

Substance listing

The TEG Banned and Declarable Substances List (BAD-SL) applies to all products, components, substances and preparations that end up in a finished product. It identifies substances which are either prohibited or restricted by regulations or by customers' requirements, due to health related or environmental hazards.

This list is intended to be used to communicate contractual requirements regarding banned and restricted substances to suppliers. Please also pay attention to the notes at the end of this document.

Module A

Table A-1 Prohibited substances

The following table of Prohibited Substances refers to chemical substances, which shall not be included in our products.

Substance name	CAS No. / Source	Category	Threshold	Applications of substance and scope of the Standards	Key Regulations and Industrial Standards (see Annex)
Cadmium / Cadmium compounds	Refer to IEC 62474 and GADSL	Prohibited	< 100 ppm	All applications except for packaging, batteries and the exemptions shown below.	1-3, 12, 13, 15, 20, 26
		Exemptions	-	Exempted applications of Annexes III and IV of the EU RoHS Directive (2011/65/EU) as amended by Directive (EU) 2015/863 and Annex II of the EU ELV Directive (2000/53/EC)	
Hexavalent chromium compounds	Refer to IEC 62474 and GADSL	Prohibited	< 1000 ppm	All applications except for packaging and the exemptions shown below.	1-3, 12, 13, 15, 20, 26
		Exemptions	-	Exempted applications of Annexes III and IV of the EU RoHS Directive (2011/65/EU) as amended by Directive (EU) 2015/863 and Annex II of the EU ELV Directive (2000/53/EC)	
Lead / Lead compounds	Refer to IEC 62474 and GADSL	Prohibited	< 1000 ppm	All applications except for packaging, batteries and the exemptions shown below.	1-3, 12, 13, 15, 20, 23, 26, 27
		Exemptions	-	Exempted applications of Annexes III and IV of the EU RoHS Directive (2011/65/EU) as amended by Directive (EU) 2015/863 and Annex II of the EU ELV Directive (2000/53/EC)	
Mercury / Mercury compounds	Refer to IEC 62474 and GADSL	Prohibited	< 1000 ppm	All applications except for packaging and the exemptions shown below.	1-3, 12, 13, 15, 20, 26, 31
		Exemptions	-	Exempted applications of Annexes III and IV of the EU RoHS Directive (2011/65/EU) as amended by Directive (EU) 2015/863 and Annex II of the EU ELV Directive (2000/53/EC)	
Polybrominated biphenyls (PBB's)	Refer to IEC 62474 and GADSL	Prohibited	< 1000 ppm	All applications	1, 12-13, 15, 20
Polybrominated diphenyl ethers (PBDE's)	Refer to IEC 62474 and GADSL	Prohibited	< 1000 ppm	All applications	1, 3, 12-13, 15-16, 20-21
Bis-(2-ethylhexyl) phthalate (DEHP)	117-81-7	Prohibited	< 1000 ppm	All applications	1, 3
Butyl benzyl phthalate (BBP)	85-68-7	Prohibited	< 1000 ppm	All applications	1, 3
Dibutyl phthalate (DBP)	84-74-2	Prohibited	< 1000 ppm	All applications	1, 3
Diisobutyl phthalate (DIBP)	84-69-5	Prohibited	< 1000 ppm	All applications	1, 3
REACH Regulation (EC) No. 1907/2006 Annex XVII (Restricted Substances)	Refer to the ECHA (European Chemicals Agency) website https://echa.europa.eu/en/substances-restricted-under-reach	Prohibited	Depending on the item*1	Depending on the item*1	3

