<i>substance preparation</i>			<i>yes/no</i>		

Table R.12-5: Table to report identified uses related to industrial workers in IUCLID

¹⁶ Note: The service life stage of a substance in articles and the waste life stage are not “uses” in the context of REACH.

Appendix R.12-1: Descriptor-list for sectors of use

	Main user groups	
SU 3	Industrial uses: uses of substances as such or in preparations at industrial sites	
SU 21	Consumer uses: Private households (= general public = consumers)	
SU 22	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	

	Sectors of use [SU] – sectors of end-use	NACE ¹⁷ codes
SU1	Agriculture, forestry, fishery	A
SU2a	Mining, (without offshore industries)	B
SU2b	Offshore industries	B 6
SU4	Manufacture of food products	C 10,11
SU5	Manufacture of textiles, leather, fur	C 13-15
	Manufacture of wood and wood products	C 16
SU6	Manufacture of pulp, paper and paper products	C 17
SU7	Printing and reproduction of recorded media	C 18
SU8	Manufacture of bulk, large scale chemicals (including petroleum products)	C 19.2+20.1
SU9	Manufacture of fine chemicals	C 20.2-20.6
SU 10	Formulation [mixing] of preparations and/or re-packaging (excluding alloys)	C 20.3-20.5
SU11	Manufacture of rubber products	C 22.1
SU12	Manufacture of plastics products, including compounding and conversion	C 22.2
SU13	Manufacture of other non-metallic mineral products, e.g. plasters, cement	C 23
SU14	Manufacture of basic metals, including alloys	C 24
SU15	Manufacture of fabricated metal products, except machinery and equipment	C 25
SU16	Manufacture of computer, electronic and optical products, electrical equipment	C 26-27
SU17	General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment.	C 28-30,33
SU18	Manufacture of furniture	C 31
SU19	Building and construction work	F
SU20	Health services	Q 86
SU23	Electricity, steam, gas water supply and sewage treatment	C 35-37
SU24	Scientific research and development	C72
	Other	
http://ec.europa.eu/comm/competition/mergers/cases/index/nace_all.html		

¹⁷ European Commission, Competition: List of NACE Codes (2007.11.19);

http://ec.europa.eu/comm/competition/mergers/cases/index/nace_all.html

Appendix R.12-2.1: Descriptor-list for Chemical Product Category (PC)

Chemical Product Category (PC)¹⁸		
	Category for describing market sectors (at supply level) regarding all uses (workers and consumers)	Examples and explanations
PC0	Other products	
PC1	Adhesives, sealants	
PC2	Adsorbents	
PC3	Air care products	
PC4	Anti-Freeze and de-icing products	
PC7	Base metals and alloys	
PC8	Biocidal products (e.g. Disinfectants, pest control)	PC 35 should be assigned to disinfectants being used as a component in a cleaning product
PC9a	Coatings and paints, thinners, paint removers	
PC9b	Fillers, putties	
PC9c	Face and finger paints	
PC11	Explosives	
PC12	Fertilizers	
PC13	Fuels	
PC14	Metal surface treatment products, including galvanic and electroplating products	This covers substances permanently binding with the metal surface
PC15	Non-metal-surface treatment products	Like for example treatment of walls before painting.
PC16	Heat transfer fluids	
PC17	Hydraulic fluids	
PC18	Ink and toners	
PC19	Intermediate	
PC20	Products such as ph-regulators, flocculants, precipitants, neutralization agents	This category covers processing aids used in the chemical industry
PC21	Laboratory chemicals	
PC23	Leather tanning, dye, finishing, impregnation and care products	
PC24	Lubricants, greases, release products	
PC25	Metal working fluids	
PC26	Paper and board dye, finishing and impregnation products: including bleaches and other processing aids;	
PC27	Plant protection products	
PC28	Perfumes, fragrances	
PC29	Pharmaceuticals	
PC30	Photo-chemicals	

¹⁸ The remark in the right column refers to consumer product (= preparation) categories particularly addressed in the ConsExpo exposure estimation tool (1) or in the TRA exposure estimation tool (2).

