核　　准 Approved	審　　核 Reviewed	擬 案 Issued
TS Wu	Jennie Lin	Pauline Feng

版序 Rev.	變更章節 Modified Chap.	變更事項 Modified Description	擬案單位 Issued Dept.	擬案人 Issued	修訂日期 Revised Date
16	3	Modify the content of Reference Document.	Green Product Management	Pauline Feng	OCT. 04, 2016
	5.1	Added Benzene and n-hexane in Level 1.			
		Added Other phthalate and its compound in Level 3.			
		Modify content of Cadmium (Cd) and cadmium compounds, Antimony(Sb) and antimony compounds, Hexabromocyclododecane (HBCDD) , Polyaromatic Hydrocarbons (PAHs)			
	5.3	Modified the concentration of Batteries.			
	5.4	Modified content of REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) Substance of Very High Concern (SVHC) and add new substances in Table 5.4.1 “REACH SVHC CANDIDATE LIST”.			
	5.5	Modified REACH Dangerous Substances List.			
	5.8	Added Conflict Minerals.			
17	1	Modified content of objective.	Green Product Management	Pauline Feng	OCT. 13, 2017
	3.1、3.8	Modified content of definition.			
	4、5	Change the order of chapters.			
	4.1	Added Other organic tin compounds, NP, NPEO, TRIS, TEPA			
	4.2	Modified the targets of following substances: Cadmium, Lead, Mercury, Hexavalent chromium, Nickel, Arsenic, PBBs, Tetrabromodiphenyl ether, Pentabromodiphenyl ether, Hexabromodiphenyl ether, Heptabromodiphenyl ether, BFRs, Other brominated organic compounds, PVC, CFRs, Other chlorinated organic compounds, Formaldehyde			
		Modified the content of following substances: Chlorinated paraffins, Organic tin compounds			
		Added Other organic tin compounds in Level 3 and NP, NPEO, TRIS, TEPA in Level 1			
		Modified “purposes” to “applications”.			
	4.3、4.4	Modified description and the title of Table 2、3、4.			
	4.5	Modified description and Table 5			
	4.8	Modified description			
	5	Modified serial number			

1. Objective

In order to achieve the goals of Green Design, Green Procurement, Green Manufacturing and Green Marketing, ASUS formulates this technical standard to monitor and control chemical substances strictly by prohibiting, planning on phasing out schedule and disclosing information of chemical substances.
ASUS has responsibility to ensure that all GreenASUS products achieve the objective as following:

(a) To prevent hazardous substances used in products,

(b) To comply with related laws and regulations,

(c) To contribute to the preservation of the global environment and

(d) To reduce the influence upon the ecosystem.

2. Scope

2.1 Applicable ASUS GA Products

(a) Designed, manufactured, sold, or distributed by the ASUS Group.

(b) Sold or distributed with the ASUS Group's logos on them, while the design or production of these products are subcontracted to parties or companies outside the ASUS Group.

(c) Outsourced by international OBM customers to the ASUS Group for design or production.

2.2 Applicable Modules, Parts, Sub-materials and Materials

Targets are the modules, parts, sub-materials, materials, and others that are procured, manufactured, sold or repaired by ASUS Group or by third parties. The targets need to satisfy the criteria specified in this technical standard.

The Targets for modules, parts, sub-materials and materials:

> Regarding the substances or their applications that have been banned by regional, country law or ordinances but not clearly regulated in ASUS technical standards, relevant law and ordinances shall be applied.

3. Definition

3.1 Hazardous Substances

”Hazardous substances” are those that, according to ASUS’ judgment, have significant environmental-impact on both humans and the globe. (Otherwise known as Restricted Substances, which is abbreviated as “RS”)
Hazardous substances which impacts the human health and environmental are listed as Level 1 to 3 management in this technical standard.

3.2 Contained

“Contained” is a situation in which a substance is added to, fills up, mingles with, or adheres to (1) the modules, parts or devices employed in products, or (2) the materials used for the modules, parts or devices, regardless if the situation is intentionally created or not.

(When a substance is unintentionally contained in a product during manufacturing process, this is also regarded as “Contained.”)

3.3 Impurity

“Impurity” is a substance that satisfies either or both of the following conditions:

(a) One contained in a natural material, which cannot technically be removed in a refining process totally (i.e. natural impurities); and

(b) One generated in a synthesis process, the total removal of which is technically impossible.

If there are substances called “Impurities” used for the purpose of changing the characteristics of a material, or even if the substances, as an “Impurity”, mingles with or adheres to modules, parts or devices, the concentration must be observed, according to the allowable concentration of a “controlled substance” specified in this technical standard.

Furthermore, substances called Dopants (doping agents) that are intentionally added to manufacture semiconductor devices, etc. are also treated as impurities. They are not treated as “contained” if present in the devices in a very small amount.

3.4 Modules

“Modules” are semi-finished products or finished products (such as hardware, software, CD-ROM drive, power supplier, screen and CPU etc.)not produced by ASUS and purchased from other companies because of the product’s demand.

3.5 Parts

“Parts” are semi-finished products with restricting functions (such as electronic parts, mechanism parts, semiconductor elements and print circuit board etc.) and composing GA products.

3.6 Sub-materials

"Sub-materials" are items (such as packaging material, packaging parts, bundling up belt, plastic bag, adhesive tape and binder etc.) that will be used during manufacturing and will be delivered to the customer together with the GA products but not listed in the BOM table; consumables (such as gloves, cotton yarn, lubricating oil, chemical liquid etc.) used for manufacturing process and equipment which may have direct contact with parts, semi-finished products and finished GA products.

3.7 Plastics

"Plastics" are materials and raw materials composed of synthetic high-molecular polymers.
More specifically, "plastics" mainly means articles composed of synthetic high-molecular polymers, including resins, films, adhesives, adhesive tapes, (injection) molding products, and products made of synthetic rubber.
When a natural resin is synthesized with any of the above articles, the synthetic substance is also classified as plastic.

3.8 Packaging Materials

"Packaging Materials" are materials used for the containment, protection, handling, delivery and presentation of products from the producer to the users, consumers or customers.

3.9 Management Level

"Management Level" is to manage hazardous substances, the following three levels are used.

(a) Level 1

The substances and/or their applications classified at this level are not intentionally added and the application must be banned immediately.

(b) Level 2

The substances and/or their applications classified at this level should be disclosed all information before a certain time and will be prohibited thereafter.

On or after the Implementation Date set in each table, the substances in the respective table will be classified at Level 1 and must not be used in modules, parts, sub-materials, and materials.

(c) Level 3

In order to monitor the use of hazardous substances in products, the information of substances classified at this level should be disclosed(reportable) when these substances are intentionally used in modules, parts, sub-materials, and materials. They shall be classified into Level 2 and to be banned in phases, depending on the availability of alternative parts, new materials or techniques that satisfy the intended application in modules, parts, sub-materials, and materials according to

ASUS’ judgment.

3.10 Exemption

“Exemption” means the application in modules, parts, sub-materials and materials not regulated by law or excluded from "the controlled substances" due to the unavailability of adequate alternative parts and materials on the market but could satisfy the intended application.

3.11 Target

“Target” is an object or an application restricted according to the defined "Management Level."

3.12 Implementation Date

”Implementation Date” is the date on or after which ASUS won’t accept the modules, parts sub-materials and materials.