Substance name	CAS No. / Source	Category	Threshold	Applications of substance and scope of the Standards	Key Regulations and Industrial Standards (see Annex)
EU POPs Regulation (EU) 2019/1021 Annexes I and II	Refer to the ECHA (European Chemicals Agency) website https://echa.europa.eu/en/list-of-substances-subject-to-pops-regulation	Prohibited	Depending on the item ^{*1}	Depending on the item ^{*1}	4
Red Phosphorus	7723-14-0	Prohibited	-	Flame retardant in resin parts used between electrodes in electrical insulation sections adopted after April 1, 2020. (Representative examples of components that may use the above application are as follows. It must be noticed that the examples are non-exhaustive. Connectors, AC power cords, AC adaptors, AC power inlets, AC power outlets, DC plugs, DC power jacks, power switches, terminal blocks, fan motors, bobbins for transformers, bobbins for inductors, bases (stands), core cases.)	-
		Exemptions	-	1. Applications other than flame retardant in resin parts used between electrodes in electrical insulation sections. 2. Flame retardant in resin parts (resin material) in the prohibition scope, adopted prior to April 1, 2020, for which a stabilization treatment (e.g. moisture-proof coating) or an equivalent measure has been applied to the red phosphorus particles.	
Arsenic/ Arsenic compounds	See IEC62474	Prohibited	< 1000 ppm	All applications except for the exemptions shown below.	3
		Exemptions	-	Compound semiconductors containing an arsenic component; copper foil bonding on printed circuit boards	
Fluorinated greenhouse gases (HFC, PFC, SF ₆)	See IEC62474	Prohibited	-	All applications (examples: refrigerants, blowing agents, extinguishing agents, cleaning agents, insulating media, caustic gas)	9
Halogenated flame retardants	-	Prohibited	Intentional Inclusion	Flame retardants in electronic displays (Enclosures and stands of electronic displays, including televisions, monitors and digital signage displays with a screens area greater than 100 cm ²)	10
Pentachlorothiophenol (PCTP)	133-49-3	Prohibited	<1000ppm	All applications	22
Phenol, isopropylated phosphate (3:1) (PIP (3:1))	68937-41-7	Prohibited after October 31, 2023 ^{*2}	Intentional Inclusion	All applications	22

*1 In accordance with the legal requirements

*2 Substances with upcoming regulatory bans that will be banned for TEG shipments on the specified date (which is usually one year before the expected regulatory date).

Table A-2 Declarable substances

The following table of Declarable Substances refers to chemical substances, for which information on product inclusion (e.g. substance name, CAS RN, inclusion subpart, concentration, etc.) is deemed as necessary by TDK.

Substance name	CAS No. / Source	Requirement	Threshold level	Applications of substance and scope of the Standards	Key legislation and industry standards (see Annex)
Halogens and Halogen compounds (only bromine from organic brominated compounds and chlorine from organic chlorinated compounds)	-	Declarable	Bromine and chlorine (individually) < 900 ppm and total combined halogens < 1500 ppm	All applications	41, 42
Substances on the Candidate List of SVHC (Substances of Very High Concern) for Authorisation by ECHA (European Chemicals Agency)	Refer to the ECHA (European Chemicals Agency) website https://echa.europa.eu/en/candidate-list-table	Declarable	< 1000 ppm	All applications	3
Beryllium/ Beryllium compounds	Refer to GADSL	Declarable	< 1000 ppm	All applications	43
Selenium/ Selenium compounds	Refer to GADSL	Declarable	< 1000 ppm	All applications	19
Antimony/ Antimony compounds	Refer to GADSL	Declarable	< 1000 ppm	All applications	-

Table A-3 Significant Substances Prior to Legal Enactment/Enforcement

Substances planned to be added to or before enforcement of key regulations, for which inclusion information (e.g. substance name, CAS RN, 'inclusion subpart, concentration, etc.) is deemed as necessary by TDK.

Substances in this table automatically become "prohibited" or "prohibition after" according to the concerned law or regulation once they're enacted.

