

Zhen Ding Technology Holding Limited

Chemical Substance Management

In 2021, we evaluated 15 sets of laws and regulations on hazardous substances, mainly regarding the 2 new substances in the list of substances with restricted use in Annex II of RoHS; the 24th and 25th update of EU's REACH (registration, evaluation, authorization, and restriction of chemicals) Candidate List on substances of very high concern (SVHC); the five persistent, bioaccumulative and toxic substances (PBT substances) that are subject to the Expedited Actions required by the U.S. Environmental Protection Agency (EPA). In response to the update of laws and regulations as mentioned above, Zhen Ding has organized timely self-inspection of relevant suppliers, and the investigation results show that the raw materials used by Zhen Ding can meet the requirements of various laws and regulations.

The Material Declaration (IEC 62474) standard was developed by the International Electrotechnical Commission for the Environmental Standardization for Electrical and Electronic Products and Systems (IEC/TC 111). The Material Declaration specifies the conditions that must be met by manufacturers and suppliers for material declarations, the materials to be declared, and a standardized data exchange format to increase the acceptability of material declarations within the global supply chain. Although Zhen Ding does not manage chemical substances in products according to the IEC 62474 specification framework, the chemical substances under our control are up to 98% consistent with the declared substances in the IEC 62474 specification list. The company has also made compliance with the IEC 62474 standard a priority in the supply chain management of declared substances and restricted substances in products, requiring suppliers to declare and return the declaration of hazardous substances form if the provided products or materials contain the regulated substances on the list. Currently, all products or materials supplied by our current suppliers are 100% compliant with the IEC 62474 list of regulated substances.

Chemical Regulatory Compliance

As of September 2022

Categories of Chemical Compliance	Number of Chemical Material	Control Items of Chemical
Restricted Substances in Products	114	RoHS 2.0, Chlorine and its compounds, Bromine and its compounds, Arsenic and its compounds, Beryllium and its compounds, Antimony and its compounds, Asbestos and its compounds, REACH Annex XVII, Azocolourants/ Arylamines/ Anilines, Short/ Medium and Long Chained Chlorinated Paraffins (SCCP, MCCP and LCCP), Organic tin compounds, Perchlorates, PFOA, PFOS, PFCA and other perfluorinated organic compounds, Polycyclic Aromatic Hydrocarbons (PAHs), Radioactive Substances, Fragrance substance, Persistent Organic Pollutants (POPs), Ozone Depleting Chemicals (ODCs), TSCA five substances
Reportable Substances in Products	30	Additive Phosphorous Flame Retardants, Diphenylamines, Substituted (SDPA), Endocrine Disrupting Chemicals (EDCs), Skin sensitizing substances, IEC 62474 Substances, Proposition 65 list of chemicals
Restricted Substances in Manufacturing Processes	31 (Some restrictions applicable to cleaning agents, degreasers, demolder solutions only)	Benzene, Toluene, Ethylbenzene, Xylene, Ethanolamine, n-Hexane, Heptane, Methylene Chloride, Carbon Tetrachloride, Trichloroethylene, Tetrachloroethylene, Cyclohexane, Cyclohexanone, Methanol, N-methylpyrrolidone (NMP), n-Propyl Bromide (nPB), Ozone Depleting Chemicals (ODCs), Brominated Organic Solvents, Chlorinated Organic Solvents, Fluorinated greenhouse gases, Phthalates
Reportable Substances in Manufacturing Processes	19	Formaldehyde, Hydrogen Fluoride

Hazardous Substances Restriction List

As of September 2022

Name of Chemical	Threshold	Scope	References
Antimony Trioxide	900 ppm	All materials	IEC 62474

Name of Chemical	Threshold	Scope	References
Arsenic and its compounds	N.D.	All materials	REACH 1907/2006 and amendments
Asbestos and its compounds	Negative	All materials	REACH 1907/2006 and amendments
Azocolourants,Arylamines, Anilines	N.D.	All materials	REACH 1907/2006 and amendments; Bedarfsgegenstände; Verordnung; GB 18401-2003 China; GB 20400-2006 China
Benzenamine,N-phenyl-reaction products with styrene and 2,4,4-trimethylpentene (BNST)	Non-use	All materials	Canadian Environmental Protection Act (1999)
Beryllium and its compounds	N.D.	All materials	Customer Requirement; IEEE1680.1-2018 criterion 4.1.4.1
Bisphenol A	N.D.	All materials	Customer Requirement; California Proposition 65
Bromine and its compounds	900 ppm · 1500 ppm (Br+Cl)	All materials	Customer Requirement; UL110.criterion 9.2.3
Cadmium and Its Compounds	5 ppm	All materials	2011/65/EU; GB/T 26572; Taiwan BSMI RoHS
Short and Medium Chained Chlorinated Paraffins (SCCP&MCCP)	N.D.	All materials	REACH 1907/2006 and amendments; EPA,SNUR 2070-AJ73,Dec.2014; IEEE 1680
Chlorine and its compounds	900 ppm · 1500 ppm(Br+Cl)	All materials	IEEE 1680.1-2018; UL 110