Chemical Product Category (PC)¹⁸		
PC31	Polishes and wax blends	
PC32	Polymer preparations and compounds	
PC33	Semiconductors	
PC34	Textile dyes, finishing and impregnating products; including bleaches and other processing aids;	
PC35	Washing and cleaning products (including solvent based products)	
PC36	Water softeners	
PC37	Water treatment chemicals	
PC38	Welding and soldering products (with flux coatings or flux cores.), flux products	
PC39	Cosmetics, personal care products	
PC40	Extraction agents	
	Other (use UCN codes: see last row)	
http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp http://195.215.251.229/fmi/xsl/spin/SPIN/guide/menuguide.xsl?-db=spinguide&-lay=overview&-view#		

Appendix R.12-2.2: Consumer products addressed in the consumer TRA

Product (Preparation) Category	Product (Preparation) –Subcategory
PC1: Adhesives, sealants	Glues, hobby use
	Glues DIY-use (carpet glue, tile glue, wood parquet glue)
	Glue from spray
	Sealants
PC3: Air care products	Air care, instant action (aerosol sprays)
	Air care, continuous action (solid & liquid)
PC9a: Coatings, paints ¹⁹ , thinners, removers	Waterborne latex wall paint
	Solvent rich, high solid, water borne paint
	Aerosol spray can
	Removers (paint-, glue-, wall paper-, sealant-remover)
PC9b: Fillers, putties,	Fillers and putty
	Plasters and floor equalizers
	Modelling clay
PC9c: Face and finger paints ²⁰	Face and finger paints
PC12: Fertilizers	Lawn and garden preparations
PC13: Fuels	Liquids
PC24: Lubricants, greases, release products	Liquids
	Pastes
	Sprays
PC31: Polishes and wax blends	Polishes, wax / cream (floor, furniture, shoes)
	Polishes, spray (furniture, shoes)
PC35: Washing and cleaning products (including solvent based products)	Laundry and dish washing products
	Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)
	Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

¹⁹ Consumer exposure from dried/cured paint on articles is included in the TRA exposure estimates related to wooden articles (see Appendix R.13-5.3). In the TRA, an exposure estimate for releases from dried wall paints is also available. This has however not been included into Appendix R.13-5.3, since exposure estimate related to mineral articles is not supported by the TRA.

²⁰ This category (including the modelling clay) is still under discussion among ECETOC, RIVM, BfR, DEPA and ECHA. To be settled on October 5.

Appendix R.12-3: Descriptor-list for process categories [PROC]

Process categories [PROC]		
	Process categories	Examples and explanations
PROC 1	Use in closed process, no likelihood of exposure	Use of the substances in high integrity contained system where little potential exists for exposures, e.g. any sampling via closed loop systems.
PROC 2	Use in closed, continuous process with occasional controlled exposure	Continuous process but where the design philosophy is not specifically aimed at minimizing emissions It is not high integrity and occasional expose will arise e.g. through maintenance, sampling and equipment breakages
PROC 3	Use in closed batch process (synthesis or formulation)	Batch manufacture of a chemical or formulation where the predominant handling is in a contained manner, e.g. through enclosed transfers, but where some opportunity for contact with chemicals occurs, e.g. through sampling
PROC 4	Use in batch and other process (synthesis) where opportunity for exposure arises	Use in batch manufacture of a chemical where significant opportunity for exposure arises, e.g. during charging, sampling or discharge of material, and when the nature of the design is likely to result in exposure.
PROC 5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	Manufacture or formulation of chemical products or articles using technologies related to mixing and blending of solid or liquid materials, and where the process is in stages and provides the opportunity for significant contact at any stage.
PROC 6	Calendering operations	Processing of product matrix Calendering at elevated temperature an large exposed surface
PROC 7	Industrial spraying	Air dispersive techniques Spraying for surface coating, adhesives, polishes/cleaners, air care products, sandblasting; Substances can be inhaled as aerosols. The energy of the aerosol particles may require advanced exposure controls; in case of coating, overspray may lead to waste water and waste.
PROC 8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities	Sampling, loading, filling, transfer, dumping, bagging in non-dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.
PROC 8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Sampling, loading, filling, transfer, dumping, bagging in dedicated facilities. Exposure related to dust, vapour, aerosols or spillage, and cleaning of equipment to be expected.
PROC 9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Filling lines specifically designed to both capture vapour and aerosol emissions and minimise spillage
PROC 10	Roller application or brushing	Low energy spreading of e.g. coatings. Including cleaning of surfaces. Substance can be inhaled as vapours, skin contact can occur through droplets, splashes, working with wipes and handling of treated surfaces.
PROC 11	Non industrial spraying	Air dispersive techniques

