ERICSSON

The Ericsson Nikola Tesla Group Lists of Banned and Restricted Substances

Requirement Specification

2021-10-28

Contet

1 Introduction

This document is based on Ericsson's document 2/000 21-FAU 104 04 Uen, Revision G (© Ericsson AB 2021) entitled The Ericsson Lists of Banned and Restricted Substances

1.1 Abstract

This document contains lists of substances that are restricted to use in products or in the manufacturing of Ericsson Nikola Tesla Group products or products supplied to Ericsson Nikola Tesla Group. It also contains substances under observation and substances with reporting requirements.

1.2 Purpose

The purpose of The Ericsson Nikola Tesla Group Lists of Banned and Restricted Substances is to ensure that Ericsson Nikola Tesla Group is fulfilling our sustainability policy, existing and anticipated environmental legislation and market requirements.

1.3 Application

The requirements are applicable in the design, at purchasing and manufacturing of components and products, including batteries and packaging. The requirements shall be applied globally.

The substances listed in this document are restricted, under observation or shall be reported in the following exemplified usages:

- Components, parts and finalized products
- Packaging
- Batteries; and
- In the manufacturing processes

2 General

2.1 Banned and restricted substances

Banned and restricted substances shall not be intentionally added for use in the specified applications. Further details and thresholds on some of the restrictions can be found in section 4 of this document.

In case local or regional legislation goes beyond the requirements in this document, such legislation must be followed, in addition to the requirements in this document.

2.2 Substances with reporting requirements

Suppliers are expected, upon request, to:

- declare the full material content of products delivered to Ericsson Nikola Tesla Group, including substances on REACH candidate list and the presence of nanomaterials,
- declare the use of certain Critical Raw Materials (as defined in the EU Critical Raw Materials List[1]) and report of due diligence activities relating to sourcing of raw materials from Conflict Affected and High-Risk Areas.

Reference
[Business Partner Environmental Requirements]
https://www.ericsson.hr/en/supliers

2.3 Substances under Observation

Any use of substances in the List of Substances under Observation in Ericsson Nikola Tesla Group products cause concern. Thus, substitution of substances under observation is highly recommended when technically, economically and environmentally feasible alternatives are available. Ericsson Nikola Tesla Group is carefully monitoring the use of these substances.

2.4 Definitions

CAS number is a numerical identifier assigned to chemical substances by the Chemical Abstracts Service.

Global Warming Potential (GWP) as defined in Regulation (EU) No 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006.

Montreal Protocol refers to the UN Montreal Protocol on Substances that Deplete the Ozone Layer, entering into force on 1 January 1989, and its following revisions.

Nanomaterial has the same meaning in this document as defined by the European Commission Recommendation of 18 October 2011 on the definition of nanomaterial (2011/696/EU). In this nanomaterial is 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.

[1] 1 COM(2020) 474 final, to be obtained at https://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=CELEX:52020DC0474

IUPAC, the International Union of Pure and Applied Chemistry.

REACH Candidate list refers to the list of substances of very high concern (SVHC) from which the substances to be included in Annex XIV (list of substances subject to authorization) are selected. The candidate list is published by the European Chemicals Agency (ECHA) and updated regularly.

REACH Regulation is the European chemical regulation covering both substances in products and substances on their own, Regulation 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).

Substances in products are substances that if used will become a part of the final Ericsson Nikola Tesla Group product in the original or reacted form.

Substances in production are substances that are needed for the manufacturing of the product but do not become part of the final product.

3 Lists of substances

3.1 General

The structure and grouping of substances in the Ericsson Nikola Tesla Group lists of substances are in accordance with the standard, Material Declaration for Products of and for the Electrotechnical Industry, IEC 62 474. The scope of the Ericsson Nikola Tesla Group lists of substances is wider than the IEC standard and contains additional substances.

