Restricted Substances for Hardware Products

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H00594 Revision History

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| --- | --- | --- | --- |
| Revision | Date | ECO | Description |
| A | 2/17/00 |  | Production Release |
| B | 7/6/00 | 5319 | Revised sections 2, 2.1, & 2.2 per ECO |
| C | 7/7/00 | 5411 | Corrected version for ECO 5319 |
| D | 3/12/01 | 5520 | Revised section 2.1 per ECO |
| E | 2/21/02 | 5700 | Revised all sections per ECO |
| F | 11/11/04 | C08547 | Revised all sections per ECO |
| G | 05/06/05 | C09734 | Added Reportable Substances  Added requirements for equipment |
| H | 08/14/06 | C15709 | Added Phthalates to Table B per ECO |
| J | 11/27/06 | C16918 | Added Bioavailability and Phthalates for Toy Directive to Table A |
| K | 2/28/07 | C17840 | Add Figure 1 and update Bioavailability background limits in Table A |
| L | 2/12/08 | C22395 | Add Policy and additional restricted substances |
| M | 3/3/08 | C23288 | Correct formatting error |
| N | 4/30/08 | C23932 | Add PAHs and additional phthalates, to Restricted substances Table A, update Deca-BDE regulation requirement, move PFOA from Table A to Table B, and update phthalate free products list. |

Document References

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| --- |
| **Microsoft Internal** |
| H00642: Restricted Substance Control System  H02446: Microsoft Approved Analytical Labs  H02462: Environmental Statement and Marking Specification for Batteries and Microsoft Hardware Products |
| **Analytical Methods** |
| Please refer to Microsoft Document H02446, Microsoft Approved Analytical Laboratory List and Approval Process, for information on methods and/or requirements. |

Document Scope

This document specifies restrictions on substances and materials used in the manufacture of Microsoft hardware products and equipment. This specification is applicable to all Microsoft hardware products and equipment unless specifically exempted by Microsoft. The listed restrictions apply to all materials purchased for use in Microsoft hardware products and equipment, including all constituents of parts, components, and other materials. This specification also bans the use of certain ozone-depleting substances during the manufacture of parts, components, materials, and products purchased by Microsoft. This document is intended to ensure compliance with worldwide regulatory and customer requirements regarding banned and reportable substances, and is updated as required to reflect changing requirements. Please contact Microsoft to confirm the current version of this document.

In addition, Microsoft has developed a program for listing and identifying additional restricted substances. This document contains a list of substances and established time frames within which they will be restricted. Microsoft will monitor this list for potential amendment against lists of substances identified by regulatory agencies and/or the scientific community as posing a risk or threatened risk of toxicological, carcinogenic, mutagenic, teratogenic, endocrine disruptive characteristics harmful to human health or the environment. Suppliers will be required to fully identify and declare all materials constituting its products in furtherance of this new program. Microsoft will regularly update its environmental specifications, such as this one, “Restricted Substances for Hardware Products H00594” (“H00594”) and its partner document “Microsoft Restricted Substance Control System Specification H00642” (“H00642”) to reflect new materials restrictions.

This specification does not apply to product packaging or shipping materials, which are covered by Microsoft specification S002689. This specification also does not apply to optical media, CD-ROM, or DVD, as they are not regulated as either packaging or hardware. However, labels that are attached to Microsoft products, such as certificates of authenticity (COA), are considered to be part of the product and hence subject to the requirements of H00594; they are not subject to the requirements of S02689. Labels attached to packaging such as the COA are conversely considered to be part of the packaging and are subject to the requirements of S02689 restricted substances and not subject to the requirements of H00594. As a point of clarification, the requirements in S02689 regarding percent recyclable material do not apply to labels because they are not composed of paperboard or corrugated fiber board.

This document is a partner to specification H00642, which outlines testing and declaration requirements in support of the restrictions below. Compliance with H00642 may also require analytical test reports demonstrating background limits for lead, cadmium, and other restricted substances. *Figure 1: Relationship of Microsoft Environmental Specifications* depicts the relationship of Microsoft Specifications.

H02050

Social & Environmental Accountability

H02462

Environmental Statement and Marking Specification for Batteries and Microsoft Hardware Products

S002689

Environmental Requirements for Packaging

Battery Specification for Environmental and Safety Requirements

H08224

H00875 – Microsoft Audit Protocol for Quality & Compliance

H02446 – Restricted Substances Test Methods, Laboratory Approval Process, & List of Microsoft Approved Labs

H00642 – Restricted Substances Control System

H00594 – Restricted Substances for Hardware Products Specification

Supplier Declarations

Supplier

Test Reports

Figure 1: Relationship of Microsoft Environmental Specifications

**Figure 1: Relationship of Microsoft Environmental Specifications**

Section A: Restricted Substances

Substances listed in *Table A* shall not be intentionally added to materials used in Microsoft hardware products and equipment in the restricted applications; nor, in the case of ozone depleting substances, shall they be used in the manufacture of Microsoft hardware products and equipment. Background limits in *Table A* provide for trace amounts of naturally occurring or unintentional impurities in materials only. See *Section C* for Battery Content Restrictions.