Name of Chemical	Threshold	Scope	References
	Non-use;Must be Elemental Chlorine Free(ECF), Totally Chlorine Free (TCF) or Process Chlorine Free (PCF)	Fiber-based packaging	IEEE 1680.1-2018 criteria 4.1.5.1&4.1.5.2; UL 110, criteria 9.2.3&12.7.1; Customer Requirement
Dimethylfumarate (DMFu)	0.1 ppm	All materials	2010/153/EC
Formaldehyde	N.D.	All materials	ChemVerbotsV; GB 18401-2003/2005, China; GB 20400-2006, China
Halogenated Diphenyl Methanes	N.D.	All materials	REACH 1907/2006 and amendments
Hexabromocyclododecane (HBCDD)	N.D.	All materials	2004/850/EU
Heavy metals (Lead, Mercury, Cadmium, Hexavalent Chromium)	Packaging material: Cd+Pb+Hg+Cr6+ < 50 ppm and Cd<5 ppm, Pb<45 ppm, Cr6+: N.D.	Packaging material	94/62/EC
Hexavalent chromium and its compounds	N.D.	All materials	2011/65/EU; GB/T 26572; Taiwan BSMI RoHS
	1 ppm	All wearable products and accessories	REACH1907/2006 Entry 72
Lacey Act and Timber Regulation	Non-use	All materials	US Lacey Act (16 U.S.C. 3371-3378); EU Timber Regulation
Lead and its compounds	45 ppm	Plastics, inks, surface coatings	

Name of Chemical	Threshold	Scope	References
	300 ppm	Solder material	IEEE 1680; CPSIA,2008; 2011/65/EU; GB/T 26572; Taiwan BSMI RoHS
	90 ppm	General metals	
	No intentional use 1000 ppm for incidentally present	All other materials except all exemptions in 2011/65/EU and its amendments	
Mercury and its compounds	N.D.	All materials	2011/65/EU; GB/T 26572; Taiwan BSMI RoHS
Methyl-phenol compounds	10 ppm total content	All materials	Canadian Environmental Protection Act
n-Hexane	1000 ppm	All materials	Customer Requirement
Nickel and its compounds	Frequently contacted or in prolonged contact with, the end user's skin: N.D. Other: report if contain	All materials	REACH 1907/2006 and amendments
Organic tin compounds	N.D.	All materials	REACH 1907/2006 and amendments
Perchlorates	N.D.	All materials	Perchlorate Contamination Prevention
PFOA and compounds	$\leq 1 \mu\text{g}/\text{m}^2$ coated area	Textiles and other coated materials	Norway FOR-2004-06-01-922; EU 2017/1000
	25 ppb	All materials	
PFOS and compounds	$\leq 1 \mu\text{g}/\text{m}^2$ coated area	Textiles and other coated materials	2004/850/EU
	10 ppm	Preparations	
	1000 ppm total content	All materials	

Name of Chemical	Threshold	Scope	References
Phthalates	1000 ppm total content	All materials except packaging	REACH 1907/2006 and amendments; California Proposition 65; 2011/65/EU
	100 ppm	Packaging material	
Polycyclic Aromatic Hydrocarbons (PAHs)	0.5 ppm individually, 10 ppm for sum of total PAHs	All materials	EC/1272/2013
Polybrominated Biphenyls (PBBs)	N.D.	All materials	2011/65/EU; GB/T 26572
Polybrominated Diphenyl Ethers (PBDEs)	N.D.	All materials	2011/65/EU; GB/T 26572
Polychlorinated Biphenyl (PCBs)	N.D.	All materials	2004/850/EU; 85/467/EEC; CRS 001/1983, Brazil
Polychlorinated Terphenyl (PCT)	N.D.	All materials	REACH 1907/2006 and amendments
Polyvinyl Chloride (PVC) and compounds	Negative	All materials	85/467/EEC; REACH 1907/2006 and amendments
Radioactive Substances	N.D.	All materials	Japanese Laws for the Regulation of Nuclear Source Material, Nuclear Fuel Material, and Reactors, 1986
REACH Annex XVII	By law	All materials	REACH 1907/2006 and amendments
REACH Candidate List of SVHCs	<1000 ppm	All materials	REACH 1907/2006 and amendments
Tetrabromobisphenyl A (TBBA、TBBPA)	N.D.	All materials	Customer Requirement