Substance name	CAS No. / Source	Requirement	Threshold level	Applications of substance and scope of the Standards	Key legislation and industry standards (see Annex)
1,6,7,8,9,14,15,16,17,17,18,18-dodecachloropentacyclo[12.2.1.16,9.02,13.05,10]octadeca-7,15-diene ("Dechlorane plus™") individual anti- and syn-isomers or any combination thereof	13560-89-9; 135821-74-8; 135821-03-3	Declarable	Intentional inclusion or any known inclusion such as impurities, etc.	All applications	4, 31, 38
Tetrabromobisphenol A (TBBPA) *Although TBBPA is a Substance on the Candidate List of SVHC (Substances of Very High Concern) for Authorisation by ECHA (European Chemicals Agency), please report any intentional inclusion	79-94-7	Declarable	Intentional inclusion or any known inclusion such as impurities, etc.	All applications	1
Medium-chain chlorinated paraffins (MCCP) with carbon chain lengths within the range from C14 to C17 *Although MCCP is a Substance on the Candidate List of SVHC (Substances of Very High Concern) for Authorisation by ECHA (European Chemicals Agency), please report any intentional inclusion	Refer to IEC 62474 and GADSL	Declarable	Intentional inclusion or any known inclusion such as impurities, etc.	All applications	3, 38
Perfluorocarboxylic acids (PFCA), their salts and related substances with carbon chain lengths within the range from C15 to C21 *The range from C9 to C14 is already restricted under REACH Regulation (EC) No 1907/2006 Annex XVII (EU) (Restricted Substances). Please refer to Table A-1	141074-63-7; 67905-19-5; 57475-95-3; 16517-11-6; 133921-38-7; 68310-12-3	Declarable	Intentional inclusion or any known inclusion such as impurities, etc.	All applications	38
Undecafluorohexanoic acid (PFHxA), its salts and related substances	Refer to IEC 62474 and GADSL	Declarable	Intentional inclusion or any known inclusion such as impurities, etc.	All applications	3
Perfluorohexane-1-sulphonic acid (PFHxS), its salts and related substances	Refer to IEC 62474 and GADSL	Declarable	Intentional inclusion or any known inclusion such as impurities, etc.	All applications	4, 38

Substance name	CAS No. / Source	Requirement	Threshold level	Applications of substance and scope of the Standards	Key legislation and industry standards (see Annex)
Per- and poly-fluoroalkyl substances (PFAS) *substances that include any member of the class of fluorinated organic chemicals containing at least one fully fluorinated carbon atom	'Refer to IEC 62474 and GADSL' ^{*1}	Declarable	Intentional inclusion or any known inclusion such as impurities, etc.	All applications	30, REACH Regulation (Restriction in evaluation)
Decabromodiphenyl ethane (DBDPE)	84852-53-9	Declarable	Intentional inclusion or any known inclusion such as impurities, etc.	All applications	31

*1 Alternatively refer to

OECD (The Organization for Economic Co-operation and Development) Comprehensive Global Database of PFAS: <https://www.oecd.org/chemicalsafety/risk-management/global-database-of-per-and-polyfluoroalkyl-substances.xlsx> or US EPA (Environmental Protection Agency) PFAS Master List of PFAS Substances: <https://comptox.epa.gov/dashboard/chemical-lists/pfasmaster>

Table A-1-1 Additional requirements for substances in packaging

Substance name	Requirement	Threshold level	Applications of substance and scope of the Standards	Key legislation and industry standards (see Annex)
Cadmium, hexavalent chromium, lead and mercury	Prohibited	Total ^{*1} < 100 ppm	Packaging materials (materials used to deliver and protect TDK products, e.g., trays, reels, sticks, bags, cushioning materials, staplers, sheets, wraps, corrugated cardboard, tape, ties, labels, printing ink, paint, etc.) except for the following exemptions.	5
	Exemptions	-	Reusable shipping boxes (containers)	
Mineral oil aromatic hydrocarbons (MOAH) consisting of 1-7 aromatic ring	Prohibited	<1.0wt% (10,000ppm) in ink	Ink subparts in: a) packaging b) printed matter intended for the public	32
	Prohibited after January 1, 2024 ^{*2}	<0.1wt% (1,000ppm) in ink		
	Declarable	<0.0001wt% (1ppm) in ink for MOAH consisting of 3-7 aromatic rings Intentional inclusion or any known inclusion such as impurities, etc.	a) All packaging b) All printed matter intended for the public, except for ink subparts. *However, above mentioned prohibition is applicable for all types of packaging and printing intended for the public destined for France.	
Mineral oil saturated hydrocarbons (MOSH) consisting of 16-35 carbon atoms	Declarable until December 31, 2023	Intentional inclusion or any known inclusion such as impurities, etc.	a) All packaging b) All printed matter intended for the public	32
	Prohibited after January 1, 2024 ^{*2}	<0.1wt% (1,000ppm) in ink	Ink subparts in: a) packaging b) printed matter intended for the public	
	Declarable	Intentional inclusion or any known inclusion such as impurities, etc.	a) All packaging b) All printed matter intended for the public, except for ink subparts. *However, above mentioned prohibition prohibition is applicable for all types of packaging and printing intended for the public destined for France.	

