BANNED/RESTRICTED CHEMICAL SUBSTANCES

REVISIONS

Revision No	Revision Date	Revision Description
4.0	03.07.2013	Table 1 and Table 3 have been updated according to new developments (REACH, RoHS Recast etc.). Sunset dates for K2 substances have been defined. References list has been updated.
3.0	02.07.2012	Material risk classes have been cancelled and ANNEX-1 is updated with placing analysis report/declaration form providing conditions. Food contact and full concentration (in scope of By-Law on Inventory and Control of Chemicals) informations have been added to analysis report/declaration form providing conditions. Table 1 has been revised regarding to new PAH Standard. Outofdate EEE Regulation has been replaced by new Turkish WEEE Regulation. SVHCs published in June 2012 have been added to Table 1. Battery and accumulators requirements have been revised in the scope of related regulations.
2.0	16.03.2012	Table 1 is updated regarding to current SVHC list and "hazard" for substances column is added. Cd limit in Table 1 has been changed. General declaration form has been canceled. English version of the procedure has been added.
1.1	23.08.2011	Cd restriction for batteries is revised in compliance with 2006/66/EC directive on batteries and accumulators.
1.0	26.07.2011	Procedure and its annexes has been revised completely.
0.1	13.09.2007	Minor revision has been done.
0.0	15.11.2005	Procedure published.

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3. METHOD:

3.1 Introduction

The aim of this procedure is, managing the use of chemical substances which are harmful to the environment and health in the parts (components), materials and substances of the electrical and electronic equipment that are produced by Arçelik, in line with the related legal requirements, this procedure and Arçelik's environmental policy.

3.2 Definitions and Abbreviations

a) Electrotechnical Products : Products which are dependent on electric current or electromagnetic fields in order to work properly and equipment for the generation, transfer and measurement of such currents and fields and designed for use with a voltage rating not exceeding 1000 volts for alternating current and 1500 volts for direct current.

b) Substance: means a chemical element and its compounds in the natural state or obtained by any manufacturing process, including any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition

c)Polymer Materials: The products which are provided from synthetic or semi-synthetic organic condensation or polymerization. Examples of polymer materials are polyethylene, polyvinyl chloride, epoxy resin, polyamide, polycarbonate, ABS resin, paint, ink,etc.

d)Metals: Metals are combinations of metallic elements. Examples of metallic materials are Fe-alloys, Ni-alloys, Sn-alloys, etc.

e)Electronics: Electronic components, electronic parts. Examples of electronics are semiconductors, active components like diyotes and integrated circuits, passive components like resistors and capacitors, electrical and electronic connectors, relays, PCBs (Printed Circuit Boards),etc.

f) Preparation: a mixture or solution composed of two or more substances.

g) Banned Substances: Substances whose intentional use has been prohibited by existing regulations or industrial policies. It is forbidden to use these substances.

h) Restricted Substances: Substances whose intentional use has been restricted (substance or limit based) by existing regulations.

i) Threshold Limit: Concentrations given for chemical substances must be lower than the determined limit values. If there is not limit for these substances, then these substances must not be used intentionally.

j) Homogenous Material : one material of uniform composition throughout or a material, consisting of a combination of materials, that cannot be disjointed or separated into different materials by mechanical actions such as unscrewing, cutting, crushing, grinding and abrasive processes.

k) CAS No (Chemical Abstracts Service Number) : The unique numerical identification assigned by the "Chemical Abstracts Service" to every chemical.

l) EC No (The European Commission Number) : The number is assigned by the Commission of the European Union; the EC number is the official number of a substance in the European Union.

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m) SVHC (Substances of Very High Concern) : Substances of very high concern that are published by European Chemicals Agency (ECHA).
n) SVHC Declaration Form (D) : Suppliers' declaration form which includes the concentration of SVHCs (w/w) in their supplied parts, sub-products, packaging materials and materials.
o) Analysis Report : The report prepared by Accredited Laboratories using test results performed according to the international standards. Typical measurement methods are as follows; Inductively Coupled-Plasma-Atomic (Optical) Emission Spectroscopy (ICP-AES [ICP-OES]), Atomic Absorption Spectroscopy (AAS), Inductively Coupled-Plasma Mass Spectroscopy (ICP-MS) and Gas Chromatography/Mass Spectrometry (GC/MS).
p) G.T.I.P. : Customs tariffs statistics position, a twelve-stage code that are used in Turkish customs tariffs schedule.
r) Recycable Materials: Substances which are used in materials such as plastics, cardboards, glasses and metals can be recycled.

3.3 Process Owner and Responsibilities

All of Arçelik's suppliers commit to comply with the legal regulations that are stated in article 3.4 "Scope of Procedure", Arçelik's standards, criterias and thereby the restrictions and notification requirements idendified in this procedure.

3.4 Scope of Procedure

In scope of this procedure :

- RoHS Recast (EU Directive 2011/65/Eu) (Directive on the Restriction Of the Use of Certain Hazardous Substances in Electric and Electronic Equipment)
- Commision Regulation (EC) No 642/2009 of 22 July 2009 Implementing Directive 2005/32/EC of the European Parliement and of the Council with regard to ecodesign requirements for televisions
- Turkish Regulation on Waste Electric and Electronic Equipment (Turkish WEEE Regulation) (O.J. 28300, 22/05/2012)
- REACH (EU Regulation 1907/2006) (Regulation of the Registration, Evaluation, Authorization and Restriction of Chemicals)
- Turkish Regulation on Control of Waste Batteries and Accumulators (O.J. 25569, 31.08.2004)
- Directive on Batteries and Accumulators (EU Directive 2006/66/EC)
- International Standards for Phytosanitary Measures 15 (ISPM 15)
- By-Law on Inventory and Control of Chemicals (O.J. 27092, 26.12.2008)

This procedure is applied to:

1) Intended for products;
   Products that are produced or supplied by Arçelik A.Ş.
2) Intended for parts (components) and materials used in products;
   Materials and parts identified above, detailed below:

a) Parts and materials,
b) Grouped/Mounted parts,
c) Accessorries: AC adaptor, remote control etc.,
d) Auxiliary materials for other structural materials,

e) Instructions for use and manuals,
f) Packaging,
g) Spare parts,
h) Packaging for transportation,
i) Other substances, materials and parts that used in these products and transmitted to the customers with these products

This procedure is not applied to:

a. Determining gas and dust (immision) limits in working area (production facility, equipment, building lot, cooling, climate etc.)
b. Chemicals used in research and development studies
c. Chemicals used for quality control, error analysis, health control or environmental effect measurement,
d. Chemicals used in production processes but not contained in finished product (volatile oil etc.)

