

nexperia	Hazardous Substances Control Standard for Products and Packaging	EHS
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1 OBJECTIVES / PURPOSE

Nexperia’s requirements for hazardous substances in products and packaging are guided by both national and international regulations, as well as specific customer requirements. Substances may either be completely prohibited, meaning they cannot be used under any circumstances, or prohibited only above certain thresholds, where they are allowed up to specific limits set by this standard but cannot exceed them. In some cases, substances are subject to restricted use, where they are permitted only in specific applications. Additionally, certain substances must be declared when present, even if they are not entirely prohibited or restricted, ensuring transparency and regulatory compliance.

2 SCOPE

This document is applicable to all materials, parts, (semi-)finished goods, subassemblies and packaging materials delivered and used for Nexperia products (ICs, discrettes and modules) which are either intended to be put on the market or intended to be used by the business for evaluation purposes.


3 RESPONSIBILITIES AND RISKS

3.1 Responsibility Assignment Matrix

The basic responsibilities are shown in the RACI matrix in Table 1. A more detailed process description can be found in the internal document XPR-0318.

Table 1: RACI matrix for the main tasks during environmental compliance review; R: Responsible; A: Accountable; C: Consulted, I: Informed;

Task	Vendor	ECO-Products	Business Group
Define environmental compliance requirements	I	A	I
Fulfil environmental compliance requirements for products and packaging in accordance with this standard over the entire product lifecycle	R	C	A
Request required documentation from vendor	I	C	A
Confirm compliance towards this procedure and provide required documentation	R	C	A
Identify and inform about any non-compliance cases	A	C	C
Perform environmental compliance reviews	C	R	A
Maintain internal documentation		C	A

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3.2 Risks

Non-compliance with regulations in Nexperia's products poses a significant risk to the company, both financially and in terms of reputation. The immediate financial risks are covered by our standard Terms & Conditions of Sales, but a failure to adhere to regulations could result in negative publicity and loss of business. The consequences of non-compliance, such as shipment blockages, fines, facility closures, and potential legal action, can have severe consequences and must be avoided.

4 FLOWCHART

n/a

5 PROCEDURE


This document provides a comprehensive overview of Nexperia's Hazardous Substances Control Standard. Substance groups may either be finite and self-contained, such as those governed by REACH Annex XIV at a specific point in time, or they may consist of an extensive, potentially limitless number of representatives, such as per- and polyfluoroalkyl substances (PFAS). XPR-0534 serves as a supporting document, providing comprehensive lists for self-contained groups of substances and illustrative examples for open substance groups.

All threshold limit values (TLVs) mentioned herein shall apply at the respective homogeneous material level. If multiple TLVs can be derived, the strictest of available requirements shall be applied. Consider the example of a metallic product-related material containing lead. Lead is: i) a substance of very high concern (SVHC) and ii) listed under Proposition 65 and therefore declarable at 100 ppm (section 5.4); iii) restricted at 500 ppm in metals (Table B1); iv) classified as a reproductive toxicant, category 1 A, thus restricted at 1000 ppm (Table B1). Consequently, the applicable threshold limit value (TLV) for lead is 500 ppm.

5.1 Legal and Regulatory Background

This standard is continuously being updated to meet the following requirements:

1. REACH Regulation (EC 1907/2006), specifically Annex XIV, Annex XVII, Appendices 1–6, and the SVHC list published in accordance with Article 59(10)
2. RoHS Directive (EU 2011/65)
3. ELV Directive (EG 2000/53)
4. PPW Directive (EC 94/62)
5. POP Regulation (EU 2019/1021)
6. ODS Regulation (EU 2024/590)
7. Fluorinated Greenhouse Gases Regulation (EU 2024/573)
8. ECHA's PBT and vPvB substance list
9. Chinese ACPEIP ("China RoHS")
10. Persistent, Bioaccumulative, and Toxic (PBT) Chemicals under TSCA Section 6(h)
11. Regulation EG 1005/2009 on substances that deplete the ozone layer, groups I and II
12. California Proposition 65 (The Safe Drinking Water and Toxic Enforcement Act of 1986)
13. Swiss Chemical Risk Reduction Ordinance (ORRChem)
14. Canadian Prohibition of Certain Toxic Substances Regulations 2022

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15. French Decree No. 2020-105 on the 'Fight Against Waste and the Circular Economy'

5.2 Prohibited Substances

The intentional use of these substances and/or substances belonging to substance groups mentioned is prohibited. Nexperia does not allow the intentional use of prohibited substances under the conditions as set by our objectives and scope in any application. Nexperia accepts impurities of these substances in naturally occurring amounts and/or amounts generated via synthesis which cannot be avoided and where removal is not feasible.