Process categories [PROC]		
	Process categories	Examples and explanations
		<p>Spraying for surface coating, adhesives, polishes/cleaners, air care products, sandblasting</p> <p>Substances can be inhaled as aerosols. The energy of the aerosol particles may require advanced exposure controls;</p>
PROC 12	Use of blowing agents in manufacture of foam	
PROC 13	Treatment of articles by dipping and pouring	<p>Immersion operations</p> <p>Treatment of articles by dipping, pouring, immersing, soaking, washing out or washing in substances; including cold formation or resin type matrix. Includes handling of treated objects (e.g. after dyeing, plating.).</p> <p>Substance is applied to a surface by low energy techniques such as dipping the article into a bath or pouring a preparation onto a surface</p>
PROC 14	Production of preparations or articles by tableting, compression, extrusion, pelletisation	
PROC 15	Use as laboratory reagent	Use of substances at small scale laboratory (< 1 l or 1 kg). Larger laboratories and R+D installations should be treated as industrial processes.
PROC 16	Using material as fuel sources, limited exposure to unburned product to be expected	Covers the use of material as fuel sources (including additives) where limited exposure to the product in its unburned form is expected. Does not cover exposure as a consequence of spillage or combustion.
PROC 17	Lubrication at high energy conditions and in partly open process	<p>Lubrication at high energy conditions (temperature, friction) between moving parts and substance; significant part of process is open to workers.</p> <p>The metal working fluid may form aerosols or fumes due to rapidly moving metal parts;</p>
PROC 18	Greasing at high energy conditions	Use as lubricant where significant energy or temperature is applied between the substance and the moving parts.
PROC 19	Hand-mixing with intimate contact and only PPE available.	Addresses occupations where intimate and intentional contact with substances occurs without any specific exposure controls other than PPE.
PROC 20	Heat and pressure transfer fluids in dispersive, professional use but closed systems	<p>Motor and engine oils, brake fluids</p> <p>Also in these applications, the lubricant may be exposed to high energy conditions and chemical reactions may take place during use. Exhausted fluids need to be disposed of as waste. Repair and maintenance may lead to skin contact.</p>
PROC 21	Low energy manipulation of substances bound in materials and/or articles	Manual cutting, cold rolling or assembly/disassembly of material/article (including metals in massive form), possibly resulting in the release of fibres, rubber fumes, metal fumes or dust;
PROC 22	<p>Potentially closed processing operations with minerals/metals at elevated temperature</p> <p>Industrial setting</p>	<p>Activities at smelters, furnaces, refineries, coke ovens.</p> <p>Exposure related to dust and fumes to be expected. Emission from direct cooling may be relevant.</p>

Process categories [PROC]		
	Process categories	Examples and explanations
PROC 23	Open processing and transfer operations with minerals/metals at elevated temperature	Sand and die casting, tapping and casting melted solids, drossing of melted solids, hot dip galvanising, raking of melted solids in paving; Exposure related to dust and fumes to be expected.
PROC 24	High (mechanical) energy work-up of substances bound in materials and/or articles	Substantial thermal or kinetic energy applied to substance (including metals in massive form) by hot rolling/forming, grinding, mechanical cutting, drilling or sanding. Exposure is predominantly expected to be to dust. Dust or aerosol emission as result of direct cooling may be expected.
PROC 25	Other hot work operations with metals	Welding, soldering, gouging, brazing, flame cutting Exposure is predominantly expected to fumes and gases.
PROC 26	Handling of solid inorganic substances at ambient temperature (<i>no corresponding TRA entry</i>)	Transfer and handling of ores, concentrates, raw metal oxides and scrap; packaging, un-packaging, mixing/blending and weighing of metal powders or other minerals;
PROC 27	Production of metal powders (<i>no corresponding TRA entry</i>)	Production of metal powders by hot (atomisation, dry dispersion) and wet (electrolysis, wet dispersion) metallurgical processes
	Other process or activity, please specify;	