3.5 CONDITIONS OF USE OF CHEMICAL SUBSTANCES IN PRODUCTS / COMPONENTS / MATERIALS

All parts, materials, sub-materials, products during banned/prohibited chemical management control process are classified into three groups and categories as given below, for each chemicals are identified in Table 1.

Category 1 (K1): Chemicals classified as in this category in Table 1 can not be used or only can be used below specified limits in products/components/materials supplied to Arçelik.

Category 2 (K2): Chemicals classified as in this category in Table 1 can not be used above the 0.1 % (w/w) limit in products/components/materials supplied to Arçelik. Further these substances can not be used in products/components/materials supplied to Arçelik after specified sunset dates.

Category 3 (K3): Chemicals classified as in this category should be notified to Arçelik when used in products/components/materials above 0.1 % (w/w) limit.

Analysis reports or declaration forms of the materials and sub-materials should be provided to Arçelik according to ANNEX-1 of this procedure. For the missing materials in ANNEX-1, please contact with Arçelik (reachinfo@arcelik.com).

This procedure is updated by Arçelik, annually.

During the panel approval process, following information and declaration also will be taken in addition to others mentioned above.

Panel suppliers should give also these below information with signed declaration to Arçelik Electronic Plant.
These information will be on mercury content (as mg per lamp) and lead content (as ppm and with highlighting exemptions regarding RoHS directive) of the panel to be approved.

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Code of Panel	Lead Content (ppm) (mention whether it's exempted or not)	Backlight lamp quantity (Number)	Mercury content (mg per lamp)	Total Mercury Content (mg)

As a note; the analysis methods of RoHS and Turkish WEEE Regulations materials are shown in Table 4 and CAS numbers and compounds of restricted/banned/declarable substances are shown in ANNEX-2.

Definitions of references in column "Hazard":
A:Allergen
BA: Bio Accumulating
C: Carcinogenic
DE: Dangerous to the Environment
ED: Endocrine Disrupter
GW: Global Warming
HAT: High Aquatic Toxic
M: Mutagenic
POP: Persistent Organic Pollutant
R: Toxic to Reproduction
T: Toxic
PBT: Persistant, Bio Accumulating, Toxic
vPvB: Very Persistant very Bio Accumulating
EqLC: equivalent level of concern having probable serious effects to the environment

3.5.1. Batteries and Accumulators

Management of the batteries and accumulators, must be complied with EU Directive (2006/66/EC) and The Turkish regulation called "Waste Batteries and Accumulators Management". Batteries and accumulators should not contained the banned substances exceeding the limits defined in Table 2. NiCd (Nickelcadmium) batteries are prohibited.
The crosses-out wheeled bin symbol (Symbol 1) should be on batteries. If lead content is higher than 40 ppm (0.004 %), the chemical symbol of lead (Pb) will be placed under the crosses-out wheeled bin symbol (Please refer to EU Directive).

Batteries and Accumulators must be labeled as indicated in The Turkish regulation which title is "Waste Battery and Accumulators Management". Battery products shall be labeled and market as described in the Turkish Standards (TS EN 61429). Batteries containing mercury (Hg) more than 0.0005% by weight and their packages shall be labeled symbol decribed in Symbol 1.

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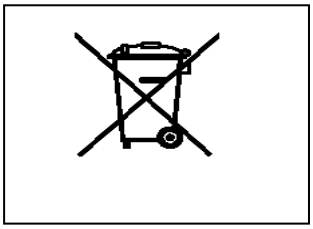

Symbol 1

3.5.2. Hazardous Substances in Packaging Materials

According to both EU Directive and Turkish Regulations, the total concentration of cadmium (Cd), lead (Pb), mercury (Hg) and hexavalent chromium (Cr +6) should not be contained more than 100 ppm.

3.5.3. Specific Conditions for Wooden Materials

Wooden palets and wooden product that supplied to Arçelik must be complied with ISPM 15 standard (International Standards for Phytosanitary Measures 15).

3.5.4 By-Law on Inventory and Control of Chemicals

The purpose of this by-law is to regulate the rules and principles related to set up an inventory and control of chemicals in order to protect the man and the environment against their negative effects.
Any manufacturer who has produced substance or any importer who has imported a substance, on its own or in a preparation above 1 tonne/year shall submit to the Ministry of Environment and Urban Planning official web portal (This requirement is only valid for Turkish manufacturers).

3.6 ENFORCEMENT and RECORD MANAGEMENT

This procedure enters into force on 01.07.2011.
The documents provided from suppliers in scope of this procedure shall be kept for 10 years.