4. Management Standards for The Hazardous Substances

4.1 The Hazardous Substances

Table 1 List of The Hazardous Substances

Hazardous Substances	
Heavy metals	Cadmium (Cd) and cadmium compounds
	Lead (Pb) and lead compounds
	Mercury (Hg) and mercury compounds
	Hexavalent chromium (Cr^{6+}) compounds
	Nickel (Ni) and nickel compounds
	Arsenic (As) and arsenic compounds
	Beryllium(Be) and beryllium compounds
	Antimony(Sb) and antimony compounds
	Bismuth(Bi) and Bismuth compounds
	Cobalt (Co) and Cobalt compounds
Brominated organic compounds	Polybrominated biphenyls (PBBs)
	Polybrominated diphenylethers (PBDEs)
	Tetrabromodiphenyl ether, Pentabromodiphenyl ether, Hexabromodiphenyl ether, Heptabromodiphenyl ether
	Tetrabromobisphenol-A (TBBP-A)
	Hexabromocyclododecane (HBCDD)
	Brominated Flame Retardants (BFRs)
	Other brominated organic compounds
Chlorinated organic compounds	Polychlorinated biphenyls (PCB), Polychlorinated naphthalenes (PCN), Polychlorinated terphenyls (PCT)
	Chlorinated paraffins (CP)
	Polyvinyl chloride (PVC) and PVC blends
	Chlorinated Flame Retardants (CFRs)
	Hexachlorobutadiene (HCBD)
	Tetrachlorobenzenes (TeCB)
	Other chlorinated organic compounds
Organic tin compounds [including Tributyl tin (TBTs) compounds, Triphenyl tin(TPTs) compounds, Dibutyl tin(DBT) compounds, Dioctyl tin(DOT) compounds and Tributyl tin Oxide(TBTO) compounds]	
Other organic tin compounds [excluding Tributyl tin (TBTs) compounds, Triphenyl tin(TPTs) compounds, Dibutyl tin(DBT) compounds, Dioctyl tin(DOT) compounds and Tributyl tin Oxide(TBTO) compounds]	
Specific Azo compounds	
Asbestos	
Formaldehyde	
Expanded Polystyrene (EPS)	
Ozone depleting substances (ODS)	
Radioactive substances	
Halogenated diphenyl methanes	
Perfluorooctane sulfonates (PFOS)	

Perfluorooctyl acid (PFOA) and individual salts and esters of PFOA
Phthalates (including Diisononyl phthalate (DINP), Diisodecyl phthalate (DIDP), Di-n-octyl Phthalate (DNOP))
Bis(2-ethylhexyl)phthalate (DEHP)
Benzyl butyl phthalate (BBP)
Dibutyl phthalate (DBP)
Diisobutyl phthalate (DIBP)
Other phthalate and its compound
Bisphenol-A
Fragrance substance (Musk xylene and Musk ketone)
Surfactants (DTDMAC, DODMAC(DSDMAC) and DHTDMAC)
Pentachlorophenol (PCP)
Triclosan
Dimethylfumarate (DMF)
Phenol,2-(2H-benzotriazol-2-yl)-4,6 bis(1,1-dimethylethyl)
Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulfur hexafluoride (SF6)
Polyaromatic Hydrocarbons (PAHs)
Selenium (Se) and Selenium compounds
Perchlorates
Red Phosphorous
Benzenamine, N-phenyl-, reaction products with styrene and 2,4,4-trimethylpentene (BNST)
Benzidine and benzidine dihydrochloride that have the molecular formulas $C_{12}H_{12}N_2$ and $C_{12}H_{12}N_2 \bullet 2HCl$, respectively
Tris(2-chloroethyl) phosphate (TCEP)
Tris(1,3-dichloro-2-propyl) phosphate (TDCPP)
Substance at nanoscale
Benzene
n-hexane
Nonylphenol(NP),Nonylphenol ethoxylate(NPEO)
Tris (2,3dibromopropyl) phosphate(TRIS)
Tris-(aziridinyl)phosphinoxide(TEPA)

4.2 The Restriction of Hazardous Substances

Cadmium (Cd) and cadmium compounds		
Targets		Implementation Date
Level 1	All applications except those classified at “Exemption”. Such as plastic materials (include rubbers), electronic parts (such as printed circuit board and parts), the applications of preventing rust on surfaces of plating for the metal and alloy portion of the modules or mechanical parts (such as screws, steel plates, heat-sink etc.). Packaging materials refer to section 4.3. Batteries refer to section 4.4.	Banned Immediately
Exemption	Refer to RoHS exemption.	
Allowable concentration: Less than 100 ppm.		
Measurement Equipment: ICP-OES, ICP-MS, or AAS	Testing Method: IEC 62321-5:2013	

Lead (Pb) and lead compounds		
Targets		Implementation Date
Level 1	All applications except those classified at “Exemption”. Such as plastic materials (include rubbers), electronic parts (such as printed circuit board and parts), the applications of preventing rust on surfaces of plating for the metal and alloy portion of the modules or mechanical parts (such as screws, steel plates, heat-sink etc.). Packaging materials refer to section 4.3. Batteries refer to section 4.4.	Banned Immediately
Exemption	Refer to RoHS exemption.	
Allowable concentration: Less than 1000 ppm. Less than 100 ppm for plastics (including rubber), paints, and inks.		
Measurement Equipment: ICP-OES, ICP-MS, or AAS	Testing Method: IEC 62321-5:2013	

Mercury (Hg) and mercury compounds		
Targets		Implementation Date
Level 1	All applications except those classified at “Exemption”. Such as plastic materials (include rubbers), electronic parts (such as printed circuit board and parts), the applications of preventing rust on surfaces of plating for the metal and alloy portion of the modules or mechanical parts (such as screws, steel plates, heat-sink etc.). Packaging materials refer to section 4.3. Batteries refer to section 4.4.	Banned Immediately
Exemption	Refer to RoHS exemption.	
Allowable concentration: Less than 1000 ppm.		
Measurement Equipment: CV-AAS, AFS, ICP-OES, or ICP-MS	Testing Method: IEC 62321-4:2013	

Hexavalent chromium (Cr^{6+}) compounds		
Targets		Implementation Date
Level 1	All applications such as plastic materials (include rubbers), electronic parts (such as printed circuit board and parts), the applications of preventing rust on surfaces of plating for the metal, alloy portion of the modules or mechanical parts (such as screws, steel plates, heat-sink etc.) and leather. Packaging materials refer to section 4.3.	Banned Immediately
Allowable concentration: according to the following test procedure measuring standard value.		
Measurement Equipment: UV-VIS Spectrophotometer		
Testing Method: 1) The metal portion of modules, mechanical parts (the exposed position including connector of the products after assembling), use IEC 62321 or ISO 3613 Spot-test procedure/Boiling-water-extraction procedure to execute the testing, and it's testing result must be "Negative" or "Not detected". Moreover, it is not acceptable to use EPA 3060A for parts with metal plating. 2) As for the electronic parts, plastic materials (including rubbers) etc., use EPA 3060A or IEC 62321 to execute the testing and the allowable concentration should be less than 1000 ppm. Following the testing method specified in the above pages, if the total quantity of Chromium is less than 1000 ppm, it also meets the concentration standard of hexavalent chromium. 3) Leather use EPA 3060A or IEC 62321 to execute the testing and the allowable concentration should be less than 3 ppm.		

Nickel (Ni) and Nickel compounds		
Targets		Implementation Date
Level 1	All applications which employ organic-nickel compounds (e.g. light stabilizer used in plastics). Metallic nickel or nickel alloy in the plating or coating application of the outer and exposed areas of modules or parts.	Banned Immediately
Level 3	All applications except those classified in level 1, such as： Modules and parts inside the products. Use non-environment controlled substance for the handling of the surface on the exposed position of the product. Under normal usage, modules and parts are not directly exposed after assembly to the product.	Reportable
Allowable concentration: Less than 1000 ppm. If using metallic nickel or nickel alloy as the plating or coating application of the outer and exposed areas of modules or parts etc., the release rate should less than 0.2 μg/cm^2/week.		

Arsenic (As) and Arsenic compounds		
Targets		Implementation Date
Level 1	Wooden materials.	Banned Immediately
Level 3	All applications (e.g. semiconductor materials).	Reportable
Allowable concentration: Less than 100 ppm.		

Beryllium (Be) and Beryllium compounds		
Targets		Implementation Date
Level 1	All applications.	Banned Immediately
Allowable concentration: Less than 1000 ppm.		