Name of Chemical	Threshold	Scope	References
Polychlorinated Naphthalene (PCNs)	N.D.	All materials	Customer Requirement
Phenol, 2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethylethyl)-phenol	Non-use	All materials	REACH 1907/2006 and amendments
Alkyl phenol	N.D.	All materials	REACH 1907/2006 and amendments
Antimony and its compounds	100 ppm	All materials	IEC 62474
Cobalt dichloride	Non-use	All materials	REACH 1907/2006 and amendments
Chlorophenols	N.D.	All materials	Customer Requirement
Tris(2-chloroethyl)phosphate (TCEP)	N.D.	All materials	Customer Requirement
Tris(2-chloro-1-methylethyl)phosphate (TCPP)	N.D.	All materials	Customer Requirement
Tris(1,3-dichloro-2-propyl)phosphate (TDCPP)	N.D.	All materials	Customer Requirement
Trixylyl phosphate (TXP)	N.D.	All materials	Customer Requirement
Expanded polystyrene (EPS)	Non-use	All materials	South Korean KC safety mark

Name of Chemical	Threshold	Scope	References
Methylenediphenyl diisocyanate (MDI)	1000 ppm	All materials	REACH 1907/2006 and amendments
2-Butanone oxime	1000 ppm	All materials	Customer Requirement
Surfactants	Non-use	All materials	Norway Prohibition on Certain Hazardous Substances in Consumer Products
Fragrance substance	Non-use	All materials	Customer Requirement
Dioxins, furans	Non-use	All materials	REACH 1907/2006 and amendments
Natural rubber	Non-use	All materials	Customer Requirement
Original wood	Non-use	Packaging material	Customer Requirement
Yellow(White) /Red Phosphorus	Negative	All materials	Japan industry health and safety Act
Selenium and its compounds	100 ppm	All materials	IEC 62474
Halogenated benzenes	N.D.	All materials	Customer Requirement
2-(2-methoxyethoxy)ethanol (DEGME)	1000 ppm	All materials	Customer Requirement
2-Butoxyethanol	1000 ppm	All materials	REACH 1907/2006 and amendments
2-(2-butoxyethoxy)ethanol (DEGBE)	1000 ppm	All materials	Customer Requirement
Benzene	N.D.	All materials	REACH 1907/2006 and amendments

Name of Chemical	Threshold	Scope	References
Toluene	N.D.	All materials	Customer Requirement
Cyclohexane	Non-use	All materials	REACH 1907/2006 and amendments
Adhesive monomers Group I & Group II	Must pass toxicological review for approval	Adhesives in wearable products UV-cured adhesives in earphones and headphones Includes oligomers and cross-linkers	Customer Requirement
Chlorinated Organic Solvents	1000 ppm, Cl<900 ppm	All materials	Customer Requirement
2,4,6-Tri-tert-butylphenol	3000 ppm	All materials	USA<Toxic Substance Control Act,TSCA>
Deca BDE	N.D.	All materials	USA<Toxic Substance Control Act,TSCA>
Phenol, isopropylated, phosphate (3:1)	N.D.	All materials	USA<Toxic Substance Control Act,TSCA>
Pentachlorothiophenol (PCTP)	10000 ppm	All materials, such as the rubber industry	USA<Toxic Substance Control Act,TSCA>
Hexachloro-1,3-butadiene	N.D.	All materials	USA<Toxic Substance Control Act,TSCA>
Long-chain perfluorocarboxylic acids, their salts and their precursors (LC-PFCAs)	N.D.	All materials	SOR/2012-285
Nitrosodiphenylamine	N.D.	All materials	SOR/2012-285
2-Methoxyethanol and ethylene glycol monomethyl ether	5000 ppm	All materials	SOR/2012-285