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Table 1. Banned/Restricted/Declarable substances

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
Asbestos	See ANNEX-2	K1	Banned	All applications(insulator, paint, pigment,etc.)	C	EU Directive 76/779/EEC
Certain TributylTin compounds (TBT) Triphenyl Compounds (TPT)	See ANNEX-2	K1	Banned	All applications especially parts where prolonged skin contact is expected (stabizer, paint, pigment,etc.)	DE, ED, HAT, T	Japan Law
Formaldehyde	CAS: 50-00-0	K1	Banned	Composite wood products or components, stereo cabinets (ex.phenol resin, etc.)	C, T, A	US/CA CARB Rule
IPPD (N-isopropyl-N-phenyl-p-phenylenediamine)	CAS : 101 -72 -4	K1	Banned	Especially rubber parts		
Nickel	CAS : 7440-02-0	K1	Banned	Stainless steel and plating where prolonged skin contact is expected (ex.headphone)	A, C, T	76/769/EEC 94/27/EC
PCB (Polychlorinated Biphenyls) PCT (Polychlorinated Terphenyls) PCN (Polychlorinated Naphthalenes) and specific substitutes	See ANNEX-2	K1	Banned	Insulation oil, solvent, lubricant oil, electrial insulation,electrolytic soltion, plasticizers, coatings for electrical wire and cables, dielectric sealants, flame retardant, stabilizer, paint	BA, DE, ED, POP, T	EU Directive 76/779/EEC Turkish Legislation on PCB, PCT Control

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Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
Perfluorooctane sulfonate (PFOs)	CAS : 2795-39-3	K1	Banned	Antistatic agent for films and plastics	BA, POP	76/769/EEC and 2006/122/EC
PFC, SF6	See ANNEX-2	K1	Banned	Refrigerant, extinguishing agents, insulating media,etc.	GW	Kyoto Protocol
Phenol,2-(2H-benzotriazol-2-yl)- 4,6-bis(1,1-dimethylethyl)	CAS : 3846-71-7	K1	Banned	Adhesive, paint, ink, plastic, ribbon,etc..	BA, T	Japan Law
Radioactive Substances	See ANNEX-2	K1	Banned	Measuring devices, dedector etc.	C, M, R, T	EU-D 96/29/Euratom; Japan Law for the Regulation of Nuclear Source Material, Nuclear Fuel Material, and Reactors, 1986; US NRC
Dimethyl fumarate	CAS: 624-49-7	K1	0.00001 % (0.1 ppm)	Biocides	A	2009/251/EC

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Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
Cadmium/cadmium compounds[3]	See ANNEX-2	K1	%0.007[1] (70 ppm) (See Table 3 for exemptions)	Plastic (Polymeric Material)[2]	BA, C, DE, HAT, T	RoHS (EU Directive 2002/95/EC and its amendments), Turkish WEEE Regulation
			0.007[1]% (70 ppm) (See Table 3 for exemptions)	Applications other than plastic (metal, electronic material. Ex.resistor material, thick glass film material, brass plating)		
			See Table 2	Batteries		
Benzo[a]pyrene	See ANNEX-2	K1	%0.0001 1 ppm	Applications where prolonged skin contact is much more than 30 sn	BA, C, DE, ED, HAT, POP, T	GS Standard
			%0.002 20 ppm	Applications where prolonged skin contacts is less than 30 sn		
PAH (sum of 18 PAH)	See ANNEX-2	K1	0.001% (10 ppm)	Applications where prolonged skin contact is much more than 30 sn	BA, C, DE, ED, HAT, POP, T	GS Standard
			0.02% (200 ppm)	Applications where prolonged skin contacts is less than 30 sn		

[1] Limit is valid as homogenius material level.
[2] Resin, paint, ink, rubber, plastic are included.
[3] Cadmium plating is prohibited on the product.

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Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
Lead and its compounds	See ANNEX-2	K1	0.01[1]% (100 ppm) (See Table 3 for exemptions)	Plastics (Polymeric Material)[2]	BA, DE, HAT, R, T	RoHS (EU Directive and its amendments), Turkish WEEE Regulation
			0.07[1]% (700 ppm) (See Table 3 for exemptions)	Applications other than plastics, nickel plating (metal material, electronic material)		
Azocolourants and azodyes which form certain aromatic amines	See ANNEX-2	K1	0.03%	All applications where prolonged skin contact is expected (headphone, rubber products, ink, paint, etc.)	C, M, R	EU Directive 76/779/EEC
Mercury and its compounds	See ANNEX-2	K1	0.071[1]% (700 ppm) (See Table 3 for exemptions)	All applications other than batteries (polymer, metal, elektronic material, electromechanic material)	BA, DE, T	RoHS (EU Directive and its amendments), Turkish WEEE Regulation
			See Table 2	Batteries		

[1] Limit is valid as homogenius material level.
[2] Resin, paint, ink, rubber, plastic included.

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Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
Hexavalent chromium and its compounds	See ANNEX-2	K1	0.07[4]% (700 ppm) (See Table 3 for exemptions)	All applications (spot test result should be negative)	C, DE, T	RoHS (EU Directive and its amendments), Turkish WEEE Regulation
PBBs and PBDEs (decaBDE included)	See ANNEX-1 CAS:1163-19-5 (for decaBDE)	K1	0.07[1]% (700 ppm)	All application (e.g. flame retardant)	BA, DE, ED, POP	RoHS (EU Directive and its amendments), Turkish WEEE Regulation
2-(2-methoxyethoxy) ethanole (DEGME)	CAS: 111-77-3	K1	0.1%	Paint, paint remover	PBT, vPvB	REACH
Toluene	CAS: 108-88-3	K1	0.1%	Paints and adhesives	C, M, R	REACH
2,4- Dinitrotoluene (2,4-DNT)	CAS: 121-14-2	K2	0.1% SD: 21.08.2015	Production of flexible PU foams	C	REACH
4,4'-Diaminodiphenylmethane (MDA)	CAS : 101-77-9	K2	0.1% SD: 21.08.2014	PU curing agent Protector for resin and epoxy	C	REACH

[1]Limit is valid as homogenius material level.
[4]Limit is valid as homogenius material level. Spot test result should be negative (The material should pass the spot test).
SD: Sunset date. Substance is banned after this date.