Antimony (Sb) and Antimony compounds		
Targets		Implementation Date
Level 1	All outer and exposed areas of modules or parts.	Banned Immediately
Level 3	All applications except those classified in level 1, such as Modules and parts which inside the products.	Reportable
Exemption	The glass's components	
Allowable concentration: Less than 1000 ppm and Antimony Trioxide less than 1000 ppm.		

Bismuth (Bi) and Bismuth compounds		
Targets		Implementation Date
Level 3	All applications.	Reportable
Allowable concentration: Less than 1000 ppm.		

Cobalt (Co) and Cobalt compounds		
Targets		Implementation Date
Level 3	All applications.	Reportable
Allowable concentration: Less than 1000 ppm.		

Polybrominated biphenyls (PBBs)		
Targets		Implementation Date
Level 1	All applications e.g. textile, flame retardants contained in plastics. Note: Hexabromobiphenyl also belongs to the banned substances.	Banned Immediately
Allowable concentration: Less than 1000 ppm. Hexabromobiphenyl must be Not detected. Not detected for textile.		
Measurement Equipment: GC/MS	Testing Method: IEC 62321	

Polybrominated diphenylethers (PBDEs)		
Targets		Implementation Date
Level 1	All applications.	Banned Immediately
Allowable concentration: Less than 1000 ppm.		
Measurement Equipment: GC/MS	Testing Method: IEC 62321	

Tetrabromodiphenyl ether, Pentabromodiphenyl ether, Hexabromodiphenyl ether, Heptabromodiphenyl ether		
Targets		Implementation Date
Level 1	All applications except electrical and electronic product (e.g. leather, textile r).	Banned Immediately
Allowable concentration: Less than 10 ppm.		

Tetrabromobisphenol-A (TBBP-A)		
Targets		Implementation Date
Level 1	All applications except classified as Level 3.	Banned Immediately
Level 3	PCB, IC package, cable and connector.	Reportable
Allowable concentration: Less than 1000 ppm.		

Hexabromocyclododecane (HBCDD)		
Targets		Implementation Date
Level 1	All applications.	Banned Immediately
Allowable concentration: Less than 100 ppm.		

Brominated Flame Retardants (BFRs)		
Targets		Implementation Date
Level 1	Following parts and applies in products: Mechanical plastic parts above 25 grams, IC, CPU, Resistor, Inductor, packaging materials, ink, paint	Banned Immediately
Level 3	All applications except classified as Level 1. (e.g. those for the flame retardants contained in printed circuit board).	Reportable
Allowable concentration: Less than 1000 ppm.		

Other brominated organic compounds		
Targets		Implementation Date
Level 3	All applications. (e.g. Other applies except flame retardants.)	Reportable
Allowable concentration: Less than 1000 ppm.		

Polychlorinated biphenyls (PCB), Polychlorinated naphthalenes (PCN), Polychlorinated terphenyls (PCT)		
Targets		Implementation Date
Level 1	All applications (e.g. ones for capacitors, lubricants, insulating oils, transformers containing oil, and flame retardants contained in plastics).	Banned Immediately
Allowable concentration: Not detected.		

Chlorinated paraffins (CP)		
Targets		Implementation Date
Level 1	All applications of SCCP(Short-chain chlorinated paraffins with the alkanes C10-C13, Cl = 48 wt% or more).	Banned Immediately
Level 2	All applications of MCCP(Medium-chain chlorinated paraffins with the alkanes C14-17).	2020/1/1
Level 3	All applications of LCCP(Long-chain chlorinated paraffins with the alkanes over C18).	Reportable
Allowable concentration: (1) Not detected for SCCP. (2) Less than 1000 ppm for MCCP and LCCP.		

Polyvinyl chloride (PVC) and PVC blends		
Targets		Implementation Date
Level 1	All applications (e.g. Vinyl ties, heat shrink tubes, packaging materials) except connectors and cables.	Banned Immediately
Level 2	Connectors	2019/1/1
Level 3	Cables(wires)	Reportable
Allowable concentration: Not detected.		

Chlorinated Flame Retardants (CFRs)		
Targets		Implementation Date
Level 1	Following parts and applies in products: Mechanical plastic parts above 25 grams, IC, CPU, Resistor, Inductor, packaging materials, ink, paint	Banned Immediately
Level 3	All applications except classified as Level 1.	Reportable
Allowable concentration: Less than 1000 ppm.		

Hexachlorobutadiene (HCBD)		
Targets		Implementation Date
Level 1	All applications.	Banned Immediately
Allowable concentration: Not detected.		

Tetrachlorobenzenes (TeCB)		
Targets		Implementation Date
Level 1	All applications.	Banned Immediately
Allowable concentration: Not detected.		

Other chlorinated organic compounds		
Targets		Implementation Date
Level 3	All applications. (e.g. Other applies except flame retardants.)	Reportable
Allowable concentration: Less than 1000 ppm.		

Organic tin compounds [including Tributyl tin (TBTs) compounds, Triphenyl tin(TPTs) compounds, Dibutyl tin(DBT) compounds, Dioctyl tin(DOT) compounds and Tributyl tin Oxide(TBTO) compounds]		
Targets		Implementation Date
Level 1	All applications (e.g. those for paints, inks, preservatives, and fungicides).	Banned Immediately
Allowable concentration: Not detected.		

Other organic tin compounds [excluding Tributyl tin (TBTs) compounds, Triphenyl tin(TPTs) compounds, Dibutyl tin(DBT) compounds, Dioctyl tin(DOT) compounds and Tributyl tin Oxide(TBTO) compounds]		
Targets		Implementation Date
Level 3	All applications (e.g. environmentally friendly flame retardant).	Reportable
Allowable concentration: Less than 1000 ppm.		

Specific Azo compounds [Note1]		
Targets		Implementation Date
Level 1	All applications (e.g. leather, textiles, packaging materials, ear phones, head phones).	Banned Immediately
Allowable concentration: Not detected.		

Note 1: List of the amines that must not be produced when azo compounds are decomposed.

CAS No.	Amines
92-67-1	4-aminodiphenyl
92-87-5	Benzidine
95-69-2	4-chloro-o-toluidine
91-59-8	2-naphthylamine
97-56-3	o-aminoazotoluene
99-55-8	2-amino-4-nitrotoluene
106-47-8	p-chroloaniline
615-05-4	2,4-diaminoanisole
101-77-9	4,4’-diaminodiphenylmethane
91-94-1	3,3’-dichlorobenzidine
119-90-4	3,3’-dimethoxybenzidine
119-93-7	3,3’-dimethylbenzidine
838-88-0	3,3’-dimethyl-4,4’-diaminodiphenylmethane

120-71-8	p-cresidine
101-14-4	4,4’-methylene-bis-(2-chloroanilene)
101-80-4	4,4’-oxideaniline
139-65-1	4,4’-thiodianiline
95-53-4	o-toluidine
95-80-7	2,4-toluylenediamine
137-17-7	2,4,5-trimethylamine
90-04-0	4-anisidine
60-09-3	4-aminoazobenzene

Asbestos		
Targets		Implementation Date
Level 1	All applications.	Banned Immediately
Allowable concentration: Not detected.		

Formaldehyde		
Targets		Implementation Date
Level 1	Wooden material, textiles and leathers	Banned Immediately
Level 3	All applications except those classified in level 1.	Reportable
Exemption	Pallet.	
Allowable concentration: (1) Wooden material(emission content): Not detected (2) Less than 75 ppm of textiles and leathers. (3) Less than 75 ppm of Level 3.		