Table A: List of prohibited substances and substance groups together with their TLVs. TLVs apply to all applications. Footnotes are given [below](#).

Substance/Substance Group	TLV ppm (mg/kg)
Asbestos	10
Biocides	0.01
Cadmium (Cd) and its compounds	5 ^{a)}
Chlorinated hydrocarbons (CHCs), aliphatic, < C ₁₀	900
Chlorinated paraffins (CPs), ≥ C ₁₀ including short-chain chlorinated paraffins (SCCPs, C ₁₀ –C ₁₃), medium-chain chlorinated paraffins (MCCPs, C ₁₄ –C ₁₇), and long-chain chlorinated paraffins (LCCPs, >C ₁₇)	100
Chlorofluorocarbons (CFCs)	1
Creosotes (tar oils)	5
Endangered species of flora and fauna according to CITES	not used
Expanded polystyrene (EPS)	not used
Glycol ethers	1
Halogenated benzenes	50
Halogenated dibenzo-p-dioxins and dibenzofurans including polybrominated dibenzo-p-dioxins (PBDDs), polybrominated dibenzofurans (PBDFs), polychlorinated dibenzo-p-dioxins (PCDDs), and polychlorinated dibenzofurans (PCDFs)	0.005
Halogenated diphenylmethanes, benzyltoluenes, and diarylalkanes	10
Halons	1
Hexavalent chromium (Cr ⁶⁺) compounds	100 ^{a)}
Hydrofluorocarbons (HFCs), hydrobromofluorocarbons (HBFCs), hydrochlorofluorocarbons (HCFCs), hydrofluoroethers (HFEs), and hydrofluoroolefins (HFOs)	1
Isocyanates	100
Mercury (Hg) and its compounds	2 ^{a)}
Metal carbonyls	100
Monomers	5
Nitro and nitroso compounds	100
Nonylphenols (NPs), octylphenols (OPs), and their ethoxylates (NPEs, OPEs)	50

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Substance/Substance Group	TLV ppm (mg/kg)
Organotin compounds	5
Ozone-Depleting Substances (ODS) as defined by groups I and II of Regulation 1005/2009/EC	1
Pentachlorophenol (PCP) and its salts and esters	5
Perchloric acid and its salts (perchlorates)	0.006
Per- and polyfluoroalkyl substances (PFAS) including fluorotelomers, perfluorocarboxylic acids (PFCAs) and perfluorosulfonic acids (PFSAs) with the following exceptions:	50
- Perfluorooctanesulfonic acid (PFOS) and its salts and related substances	1
- Perfluorocarbons (PFCs)	1
- Perfluorohexanoic acid (PFHxA), perfluorohexanesulfonic acid (PFHxS), perfluorooctanoic acid (PFOA), and their salts	0.025
- Related substances of PFHxA, PFHxS, and PFOA	1
- C ₉ –C ₂₁ PFCAs and their salts ¹	0.025
- Related substances of C ₉ –C ₂₁ PFCAs	0.26
Persistent, bioaccumulative, and toxic (PBT) and very persistent and very bioaccumulative (vPvB) substances per ECHA	1000
Persistent Organic Pollutants per EU 2019/1021	not used
Phthalates, including their salts and esters	100
Polychlorinated/polybrominated biphenyls (PCBs/PBBs), diphenyl ethers (PCDEs/PBDEs), terphenyls (PCTs/PBTs), and naphthalenes (PCNs/PBNs)	0.1
Radioactive elements	background radiation
REACH Annex XIV substances (Authorization List)	not used
Selenium (Se) and its compounds	100
Triorganophosphates	1000
TSCA Section 6(h)-covered substances	not used

5.3 Restricted Substances

The intentional use of these substances is restricted. Nexperia allows their intentional use only for specific applications under the conditions as set by our objectives and scope. Nexperia accepts impurities of substances in naturally occurring amounts and/or amounts generated via synthesis which cannot be avoided and where removal is not feasible.