In the naming of substances IUPAC terminology have been used. When there is no CAS number in this list all substances within the substance group are covered, the reason is that no exhaustive list of CAS numbers for some substance groups exists. Indicative lists are available and can be used as an aid, for example the Reference substances in the standard IEC 62 474.

For details on the specific restrictions see section 0 of this document.

Reference
[IEC 62 474 Standard] IEC 62474 database on material declaration
http://std.iec.ch/iec62474/iec62474.nsf

3.2 Banned and restricted substances - in products

Banned and restricted substances - in products			
Group of restricted substances	**Restricted substances**	**CAS No.**	**Application examples**
	2-benzotriazole-2-yl-4,6-ditert-butyl-phenol	3846-71-7	All applications.
	4,4'- diamino-diphenylmethane (MDA)	101-77-9	All applications.
Arsenic/ Arsenic compounds		Several	As wood preservative.
Asbestos		Several	All applications.
Azocolourants and azodyes that can decompose to carcinogenic aromatic amines		Several	All applications.
	Benzyl butyl phthalate (BBP)	85-68-7	All applications.
	Beryllium Oxide (BeO)	1304-56-9	All applications.
	Bis (2-ethylhexyl) phthalate (DEHP)	117-81-7	All applications.
Cadmium/ Cadmium compounds		Several	All applications.
	Cobalt dichloride[2]	7646-79-9[2]	All applications.
Chromium (VI) compounds		Several	All applications.
Creosotes		Several	All applications.
	Dibutyl phthalate(DBP)	84-74-2	All applications.
Dibutyltin (DBT) compounds		Several	All applications were the part can become a part of aconsumer product.
	Diisobutyl phthalate (DIBP)	84-69-5	All applications.
	Dimethylfumarate (DMFu)	624-49-7	All applications.
Dioctyltin (DOT)compounds		Several	Two-component room temperature vulcanization moulding kits (RTV-2 moulding kits)

[2] Note: Both the anhydrous and hydrated forms of a substance are covered in the restriction, as under EC no 231-589-4

	Formaldehyde	50-00-0	Preservative in wood panels, details in section4.4.
Lead/ Lead compounds		Several	Details in section 0.
Mercury/ Mercury compounds		Several	All applications.
CFCs – Chlorofluorocarbons	According to the Montreal Protocol and EC/1005/2009	Several	All applications.
Halons	According to the Montreal Protocol and EC/1005/2009	Several	All applications.
HCFCs – Hydrochlorofluorocarbons	According to the Montreal Protocol and EC/1005/2009	Several	All applications.
Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified		25637-99-4 3194-55-6 134237-50-6 134237-51-7 134237-52-8	All applications.
Hydrofluorocarbons (HFC) with GWP of 150 or more		Several	All applications.
Perfluorooctane sulfonic acid and its derivatives (PFOS)		Several	Details in section4.6.
Perfluorooctanoic acid (PFOA)		Several	All applications. See details in section 4.7.
PBB – Polybrominated biphenyls		Several	All applications.
PBDE – Polybrominated diphenylethers (including deca-BDE)		Several	All applications.
Polychlorinated Biphenyls (PCB)		Several	All applications.
Polychlorinated Naphtalenes (PCN)		Several	All applications.
Polychlorinated Terphenyls (PCT)		Several	All applications.
	Short Chained Chlorinated Paraffins (C10-C13)	85535-84-8	All applications.
	Tris (2-chloroethyl) phosphate	115-96-8	All applications.
Tri-substituted organostannic compounds (including both Tributyl tin and Triphenyl tin compounds)		Several	All applications.