*1 The concentration of cadmium, hexavalent chromium, lead and mercury contained in packaging or packaging components (including paints and inks) shall not exceed 100 ppm, both individually or as the total of the 4 heavy metals.

*2 Substances with upcoming regulatory bans that will be banned for TDK shipments on the specified date (which is usually one year before the expected regulatory date).

Table A-1-2 Additional requirements for substances in batteries and accumulators

Substance name	Requirement	Threshold level	Applications of substance and scope of the Standards	Key legislation and industry standards (see Annex)
Mercury/ Mercury compounds ^{*1}	Prohibited	< 5ppm*	Batteries and accumulators ^{*2}	6
Cadmium/ Cadmium compounds ^{*1}	Prohibited	< 20 ppm*	Portable batteries and accumulators except for the exempted applications shown below. ^{*3}	6
	Exemptions	-	Portable batteries or accumulators for emergency and alarm systems, including emergency lighting; medical equipment ^{*3}	
Lead/ Lead compounds ^{*1}	Prohibited	< 40 ppm*	Alkaline zinc manganese dioxide batteries	14
	Prohibited	< 2000 ppm*	Non-alkaline zinc manganese dioxide batteries	
	Exemptions	-	Except for the batteries and accumulators above.	
Perchlorates	Prohibited	< 0.006 ppm*	Coin cell batteries ^{*8}	28

* refers to the weight of the product.

*1 Please note that the "EU Directive on Batteries and Accumulators and Waste Batteries and Accumulators and Repealing Directive 91/157/EEC" (2006/66/EC) imposes labeling obligations even if the inclusion concentration is below the set threshold level

*2 'battery' or 'accumulator' means any source of electrical energy generated by direct conversion of chemical energy and consisting of one or more primary battery cells (non-rechargeable) or consisting of one or more secondary battery cells (rechargeable).

*3 'portable battery or accumulator' means any battery^{*2}, button cell^{*4}, battery pack^{*5} or accumulator^{*2} that:
 (a) is sealed; and
 (b) can be hand-carried; and
 (c) is neither an industrial battery nor accumulator^{*6} nor an automotive battery or accumulator^{*7}.

*4-7 (intentionally left blank)

*8 'Coin cell battery' means a small button battery which is the size and shape of a coin. The battery number will start with "CR" and it may be found in watches, appliances, keyless entry systems, and any device that is able to retain memory after the power supply is cut off.

Note that the "EU Directive on Batteries and Accumulators and Waste Batteries and Accumulators and Repealing Directive 91/157/EEC" (2006/66/EC) may have additional requirements as stipulated by the laws of EU member states.

Module B

Module B-1 IEC62474 List

Substances on the IEC 62474 (International Electrotechnical Commission Standard, Material Declaration for the Electrical and Electronic Industry and its Products) list (always valid latest version).

Please refer to the URL below for the "IEC2474 Declarable Substance List"

<http://std.iec.ch/iec62474/iec62474.nsf/Index?open&q=080632>

Suppliers shall declare inclusion of these substances in purchased products to TDK when set thresholds are exceeded.

Module B-2 (GADSL)

Table B-2 Prohibited and Declarable Substances

Substances listed in the "Global Automotive Declarable Substance List (GADSL)" published by the Global Automotive Stakeholder Group (GASG) (always in the current valid edition).