Name of Chemical	Threshold	Scope	References
PFCAs (C9-C14), their salts and related substances	25 ppb for the sum of C9-C14 PFCAs and their salts 260 ppb for the sum of C9-C14 PFCA-related substances	All materials	https://echa.europa.eu/documents/10162/2ec5dfdd-0e63-0b49-d756-4dc1bae7ec61
PFHxS, its salts and related substances	25 ppb for the sum of PFHxS and its salts 1000 ppb for the sum of PFHxS related substances	All materials	https://echa.europa.eu/documents/10162/a22da803-0749-81d8-bc6d-ef551fc24e19
Persistent Organic Pollutants (POPs)	N.D.	All materials	(EC) No 850/2004; (EU) No 519/2012; Customer Requirement
Endangered Species of Flora and Fauna	Non-use	All materials	US Lacey Act; EU Timber Regulation
Ozone Depleting Chemicals (ODCs)	N.D.	All materials	Montreal Protocol; US Clean Air Act; Customer Requirement
Bismuth (Bi) and its compounds	1000 ppm	All materials	Customer Requirement
Chemical Substance Control Law (CSCL) Class I specified chemical substance	N.D.	All materials	Chemical Substance Control Law (CSCL)
Nitrogen trifluoride	Non-use	All materials	Customer Requirement

Name of Chemical	Threshold	Scope	References
2-(2H-Benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328)	Non-use	All materials	Customer Requirement
Tetrafluoroethylene	Non-use	Paints, Adhesives, Cleaners	Customer Requirement
Ethylene glycol, and its ethers	No intentional use 1000 ppm	All materials	Customer Requirement
Ethane	Non-use	All materials	Customer Requirement
Ethylbenzene	1000 ppm	Solvents in paints, primers, coatings, inks, lubricants and adhesives	Customer Requirement
Acetaldehyde	3.7 µg/m³	Solvents in paints, primers, coatings, inks, lubricants and adhesives	VOC JEITA
4-Nitrobiphenyl and its salts	Non-use	All materials	Customer Requirement
Tritolyl Phosphate (TCP)	Non-use	All materials	Customer Requirement
Brominated Polystyrene	Non-use	Blister packaging	Customer Requirement
Octylphenol and its ethers (Ops)	Non-use	All materials	Customer Requirement
Hexachloroethane	N.D.	All materials	Customer Requirement
2,4-Dinitrotoluene ; 2,4-DNT	1000 ppm	All materials	Customer Requirement
Dichloromethyl ether	N.D.	All materials	Customer Requirement

Name of Chemical	Threshold	Scope	References
Triclosan	10 ppm	All materials	Customer Requirement
Isocyanic acid	Non-use	All materials	Customer Requirement
Organophosphorus compounds	N.D.	All materials	Customer Requirement
Phenol and its compounds	N.D.	All materials	Customer Requirement
Per- and Polyfluoroalkyl Substances (PFAS)	Non-use	All materials	http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?doclanguage=en&cote=env/jm/mono(2006)15
N-Nitrosodimethylamine (NDMA)	Non-use	All materials	Customer Requirement
Chlorinated paraffin (C18-28) (LCCPs)	N.D.	All materials	Customer Requirement
DechloranePlus (DCRP)	Non-use	All materials	Customer Requirement
Decabromodiphenyl Ethane (DBDPE)	Non-use	All materials	Customer Requirement
1, 4-Dioxane	Non-use	All materials	Toxic Substances Control Act (TSCA)
Pigment Violet 29	Non-use	All materials	Toxic Substances Control Act (TSCA)
Phosphine	Non-use	All materials	Germany. Chemicals Prohibition Ordinance. Denmark: Statutory Order No. 289. United States. Toxic Substances
Ethylenediaminetetraacetic acid (EDTA)	Non-use	All materials	Customer Requirement