¹ The "Prohibition of Certain Toxic Substances Regulations, 2022" sets restrictions on PFCAs of molecular formula C_nF_{2n+1}COOH in which 8 ≤ n ≤ 20. Within this document, these PFCAs are described as "C₉–C₂₁ PFCAs", thus including the carboxylic acid carbon atom.

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5.3.1 General

Table B1: List of restricted substances and substance groups together with their restricted applications and TLVs. Footnotes are given [below](#).

Substance/Substance Group	Restricted Application(s)	TLV ppm (mg/kg)
Aldehydes	Wooden packaging materials	0.05
Anilines (including benzidines and phenylenediamines) and their salts	Direct and prolonged skin contact	30
Aromatic brominated flame retardants (BFRs)	New materials and products	not used
Arsenic (As) and its compounds	Product-related materials, except as dopant in semiconductor dies	25
	Packaging	10
Azo compounds and their salts	Direct and prolonged skin contact	30
Beryllium (Be) and its compounds	All, except as dopant in gold wires	1000
Carcinogenic, mutagenic, or toxic for reproduction (CMR) substances, cat. 1 A and 1 B according to REACH (Appendices 1 to 6)	All, except PAH impurities from carbon black pigment and lead in RoHS or ELV-exempted applications	1000
Lead (Pb) and its compounds	All metals, except for applications exempted by RoHS or ELV	500 ^{a)}
	All non-metals, except for applications exempted by RoHS or ELV	20 ^{a)}
Mineral and ceramic fibres	All, except in GRPs in PCBs and as crystalline silica in mould compounds and adhesives	10
Mineral Oil Aromatic Hydrocarbons (MOAH), 1–7 aromatic rings, except for: - MOAH containing 3–7 aromatic rings	Inks	1000
		1
Mineral Oil Saturated Hydrocarbons (MOSH)	Inks	1000
Natural rubber (latex)	Direct and prolonged skin contact	100
Phenols, their salts, and related substances	Direct and prolonged skin contact	50
Polycyclic aromatic hydrocarbons (PAHs)	All, except naturally occurring amounts and/or amounts generated via synthesis which cannot be avoided and where removal is not feasible	1
Polyvinylchloride (PVC) and PVC blends	All, except PVC tubes/rails for semiconductor packaging	5
Skin sensitizers of category 1 per CLP Regulation – including, but not limited to: - Cobalt (Co) and its compounds - Nickel (Ni) and its compounds	Direct and prolonged skin contact and laminates of PCBs	1000 ^{b)}
REACH Annex XVII substances (Restriction List)	All, except i) As as dopant in semiconductor dies; ii) Ni in non-direct/prolonged skin contact applications; iii) azodyes in non-direct/prolonged skin contact applications; iv) Pb in applications exempted by RoHS or ELV;	1000

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5.3.2 Halogen/Antimony-Free Products Only

The requirements from Table B2 must be met for all homogeneous materials in Nexperia parts that are designated to meet Nexperia's Halogen-Free definition as per XPR-0213.

Table B2: List of restricted substances/substance groups for products designated to meet Nexperia's Halogen-Free definition. Footnotes are given [below](#).

Substance/Substance Group	Applications	TLV ppm (mg/kg)
Antimony oxides	Any product-related h.m. of a product to meet Nexperia's Halogen-Free definition	900
Sum of chlorine and bromine content	If the final product is to meet Nexperia's Halogen-Free definition	900

Footnotes to the tables:

- Sum of cadmium, mercury, chromium(VI) and lead shall not exceed the limit of 100 ppm (0.01 %) in packaging material.
- For nickel in surface preparations of products intended to come into direct and prolonged contact with the skin: Nickel ion release $<0.5 \mu\text{g}/\text{cm}^2/\text{week}$ using test method EN1811:2011.