Appendix R.12-4.1: Description for Environmental Release Categories

ERC NUMBER	Name	Description
ERC 1	Manufacture of substances	Manufacture of organic and inorganic substances in chemical, petrochemical, primary metals and minerals industry including intermediates, monomers using continuous processes or batch processes applying dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions
ERC 2	Formulation of preparations	Mixing and blending of substances into (chemical) preparations in all types of formulating industries, such as paints and do-it-yourself products, pigment paste, fuels, household products (cleaning products), lubricants etc.
ERC 3	Formulation in materials	Mixing or blending of substances which will be physically or chemically bound into or onto a matrix (material) such as plastics additives in master batches or plastic compounds. For instance a plasticizers or stabilizers in PVC master-batches or products, crystal growth regulator in photographic films etc.
ERC 4	Industrial use of processing aids in processes and products, not becoming part of articles	Industrial use of processing aids in continuous processes or batch processes applying dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions. For example, solvents used in chemical reactions or the 'use' of solvents during the application of paints, lubricants in metal working fluids, anti-set off agents in polymer moulding/casting
ERC 5	Industrial use resulting in inclusion into or onto a matrix	Industrial use of substances as such or in preparations (non-processing aids), which will be physically or chemically bound into or onto a matrix (material) such as binding agent in paints and coatings or adhesives, dyes in textile fabrics and leather products, metals in coatings applied through plating and galvanizing processes. The category covers substances in articles with a particular function and also substances remaining in the article after having been used as processing aid in an earlier life cycle stage (e.g. heat stabilisers in plastic processing)..
ERC 6A	Industrial use resulting in manufacture of another substance (use of intermediates)	Use of intermediates in primarily the chemical industry using continuous processes or batch processes applying dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions, for the synthesis (manufacture) of other substances. For instance the use of chemical building blocks (feedstock) in the synthesis of agrochemicals, pharmaceuticals, monomers etc.
ERC 6B	Industrial use of reactive processing aids	Industrial use of reactive processing aids in continuous processes or batch processes applying dedicated or multi-purpose equipment, either technically controlled or operated by manual interventions. For example the use of bleaching agents in the paper industry.
ERC 6C	Industrial use of monomers for manufacture of thermoplastics	Industrial use of monomers in the production of polymers, plastics (thermoplastics), polymerization processes. For example the use of vinyl chloride monomer in the production of PVC
ERC 6D	Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers	Industrial use of chemicals (cross-linking agents, curing agents) in the production of thermosets and rubbers, polymer processing. For instance the use of styrene in polyester production or vulcanization agents in the production of rubbers