3.3 Substances under Observation - in products

Substances under observation – in products			
Group of substances under observation	Substances under observation	CAS No.	Main concern
	4,4'-Isopropylidendiphenol (bisphenol A)	80-05-7	Toxic
	1,2-Benzene-dicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP)	71888-89-6	Toxic for reproduction
	1,2-Benzene-dicarboxylic acid, di-C7-11-branched and linear alkyl esters (DHNUP)	68515-42-4	Toxic for reproduction
	2,3-dibromo-1-propanol	96-13-9	Carcinogenic
	2-methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	71868-10-5	REACH candidate list
Antimony and its compounds, such asfor example antimony trioxide		Several	Toxic
Beryllium and its compounds		Several	Alloys such as BeCucan form BeO at recycling.
	Bis(2-methoxyethyl) phthalate	117-82-8	REACH candidatelist.
Bismuth and its compounds		Several	Can be negative for recycling
Chlorinated polymers, includingPVC		Several	Can create toxic substances at uncontrolled end-of-life treatment
	Decabromo-diphenyl-ethane (DBDPE)	84852-53-9	Toxic
	Diboron trioxide	1303-86-2	REACH candidate list
	Dibromoneopentyl-glycol	3296-90-0	Carcinogenic
Halogenated flame retardants neither Banned nor Restricted in this document		Several	Can create toxic substances at uncontrolled end-of-life treatment
	Indium phosphide	22398-80-7	Potentially carcinogenic or toxic for reproduction

Medium chained chlorinated paraffins C14-C17		Several	Toxic
Mineral oils		Several	Toxic
Nickel and its alloys, except in steel alloys		Several	Allergenic
Perchlorates		Several	Labeling requirements
	Phenol, 4-nonyl-, branched	84852-15-3	REACH candidate list
Phthalates not mentioned elsewherein this document		Several	Can be carcinogenic or toxic for reproduction
Polycyclic Aromatic Hydrocarbons (PAH) (classified CMR cat 1or 2)		Several	Carcinogenic
Radioactivesubstances		Several	Carcinogenic

3.4 Banned and restricted substances – in production

Banned & restricted substances – in production			
Group of restricted substances	Restricted substances	CAS No.	Banned application
CFCs – Chlorofluorocarbons	According to the Montreal Protocol and EC/1005/2009	Several	All applications
HCFCs – Hydrochlorofluorocarbons	According to the Montreal Protocol and EC/1005/2009	Several	All applications
Hydrofluorocarbons (HFC) with GWP of 150 or more		Several	All applications
Halons	According to the Montreal Protocol and EC/1005/2009	Several	All applications
	Bromochloromethane	74-97-5	All applications
	Carbon tetrachloride	56-23-5	All applications
	Methyl bromide	74-83-9	All applications
	Methylene chloride	75-09-2	All applications
	n-bromopropane	106-94-5	All applications
	Tetrachloroethylene	127-18-4	All applications
	1.1.1-trichloroethane	71-55-6	All applications
	Trichloroethylene	79-01-6	All applications
	Trichlorobenzene	120-82-1	All applications
Perfluorooctane sulfonic acid and its derivatives (PFOS)		Several	All applications, details in section 4.6

	Nonylphenol	25154-52-3	All applications
	Nonylphenol ethoxylate (Nonylphenol polyglycolethers)	9016-45-9	All applications
	Acrylamide	1979-06-01	All applications

3.5 Substances under observation- in production

Substances under observation – in production			
Group of substances under observation	Substance under observation	CAS No.	Main risk
	Sodium dichromate	10588-01-9 7789-12-0	Carcinogenic, mutagenic and toxic to reproduction
Fluorocarbons – FC		Several	Global warming
Fluorohydrocarbons – HFC, with GWPbelow 150		Several	Global warming
Aromatic amines		Several	Carcinogenic
Isocyanates		Several	Allergenic, carcinogenic, toxic
	Nitrogen trifluoride	7783-54-2	Global warming
	Sulfur hexafluoride,SF6	2551-62-4	Global warming

4 Further details

This section contains further details concerning restrictions, requirements and applicable exemptions.