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Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	CAS : 81-15-2	K2	0.1% SD: 21.08.2014	Scent formulations	VPvB	REACH
Ammonium dichromate	CAS: 7789-09-5	K2	0.1% SD: 21.09.2017	Oxidizing agent, mordant for textiles, production of photosensitive screens	C, M, R	REACH
Benzyl butyl phthalate (BBP)**	CAS : 85-68-7	K2	0.1% SD: 21.02.2015	PVC plasticizer	R	REACH
Bis (2-ethylhexyl)phthalate (DEHP)**	CAS: 117-81-7	K2	0.1% SD: 21.02.2015	PVC plasticizer	R	REACH
Chromium trioxide	CAS: 1333-82-0	K2	0.1% SD: 21.09.2017	Electronic components, HDPE,LLDPE,PP	C, M	REACH
Chromic acid, Oligomers of chromic acid and dichromic acid, Dichromic acid	CAS: 7738-94-5, 13530-68-2	K2	0.1% SD: 21.09.2017	Chrome coating derivatives	C	REACH

SD: Sunset date. Substance is banned after this date.
**DEHP, BBP, DBP, DIBP do not use in materials/components above the 0.1% concentration limit. "phthalate free" material supply will be increased and use of phthalates will be restricted step by step.

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Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
Diarsenic pentaoxide	CAS : 1303-28-2	K2	0.1% SD: 21.05.2015	Glass, cable coating	C	REACH
Diarsenic trioxide	CAS : 1327-53-3	K2	0.1% SD: 21.05.2015	Glass, cable coating	C	REACH
Dibutyl phthalate (DBP)**	CAS : 84-74-2	K2	0.1% 21.02.2015	PVC plasticizer	R	REACH
Diisobutyl phthalate (DIBP)**	CAS : 84-69-5	K2	0.1% 21.02.2015	PVC plasticizer	R	REACH
Hexabromocyclododecane (HBCDD) and all identified diastereoisomers	CAS: 25637-99-4 3194-55-6 (134237-50-6) (134237-51-7) (134237-52-8)	K2	0.1% SD: 01.01.2014	Flame retardant for PS, EPS,XPS	PBT	REACH
Lead chromate	CAS: 7758-97-6	K2	0.1% SD: 21.05.2015	Production of paints and pigments	C, R	REACH

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**DEHP, BBP, DBP, DIBP do not use in materials/components above the 0.1% concentration limit. "phthalate free" material supply will be increased and use of phthalates will be restricted step by step

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Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
Lead chromate molibdate sulphate red (C.I. Pigment Red 104)	CAS : 12656-85-8	K2	0.1% SD: 21.05.2015	Paints	C, R	REACH
Lead sulfochromate yellow (C.I. Pigment Yellow 34)	CAS : 1344-37-2	K2	0.1% SD: 21.05.2015	Paints	C, R	REACH
Potassium chromate	CAS : 7789-00-6	K2	0.1% SD: 21.09.2017	Anticorrosive, metal coating	C, M	REACH
Potassium dichromate	CAS : 7778-50-9	K2	0.1% SD: 21.09.2017	Anticorrosive, metal coating	C, M, R	REACH
Sodium chromate	CAS: 7775-11-3	K2	0.1% SD: 21.09.2017	Anticorrosive, metal coating	C, M, R	REACH
Sodium dichromate	CAS: 7789-12-0/ 10588-01-9	K2	0.1% SD: 21.09.2017	Anticorrosive, metal coating	C, M, R	REACH

SD: Sunset date. Substance is banned after this date.

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Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
Trichloroethylene	CAS: 79-01-6	K2	0.1% SD: 21.04.2016	Production of chlorinated and fluorinated product derivatives	C	REACH
Tris(2-chloroethyl) phosphate, TCP	CAS : 115-96-8	K2	0.1% SD: 21.08.2015	Flame retardant for PU, PVC etc.	R	REACH
1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP)**	CAS: 71888-89-6	K3	0.1%	PVC plasticizer	R	REACH
1,2,3-Trichloropropane (1,2,3-TCP)	CAS: 96-18-4	K3	0.1%	Biocides, chlorinated solvents	C, R	REACH
1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	CAS: 84777-06-0	K3	0.1%	-	R	REACH
1,2-Dichloroethane	CAS: 107-06-2	K3	0.1%	Vinyl chloride monomer production	C	REACH
1,2-Diethoxyethane	CAS: 629-14-1	K3	0.1%	Solvent, fabric clening compounds	R	REACH

**"phthalate free" material supply will be increased and use of phthalates will be restricted step by step.

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Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME)	CAS: 110-71-4	K3	0.1%	Battery, microelectronic components	R	REACH
1-bromopropane (n-propyl bromide)	CAS: 106-94-5	K3	0.1%	Solvent	R	REACH
1-Methyl-2-pyrrolidone (NMP)	CAS: 872-50-4	K3	0.1%	Solvents	R	REACH
1,2-bis(2-methoxyethoxy) ethane (TEGDME; triglyme)	CAS: 112-49-2	K3	0.1%	Battery	R	REACH
1,3,5-Tris(oxiran-2-ylmethyl)-1,3,5-triazinane-2,4,6-trione (TGIC)	CAS: 2451-62-9	K3	0.1%	Metal coating, printed circuit boards	M	REACH
1,3,5-tris[(2S and 2R)-2,3-epoxypropyl]-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione (β-TGIC)	CAS: 59653-74-6	K3	0.1%	Metal coating, printed circuit boards	M	REACH
2,2'-Dichloro-4,4'-methylenedianiline	CAS: 101-14-4	K3	0.1%	PU	C	REACH

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Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
2-Ethoxyethanol	CAS: 109-86-4	K3	0.1%	Solvents	R	REACH
2-Ethoxyethyl acetate (2-EEA)	CAS: 111-15-9	K3	0.1%	Solvents	R	REACH
2-Methoxyaniline; o-Anisidine	CAS: 90-04-0	K3	0.1%	Packaging inks	C	REACH
2-Methoxyethanol	CAS: 110-80-5	K3	0.1%	Solvents	R	REACH
3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine	CAS: 143860-04-2	K3	0.1%	Laboratory chemicals	R	REACH
4-(1,1,3,3-Tetramethylbutyl)phenol; 4-tert-octyl phenol	CAS: 140-66-9	K3	0.1%	Phenolic resins	DE	REACH
4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated [covering well-defined substances and UVCB substances, polymers and homologues]	-	K3	0.1%	Paints	EqLC	REACH
4,4'-bis(dimethylamino)benzophenone (Michler's ketone)	CAS: 90-94-8	K3	0.1%	Printed circuit board, paint	C	REACH