Name of Chemical	Threshold	Scope	References
2-(2-Aminoethylamino) ethanol (AEEA)	Non-use	All materials	Customer Requirement
Tri-(2,3-dibromo-propyl) phosphate (TDBPP)	N.D.	All materials	Customer Requirement
Gallium	Non-use	All materials	Customer Requirement
Methoxyethanol	Non-use	All materials	Customer Requirement
Tri-(1-aziiridiny) phosphin oxide	N.D.	All materials	Customer Requirement
Benzene	Non-use	Cleaning agents, degreasers, demolder solutions in all manufacturing processes	NIOSH
Beryllium Dust and Fumes	Breathing zone <0.0002 mg/m ³	Connector contacts, EMI finger (beryllium-copper alloys), transceivers (beryllium oxide)	California OSHA PEL (2006); GBZ 2.1 2007
Brominated Organic Solvents	Non-use	Cleaning agents, degreasers, demolder solutions in all manufacturing processes	Customer Requirement
Chlorinated Organic Solvents	Non-use	Cleaning agents, degreasers, demolder solutions in all manufacturing processes	Customer Requirement
n-Hexane	Non-use	Cleaning agents, degreasers, demolder solutions in all manufacturing processes	GBZ 2.1 2007; ACGIH
N-methylpyrrolidone (NMP)	Non-use	Cleaning agents, degreasers, demolder solutions in all manufacturing processes	AIHA TWA; California OSHA
n-Propyl Bromide (nPB)	Non-use	Cleaning agents, degreasers, demolder solutions in all manufacturing processes	Customer Requirement

Name of Chemical	Threshold	Scope	References
Ozone Depleting Chemicals (ODC)	No intentional use	All manufacturing processes	Montreal Protocol; EC No. 2037/2000
Toluene	Non-use	Cleaning agents, degreasers, demolder solutions in all manufacturing processes	ACGIH(2015)
Xylene	Non-use	All manufacturing processes	NIOSH
m-xylene	Non-use	All manufacturing processes	NIOSH
p-xylene	Non-use	All manufacturing processes	NIOSH
o-xylene	Non-use	All manufacturing processes	NIOSH
Ethylbenzene	Non-use	All manufacturing processes	NIOSH
Trichloroethylene	Non-use	All manufacturing processes	NIOSH
Tetrachloroethylene	Non-use	All manufacturing processes	NIOSH
Fluorinated greenhouse gases (CFCs, HCFCs, HFCs, PFCs, SF₆)	Non-use	All manufacturing processes	(EC) No 842/2006; (EC) No.1005/2009
Ethanolamine	Non-use	Cleaning agents, degreasers, demolder solutions in all manufacturing processes	ACGIH; GBZ 2.1 2007; Customer Requirement
2-Ethoxyethanol	Non-use	Cleaning agents, degreasers, demolder solutions in all manufacturing processes	ACGIH; GBZ 2.1 2007; Customer Requirement
2-Ethoxyethyl acetate	Non-use	Cleaning agents, degreasers, demolder solutions in all manufacturing processes	ACGIH; GBZ 2.1 2007; Customer Requirement
Cyclohexanone	Non-use	Cleaning agents, degreasers, demolder solutions in all manufacturing processes	ACGIH; GBZ 2.1 2007; Customer Requirement

Name of Chemical	Threshold	Scope	References
N, N Dimethylformamide	Non-use	Cleaning agents, degreasers, demolder solutions in all manufacturing processes	ACGIH; GBZ 2.1 2007; Customer Requirement
Methanol	Non-use	Cleaning agents, degreasers, demolder solutions in all manufacturing processes	ACGIH; GBZ 2.1 2007; Customer Requirement
Methylene Chloride	Non-use	Cleaning agents, degreasers, demolder solutions in all manufacturing processes	ACGIH; GBZ 2.1 2007; Customer Requirement
Carbon Tetrachloride	Non-use	Cleaning agents, degreasers, demolder solutions in all manufacturing processes	ACGIH; GBZ 2.1 2007; Customer Requirement
2-Butoxy ethanol	Non-use	Cleaning agents, degreasers, demolder solutions in all manufacturing processes	ACGIH; GBZ 2.1 2007; Customer Requirement
Heptane	Non-use	Cleaning agents, degreasers, demolder solutions in all manufacturing processes	Customer Requirement
Cyclohexanone	Non-use	Cleaning agents, degreasers, demolder solutions in all manufacturing processes	Customer Requirement
Phthalates	1000 ppm total content	The tools, auxiliary materials, packaging materials, work surfaces, equipment surfaces of contact, etc. that are in contact with product production, including but not limited to the objects listed in Appendix T.	California Proposition 65; REACH 1907/2006 and amendments; 2011/65/EU; Customer Requirement
2-Butoxyethanol	Non-use	Paints, coatings, thinners, etc.	Customer Requirement
Phosphine	Non-use	All manufacturing processes	Customer Requirement