4.1 Electrical and electronic equipment

In electrical and electronic equipment, including their components and parts, also mechanical, the maximum concentration by weight in homogeneous materials shall be less than:

- Lead (0.1 %)
- Mercury (0.1 %)
- Cadmium (0.01 %)
- Hexavalent chromium (0.1 %)
- Polybrominated biphenyls (PBB) (0.1 %)
- Polybrominated diphenyl ethers (PBDE) (0.1 %)
- Bis(2-ethylhexyl) phthalate (DEHP) (0,1 %)
- Butyl benzyl phthalate (BBP) (0,1 %)
- Dibutyl phthalate (DBP) (0,1 %)
- Diisobutyl phthalate (DIBP) (0,1 %)

Unless otherwise stated by Ericsson Nikola Tesla Group, the exemptions in Annex III of the RoHS directive, 2011/65/EU, and its amendments may be used.

Suppliers shall phase out the use under exemptions when technically and economically feasible, however no later than 12 months before the exemption expires. After this deadline products and parts using the exemption shall only be delivered if specifically ordered by Ericsson (e.g. for use in spare parts or for capacity expansions).

Reference
[EU RoHS directive] 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 (recast)

4.2 Packaging

The concentration of lead, cadmium, mercury and hexavalent chromium in each packaging component shall not exceed 100 ppm (mg/kg).

Reference
[EU Packaging Directive] European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste including its amendments.

4.3 Batteries and accumulators

The acceptable concentration of specified substances in each battery is:

- cadmium – 0.002 % by weight
- mercury – 0.0005 % by weight

The ban on lead is not applicable to batteries (in line with recital 29 of the Batteries Directive 2006/66/EC).

Reference
[EU Batteries Directive] Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators and waste batteries and accumulators including its amendments

4.4 Formaldehyde

The levels of formaldehyde in plywood must not exceed the E1-norm. The E1 norm means 0.124 mg/m3 air according to test method EN 717-1 (chamber method) or 3.5 mg/m3 air according to test method EN 717-2 (gas analysis method).

Reference
[EN 717-1] Wood-based panels - Determination of formaldehyde release - Part 1: Formaldehyde emission by the chamber method

[EN 717-2] Wood-based panels - Determination of formaldehyde release - Part 2: Formaldehyde release by the gas analysis method

4.5 Perfluorooctane sulfonates, PFOS

If the quantity released into the environment is minimized the following specific uses are allowed:

- wetting agents for use in controlled electroplating systems
- photoresists or anti-reflective coatings for photolithography processes

Note: The restrictions of perfluorooctane sulfonic acid and its derivatives (PFOS) includes substances with the formula C8F17SO2X, were X can be an OH-group, a metal salt (O-M+), halide, amide, or other derivatives including polymers.

Reference
[Stockholm convention] The Stockholm Convention on Persistent Organic Pollutants
[POP] Regulation No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC

4.6 Perfluorooctanoic acid, PFOA

The requirement on PFOA applies to adhesive foil or tape in semiconductors to be used in consumer products. The sum of the PFOA substances below shall not exceed 0.1% by weight of the component, part or products were used.

The requirement applies for all applications with a threshold limit of 25 ppb, except where any exempted use is applicable (see Commission Regulation (EU) 2017/1000 amending Annex XVII of the REACH regulation 1907/2006/EU).

List of Perfluorooctanoic acid (PFOA) and individual salts and esters of PFOA:

Substance	CAS
Pentadecafluorooctanoic acid	335-67-1
Ammonium pentadecafluorooctanoate	3825-26-1
Sodium pentadecafluorooctanoate	335-95-5
Potassium pentadecafluorooctanoate	2395-00-8
Silver pentadecafluorooctanoate	335-93-3
Pentadecafluoroctanoyl fluoride	335-66-0
Methyl pentadecafluorooctanoate	376-27-2
Ethyl perfluorooctanoate	3108-24-5

Reference:

[REACH Candidate list] List of substances of very high concern for potential inclusion in REACH Annex XIV https://echa.europa.eu/candidate-list-table

5 Change information

- This is the first version of the document