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Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol	CAS: 561-41-1	K3	0.1%	Paint	C	REACH
[4-[[4-anilino-1-naphthyl][4-(dimethylamino)phenyl]methylene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride (C.I. Basic Blue 26)	CAS: 2580-56-5	K3	0.1%	Paint	C	REACH
[4-[4,4'-bis(dimethylamino) benzhydrylidene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride (C.I. Basic Violet 3)	CAS: 548-62-9	K3	0.1%	Paint	C	REACH
4,4'-methylenedi-o-toluidine	CAS: 838-88-0	K3	0.1%	Textile chemical	C	REACH

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Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
4,4'-oxydianiline and its salts	CAS: 101-80-4	K3	0.1%	Plastic materials	C	REACH
4-Aminoazobenzene	CAS: 60-09-3	K3	0.1%	Pigments	C	REACH
4-methyl-m-phenylenediamine (toluene-2,4-diamine)	CAS: 95-80-7	K3	0.1%	Paint	C	REACH
4-Nonylphenol, branched and linear, ethoxylated [substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, ethoxylated covering UVCB- and well-defined substances, polymers and homologues, which include any of the individual isomers and/or combinations thereof]	-	K3	0.1%	Epoxy resin	EqLC	REACH
4-Nonylphenol, branched and linear covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof]	-	K3	0.1%	Plastic and epoxy materials; printed circuit boards, paint	EqLC	REACH

BANNED/RESTRICTED CHEMICAL SUBSTANCES

Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
6-methoxy-m-toluidine (p-cresidine)	CAS: 120-71-8	K3	0.1%	Chemical production	C	REACH
α,α-Bis[4-(dimethylamino)phenyl]-4 (phenylamino) naphthalene-1-methanol (C.I. Solvent Blue 4)	CAS: 6786-83-0	K3	0.1%	Paint	C	REACH
Acetic acid, lead salt, basic	CAS: 51404-69-4	K3	0.1%	Electronics, paint	R	REACH
Acrylamide	CAS : 79-06-1	K3	0.1%	Polyacrylamide production	C, M	REACH
Alkanes, C10-13, chloro (Short Chained Chlorinated Paraffines)	CAS : 85535-84-8	K3	0.1%	Flame retardant for rubber	PBT, vPvB	REACH
Aluminosilicate Refractory Ceramic Fibres (fibres covered by index number 650-017-00-8 in Annex VI, part 3, table 3.1 of Regulation (EC) No 1272/2008	See ANNEX-2	K3	0.1%	Ceramic Fibres for high temperature izolation	C	REACH

BANNED/RESTRICTED CHEMICAL SUBSTANCES

Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
Ammonium pentadecafluorooctanoate (APFO)	CAS: 3825-26-1	K3	0.1%	Electrical wire insulation, Specialist circuit boards, Non-stick coatings	R, PBT	REACH
Anthracene	CAS: 120-12-7	K3	0.1%	Black rubber and plastics, liquid crystal, pigments	PBT	REACH
Anthracene oil	CAS: 90640-80-5	K3	0.1%	Production of anthracene and carbon black	C, PBT, vPvB	REACH
Anthracene oil, anthracene paste	CAS : 90640-81-6	K3	0.1%	Same with anthracene oil	C, M, PBT, vPvB	REACH
Anthracene oil, anthracene paste, anthracene fraction	CAS : 91995-15-2	K3	0.1%	Same with anthracene oil	C, M, PBT, vPvB	REACH
Anthracene oil, anthracene paste, distn. oils	CAS : 91995-17-4	K3	0.1%	Same with anthracene oil	C, M, PBT, vPvB	REACH
Anthracene oil, anthracene-low	CAS : 90640-82-7	K3	0.1%	Same with anthracene oil	C, M, PBT, vPvB	REACH
Arsenic acid	CAS: 7778-39-4	K3	0.1%	Special glass, laminated printed circuit boards	C	REACH
Biphenyl-4-ylamine	CAS: 92-67-1	K3	0.1%	Resin	C	REACH

BANNED/RESTRICTED CHEMICAL SUBSTANCES

Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
Bis(2-methoxyethyl) ether	CAS: 111-96-6	K3	0.1%	Solvent	R	REACH
Bis(2-methoxyethyl) phthalate**	CAS: 117-82-8	K3	0.1%	PVA, PVC etc. plasticizer	R	REACH
Bis(tributyltin)oxide (TBTO)	CAS: 56-35-9	K3	0.1%	Wood protector, biocides	PBT	REACH
Boric Acid	CAS: 10043-35-3 / 11113-50-1	K3	0.1%	Glass fiber, LCD display	R	REACH
Brominated flame retardants (other than PBB, PBDE, HBCDD)	See ANNEX-2	K3	0.1%	Plastics	BA, HAT, PBT	DIGITALEUROPE /CECED/ AeA / EERA
Diazene-1,2-dicarboxamide (C,C'-azodi(formamide))	CAS: 123-77-3	K3	0.1%	Plastic and resin	EqLC	REACH
Diboron trioxide	CAS: 1303-86-2	K3	0.1%	Glass, fiberglass, paint, adhesive, enamel	R	REACH
Dichromium tris(chromate)	CAS: 24613-89-6	K3	0.1%	Metal processing	C	REACH
Diethyl sulphate	CAS: 64-67-5	K3	0.1%	Chemical production	C	REACH