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ERC NUMBER	Name	Description
ERC 7	Industrial use of substances in closed systems	Industrial use of substances in closed systems. Use in closed equipment, such as the use of liquids in hydraulic systems, cooling liquids in refrigerators and lubricants in engines and dielectric fluids in electric transformers and oil in heat exchangers. No intended contact between functional fluids and products foreseen, and thus low emissions via waste water and waste air to be expected.
ERC 8A	Wide dispersive indoor use of processing aids in open systems	Indoor use of processing aids by the public at large or professional use. Use (usually) results in direct release into the environment/sewage system, for example, detergents in fabric washing, machine wash liquids and lavatory cleaners, automotive and bicycle care products (polishes, lubricants, de-icers), solvents in paints and adhesives or fragrances and aerosol propellants in air fresheners.
ERC 8B	Wide dispersive indoor use of reactive substances in open systems	Indoor use of reactive substances by the public at large or professional use. Use (usually) results in direct release into the environment, for example, sodium hypochlorite in lavatory cleaners, bleaching agents in fabric washing products, hydrogen peroxide in dental care products.
ERC 8C	Wide dispersive indoor use resulting in inclusion into or onto a matrix	Indoor use of substances (non-processing aids) by the public at large or professional use, which will be physically or chemically bound into or onto a matrix (material) such as binding agent in paints and coatings or adhesives, dyeing of textile fabrics.
ERC 8D	Wide dispersive outdoor use of processing aids in open systems	Outdoor use of processing aids by the public at large or professional use. Use (usually) results in direct release into the environment, for example, automotive and bicycle care products (polishes, lubricants, de-icers, detergents), solvents in paints and adhesives.
ERC 8E	Wide dispersive outdoor use of reactive substances in open systems	Outdoor use of reactive substances by the public at large or professional use. Use (usually) results in direct release into the environment, for example, the use of sodium hypochlorite or hydrogen peroxide for surface cleaning (building materials)
ERC 8F	Wide dispersive outdoor use resulting in inclusion into or onto a matrix	Outdoor use of substances (non-processing aids) by the public at large or professional use, which will be physically or chemically bound into or onto a matrix (material) such as binding agent in paints and coatings or adhesives.
ERC 9A	Wide dispersive indoor use of substances in closed systems	Indoor use of substances by the public at large or professional (small scale) use in closed systems. Use in closed equipment, such as the use of cooling liquids in refrigerators, oil-based electric heaters.
ERC 9B	Wide dispersive outdoor use of substances in closed systems	Outdoor use of substances by the public at large or professional (small scale) use in closed systems. Use in closed equipment, such as the use of hydraulic liquids in automotive suspension, lubricants in motor oil and brake fluids in automotive brake systems.
ERC 10A	Wide dispersive outdoor use of long-life articles and materials with low release	Low release of substances included into or onto articles and materials during their service life in outdoor use, such as metal, wooden and plastic construction and building materials (gutters, drains, frames etc.)
ERC 10B	Wide dispersive outdoor use of long-life articles and materials with high or intended release (including abrasive processing)	Substances included into or onto articles and materials with high or intended release during their service life from outdoor use. Such as tyres, treated wooden products, treated textile and fabric like sun blinds and parasols and furniture, zinc anodes in commercial shipping and pleasure craft, and brake pads in trucks or cars. This also includes releases from the article matrix as a result of processing by workers. These are processes typically related to PROC 21, 24, 25, for example: Sanding of buildings (bridges, facades) or vehicles (ships).

ERC NUMBER	Name	Description
ERC 11A	Wide dispersive indoor use of long-life articles and materials with low release	Low release of substances included into or onto articles and materials during their service life from indoor use. For example, flooring, furniture, toys, construction materials, curtains, footwear, leather products, paper and cardboard products (magazines, books, news paper and packaging paper), electronic equipment (casing)
ERC 11B	Wide dispersive indoor use of long-life articles and materials with high or intended release (including abrasive processing)	Substances included into or onto articles and materials with high or intended release during their service life from indoor use. For example: release from fabrics, textiles (clothing, floor rugs) during washing. This also includes releases from the article matrix as a result of processing by workers. These are processes typically related to PROC 21, 24, 25. For example removal of indoor paints.
ERC 12	Industrial processing of articles with abrasive techniques (high release)	Substances included into or onto articles and materials are released from the article matrix as a result of processing by workers. These are processes typically related to PROC 21, 24, 25, where the removal of material is intended. For example metal cutting in engineering industries or centralised paint stripping in aircraft industry
	Other environmental characteristics; please specify	