EPS (Expanded Polystyrene)		
Targets		Implementation Date
Level 1	All packing materials sold to South Korea.	Banned Immediately
Level 3	All applications except classified as Level 1.	Reportable
Allowable concentration: Not detected		

Ozone depleting substances (ODS) [Chlorofluorocarbons (CFCs), Halon, Carbon tetrachloride (CCl_4), 1,1,1 trichloroethane ($C2H_3Cl_3$), Bromochloromethane (CH_2BrCl), Methyl bromide (CH_3Br), Hydrochlorofluorocarbons (HCFCs) and Hydrobromofluorocarbons (HBFCs)]		
Targets		Implementation Date
Level 1	All applications.	Banned Immediately
Allowable concentration: Not detected		

Radioactive substances [Uranium (U), Plutonium (Pu), Radon (Rn), Americium (Am), Thorium (Th) , Cesium(Cs) , Strontium (Sr) and other radioactive substances]		
Targets		Implementation Date
Level 1	All applications.	Banned Immediately
Allowable concentration: Not detected		

Halogenated diphenyl methanes Note2		
Targets		Implementation Date
Level 1	All applications (e.g. ones for capacitors, lubricants, insulating oils, transformers containing oil).	Banned Immediately
Allowable concentration: Not detected		

Note 2: List of the Halogenated diphenyl methanes

CAS No.	Abbreviation	Halogenated diphenyl methanes
76253-60-6	Ugilec 141	Monomethyltetrachlorodiphenylmethane
81161-70-8	Ugilec 121	Monomethyldichlorodiphenylmethane
99688-47-8	DBBT	Monomethyldibromodiphenylmethane

Perfluorooctane sulfonates (PFOS)		
Targets		Implementation Date
Level 1	All applications (e.g. semiconductor materials, textiles, leathers) except those classified at “Exemption”.	Banned Immediately
Exemption	Mist suppressants for nondecorative hard chromium (VI) plating and wetting agents for use in controlled electroplating systems.	
Allowable concentration: (1) In preparations: Less than 10 ppm. (2) In parts, components, or products: Less than 1000 ppm. (3) Textile or other coated materials: Less than 1 μg/m^2		

Substances: Perfluorooctyl acid (PFOA) and individual salts and esters of PFOA		
Targets		Implementation Date
Level 1	All applications except those classified at “Exemption” (e.g. Teflon, textiles, leathers).	Banned Immediately
Exemption	In spare parts for EEE placed on the market before June 1, 2014.	
Allowable concentration: (1) In pure substances and mixtures: Less than 10 ppm (2) In textiles or coated materials: Less than 1.0 μg/m^2 (3) In parts, components, or products: Less than 1000 ppm		

Phthalate [including Diisononyl phthalate (DINP), Diisodecyl phthalate (DIDP), and Di-n-octyl Phthalate (DNOP)]		
Targets		Implementation Date
Level 1	All applications except connectors and cables.	Banned Immediately
Level 3	Cables and Connectors	Reportable
Allowable concentration: Total concentration of Diisononyl phthalate (DINP), Diisodecyl phthalate (DIDP), Di-n-octyl Phthalate (DNOP) less than 1000 ppm.		

Bis(2-ethylhexyl)phthalate (DEHP)		
Targets		Implementation Date
Level 1	All applications.	Banned Immediately
Allowable concentration: Less than 1000 ppm.		

Benzyl butyl phthalate (BBP)		
Targets		Implementation Date
Level 1	All applications	Banned Immediately
Allowable concentration: Less than 1000 ppm.		

Dibutyl phthalate (DBP)		
Targets		Implementation Date
Level 1	All applications.	Banned Immediately
Allowable concentration: Less than 1000 ppm.		

Diisobutyl phthalate (DIBP)		
Targets		Implementation Date
Level 1	All applications.	Banned Immediately
Allowable concentration: Less than 1000 ppm.		

Other phthalate and its compound [Note3]		
Targets		Implementation Date
Level 3	All applications.	Reportable
Allowable concentration: Less than 1000 ppm.		

Note 3: List of the amines that must not be produced when azo compounds are decomposed.

CAS No.	Abbreviation	Amines
84-66-2	DEP	Diethyl phthalate
131-11-3	DMP	Dimethyl phthalate

84-75-3	DnHP	Di-N-hexyl phthalate
71888-89-6	DIHP	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters,C7-rich
68515-51-5 68648-93-1	-	1,2-Benzenedicarboxylic acid, di-C6-10-alkyl esters; 1,2-Benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with ≥ 0.3% of dihexyl phthalate
68515-42-4	DHNUP	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters
84777-06-0	DPP	1,2-Benzenedicarboxylic acid, dipentylester, branched and linear
117-82-8	DMEP	Bis(2-methoxyethyl) phthalate
131-18-0	DnPP	Di-n-pentyl phthalate
776297-69-9	nPIPP	n-Pentyl-isopentyl phthalate
605-50-5	DIPP	Diisopenthyl phthalate
53306-54-0	DPrHP	Bis(2-propylheptyl) phthalate
68515-50-4	-	1,2-Benzenedicarboxylic acid, dihexylester, branched and linear
-	-	Other phthalate

Bisphenol-A		
Targets		Implementation Date
Level 3	All applications (e.g.epoxy resin, polycarbonate and other plastics).	Reportable
Allowable concentration: Less than 50 ppm.		

Fragrance substance [Musk xylene and Musk ketone]		
Targets		Implementation Date
Level 3	All applications (e.g. essence).	Reportable
Allowable concentration: Less than 500 ppm for Musk xylene and Musk ketone		

Surfactants [DTDMAC, DODMAC (DSDMAC) and DHTDMAC] Note4		
Targets		Implementation Date
Level 3	All applications (e.g. softener).	Reportable
Allowable concentration: The total concentration of all surfactants (DTDMAC, DODMAC(DSDMAC) and DHTDMAC) is less than 1000 ppm.		

Note 4: List of the Surfactants

CAS No.	Abbreviation	Surfactants
68783-78-8	DTDMAC	Dimethyl ditallow ammonium chloride
107-64-2	DODMAC(DSDMAC)	Dioctyldimethylammonium chloride/ Distearyldimethylammoniumchloride
61789-80-8	DHTDMAC	Dihydrogenated tallow dimethylammonium chloride

Pentachlorophenol (PCP)		
Targets		Implementation Date
Level 3	All applications (e.g. preservative and pesticide).	Reportable
Allowable concentration: Less than 5 ppm.		

Triclosan		
Targets		Implementation Date
Level 3	All applications (e.g. antibacterial and pesticide).	Reportable
Allowable concentration: Less than 10 ppm.		

Dimethylfumarate (DMF)		
Targets		Implementation Date
Level 1	All applications (e.g. preservative).	Banned Immediately
Allowable concentration: Less than 0.1 ppm.		

(Phenol,2-(2H-benzotriazol-2-yl)-4,6 bis(1,1-dimethylethyl))		
Targets		Implementation Date
Level 1	All applications.	Banned Immediately
Allowable concentration: Not detected		

Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulfur hexafluoride (SF6)		
Targets		Implementation Date
Level 1	All applications.	Banned Immediately
Allowable concentration: Not detected		

Polyaromatic Hydrocarbons (PAHs) Note[5]		
Targets		Implementation Date
Level 1	All outer and exposed areas of modules or parts	Banned Immediately
Level 3	All applications except those classified in level 1, such as Modules and parts which inside the products	Reportable
Allowable concentration: Benzo[a]pyrene, Benzo[e]pyrene, Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[j]fluoranthene, Benzo[k]fluoranthene, Chrysene, Dibenzo[a,h]anthracene, Benzo[g,h,i]perylene, Indeno[1,2,3-cd] pyrene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Pyrene, Anthracen, Fluoranthene, Naphthalene: Less than 1 ppm of each PAHs		

Note 5: List of Polyaromatic Hydrocarbons(PAHs)

CAS No.	Abbreviation	Polyaromatic Hydrocarbons
208-96-8	AcPy	Acenaphthylene
83-32-9	Acp	Acenaphthene
120-12-7	Ant	Anthracen
56-55-3	BaA	Benzo[a]anthracen
205-99-2	BbF	Benzo[b]fluoranthen
205-82-3	BjFA	Benzo[j]fluoranthene
207-08-9	BkF	Benzo[k]fluoranthene
191-24-2	BghiP	Benzo[g,h,i]perylene
50-32-8	BaP	Benzo[a]pyrene
192-97-2	BeP	Benzo[e]pyrene
218-01-9	CHR	Chrysene
53-70-3	DBA	Dibenz[a,h]anthracene
206-44-0	FL	Fluoranthene
86-73-7	Flu	Fluorene
193-39-5	IND	Indeno[1,2,3-cd]pyrene
91-20-3	Nap	Naphthalene
85-01-8	PA	Phenanthrene
129-00-0	Pyr	Pyrene

Selenium (Se) and Selenium compounds		
Targets		Implementation Date
Level 3	All applications.	Reportable
Allowable concentration: Less than 1000 ppm.		