(Threshold: 0.1% by weight (1000 ppm) if not stated otherwise)

Please refer to the URL below for the "GADSL Reference List"

<http://www.gadsl.org>

Note on Substance Classification

- Substances classified as "P" ("prohibited") in the "GADSL Reference List" shall not be used for TDK products. Suppliers shall check and verify that the content levels of these substances in purchased products do not exceed the permissible content thresholds.
- Substances classified as "D" ("declarable") in the "GADSL Reference List" shall be declared whenever included above the set thresholds.
- Substances classified as "D/P" in the "GADSL Reference List" are "prohibited" or "declarable" depending on the intended use. Among these substances, the requirements shown in Module A (Table A-1) shall take priority for cadmium, hexavalent chromium, lead and mercury.

Module C

In case a substance regulation is stricter due to requirements of individual legislations of a country, an area or due to agreed customer's individual requirements, a substance on its own or a threshold level can be regulated stricter than mentioned above.

For such cases, these requirements are contractually agreed with suppliers, which can mean:

- (1) the threshold value of a substance can be lower than noted above,
- (2) the substance referred as declarable substance above can be rated as a prohibited substance, or
- (3) the substance is not mentioned above but can be declarable or prohibited.

Annex: List of reference laws & regulations and industry standards

The list below is a non-exhaustive list of key laws, regulations and industry standards that affect TDK's Environmental Product Quality activities.

The latest editions of the laws, regulations and industry standards including the amendments that followed their enactment shall be referenced.

#	Country/ Region	Regulations and Industry Standards
1	EU	Directive 2011/65/EU ("RoHS Directive") ("Directive on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment" (recast))
2	EU	Directive 2000/53/EC ("ELV Directive") ("Directive on End-of-Life Vehicles")
3	EU	Reg. (EC) No. 1907/2006 ("REACH Regulation") ("Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)")
4	EU	Reg. (EU) 2019/1021 ("EU POPs Regulation") ("Regulation on Persistent Organic Pollutants (recast)", (EU POPs Regulation))
5	EU	Directive 94/62/EC ("EU Packaging Directive") ("Directive on Packaging and Packaging Waste")
6	EU	Directive 2006/66/EC ("EU Battery Directive") ("Directive on Batteries and Accumulators and Waste Batteries and Accumulators")
7	EU	Reg. (EC) No. 1005/2009 ("Regulation on substances that deplete the ozone layer")
8	EU	Directive 2013/59/EURATOM ("Directive on Radioactive Substances") ("2013/59/EURATOM laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation")
9	EU	Reg. (EU) No.517/2014 ("Regulation (EU) No 517/2014 on Fluorinated Greenhouse Gases")
10	EU	Directive 2009/125/EC ("ErP Directive") and related regulations ("Directive establishing a framework for the setting of ecodesign requirements for energy-related products (recast)"; "Ecodesign Directive")
11	EU	CRM (Critical Raw Materials) List (COM(2020) 474 final; Critical Raw Materials Resilience: Charting a Path towards greater Security and Sustainability)
12	China	Decree 32 of the Chinese Ministry of Industry and Information Technology (MIIT) on the Administrative Measures for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products ("Revised China RoHS")
13	China Taiwan	GB/T 30512 ("Requirements for prohibited substances on automobiles") ("China ELV")
14	China	Chinese National Standard (GB 24427-2009) "Content limitation of mercury, cadmium and lead for zinc anode primary battery"
15	Japan	"The Law for Promotion of Effective Utilization of Resources" ("J-MoSS": Abbreviation combining "Japan" and an acronym of the JIS C 0950 standard title "The marking for presence of the specific chemical substances for electrical and electronic equipment");
16	Japan	"Act on the Regulation of Manufacture and Evaluation of Chemical Substances" (Act No. 117 of October 16, 1973) "Chemical Substances Control Law" ("CSCL")
17	Japan	"Act on the Protection of the Ozone Layer through the Control of Specified Substances and other Measures" (Act No. 53 of May 20, 1988)
18	Japan	"Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors" (Act No. 166 of June 10, 1957)
19	Japan	Water Pollution Prevention Act (Act No. 38 of 1970)
20	South Korea	"The Act for Resource Recycling of Electrical and Electronic Equipment and Vehicles" (Korea RoHS)
21	South Korea	"Persistent Organic Pollutants Control Act" ("Korea POPs")
22	United States	15 U.S.C. §2601 et seq. (1976) "The Toxic Substances Control Act" (US, The United States Environmental Protection Agency, "TSCA")
23	United States	[Public Law 110–314] ("Consumer Product Safety Improvement Act of 2008", (CPSIA))
24	United States	42 U.S.C. ch. 85 (§§ 7401-7671q) ("Clean Air Act" (CAA))
25	United States	Nuclear Regulatory Commission (NRC) Regulations Title 10 CFR Part 20