5.4 Declarable Substances

All prohibited (Table A) and restricted substances (Tables B1 and B2) are also considered declarable substances. The declarable concentration limit shall be the lower of either the respective TLV or 100 ppm. In addition, substances belonging to one or more of the following groups are declarable at the 100 ppm level:

Elements and their compounds

- Aluminum (Al) and its compounds²
- Antimony (Sb) and its compounds²
- Barium (Ba) and its compounds²
- Bismuth (Bi) and its compounds²
- Boron (B) and its compounds²
- Copper (Cu) and its compounds²
- Chromium (Cr) and its compounds
- Gallium (Ga) and its compounds²
- Germanium (Ge) and its compounds²
- Gold (Au) and its compounds
- Hafnium (Hf) and its compounds²
- Indium (In) and its compounds
- Lithium (Li) and its compounds²
- Magnesium (Mg) and its compounds²
- Manganese (Mn) and its compounds²
- Niobium (Nb) and its compounds²

² Part of the fifth list 2023 of critical raw materials for the EU, either directly or indirectly.

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- Phosphorus (P) and its compounds²
- Platinum group elements³ and their compounds²
- Rare earth elements⁴ and their compounds²
- Silver (Ag) and its compounds
- Silicon (Si) and its compounds²
- Strontium (Sr) and its compounds²
- Tantalum (Ta) and its compounds²
- Tellurium (Te) and its compounds
- Thallium (Tl) and its compounds
- Tin (Sn) and its compounds
- Titanium (Ti) and its compounds²
- Tungsten (W) and its compounds²
- Vanadium (V) and its compounds²
- Zinc (Zn) and its compounds

Declarable substances required by legislation

- California Proposition 65 substances
- Substances of Very High Concern (SVHCs) per REACH Article 59(10)

Declarable substances required by industry standards

- Global Automotive Declarable Substances List (GADSL)
- IEC 62474

Individual substance classes

- Chemical warfare agents
- Cyanogenic compounds and inorganic cyanides
- Epoxy compounds
- Graphite²
- Halogenated organic compounds (including brominated flame retardants, BFRs), salts with halogenated ions, and inorganic halides
- Nanomaterials
- Nitrites
- Polyamines
- Polymeric resins

The declaration of substances is generally mandatory for all intentionally added and unintentionally present substances that exceed 100 ppm (0.01 %) of the homogeneous material. Nexperia recognizes that minor variations in chemical composition between production lots may occur. However, the declared concentrations are considered fixed values and must reflect typical substance levels, as ranges or deviations are not acceptable. This ensures consistent and reliable reporting of substance concentrations.

The use of wildcards such as "Misc., not to declare" is strongly discouraged, since in this case a continuous alignment with Nexperia's changing requirements on declarable substances in step

³ Platinum group elements are ruthenium, osmium, rhodium, iridium, palladium, and platinum.

⁴ Rare earth elements include lanthanides (lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium), yttrium, and scandium

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with legal and customer requirements is necessary. In any case, the concentration of wildcard substances must not exceed 10 % of the respective homogeneous material.


5.5 Non-Conformance

Nexperia requires suppliers to address any non-conformance towards the requirements mentioned herein. The Nexperia Sourcing Manager and ECO-Products (eco-products@nexperia.com) must be informed immediately when a non-conformance is either suspected or confirmed. The existence of any non-conformity shall be verified via appropriate verification methods. After root cause analysis and recognition of the extent of the non-conformity, a corrective action plan must be shared with Nexperia. After the non-conformance has been remedied, suitable evidence is required to confirm that the non-conformance has been successfully eliminated.

In case Nexperia's customer reports a possible non-conformance towards agreed-on requirements, the procedure as outlined in XPR-0036, Customer Complaint Handling Procedure, shall be followed.

6 RECORDS

Compliance to this procedure should be checked with help of the full material declaration process (XPR-0318), with the relevant form being XTE-0008 for incoming materials and products. In addition, compliance should be verified by Certificates of Analysis (CoAs) as evidence with respect to Nexperia's test requirements (XPR-0009), with XPR-0282 being the respective process description. Documents submitted by suppliers should be attached to the material level in Enovia for traceability purposes.