**"phthalate free" material supply will be increased and use of phthalates will be restricted step by step.

BANNED/RESTRICTED CHEMICAL SUBSTANCES

Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
Diisopentylphthalate**	CAS: 605-50-5	K3	0.1%	PVC	R	REACH
Dimethyl sulphate	CAS: 77-78-1	K3	0.1%	Chemical production	C	REACH
Dinoseb (6-sec-butyl-2,4-dinitrophenol)	CAS: 88-85-7	K3	0.1%	Plastics	R	REACH
Dioxobis(stearato)trilead	CAS: 12578-12-0	K3	0.1%	Plastics	R	REACH
Dipentyl phthalate (DPP)**	CAS: 131-18-0	K3	0.1%	PVC	R	REACH
Disodium tetraborate, anhydrous	CAS : 1303-96-4/ 1330-43-4/ 12179-04-3	K3	0.1%	Glass and glass fibers	R	REACH
Phenolphthalein	CAS: 77-09-8	K3	0.1%	pH-indicator paper, disappearing inks	C	REACH
[Phthalato(2-)]dioxotrilead	CAS: 69011-06-9	K3	0.1%	Plastics	R	REACH
Formaldehyde, oligomeric reaction products with aniline (technical MDA)	CAS: 25214-70-4	K3	0.1%	MDI production	C	REACH
Furan	CAS: 110-00-9	K3	0.1%	Detergents, solvents	C	REACH
Hydrazine	CAS: 302-01-2 / 7803-57-8	K3	0.1%	Paint, ink, foaming agent	C	REACH

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BANNED/RESTRICTED CHEMICAL SUBSTANCES

Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
Cadmium oxide	CAS: 1306-19-0	K3	0.1%	Nickel cadmium (Ni-Cd) batteries	C	REACH
Calcium arsenate	CAS: 7778-44-1	K3	0.1%	copper and lead refining	C	REACH
Cobalt(II) diacetate	CAS: 71-48-7	K3	0.1%	Catalyst production	C, R	REACH
Cobalt(II) dinitrate	CAS: 10141-05-6	K3	0.1%	Catalyst production, rechargable batteries	C, R	REACH
Cobalt(II) carbonate	CAS: 513-79-1	K3	0.1%	Catalyst production, ground coat frit	C, R	REACH
Cobalt(II) sulphate	CAS: 10124-43-3	K3	0.1%	Anticorrosive agent	C, R	REACH
Cobalt dichloride	CAS: 7646-79-9	K3	0.1%	Paint	C, R	REACH
Cyclohexane-1,2-dicarboxylic anhydride [all possible combinations of the cis- and trans-isomers [1] are covered by this entry]	CAS: 85-42-7, 13149-00-3, 14166-21-3	K3	0.1%	Plastic and epoxy materials	EqLC	REACH
Fatty acids, C16-18, lead salts	CAS: 91031-62-8	K3	0.1%	Plastics (especially PVC)	R	REACH
Formamide	CAS: 75-12-7	K3	0.1%	Solvent	R	REACH
Hexahydromethylphthalic anhydride and all possible combinations of the isomers	CAS: 25550-51-0, 19438-60-9, 48122-14-1, 57110-29-9	K3	0.1%	Plastic and epoxy materials	EqLC	REACH
Henicosafluoroundecanoic acid	CAS: 2058-94-8	K3	0.1%	Non-stick coatings, cable-wire isolation	vPvB	REACH
Heptacosafluorotetradecanoic acid	CAS: 376-06-7	K3	0.1%	Non-stick coatings, cable-wire isolation	vPvB	REACH

BANNED/RESTRICTED CHEMICAL SUBSTANCES

Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
Lead (II) bis(methanesulfonate)	CAS: 17570-76-2	K3	0.1%	Electronic components	R	REACH
Lead bis(tetrafluoroborate)	CAS: 13814-96-5	K3	0.1%	Metal processing	R	REACH
Lead diazide	CAS :13424-46-9	K3	0.1%	Pyrotechnics	R	REACH
Lead dinitrate	CAS: 10099-74-8	K3	0.1%	Paint	R	REACH
Lead dipicrate	CAS : 6477-64-1	K3	0.1%	Pyrotechnics	R	REACH
Lead hydrogen arsenate	CAS : 7784-40-9	K3	0.1%	Biocides	C, R	REACH
Lead monoxide (lead oxide)	CAS: 1317-36-8	K3	0.1%	Resin and ceramic materials, paint, battery	R	REACH
Lead oxide sulfate	CAS: 12036-76-9	K3	0.1%	Plastics (especially PVC)	R	REACH
Lead styphnate	CAS : 15245-44-0	K3	0.1%	Pyrotechnics	R	REACH
Lead cyanamidate	CAS: 20837-86-9	K3	0.1%	Electrocoatings	R	REACH
Lead titanium trioxide	CAS: 12060-00-3	K3	0.1%	Semi conductive applications	R	REACH
Lead titanium zirconium oxide	CAS: 12626-81-2	K3	0.1%	Electro-ceramic and piezo-ceramic applications	R	REACH
Methoxyacetic acid	CAS: 625-45-6	K3	0.1%	Sanitizers and anticorrosive materials for food contact surfaces	R	REACH
Methyloxirane (Propylene oxide)	CAS: 75-56-9	K3	0.1%	Paints, varnishes, paint removers, adhesives	C	REACH
N-methylacetamide	CAS: 79-16-3	K3	0.1%	Laboratory chemicals	R	REACH