Perchlorates		
Targets		Implementation Date
Level 3	All applications.	Reportable
Allowable concentration: Less than 0.006 ppm.		

Red Phosphorous		
Targets		Implementation Date
Level 1	AC power cord and plastic in contact with conductor	Banned Immediately
Level 3	All applications except classified as Level 1.	Reportable
Allowable concentration: Not detected.		

Benzenamine, N-phenyl-, reaction products with styrene and 2,4,4-trimethylpentene (BNST)		
Targets		Implementation Date
Level 1	All applications.	Banned Immediately
Allowable concentration: Not detected.		

Benzidine and benzidine dihydrochloride that have the molecular formulas $C_{12}H_{12}N_2$ and $C_{12}H_{12}N_2 \bullet 2HCl$, respectively		
Targets		Implementation Date
Level 1	All applications.	Banned Immediately
Allowable concentration: Not detected.		

Tris(2-chloroethyl) phosphate (TCEP)		
Targets		Implementation Date
Level 1	All applications.	Banned Immediately
Allowable concentration: Less than 1000 ppm.		

Tris(1,3-dichloro-2-propyl) phosphate (TDCPP)		
Targets		Implementation Date
Level 1	All applications.	Banned Immediately
Allowable concentration: Less than 1000 ppm.		

Substance at nanoscale		
Targets		Implementation Date
Level 3	All applications.	Reportable
Allowable concentration: Less than 100 g.		

Benzene		
Targets		Implementation Date
Level 1	All applications.	Banned Immediately
Allowable concentration: Less than 1000 ppm.		

n-hexane		
Targets		Implementation Date
Level 1	All applications.	Banned Immediately
Allowable concentration: Less than 1000 ppm.		

Nonylphenol (NP) and Nonylphenol ethoxylate (NPEO)		
Targets		Implementation Date
Level 1	Leathers and textiles.	Banned Immediately
Allowable concentration: Not detected		

Tris (2,3dibromopropyl) phosphate (TRIS)		
Targets		Implementation Date
Level 1	Leathers.	Banned Immediately
Allowable concentration: Not detected		

Tris-(aziridinyl)phosphinoxide (TEPA)		
Targets		Implementation Date
Level 1	Leathers.	Banned Immediately
Allowable concentration: Not detected		

4.3 Additional Rules for Heavy Metals in Packaging Materials

Packaging materials not only need to comply with section 4.2 restrictions, but also have to meet requirements for four heavy metals in Table 2.

Table 2 The Restriction of Heavy Metals in Packaging Materials

Mercury (Hg), Cadmium (Cd), Lead (Pb), and Hexavalent Chromium (Cr^{6+})		
Targets		Implementation Date
Level 1	All packaging materials (excluding applications listed as exemptions), including but not limited to the packaging materials listed in Table 3.	Banned Immediately
Exemption	Packaging materials disposed or recycled/reused by suppliers.	
Allowable concentrations: "Less than 100 ppm" is determined as an allowable total-concentration of four heavy metals contained in each part, ink, or paint that constitutes a package.		
Measurement equipment and testing method: Refer to cadmium, lead, mercury, chromium and hexavalent chromium of section 4.2. If any other measurement method can guarantee that the Method Detection Limit (MDL) is equal or less than 5 ppm in each heavy metal, it can be recognized as an acceptable measurement for the packaging materials.		

Table 3 Packaging Materials List

No.	Packaging Materials	Description
1	Carton	All kinds of carton made from any material, such as master carton, sub-master and gift box.
2	Cushion	
3	Protection bag/sheet	Blister packs, EPE (Expanded Polyethylene), and those made from foamed plastic or non-woven fabric
4	Poly bag	Such as PE (Polyethylene) bag and ESD bag
5	Envelope	Such as used for certificate or warranty card
6	Tray	Tray, vacuum formed sponge
7	Film	Including protection films such as used for the LCD displays
8	Model number label	
9	Separator/Spacer/Partition	Such as paper, EPE, and EPS (Expanded Polystyrene)
10	Printing ink	Such as used for printing on packaging materials
11	Tape	Such as used for closing carton or poly bag, or, fixing or protection for removable component.
12	Staple	Such as the applications for carton spiking
13	Label	Such as bar-code labels, safety marks or warning signals stuck on the packaging component
14	Joint	Carton joint
15	Binding band	Such as PP (Polypropylene) band
16	Pallet	Such as wooden pallet and plastic pallet
17	Carrying handle	
18	Color sleeve	Such as printed paper or PET (Polyethylene Terephthalate)
19	Shrink film	

4.4 Additional Rules for Heavy Metals in Batteries

Batteries not only need to comply with section 4.2 restrictions, but also have to meet requirements for four heavy metals in Table 4.

Table 4 The Restriction of Heavy Metal in Batteries

Cadmium (Cd), Lead (Pb), Mercury (Hg)			
Targets			Implementation Date
Level 1	Cadmium (Cd)	The concentration does not exceed 0.001 % of the total weight of batteries and battery pack.	Banned Immediately
	Lead (Pb)[Note 6]	The concentration does not exceed 0.004 % of the total weight of batteries and battery pack. Small size sealed Pb acid battery is prohibited.	
	Mercury (Hg)	The concentration does not exceed 0.0001 % of the total weight of batteries and battery pack. Mercuric oxide battery/cell is prohibited.	
	Note 6: Lead which are used for plastics (including rubber), paints, and inks and which are classified at level 1 in section 4.2, are subject to the corresponding regulations. If Pb exceeds 0.004 %, the product needs to comply with the label requirement defined in 2006/66/EC.		
Measurement Equipment: For cadmium, lead, mercury, refer to section 4.2. Testing Method: For cadmium, lead, mercury, refer to section 4.2 or GB/T 20155-2006 , NIEA R315 If choose IEC62321 to test the battery, the Method Detection Limit (MDL) should be: (1) Less than 5 ppm for lead; (2) Less than 2 ppm for cadmium; (3) Less than 1 ppm for mercury.			

4.5 EU REACH Regulation

REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) Regulation (EC) No 1907/2006 is a chemical regulatory framework of the European Union and it entered into force on 1 June 2007. The control measures include: registration, evaluation, authorization, information disclosure, etc. In order to comply with REACH, ASUS has the following approaches:

(a) ASUS will continue to survey the modules, parts, sub-materials, and materials of GA products to see if they have the Substance of Very High Concern (SVHC)[Note 7]. Please see Table 5 for the current latest candidate list maintained by ASUS. If the substances listed in Table 5 are also shown in section 4.2, please follow section 4.2 requirement.