TDK Electronics Group

TEG Banned and Declarable Substances List (BAD-SL)

Release TQ: Mai 31, 2023

Version 02

#	Country/ Region	Regulations and Industry Standards
26	State of California, USA	"California Electronic Waste Recycling Act of 2003" SB20, Chapter 526, as amended by SB 50 and AB 575
27	State of California, USA	Safe Drinking Water and Toxic Enforcement Act of 1986 ("Proposition 65") (HEALTH AND SAFETY CODE - HSC; Chapter 6.6
28	State of California, USA	California Assembly Bill No. 826 (AB 826) "The Perchlorate Contamination Prevention Act" implemented July 1, 2006.
29	State of New York, USA	New York Environmental Conservation Law - Title 7 § 27-0719. Battery management and disposal
30	State of Maine, USA	"Public Law c. 477, An Act To Stop Perfluoroalkyl and Polyfluoroalkyl Substances Pollution" (PFAS Regulation)
31	Canada	Prohibition of Certain Toxic Substances Regulations, 2012 (SOR/2012-285) and related regulations
32	France	"Decree No. 2020-105 on the 'Fight Against Waste and the Circular Economy' Article 112"; "l'article 112 de la loi du 10 février 2020 relative à la lutte contre le gaspillage et à l'économie circulaire"
33	Switzerland	SR814.81 "Chemical Risk Reduction Ordinance"(ORRChem; ChemRRV)
34	Norway	FOR-2004-06-01-0922 ("Product Regulations"); (Forskrift om begrensning i bruk av helse- og miljøfarlige kjemikalier og andre produkter (produktforskriften); Regulations restricting the use of chemicals and other products hazardous to health and the environment (product regulations)).
35	Austria	"Formaldehydverordnung" (Formaldehyde Ordinance) (Austria, BGB I 1990/194 §2, 12/2/1990)
36	Lithuania	"Hygiene Norm HN 96:2000 (Hygiene Norms and Regulations)"
37	China Taiwan	"Restrictions on the Manufacture, Import, and Sale of Dry Cell Batteries", Article 21 of Waste Disposal Act
38	United Nations	"Stockholm Convention on Persistent Organic Pollutants ("POPs Convention")
39	United Nations	"The Montreal Protocol on Substances that Deplete the Ozone Layer"
40	United Nations	Kyoto Protocol ("The Kyoto Protocol to the United Nations Framework Convention on Climate Change")
41	Industry	IPC-4101(Association Connecting Electronics Industries Standard, "Specification for Base Materials for Rigid and Multilayer Printed Boards")
42	Industry	IEC 61249-2-21(International Electrochemical Commission Standard: Materials for Printed Boards and other Interconnecting Structures)
43	Industry	EICTA/CECED*/AeA/EERA** Joint Position Guidance on implementing article 11 of Directive 2002/96 (EC) concerning information for treatment facilities"

Note

The above list is a non-exhaustive list of key regulations and industry standards that affect TDK's environmental product quality activities.

Important Note

This document contains links to other websites. Following these links causes the user to leave the TEG website. The inclusion of these links does not indicate support for or adoption of the content of the linked pages by TEG. The linked sites are not under the control of TEG. Consequently, TEG accepts no responsibility for these links. TEG explicitly accepts no responsibility for the content of such links or any associated transmission of data. Users make use of such third-party websites at their own risk.