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7 DOCUMENT INFORMATION

7.1 References

Item	Description
XTE-0008	Nexperia Material Declaration Form (<i>public</i>)
XPR-0036	Customer Complaint Handling Procedure (<i>company internal</i>)
XPR-0213	RHF-2006 Classification for Semiconductor Products (<i>public</i>)
XPR-0282	Obtaining Valid Certificates of Analysis (CoAs) (<i>company internal</i>)
XPR-0318	Full Material Declaration Process (<i>company internal</i>)
XPR-0534	List of Controlled Substances in Products and Packaging (<i>public</i>)
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLP	Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
ELV	Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of-life vehicles
EU 2024/573	Regulation (EU) 2024/573 of the European Parliament and of the Council of 7 February 2024 on fluorinated greenhouse gases, amending Directive (EU) 2019/1937 and repealing Regulation (EU) No 517/2014
French Decree No. 2020-105	LAW no. 2020-105 of 10 February 2020 on the fight against waste and the circular economy
GADSL	Global Automotive Declarable Substances List
IEC 62474	Declarable Substances List (DSL) including Reference Substance List (RSL) per "IEC 62474 - Material Declaration for Products of and for the Electrotechnical Industry"
ODS	Regulation (EU) 2024/590 of the European Parliament and of the Council of 7 February 2024 on substances that deplete the ozone layer
PBT/vPvB	The ECHA publishes a PBT assessment list.
POP	Regulation (EU) 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants
PPW	European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste
REACH	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)


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RoHS	Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment
TSCA	Toxic Substances Control Act of 1976


7.2 Terms, Acronyms, and Definitions

Acronym / Term	Definition
Background radiation	Nexperia defines background radiation as 0.2 µSv/h and/or 50 Bq/g maximum at 10 cm distance.
BFR	Brominated flame retardant
CFC	Chlorofluorocarbons
CHC	Chlorinated hydrocarbon
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora (see section 7.1)
CLP	Classification, labelling and packaging of substances and mixtures (see section 7.1)
CMR	Carcinogenic, mutagenic, or reproductive toxicant
CP	Chlorinated paraffin
ECHA	European Chemicals Agency
ELV	End-of-life vehicles (see section 7.1)
EPS	Expanded polystyrene
GRP	Glass-reinforced plastics
h.m. = homogeneous material	A material of uniform composition throughout or a material, consisting of a combination of materials that cannot be disjoined or separated into varied materials by mechanical actions such as unscrewing, cutting, crushing, grinding, and abrasive processes.
HBFC	Hydrobromofluorocarbon
HCFC	Hydrochlorofluorocarbon
HFC	Hydrofluorocarbon
HFE	Hydrofluoroether
HFO	Hydrofluoroolefin
Impurity	An impurity is a trace amount of a substance that is present in raw materials and is not removed during the production process. These substances can include contaminants found in recycled materials or naturally occurring elements in raw materials, such as ore. Additionally, impurities encompass residual substances that remain in a homogeneous material after processing by the