Table 5 REACH SVHC candidate list

Item	Level/Category		Substance name	CAS No.
1	Level I/III	PAHs	Anthracene	120-12-7
2	Level I	Azo	4,4'- Diaminodiphenylmethane (MDA)	101-77-9
3	Level I	DBP	Dibutyl phthalate (DBP)	84-74-2
4	Level III	Co	Cobalt dichloride	7646-79-9
5	Level III	As	Diarsenic pentaoxide	1303-28-2
6	Level III	As	Diarsenic trioxide	1327-53-3
7	Level I	Cr^{6+}	Sodium dichromate	10588-01-9, 7789-12-0
8	Level III	Fragrance substance	5-tert-butyl-2,4,6-trinitro-m-xylene (Musk xylene)	81-15-2
9	Level I	DEHP	Bis (2-ethylhexyl)phthalate (DEHP)	117-81-7
10	Level I	HBCDD	Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified	-
			Hexabromocyclododecane	25637-99-4
			1,2,5,6,9,10-hexabromocyclodecane	3194-55-6
			alpha-hexabromocyclododecane	134237-50-6
			beta-hexabromocyclododecane	134237-51-7
			gamma-hexabromocyclododecane	134237-52-8
11	Level I	SCCP	Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8
12	Level I	TBTO	Bis(tributyltin) oxide (TBTO)	56-35-9
13	Level I	Pb	Lead hydrogen arsenate	7784-40-9
14	Level I	BBP	Benzyl butyl phthalate (BBP)	85-68-7
15	Level III	As	Triethyl arsenate, Triethylarsenate	15606-95-8
16	Level I/III	PAHs	Anthracene oil, Anthraceneoil	90640-80-5
17	Level I/III	PAHs	Anthracene oil, anthracene paste, distn. lights, Anthraceneoil,anthracenepaste,distn.lights	91995-17-4
18	Level I/III	PAHs	Anthracene oil, anthracene paste, anthracene fraction, Anthraceneoil,anthracenepaste,anthracenefraction	91995-15-2
19	Level I/III	PAHs	Anthracene oil, anthracene-low, Anthraceneoil,anthracene-low	90640-82-7
20	Level I/III	PAHs	Anthracene oil, anthracene paste, Anthraceneoil,anthracenepaste	90640-81-6

21	Level III	SVHC	Pitch, coal tar, high-temp	65996-93-2
22	Level III	SVHC	Aluminosilicate Refractory Ceramic Fibres are 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, and fulfil the three following conditions: a) oxides of aluminium and silicon are the main components present (in the fibres) within variable concentration ranges b) fibres have a length weighted geometric mean diameter less two standard geometric errors of 6 or less micrometres (μm) c) alkaline oxide and alkali earth oxide (Na2O+K2O+CaO+MgO+BaO) content less or equal to 18% by weight	-
23	Level III	SVHC	Zirconia Aluminosilicate Refractory Ceramic Fibres are 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, and fulfil the three following conditions: a) oxides of aluminium, silicon and zirconium are the main components present (in the fibres) within variable concentration ranges b) fibres have a length weighted geometric mean diameter less two standard geometric errors of 6 or less micrometres (μm). c) alkaline oxide and alkali earth oxide (Na2O+K2O+CaO+MgO+BaO) content less or equal to 18% by weight	-
24	Level III		2,4-dinitrotoluene (2,4-DNT)	121-14-2
25	Level I	DIBP	Diisobutyl phthalate (DIBP)	84-69-5
26	Level I	Pb	Lead chromate	7758-97-6
27	Level I	Pb	Lead chromate molybdate sulphate red (C.I. Pigment Red 104), Leadchromatemolybdatesulphatered(C.I.PigmentRed104)	12656-85-8
28	Level I	Pb	Lead sulfochromate yellow (C.I. Pigment Yellow 34), Leadsulfochromateyellow(C.I.PigmentYellow34)	1344-37-2
29	Level I	TCEP	Tris(2-chloroethyl) phosphate (TCEP)	115-96-8
30	Level III	SVHC	Acrylamide	79-06-1
31	Level III	SVHC	Trichloroethylene	79-01-6
32	Level III	SVHC	Boric acid	-
			Boric acid, crude natural	11113-50-1
			Boric acid	10043-35-3
33	Level III	SVHC	Disodium tetraborate, anhydrous	12179-04-3, 1303-96-4, 1330-43-4
34	Level III	SVHC	Tetraboron disodium heptaoxide, hydrate	12267-73-1
35	Level I	Cr^{6+}	Sodium chromate	7775-11-3
36	Level I	Cr^{6+}	Potassium chromate	7789-00-6
37	Level I	Cr^{6+}	Ammonium dichromate	7789-09-5
38	Level I	Cr^{6+}	Potassium dichromate	7778-50-9
39	Level III	Co	Cobalt(II) sulphate	10124-43-3
40	Level III	Co	Cobalt(II) dinitrate	10141-05-6
41	Level III	Co	Cobalt(II) carbonate	513-79-1
42	Level III	Co	Cobalt(II) diacetate	71-48-7
43	Level III	SVHC	2-methoxyethanol	109-86-4
44	Level III	SVHC	2-ethoxyethanol	110-80-5
45	Level I	Cr^{6+}	Chromium trioxide	1333-82-0

46	Level I	Cr^{6+}	Acids generated from chromium trioxide and their oligomers	-
			Dichromic acid	7738-94-5
			Chromic acid	13530-68-2
			Oligomers of chromic acid and dichromic acid	-
47	Level III	SVHC	2-ethoxyethyl acetate	111-15-9
48	Level I	Cr^{6+}	Strontium chromate	7789-06-2
49	Level III	phthalate	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	68515-42-4
50	Level III	SVHC	Hydrazine	302-01-2, 7803-57-8
51	Level III	SVHC	1-Methyl-2-pyrrolidone (NMP)	872-50-4
52	Level III	SVHC	1,2,3-trichloropropane	96-18-4
53	Level III	phthalate	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP)	71888-89-6
54	Level III	As	Calcium arsenate	7778-44-1
55	Level III	SVHC	Bis(2-methoxyethyl) ether	111-96-6
56	Level III	SVHC	Potassium hydroxyoctaoxodizincatedichromate	11103-86-9
57	Level I	Pb	Lead dipicrate	6477-64-1
58	Level III	SVHC	N,N-dimethylacetamide (DMAC)	127-19-5
59	Level III	As	Arsenic acid	7778-39-4
60	Level I	Azo	2-Methoxyaniline, o-Anisidine	90-04-0
61	Level I	Pb	Trilead diarsenate	3687-31-8
62	Level III	SVHC	1,2-dichloroethane (EDC)	107-06-2
63	Level III	SVHC	Pentazinc chromate octahydroxide	49663-84-5
64	Level I/III	Formaldehyde	Formaldehyde, oligomeric reaction products with aniline	25214-70-4
65	Level III	phthalate	Bis(2-methoxyethyl) phthalate	117-82-8
66	Level III	SVHC	4-(1,1,3,3-tetramethylbutyl)phenol	140-66-9
67	Level I	Pb	Lead diazide, Lead azide	13424-46-9
68	Level III	SVHC	Phenolphthalein	77-09-8
69	Level III	SVHC	Dichromium tris(chromate)	24613-89-6
70	Level I	Pb	Lead styphnate	15245-44-0
71	Level I	Azo	2,2'-dichloro-4,4'-methylenedianiline (MOCA)	101-14-4
72	Level III	SVHC	1,2-bis(2-methoxyethoxy)ethane (TEGDME,triglyme)	112-49-2
73	Level III	SVHC	1,2-dimethoxyethane,ethylene glycol dimethyl ether (EGDME)	110-71-4
74	Level III	SVHC	Diboron trioxide	1303-86-2
75	Level III	SVHC	Formamide	75-12-7
76	Level I	Pb	Lead(II) bis(methanesulfonate), Lead(II)bis(methanesulfonate)	17570-76-2
77	Level III	SVHC	1,3,5-Tris(oxiran-2-ylmethyl)-1,3,5-triazinane-2,4,6-trione (TGIC)	2451-62-9
78	Level III	SVHC	1,3,5-tris[(2S and 2R)-2,3-epoxypropyl]-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione (β-TGIC), 1,3,5-tris[(2Sand2R)-2,3-epoxypropyl]-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione(β-TGIC)	59653-74-6
79	Level III	Fragrance substance	4,4'-bis(dimethylamino)benzophenone (Michler’s ketone)	90-94-8
80	Level III	SVHC	N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler’s base)	101-61-1
81	Level III	SVHC	[4-[[4-anilino-1-naphthyl][4-(dimethylamino)phenyl]methylene]cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride (C.I. Basic Blue 26)with ≥ 0.1% of Michler's ketone or Michler's base	2580-56-5