Appendix R.12-4.2: Use characteristics by the Environmental Release Categories

ERC	Lifecycle Stage	level of containment	Intended technical fate of substance	Dispersion of emission sources	indoor/outdoor	release promotion during service life
1	Manufacture	open-closed		Industrial	Indoor	n.a
2	Formulation	open-closed	not included into matrix	Industrial	Indoor	n.a.
3	Formulation	open-closed	Inclusion into/onto matrix	Industrial	Indoor	n.a.
4	End use	open-closed	processing aid	Industrial	Indoor	n.a.
5	End use	open-closed	Inclusion into/onto matrix	Industrial	Indoor	n.a.
6a	End use	open-closed	Intermediate	Industrial	Indoor	n.a.
6b	End use	open-closed	reactive processing aid	Industrial	Indoor	n.a.
6c	End use	open-closed	monomers for polymers	Industrial	Indoor	n.a.
6d	End use	open-closed	monomers for rubbers or thermosets	Industrial	Indoor	n.a.
7	End use	Closed system	processing aid	Industrial	Indoor	n.a.
8a	End use	open-closed	processing aid	wide disperse	Indoor	n.a.
8b	End use	open-closed	reaction on use	wide disperse	Indoor	n.a.
8c	End use	open-closed	Inclusion into/onto matrix	wide disperse	Indoor	n.a.
8d	End use	open-closed	processing aid	wide disperse	Outdoor	n.a.
8e	End use	open-closed	reaction on use	wide disperse	Outdoor	n.a.
8f	End use	open-closed	Inclusion into/onto matrix	wide disperse	Outdoor	n.a.
9a	End use	Closed systems	processing aid	wide disperse	Indoor	n.a.
9b	End use	Closed systems	processing aid	wide disperse	Outdoor	n.a.
10a	Service life	Open	Inclusion into/onto matrix	wide disperse	Outdoor	Low
10b	Service life	Open	Inclusion into/onto matrix Removing from matrix	wide disperse	Outdoor	High or intended
11a	Service life	Open	Inclusion into/onto matrix	wide disperse	Indoor	Low
11b	Service life	Open	inclusion into/onto matrix Removing from matrix	wide disperse	Indoor	High or intended
12	Service life	open-closed	Losses from matrix during article processing	Industrial	Indoor	High or intended

Appendix R.12-4.3: Overview of available Specific Environmental Release Categories (SPERCs)

To be included

Appendix R. 12-5.1: Descriptor-list for substances in articles [AC]

Article categories, no release intended [AC]		
	Article categories (and non exhaustive examples) for describing the type of article in which the substance is contained during service life and waste life	Suitable TARIC chapters
Categories of complex articles		
AC 1	Vehicles	86-89
	Trucks, passenger cars and motor cycles, bicycles, tricycles and associated transport equipment Other vehicles: Railway, aircraft, vessels, boats	
AC 2	Machinery, mechanical appliances, electrical/electronic articles	84/85
	Machinery and mechanical appliances , Electrical and electronic articles, e.g. computers, video and audio recording, communication equipment; lamps and lightening; cameras; refrigerator, dish washer, washing machines	
AC 3	Electrical batteries and accumulators	8506/07
Categories of material based articles		
AC 4	Stone, plaster, cement, glass and ceramic articles	68/69/70
	Glass and ceramic article: e.g. dinner ware, drinking glasses, pots, pans, food storage containers Construction and isolation articles Natural or artificial abrasive powder or grain, on a base of textile material, of paper, of paperboard or of other materials.	
AC 5	Fabrics, textiles and apparel	50-63, 94/95
	Clothing Bedding, mattress Curtains, upholstery, carpeting/flooring, car seats Textile Toys	
AC 6	Leather and fur articles	41-43, 64, 94
	Gloves, purse, wallet, Foot wear Furniture	
AC 7	Metal articles	71, 73-83, 95
	Cutlery, cooking utensils, pots, pans, Jewellery Toys Furniture Construction articles	
AC 8	Paper articles	48-49
	Paper articles: tissue, towels, disposable dinnerware, nappies, feminine hygiene products, adult incontinence products; Paper articles for writing, office paper Printed paper articles: e.g. newspapers, books, magazines, printed photographs Wallpaper	
AC 10	Rubber articles	40, 64, 95