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Acronym / Term	Definition
	supplier. These residuals can include unreacted constituent substances (e.g., monomers, pre-polymers, base materials, antioxidants, and catalysts), solvents, reaction byproducts formed during production, and decomposition products.
LCCP	Long-chain chlorinated paraffin. An unbranched chloroparaffin with a carbon chain length of more than 17 atoms.
MCCP	Medium-chain chlorinated paraffin. An unbranched chloroparaffin $C_xH_{2x-y+2}Cl_y$, where $x = 14-17$ and $y = 1-17$.
MOAH	Mineral oil aromatic hydrocarbon
MOSH	Mineral oil saturated hydrocarbon
n.d. = not detectable	Nexperia considers amounts of substances below the natural occurrence levels and/or below the detection limit of currently accepted quantitative analytical methods as "not detectable (n.d.)", "not present", "not contained" or "0 ppm".
Nanomaterial	following Commission recommendation 2011/696/EU, a nanomaterial shall be defined as " <i>a natural, incidental or manufactured material containing particles, in an unbound state or as an aggregate or as an agglomerate and where, for 50 % or more of the particles in the number size distribution, one or more external dimensions is in the size range 1 nm-100 nm.</i> "
Not used	A substance that is not intentionally added during the manufacturing or processing of a material or product.
NPE	Nonylphenol ethoxylate (= ethoxylated nonylphenol)
NP	Nonylphenol
ODS	Ozone-depleting substance
OPE	Octylphenol ethoxylate (= ethoxylated octylphenol)
OP	Octylphenol
Packaging (material)	Please refer to the legal definition set out in PPW Directive: " <i>all products made of any materials of any nature to be used for the containment, protection, handling, delivery and presentation of goods, from raw materials to processed goods, from the producer to the user or the consumer.</i> " As such, the definition also covers tertiary shipment materials such as pallets to facilitate handling and transport of a number of sales units or grouped packagings.
Packing (material)	Materials in direct (primary) or indirect (secondary) contact with the product, such as reel, tape, tube, tray, bag, box, cushion, bag, plug, humidity indicator card, label, ...
PAH	Polycyclic aromatic hydrocarbon
PBT	Persistent, bioaccumulative, and toxic

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Acronym / Term	Definition
PBB	Polybrominated biphenyl
PBDD	Polybrominated dibenzodioxin
PBDE	Polybrominated diphenyl ether
PBDF	Polybrominated dibenzofuran
PBN	Polybrominated naphthalene
PBT	Polybrominated terphenyl
PCB	Printed circuit board <i>or</i> polychlorinated biphenyl
PCDD	Polychlorinated dibenzodioxin
PCDE	Polychlorinated diphenyl ether
PCDF	Polychlorinated dibenzofuran
PCN	Polychlorinated naphthalene
PCP	Pentachlorophenol
PCT	Polychlorinated terphenyl
PFAS	<p>Per- and polyfluoroalkyl substances. Any substance that contains at least one fully fluorinated methyl (-CF₃) or methylene (-CF₂-) carbon atom (without any H/Cl/Br/I attached to it). A substance that only contains the structural element CF₃-X or X-CF₂-X', where X = -OR or -NRR' and X' = methyl (-CH₃), methylene (-CH₂-), an aromatic group, a carbonyl group (-C(O)-), -OR'', -SR'' or -NR''R''', and where R/R'/R''/R''' is a hydrogen (-H), methyl (-CH₃), methylene (-CH₂-), an aromatic group or a carbonyl group (-C(O)-), is excluded from the scope.</p> <p>PFAS are sometimes referred to as per- and polyfluorinated chemicals, abbreviated as "PFCs". This should not be confused with the use of the abbreviation PFC in this document.</p>
PFC	Perfluorocarbon
PFCA	Perfluorocarboxylic acid
PFHxA	Perfluorohexanoic acid
PFHxS	Perfluorohexanesulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctanesulfonic acid
PFSA	Perfluorosulfonic acid


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Acronym / Term	Definition
PVC	Polyvinyl chloride
POP	Persistent organic pollutant (see section 7.1)
PPW	Packaging and packaging waste (see section 7.1)
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals (see section 7.1)
Related substance of...	A related substance of a given substance is a substance (including polymers) that can release the target substance and thereby act as its precursor. For example, compounds containing the structural element C ₈ F ₁₇ SO ₂ ⁻ , C ₈ F ₁₇ SO ₃ ⁻ , or C ₈ F ₁₇ SO ₂ N ⁻ are suspected to release perfluorooctane sulfonate (PFOS) and are related substances of PFOS.
RoHS	Restriction on Hazardous Substances (see section 7.1)
RHF	RoHS and Halogen/Antimony-Free
SCCP	Short-chain chlorinated paraffin. An unbranched chloroparaffin C _x H _{2x-y+2} Cl _y , where x = 10–13 and y = 1–13.
Skin contact, prolonged	Contact with the skin for more than 10 minutes on three or more occasions within two weeks, or for 30 minutes on one or more occasions within two weeks.
SVHC	Substance of very high concern
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act (see section 7.1)
vPvB	Very persistent and very bioaccumulative