82	Level III	SVHC	[4-[4,4'-bis(dimethylamino) benzhydrylidene] cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride (C.I. Basic Violet 3)with ≥ 0.1% of Michler's ketone or Michler's base	548-62-9
83	Level III	SVHC	4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol with ≥ 0.1% of Michler's ketone or Michler's base	561-41-1
84	Level III	SVHC	α,α-Bis[4-(dimethylamino)phenyl]-4(phenylamino)naphthalene-1-methanol (C.I. Solvent Blue 4)with ≥ 0.1% of Michler's ketone or Michler's base	6786-83-0
85	Level I	PBDEs	Bis(pentabromophenyl) ether (decabromodiphenyl ether) (DecaBDE)	1163-19-5
86	Level III	SVHC	Pentacosafluorotridecanoic acid	72629-94-8
87	Level III	SVHC	Tricosafluorododecanoic acid	307-55-1
88	Level III	SVHC	Henicosafluoroundecanoic acid	2058-94-8
89	Level III	SVHC	Heptacosafluorotetradecanoic acid	376-06-7
90	Level III	SVHC	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (ADCA)	123-77-3
			Cyclohexane-1,2-dicarboxylic anhydride all possible combinations of the cis- and trans-isomers	-
			cis-cyclohexane-1,2-dicarboxylic anhydride	13149-00-3
			Cyclohexane-1,2-dicarboxylic anhydride	85-42-7
			trans-cyclohexane-1,2-dicarboxylic anhydride	14166-21-3
91	Level III	SVHC	Hexahydromethylphthalic anhydride including cis- and trans- stereo isomeric forms and all possible combinations of the isomers	-
			Hexahydro-4-methylphthalic anhydride	19438-60-9
			Hexahydro-3-methylphthalic anhydride	57110-29-9
			Hexahydro-1-methylphthalic anhydride	48122-14-1
			Hexahydromethylphthalic anhydride	25550-51-0
92	Level III	SVHC	4-Nonylphenol, branched and linear substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof	-
93	Level III	SVHC	4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated covering well-defined substances and UVCB substances, polymers and homologues	-
94	Level III	SVHC	Methoxyacetic acid	625-45-6
95	Level III	SVHC	N,N-dimethylformamide	68-12-2
96	Level I/III	DBT	Dibutyltin dichloride (DBTC)	683-18-1
97	Level I	Pb	Lead monoxide (lead oxide)	1317-36-8
98	Level I	Pb	Orange lead (lead tetroxide)	1314-41-6
99	Level I	Pb	Lead bis(tetrafluoroborate)	13814-96-5
100	Level I	Pb	Trilead bis(carbonate) dihydroxide	1319-46-6
101	Level I	Pb	Lead titanium trioxide	12060-00-3
102	Level I	Pb	Lead titanium zirconium oxide	12626-81-2
103	Level I	Pb	Silicic acid, lead salt	11120-22-2
104	Level I	Pb	Silicic acid (H2Si2O5), barium salt (1:1), lead-doped with lead (Pb) content above the applicable generic concentration limit for 'toxicity for reproduction' Repr. 1A (CLP) or category 1 (DSD),the substance is a member of the group entry of lead compounds, with index number 082-001-00-6 in Regulation (EC) No 1272/2008	68784-75-8
105	Level I	ODS	1-bromopropane (n-propyl bromide)	106-94-5
106	Level III	SVHC	Methyloxirane (Propylene oxide)	75-56-9
107	Level III	phthalate	1,2-Benzenedicarboxylic acid, dipentyl ester, branched and linear	84777-06-0
108	Level III	phthalate	Diisopentyl phthalate (DIPP)	605-50-5

109	Level III	phthalate	N-pentyl-isopentylphthalate	776297-69-9
110	Level III	SVHC	1,2-diethoxyethane	629-14-1
111	Level I	Pb	Acetic acid, lead salt, basic	51404-69-4
112	Level I	Pb	Lead oxide sulfate	12036-76-9
113	Level I	Pb	[Phthalato(2-)]dioxotrilead	69011-06-9
114	Level I	Pb	Dioxobis(stearato)trilead	12578-12-0
115	Level I	Pb	Fatty acids, C16-18, lead salts	91031-62-8
116	Level I	Pb	Lead cyanamidate	20837-86-9
117	Level I	Pb	Lead dinitrate	10099-74-8
118	Level I	Pb	Pentalead tetraoxide sulphate	12065-90-6
119	Level I	Pb	Pyrochlore, antimony lead yellow, Pyrochlore,antimonyleadyellow	8012-00-8
120	Level I	Pb	Sulfurous acid, lead salt, dibasic	62229-08-7
121	Level I	Pb	Tetraethyllead	78-00-2
122	Level I	Pb	Tetralead trioxide sulphate	12202-17-4
123	Level I	Pb	Trilead dioxide phosphonate	12141-20-7
124	Level III	SVHC	Furan	110-00-9
125	Level III	SVHC	Diethyl sulphate	64-67-5
126	Level III	SVHC	Dimethyl sulphate	77-78-1
127	Level III	SVHC	3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine	143860-04-2
128	Level III	SVHC	Dinoseb (6-sec-butyl-2,4-dinitrophenol)	88-85-7
129	Level I	Azo	4,4'-methylenedi-o-toluidine	838-88-0
130	Level I	Azo	4,4'-oxydianiline and its salts	101-80-4
131	Level I	Azo	4-aminoazobenzene	60-09-3
132	Level I	Azo	4-methyl-m-phenylenediamine (toluene-2,4-diamine)	95-80-7
133	Level I	Azo	6-methoxy-m-toluidine (p-cresidine)	120-71-8
134	Level I	Azo	Biphenyl-4-ylamine	92-67-1
135	Level I	Azo	o-aminoazotoluene	97-56-3
136	Level I	Azo	o-toluidine	95-53-4
137	Level III	SVHC	N-methylacetamide	79-16-3
138	Level I	Cd	Cadmium	7440-43-9
139	Level I	Cd	Cadmium oxide	1306-19-0
140	Level I	PFOA	Ammonium pentadecafluorooctanoate (APFO)	3825-26-1
141	Level I	PFOA	Pentadecafluorooctanoic acid (PFOA)	335-67-1
142	Level III	phthalate	Dipentyl phthalate (DPP)	131-18-0
143	Level III	SVHC	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	-
144	Level I	Cd	Cadmium sulphide	1306-23-6
145	Level III	SVHC	Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)] bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28)	573-58-0
146	Level III	SVHC	Disodium 4-amino-3-[[4'-[(2,4-diaminophenyl)azo] [1,1'-biphenyl]-4-yl]azo] -5-hydroxy-6-(phenylazo) naphthalene-2,7-disulphonate (C.I. Direct Black 38)	1937-37-7
147	Level III	phthalate	Dihexyl phthalate	84-75-3
148	Level III	SVHC	Imidazolidine-2-thione (2-imidazoline-2-thiol)	96-45-7