BANNED/RESTRICTED CHEMICAL SUBSTANCES

Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
N,N-dimethylacetamide (DMAC)	CAS: 127-19-5	K3	0.1%	Solvent	R	REACH
N,N-dimethylformamide	CAS: 68-12-2	K3	0.1%	Printed circuit boards	R	REACH
N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base)	CAS: 101-61-1	K3	0.1%	Paint	C	REACH
N-pentyl-isopentylphthalate**	CAS: 776297-69-9	K3	0.1%	PVC	R	REACH
o-aminoazotoluene	CAS: 97-56-3	K3	0.1%	Laboratory chemicals	C	REACH
o-Toluidine	CAS: 95-53-4	K3	0.1%	Laboratory chemicals	C	REACH
Orange lead (lead tetroxide)	CAS: 1314-41-6	K3	0.1%	Resin and ceramic materials, paints, batteries	R	REACH
Pentacosafluorotridecanoic acid	CAS: 72629-94-8	K3	0.1%	Non-stick coatings, wire-cable isolations	vPvB	REACH
Pentadecafluorooctanoic acid (PFOA)	CAS: 335-67-1	K3	0.1%	Electrical wire insulation, Specialist circuit boards, Non-stick coatings	R, PBT	REACH
Pentalead tetraoxide sulphate	CAS: 12065-90-6	K3	0.1%	Plastics (especially PVC), batteries	R	REACH
Pentazinc chromate octahydroxide	CAS: 49663-84-5	K3	0.1%	Thinner, paint primer	C	REACH
Perchlorates	CAS: 10034-81-8, 7778-74-7, 7790-98-9, 7601-89-0	K3	0.006 ppm	Rocket fuels		Law of the State of California

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BANNED/RESTRICTED CHEMICAL SUBSTANCES

Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
Potassium hydroxyoctaoxodizincatedichromate	CAS: 11103-86-9	K3	0.1%	Paint primer	C	REACH
PVC and PVC mixtures	See ANNEX-2	K3	0.1%	Packing materials, cable ties, flexible flat cables-FFC, insulators, etc	BA, DE, HAT, R, T	IEEE1680
Pyrochlore, antimony lead yellow	CAS: 8012-00-8	K3	0.1%	Glass and ceramics, paints, inks	R	REACH
Silicic acid (H2Si2O5), barium salt (1:1), lead-doped	CAS: 68784-75-8	K3	0.1%	Bulb coatings	R	REACH
Silicic acid, lead salt	CAS: 11120-22-2	K3	0.1%	Concrete, plaster, glass and ceramic materials	R	REACH
Strontium chromate	CAS: 7789-06-2	K3	0.1%	Paints, varnishes, adhesives	C	REACH
Sulfurous acid, lead salt, dibasic	CAS: 62229-08-7	K3	0.1%	Plastics (especially PVC)	R	REACH
Tetraboron disodium heptaoxide, hydrate	CAS: 12267-73-1	K3	0.1%	Glass and glas fibers, flame retardant	R	REACH

BANNED/RESTRICTED CHEMICAL SUBSTANCES

Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
Tetraethyllead	CAS: 78-00-2	K3	0.1%	Fuel additive	R	REACH
Tetralead trioxide sulphate	CAS: 12202-17-4	K3	0.1%	Plastics (especially PVC)	R	REACH
Tricosafluorododecanoic acid	CAS: 307-55-1	K3	0.1%	Non-stick coatings, wire-cable isolations	vPvB	REACH
Triethyl arcenate	CAS: 15606-95-8	K3	0.1%	Semi conductor electronic components	C	REACH
Trilead bis(carbonate)dihydroxide	CAS: 1319-46-6	K3	0.1%	Intermetiate for ceramic production	R	REACH
Trilead diarsenate	CAS: 3687-31-8	K3	0.1%	Manufacture of copper, lead and a range of precious metals	C, R	REACH
Trilead dioxide phosphonate	CAS: 12141-20-7	K3	0.1%	Plastics (especially PVC), batteries	R	REACH
Pitch, coal tar, high temp.	EC : 266-028-2	K3	0.1%	Active carbon production	C, PBT, vPvB	REACH
Zirconia Aluminosilicate, Refractory Ceramic Fibres (fibres covered by index number 650-017-00-8 in Annex VI, part 3, table 3.1 of 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)	See ANNEX-2	K3	0.1%	Refractory ceramic fibres	C	REACH

BANNED/RESTRICTED CHEMICAL SUBSTANCES

Table 1. Banned/Restricted/ Declarable substances (cont'd)

Subtance	CAS no / EC No	Category	Limit	Examples for Applications	Hazard	Legistlation
SVHCs not included in Table1 (See SVHC List)	-	K3	0.1%	-		REACH

Table 2. Restrictions for batteries

Substance	Limit	Explanation
Mercury (Hg)	0.0005 %	Limit is not valid for button cell. Mercury in button cells should be lover than 2 %
Cadmium (Cd)	0.002 %	Limit is valid for batteries with three exemptions : • Emergency and alarm systems including emergency lighting • Medical equipment • Cordless power tools (under review)

BANNED/RESTRICTED CHEMICAL SUBSTANCES

Table 3. Exemptions for restricted substances

Substance	**Directive**
Mercury in compact fluorescent lamps not exceeding 5 mg per lamp. a. < 30 W 2,5 mg b. ≥ 30 W and < 50 W 3,5 mg	Turkish WEEE, RoHS
Mercury in straight fluorescent lamps for general purposes not exceeding: a. triphosphor with normal lifetime 3,5 mg b. triphosphor with long lifetime 5 mg	Turkish WEEE, RoHS
Mercury in straight fluorescent lamps for special purposes a. (≤ 500 mm) 3,5 mg b. (> 500 mm and ≤ 1500 mm) 5 mg c. > 1500 mm 10 mg	Turkish WEEE, RoHS
Non-linear halophosphate lamps (all diameters) not exceeding (per lamp): 15 mg [I]	RoHS
Mercury in High Pressure Mercury (vapour) lamps (HPMV) [II]	RoHS
Lead in glass of fluorescent tubes not exceeding 0,2 % by weight	Turkish WEEE, RoHS
Lead as an alloying element in steel containing up to 0,35% lead by weight, aluminium containing up to 0,4% lead by weight and as a copper alloy containing up to 4% lead by weight.	Turkish WEEE, RoHS
Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead), Lead in solders for servers, storage and storage array systems, network infrastructure eguirment for switching, signalling, transmission as well as network management for telecommunivations, lead in electronic ceramic parts (e.g. piezoelectronic devices)	Turkish WEEE, RoHS