Article categories, no release intended [AC]		
	Article categories (and non exhaustive examples) for describing the type of article in which the substance is contained during service life and waste life	Suitable TARIC chapters
	Rubber tyres Rubber flooring Rubber gloves Rubber footwear Rubber toys	
AC 11	Wood and straw articles	44-46 , 94/95
	Wooden flooring Wooden furniture Wooden toys Wooden construction articles	
AC 13	Plastic articles	39 , 94/95, 85/86
	Plastic dinner ware, food storage, food packaging, baby bottles Plastic flooring Plastic toys Plastic furniture Small plastic articles of daily use e.g. ball pen, PC, mobile phone Plastic construction articles	
	Other (use TARIC codes: see last row)	
	http://ec.europa.eu/taxation_customs/dds/tarhome_en.htm	

Appendix R. 12-5.2: Articles with intended release of substances

Use descriptor for articles with intended release of substances	
Descriptor based on an indicative list of examples	
AC30	Other articles with intended release of substances, please specify ²¹
AC31	Scented clothes
AC32	Scented eraser
AC33	<i>Entry has been removed after the REACH CA meeting in March 2008.</i>
AC34	Scented Toys
AC35	Scented paper articles
AC36	Scented CD
AC38	Packaging material for metal parts, releasing grease/corrosion inhibitors

²¹ see previous footnote; please note that articles could also be relevant for occupational exposure, in particular with regard to abrasive processes (see PROC 21 and 24) and hot work operations (PROC 25) Electrodes for welding and soldering are listed under PC 38 as a preparation.

Appendix R. 12-5.3: Consumer articles addressed in the TRA

Article Category	Article –Subcategory in TRA for consumer exposure
AC5:Fabrics, textiles and apparel	Clothing (all kind of materials), towel
	Bedding, mattress
	Toys (cuddly toy)
	Car seat, chair, flooring
AC6: Leather articles	Purse, wallet, covering steering wheel (car)
	Footwear (shoes, boots)
	Furniture (sofa)
AC8:Paper articles	Diapers
	Sanitary towels
	Tissues, paper towels, wet tissues, toilet paper
	Printed paper (papers, magazines, books)
AC10:Rubber articles	Rubber handles, tyres
	Flooring
	Footwear (shoes, boots)
	Rubber toys
AC11:Wooden articles	Furniture and flooring (chair, parquet)
	Small toys (car, train)
	Toys, outdoor equipment
AC13:Plastic articles	Plastic, larger articles (plastic chair, PVC-flooring, lawn mower, PC)
	Toys (doll, car, animals, teething rings)
	Plastic, small articles (ball pen, mobile phone)

Appendix R. 12-6: List of functional categories (optional, if needed)²²

List of technical functions a substance may have in a chemical product (preparation) or article		
	Function	Explanation
	Aerosol propellants	Compressed or liquefied gases within which substances are dissolved or suspended and expelled from a container upon discharge of the internal pressure through expansion of the gas
	Agents adsorbing and absorbing gases or liquids	Substances used to absorb or adsorb gases or liquids: filter materials/media; molecular sieves; silica gel etc
	Anti-condensation agents	Substances used to avoid condensation on surfaces and in the atmosphere: anti-dim agents; condensation removers.
	Anti-freezing agents	Substances used to prevent and remove ice formation: antifreeze liquids; de-icing agents.
	Anti-set off and adhesive agents	Substances used to prevent set-off and adhesion: spraying powder and anti-set-off additives for printing; oils and waxes for laths and shuttering; casting slip etc
	Anti-static agents	Substances used to prevent or reduce the tendency to accumulate electrostatic charges: anti-static additives; substances for surface treatment against static electricity.
	Binding agents	Resin or polymer-substances in coatings and adhesives
	Biocide substances	
	Bleaching agents	Substances used to whiten or decolourise materials. Not: cosmetics; photographic bleaches; optical brighteners.
	Colouring agents, dyes	
	Colouring agents, pigments	
	Complexing agents	Substances used to combine with other substances (mainly metal ions) to form complexes.
	Conductive agents	Substances used to conduct electrical current. Sub-categories electrolytes; electrode materials.
	Corrosion inhibitors and anti-scaling agents	Substances used to prevent corrosion: corrosion inhibiting additives; rust preventives.
	Dust binding agents	Substances used to control finely divided solid particles of powdered or ground materials to reduce their discharge into the air.
	Explosives	
	Fertilisers	
	Fillers	Relatively inert, and normally non-fibrous, finely divided substances added to elastomers, plastics, paints, ceramics etc., usually to extend volume.
	Fixing agents	Substances used to interact with a dye on fibres to improve fastness.