149	Level I	Pb	Lead di(acetate)	301-04-2
150	Level III	SVHC	Trixylyl phosphate	25155-23-1
151	Level I	Cd	Cadmium chloride	10108-64-2
152	Level III	SVHC	1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear	68515-50-4
153	Level III	SVHC	Sodium peroxometaborate	7632-04-4
154	Level III	SVHC	Sodium perborate, perboric acid, sodium salt	-
			Sodium perborate	15120-21-5
			Perboric acid, sodium salt	11138-47-9
155	Level I	Cd	Cadmium fluoride	7790-79-6
156	Level I	Cd	Cadmium sulphate	10124-36-4, 31119-53-6
157	Level I	UV-320	2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)	3846-71-7
158	Level III	SVHC	2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328)	25973-55-1
159	Level I/III	DOT	2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)	15571-58-1
160	Level III	SVHC	Reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate and 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (reaction mass of DOTE and MOTE)	-
161	Level III	phthalate	1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters; 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with ≥ 0.3% of dihexyl phthalate (EC No. 201-559-5)	68648-93-1, 68515-51-5
162	Level III	SVHC	5-sec-butyl-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [1], -sec-butyl-2-(4,6-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [2], covering any of the individual stereoisomers of [1] and [2] or any combination thereof	-
			5-sec-butyl-2-(4,6-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane	-
			5-sec-butyl-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane	-
163	Level III	SVHC	Nitrobenzene	98-95-3
164	Level III	SVHC	2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327)	3864-99-1
165	Level III	SVHC	2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350)	36437-37-3
166	Level III	SVHC	1,3-propanesultone	1120-71-4
167	Level III	SVHC	Perfluorononan-1-oic-acid and its sodium and ammonium salts	-
			Perfluorononan-1-oic-acid	375-95-1
			Sodium salts of perfluorononan-1-oic-acid	21049-39-8
			Ammonium salts of perfluorononan-1-oic-acid	4149-60-4
168	Level I/III	PAHs	Benzo[def]chrysene (Benzo[a]pyrene), Benzo[def]chrysene(Benzo[a]pyrene)	50-32-8
169	Level III	SVHC	4,4'-isopropylidenediphenol	80-05-7
170	Level III	SVHC	4-heptylphenol, branched and linear substances with a linear and/or branched alkyl chain with a carbon number of 7 covalently bound predominantly in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof	-
171	Level III	SVHC	Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts	335-76-2
			Ammonium nonadecafluorodecanoate	3108-42-7
172	Level III	SVHC	Decanoic acid, nonadecafluoro-, sodium salt	3830-45-3
173	Level III	SVHC	p-(1,1-dimethylpropyl)phenol	80-46-6

174	Level III	SVHC	Perfluorohexane-1-sulphonic acid and its salts	-

Note 7: The SVHC candidate list is continuously updated. There were 174 SVHCs announced till this technical standard latest reversion. Please visit http://echa.europa.eu/ for the latest Candidate List.

(b) In order to comply with dangerous substances of REACH, ASUS prohibits the substances listed in Appendix 17 of REACH to be used in the modules, parts, sub-materials, and materials in ASUS products since 2009. Please refer to Appendix 17 of REACH [Note 8] for substances and conditions of restriction. If the dangerous substances listed in Appendix 17 of REACH and also shown in section 4.2, please follow section 4.2 requirement.

Note 8: The dangerous substances list is continuously updated. There were 68 substances announced till this technical standard latest reversion. Please visit http://echa.europa.eu/ for the latest List.

4.6 Halogen-Free Requirement for Products

For meeting the environmental requirements, ASUS has been applied Halogen-Free Policy onto products since 2008. ASUS requires all modules, parts, sub-materials and materials of Halogen-Free Products to comply with both this Technical Standard and GreenASUS HALOGEN-FREE (HF) TECHNICAL STANDARD (S-AT2-003 (E)).

4.7 Eco Label Requirement for Products

In order to join the Green Procurement Program which is actively promoted by many countries and which encourages government agencies to use green products, ASUS requires all modules, parts, sub-materials and materials of Eco Label Products to comply with both this Technical Standard and GreenASUS ECO LABEL PRODUCT TECHNICAL STANDARD (S-AT2-004 (E))

4.8 Requirements of Conflict Minerals Management

Committing to corporate social responsibility, ASUS requests suppliers to provide Gold (Au), Tantalum (Ta), Tin (Sn), and Tungsten (W), materials often used in electronic products, not to be mined with illegal means, human rights violation, and poor work environments (hereinafter referred to as the “Conflict Minerals”).

ASUS establishes the management procedures of conflict minerals and requests suppliers to commit compliance via the following actions:

(a) Suppliers sign the "Consent of ASUSTeK Code of Conduct" to reasonably demonstrate no metals including Gold, Tantalum, Tin, and Tungsten used in their products which are made with minerals that directly or indirectly finance armed rebel groups in the Democratic Republic of the Congo and adjoining countries.

(b) Suppliers cooperate with the annual ASUS conflict minerals investigation and disclose the information regarding minerals’ resources, scope of usage, and smelter list using the Conflict Minerals Reporting Template (CMRT).

4.8.1 ASUS Conflict-Free Smelter Roadmap:

ASUS aggressively cooperates with suppliers to reduce the impact of conflict minerals through requiring suppliers to gradually increase the procurement of minerals from legal smelters.

(a) Since 2018, the procurements of Tantalum are all from conflict-free smelter.

(b) Since 2019, the procurements of Tungsten are all from conflict-free smelter.

(C) Since 2020, the procurements of Gold and Tin are all from conflict-free smelter.

5. Reference Document

(1) The order that electric apparatuses of European Union and electronic equipment endanger materials to restrain from (including the order of extending) and similar environmental regulations around the world.

Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment Directive (RoHS) 2011/65/EU, and the amending Directives, is abbreviated to “RoHS”.

(amending Annex II to Directive 2011/65/EU of the European Parliament and of the Council as regards the list of restricted substances)

(2) European Union packs and packs the offal order (including the order of extending) Packaging and Packaging Waste Directive 94/62/EC and the amending Directives.

(3) Destroy the substance of the ozonosphere and control the protocol in Montreal (including the amendment of extending)

Montreal Protocol (on Substances that Deplete the Ozone Layer) and the amendments.

(4) Norway Prohibition on Certain Hazardous Substances in consumer Products(POHS)(Draft)

(5) Batteries and Accumulators and Waste Batteries and Accumulators Directive 2006/66/EC (including the order of extending)

(DIRECTIVE 2013/56/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 November 2013)

(6) Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) (EC) No 1907/2006

(7) California Code of Regulation, Sections 93120-93120.12, Title 17

(8) DIRECTIVE 2005/84/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 14 December 2005

Phthalates in toys and childcare articles. Amending for the 22nd time Council Directive 76/769/EEC on the approximation of the laws, regulations and

administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations.

(9) Denmark's executive Order (BEK nr 1113)

Executive Order banning the import and sale of products for indoor use containing phthalates DEHP, DBP, BBP and DIBP, and items which parts of these substances can come into contact with skin or mucous membrane.

(10) Directive COMMISSION DECISION of 17 March 2009 requiring Member States to ensure that products containing the biocide dimethylfumarate are not placed or made available on the market (2009/251/EC)

(11) GreenASUS HALOGEN-FREE (HF) TECHNICAL STANDARD (S-AT2-003 (E))

(12) GreenASUS ECO LABEL PRODUCT TECHNICAL STANDARD (S-AT2-004 (E))

(13) HSF, Treatment and Marking Requirements for Pallet (P-GA3-019)

(14) Forbyr PFOA i norske forbrukerprodukter

(15) German GS Mark: Geprüfte Sicherheit (German safety standard)

(16) The Stockholm Convention on Implementing International Action on Certain: Persistent Organic Pollutants (POPs) (including the amendment of extending)

(17) Prohibition of Certain Toxic Substances Regulations, 2012 (SOR/2012-285)

(18) IEC 62474 - Material Declaration for Products of and for the Electrotechnical Industry

(19) United States. Vermont State. Prohibitions on Toxic Flame Retardants Act 85

(20) France Decree no. 2012-232 of 17 February 2012 on the annual declaration on substances at nanoscale in application of article R. 523-4 of the Environment code

(21) Chinese Standard GB 24427-2009 "Limitation of mercury, cadmium and lead contents for alkaline and non-alkaline zinc manganese dioxide batteries

(22) Conflict Minerals section to the Dodd-Frank Wall Street Reform and Consumer Protection Act

(23) The Consumer Product Safety Improvement Act (CPSIA)

(24) The Safe Drinking Water And Toxic Enforcement Act Of 1986 in California (CP65)

6. Appendix

No Appendix.