[I] Expires on 13th April 2016 according to RoHS
[II] Expires on 13th April 2015 according to RoHS

BANNED/RESTRICTED CHEMICAL SUBSTANCES

Table 3. Exemptions for restricted substances (cont'd)

Substance	Directive
Cadmium and its compounds in electrical contacts and cadmium plating except for applications banned under Directive 91/338/EEC amending Directive 76/769/EEC relating to restrictions on the marketing and use of certain dangerous substances and preparations.	Turkish WEEE, RoHS
Hexavalent chromium as an anti-corrosion of the carbon steel cooling system in absorption refrigerators. (lower than 75 % w/w) a. Lead in lead-bronze bearing shells and bushes	Turkish WEEE, RoHS
The Commision shall evaluate the applications for deca BDE,etc.	Turkish WEEE, RoHS
Hexavalent chromium as an anti-corrosion of the carbon steel cooling system in absorption refrigerators. (lower than 75 % w/w) a. Lead in lead-bronze bearing shells and bushes	Turkish WEEE, RoHS
Lead as a coating material for the thermal conduction module c-ring [III]	Turkish WEEE, RoHS
Lead and cadmium in optical and filter glass	Turkish WEEE, RoHS
Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages	Turkish WEEE, RoHS
Lead halide as radiant agent in High Intensity Discharge (HID) lamps used for professional reprography applications	Turkish WEEE, RoHS
Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCD)[III]	Turkish WEEE, RoHS
Lead and cadmium in printing inks for the application of enamels on borosilicate glass	Turkish WEEE, RoHS
Lead in finishes of fine pitch components other than connectors with a pitch of 0.65 mm or less with NiFe lead frames and lead in finishes of fine pitch components other than connectors with a pitch of 0.65 mm or less with copper lead frames[VI]	Turkish WEEE, RoHS

[III] May be used in spare parts for EEE placed on the market before 24 September 2010 according to RoHS

BANNED/RESTRICTED CHEMICAL SUBSTANCES

Table 3. Exemptions for restricted substances (cont'd)

Substance	Directive
Lead as impurity in RIG (rare earth iron garnet) Faraday rotators used for fibre optic communications systems	Turkish WEEE, RoHS
Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors	Turkish WEEE, RoHS
Lead oxide in plasma display panels (PDP) and surface conduction electron emitter displays (SED) used in structural elements; notably in the front and rear glass dielectric layer, the bus electrode, the black stripe, the address electrode, the barrier ribs, the seal frit and frit ring as well as in print pastes	Turkish WEEE, RoHS
Lead alloys as solder for transducers used in high-powered (designated to operate for several hours at acoustic power levels of 125 dB SPL and above) loudspeakers	Turkish WEEE
Hexavalent chromium in corrosion preventive coatings of unpainted metal sheetings and fasteners used for corrosion protection AND Electromagnetic Interference Shielding in equipment falling under WEEE Category 3 (IT and telecommunications equipment). Exemption granted until 1 July 2007. Note: Both criteria must be met.	Turkish WEEE
Lead bound in crystal glass	Turkish WEEE, RoHS
Cadmium alloys as electrical/mechanical solder joints to electrical conductors located directly on the voice coil in transducers used in high-powered loudspeakers with sound pressure levels of 100 dB (A) and more	RoHS
Lead in soldering materials in mercury free flat fluorescent lamps (which e.g. are used for liquid crystal displays, design or industrial lighting)	RoHS
Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes	RoHS
Lead in solders for the soldering of thin copper wires of 100 µm diameter and less in power transformers	RoHS
Lead in cermet-based trimmer potentiometer elements	RoHS
Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body	RoHS

BANNED/RESTRICTED CHEMICAL SUBSTANCES

Table 3. Exemptions for restricted substances (cont'd)

Substance	Directive
Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide	RoHS
Cadmium in colour converting II-VI LEDs (< 10 µg Cd per mm 2 of light-emitting area) for use in solid state illumination or display systems [IV]	RoHS

[IV] Expires on 1st April 2014

BANNED/RESTRICTED CHEMICAL SUBSTANCES

Table 4. Examples of Test Methods for Restricted Substances

Substance Class	Matrix	Method for Inspection (Non-destructive test)	Method for Verification (Destructive Test)
Cadmium Compounds, Lead Compounds	plastic, rubber, paints, inks	XRF (handheld)	1. XRF (desktop) 2. AAS / Atomic Absorpsiyon 3. ICO-OES
Lead and Lead alloys	Metal	XRF (FP method) (fundemantal parameter, handheld)	1. XRF (desktop) 2. ICP-OES
Mercury Compounds	plastic, rubber, paints, inks	XRF (handheld)	1. XRF (desktop) 2. CV-AAS with vapor hydride generation aparatus 3. CV-AAS with thermal decomposition and/or gold amalgamation 4. ICP-OES with vapor hydride generation apparatus
Mercury	Metal		CV-AAS with thermal decomposition for analyzing mercury content in flourescent tubes
Hexavalent Chromium Compounds	Metal	1. XRF (handheld, total chromium) 2. Dip test (qualitative)	1. Alkaline digestion /colorimetric method (polymer and elektronic materials) 2. Spot-test procedure/boiling water-extraction procedure (metallic materials)
Polybrominated bphenyls (PBB) Polybrominated diphenyl ethers (PBDE)	plastics	Total bromine content / for confirmation of total bromine free: 1. XRF (handheld) 2. HPLC -Ion chromatography	For identification pf PBB and PBDE: FT-IR. Dor identification and quantification of PBB and PBDE : GC/MS (HRGC/MS)

PS: Analysis of the banned/restricted/declarable substances other than in Table 3 can be performed in acredidated laboratories.