²² Reference to SNIF and TSCA reporting to be included.

List of technical functions a substance may have in a chemical product (preparation) or article		
	Function	Explanation
	Flame retardants	Substances incorporated into, or applied to the surface of, materials to slow down or prevent combustion
	Flotation agents	Substances used to concentrate and obtain minerals from ores: flotation oil; flotation, depressants.
	Flux agents for casting	Substances used to promote the fusing of minerals or prevent oxide formation.
	Foaming (blowing) agents	Substances used to form a foam or cellular structure in a plastic or rubber material: physically by expansion of compressed gases or vaporisation of liquid, or chemically by decomposition evolving a gas.
	Food/feedstuff additives	
	Fuels and fuel additives	
	Heat transfer agents	
	Impregnation agents	Substances used to admix with solid materials, which retain their original form: impregnating agents for leather, paper, textile and wood. Not: flame retardants; conserving agents; biocides.
	Intermediates	
	Laboratory chemicals	Substances used in laboratories for analytical purposes.
	Lubricants and lubricant additives	Substances entrained between two surfaces and thereby used to reduce friction: oils; fats; waxes; friction reducing additives.
	Odour agents	Substances used to produce, enhance or mask odour. Not: food additives; cosmetics.
	Oxidizing agents	Substances that give up oxygen easily, remove hydrogen from other substances, or accept electrons in chemical reactions, and are used for such purposes.
	Pharmaceutical substance	
	Photosensitive agents and other photo-chemicals	Substances used to create a permanent photographic image. Sub-categories: desensitisers; developers; fixing agents; photosensitive agents; sensitisers; anti-fogging agents; light stabilisers; intensifiers.
	pH-regulating agents	
	Plant protection active substance	
	Plating agents and metal surface treating agents	
	Pressure transfer agents	
	Process regulators, other than polymerization or vulcanization processes	Substances used to regulate the speed of a (chemical) process, e.g. accelerators; activators; catalysts; inhibitors; siccatives; anti-siccatives; cross-linking agents; initiators; photo-initiators etc
	Process regulators, used in vulcanization or polymerization processes	Substances used to regulate the speed of a (chemical) process, e.g. accelerators; activators; catalysts; inhibitors; siccatives; anti-siccatives; Cross-linking agents; initiators; photo-initiators etc
	Processing aid, not otherwise listed	

CHAPTER R.12 – USE DESCRIPTOR SYSTEM

List of technical functions a substance may have in a chemical product (preparation) or article		
	Function	Explanation
	Reducing agents	Substances used to remove oxygen, hydrogenate or, in general, act as electron donors in chemical reactions
	Reprographic agents (Toners)	Substances used to reproduce a permanent image.
	Semiconductors and photovoltaic agents	Substances having resistivities that are between those of insulators and metals, and are usually changeable by light, heat or electrical or magnetic field, or generate electromotive force upon the incidence of radiant energy
	Softeners	Substances used for softening materials to improve feel, to facilitate finishing processes or to impart flexibility or workability. Sub-categories: coalescing agents; bates (leather technology); de-vulcanising agents; emollients; swelling agents; water softeners; plasticisers
	Solvents	Substances used to dissolve, thin, dilute and extract: extraction agents; solvents and thinners for paints, lacquers, adhesives and other materials
	Stabilisers	Substances used to prevent or slow down spontaneous changes in, and aging of, materials.
	Surface active agents	Substances used to lower the surface and/or interfacial tension of liquids and promote cleaning, wetting, dispersion etc
	Tanning agents	Substances used for treating hides and skins.
	Viscosity adjustors	Substances used to modify the flow characteristics of other substances, or mixtures, to which they are added
	Other	