7.3 History of Changes

Date	Description of change	Changed by (name)
2017-02-06	Transfer from NX3-00119 to Nexperia	Rainer Paschold
2018-04-18	Update of terms and tables	Annette Bunk
2019-12-04	Review and re-validation, correction of typos. Changed owning organization from Quality to EHS.	Annette Bunk
2022-04-22	<i>Interim revision: changed document owner from Marc Bollmann to Timo Stein</i>	<i>NMS Admin</i>
2022-10-11	<ul style="list-style-type: none"> • Periodic review • Definitions for prohibited, restricted, declarable substances were moved from chapter 7 to chapter 5 • "Azo compounds (azocolourants and azodyes)" moved from prohibited to restricted 	Annette Bunk

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	<ul style="list-style-type: none"> • "Persistent, Bioaccumulative and Inherently Toxic Substances (PBiTs)" renamed to PBTs and moved from restricted to prohibited • Typographic fixes • Removed footnote f) about benzene impurities • Info on Tab. C1 and C2 removed as it applies to XTE-0008/XTE-0055 • Rework of chapter 7.1 and 7.2 • Removed Master List attachment as it is distributed along with XTE-0008/XTE-0055 	
2023-02-07	<p><u>Reworked:</u> (3.2) Risks</p> <p><u>Updated:</u></p> <ul style="list-style-type: none"> - (5.1) Prohibited Substances: PFAS limits adapted to new requirements; polychlorinated phosphate esters added; TSCA 6(h) substances added; specified group column "Applications" removed - (5.2) Restricted Substances: Addition of MOAH/MOSH <p><u>Added:</u></p> <ul style="list-style-type: none"> - (5.4) Non-Conformance; - (8) MasterList as an Excel appendix 	Annette Bunk
2023-06-15	<ul style="list-style-type: none"> • MasterList: (a) Added requirements on declarable substances according to EU Critical raw materials (CRMs) 2023 draft. (b) SVHC-235 update. • (5.1) Specified PFAS requirements, added PFHxA • (5.2.1) Application for "natural rubber (latex)" was changed from "All, except in photo diodes" to "direct and prolonged skin contact". Application for Arsenic was changed from "All, except ICs (as dopant or GaAs-based dies)" to "All, except semiconductor chips". • (5.2.2) Specified Cl+Br requirement for Halogen-Free; removed footnote j; • (5.3) Rework. Explicit reference to the declarability of substances according to MasterList and wildcard substances. 	Annette Bunk
2023-11-29	<i>Interim rev. removed "Nexperia" from document title</i>	<i>Timo Stein</i>
2024-08-27	<p>Renamed the document from "Nexperia List of Hazardous Substances in Products and Packaging" to "Hazardous Substances Control Standard for Products and Packaging"</p> <ul style="list-style-type: none"> • Reworked "1 Objectives / Purpose", the responsibility assignment matrix below "3 Responsibilities and Risks", and "5 Procedure". • Added "5.1 Legal and Regulatory Background". • Prohibited substances. Removed "(excl. hexachlorobenzene)" from halogenated benzenes; Added definitions of SCCPs, MCCPs, and LCCPs to CPs. Specified "endangered species of flora and fauna" by adding "according to CITES". Changed "greenhouse gases" to cover HFCs, HBFCs, and HCFCs. Moved aldehydes to 	Annette Bunk

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	<p>restricted substances. Renamed "pesticides, herbicides, insecticides" to "biocides", lowered TLV from 1000 ppm to 0.01 ppm. Removed UV-320, is covered by REACH Annex XIV. Removed dimethylfumarate, is covered by REACH Annex XVII. Merged "ethyl/methyl glycols and their acetates" (P1) and "toxic glycol ethers, excluding ethyl/methyl glycols and their acetates" (P1000) to one row "glycol ethers" (P1). Removed fluorotelomers, is covered by PFAS. Added isocyanates at 100 ppm. Lowered metal carbonyls to 100 ppm. Merged nitro compounds and nitrosamines to "nitro and nitroso compounds", lowered TLV from 1000 ppm to 100 ppm. Removed HBCDD, is covered by REACH Annex XIV. Removed hexachlorobenzene, is covered by biocides. Added OPs and OPEs to NPs and NPEs. Moved organotin compounds from restricted to prohibited. Added info on origin of ODS (1005/2009/EC). Added PFCs, HFCs, HFEs, HFOs below PFAS at 1 ppm. Redefined PBTs and vPvBs to extend to ECHA-specified substances. Merged "phthalates, specified group" (P100) and "phthalates, excl. specified group" (R100) as "phthalates, including their salts and esters" (P100). PCBs, PBBs, PCDEs, PBDEs, PCTs, PBTs, PCNs, PBNs now all at P5. Renamed "polychlorinated phosphate esters, specified group" to "triorganophosphates". Removed PACs and thioxanthenes. Moved PAHs to restricted substances. Added REACH Annex XIV as "not used". Removed triclosan, is covered by biocides. Added "creosotes (tar oils)" at 5 ppm.</p> <ul style="list-style-type: none"> • Restricted substances: Added "aromatic brominated flame retardants" (not used). Moved aldehydes from prohibited to restricted, apply only to wooden packaging materials. Added "anilines (including benzidines and phenylenediamines) and their salts" at 30 ppm. Expanded "azo compounds" to also cover their salts. Removed "ceramic headers" from beryllium application. Changed CMR application to "all, except PAH impurities from carbon black as a pigment in product-related and packaging materials and lead in RoHS or ELV-exempted applications". Raised TLV for lead in metals to 500 ppm. Changed application for mineral and ceramic fibres to cover adhesives as well. Lowered MOAH and MOSH limits to 1000 ppm. Added MOAH w. 3-7 aromatic rings at 1 ppm. Moved "organotin compounds" to prohibited substances. Changed "phenols excl. PCPs, NPs, NPEs, and UV-320" to "phenols, their derivatives and salts", changed application to "direct and prolonged skin contact". Moved PAHs from prohibited to restricted substances. Removed phthalates, now covered under prohibited substances. Specified that skin sensitizers 	
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	<p>apply to substances as classified by CLP. Added REACH Annex XVII at R1000. Removed TRIS and TEPA, are covered by REACH Annex XVII.</p> <ul style="list-style-type: none"> • Reworked Tab. B2 to list antimony requirements for glass diodes and other products. • Reworked "5.4 Declarable Substances", now mentioning all declarable substance groups. • Reworked "7.2 Terms, Acronyms, and Definitions". • Removed Appendix, replaced by XPR-0534. • Removed references to XTE-0055 (Product Declaration Form), now all handled within XTE-0008. 	
2024-09-05	<ul style="list-style-type: none"> • Changed "Pb in applications non-exempted by RoHS or ELV" to "Pb in applications exempted by RoHS or ELV" for REACH Annex XVII substances (Table B1). • Fixed two wrong references to XPR-0534 (was: XPR-0543) and the link to the document. 	Annette Bunk
2025-01-16	<ul style="list-style-type: none"> • Changed document author to Timo Stein • 5.1: Added Regulation 2024/573/EU and French Decree No. 2020-105 • 5.2: Moved HFES and HFOs from PFAS sub-groups to the group of HFCs, HBFCs, and HCFCs; Added PFOS and its salts/derivatives to the PFAS category with TLV of 1 ppm; Included LC-PFCAs up to C₂₁ (was: C₁₉); Added 2019/1021/EU POPs as "not used"; Lowered TLV for PCBs/PBBs, PCDEs/PBDEs, PCTs/PBTs, PCNs/PBNs from 5 ppm to 0.1 ppm: • 5.3.1: Phenols and their salts now also include "related substances" • 5.3.2: The restriction on the concentration of antimony oxide in glass diodes has been lifted and the general requirements for halogen-free products now apply • 5.5: Added reference to XPR-0036 as the leading process to handle non-conformities reported by customers • 7.1: Added XPR-0036, 2024/573/EU, French Decree No. 2020-105, GADSL, IEC 62474 	Timo Stein

7.4 Document Release

Function	Name	Organisation and Role
Approver	Timo Stein	Manager ECO-Products
Author	Timo Stein	Manager ECO-Products
Co-Author	-	
Reviewer	-	

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