Microsoft may have products that will go above and beyond the regulatory driven specifications outlined in this document (H00594). In these cases, Microsoft will provide the supplier with a product specification that outlines the restricted substances and/or designs that are more stringent than this specification and that product specification will take precedence over this specification.

Table A: Restricted Substances

| **Restricted Substance** | **Legal &/ or Regulatory Basis** | **Restricted Applications** | **Background Limit Weight % (PPM)** |
| --- | --- | --- | --- |
| **Lead and lead compounds** | **RoHS Directive (2002/95/EC) for electronic components and California Proposition 65 for external plastics/cables.** | **All Applications**  (See **Note A1**) | In PVC and Plastics:  0.0300 (300 PPM)  In all other materials:  (See **Notes A1 & A2 about RoHS exemptions**)  0.1000 (1000 PPM)  See Microsoft Document H02446, Microsoft Approved Analytical Labs, for test method requirements for PVC and plastics |
| **Cadmium and cadmium compounds** | **RoHS Directive (2002/95/EC) for electronic components** | **All Applications**  (See **Note A1**) | 0.0100 (100 PPM)  See Microsoft Document H02446, Microsoft Approved Analytical Labs, for test method requirements for PVC and plastics |
| **Mercury and mercury compounds** | **RoHS Directive (2002/95/EC) for electronic components** | **All Applications**  (See **Note A1**) | RoHS 0.1000  (1000 PPM) |
| **Hexavalent chromium (chromium VI) and hexavalent chromium compounds** | **RoHS Directive (2002/95/EC)** | **All Applications**  (See Notes **A1 and A2**) | 0.1000 (1000 PPM) |
| **Polybrominated biphenyls (PBB)s** | **RoHS Directive (2002/95/EC)** | **All Applications**  (See Note **A1**) | 0.1000 (1000 PPM) Cumulative |
| **Polybrominated diphenyl ethers (PBDEs)** | **RoHS Directive (2002/95/EC)** | **All Applications**  (See Note **A1**) | 0.1000 (1000 PPM)  Cumulative |
| **Deca-brominated diphenyl-ethers (deca-BDE)** | **RoHS Directive (2002/95/EC)** | **All Applications**  (See Note **A1**) | 0.1000 (1000 PPM)  Cumulative |
| **Asbestos and asbestos materials** | **76/769/EEC (+91/659/EEC)** | **All Applications** | 0.1000 (1000 PPM) |
| **Azo-based dyes and colorants with carcinogenic amino compounds** | **76/769/EEC** | **All Applications** | 0.0030 (30 PPM) |
| **Brominated dioxins/furans,**  **Chlorinated dioxins/furans** | **Microsoft policy** | **All Applications** | 0.0000005 (5 PPB) |
| **Chloroparaffins with chain length 10-13 C atoms, chlorine content**  **> 50% by weight** | **76/769/EEC** | **All Applications** | 0.1000 (1000 PPM) |
| **Chlorofluorocarbons (CFCs), Hydrochlorofluorocarbons (HCFCs), Hydrofluorocarbons (HFCs), Halons and Ozone Depleting Substances** | **Montreal Protocol, Japanese Law, US Clean Air Act, 76/769/EEC and amendments.** | **All manufacturing operations, including but not limited to solvents, cleaning agents, compressed gas packages, refrigerants, foam plastics** | **NA** |
| **Polychlorinated Biphenyls (PCBs), Polychlorinated Terphenyls (PCTs)** | **76/769/EEC and Japanese Law: (The Law concerning the Examination and Regulation of Manufacture etc. of Chemical Substances, class 1)** | **All Applications** | 0.0050 (50 PPM) |
| **Radioactive materials** | **Laws for the Regulation of Nuclear Source Material, Fuel Material, and Reactors 1986 (Japanese Law)** | **All Applications** | **NA** |
| **Tributyl tin (TBT) and, Triphenyl tin (TPT) compounds** | **Japanese Law: (The Law concerning the Examination and Regulation of Manufacture etc. of Chemical Substances, class 2)** | **All Applications** | 0.0100 (100 PPM) |
| **Polycyclic Aromatic Hydrocarbon (PAH): Benzo[a]pyrene** | **Central Experience Exchange Office (ZEK), Central Authority of Federal States for Safety (ZLS). German committee ”Technische Arbeitsmittel und Verbraucherprodukte (AtAV)**  **Document: ZEK 01-08** | **External Applications in certain Products**  (See Note **A3**) | 0.0001 (1 PPM) |
| **All Other Applications** | 0.0020 (20 PPM) |
| **16 PAHs: Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Chrysene, Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo[a]pyrene, Dibenzo[a,h]anthrancene, Indeno[c,d]pyrene, Benzo[g,h,i]perylene** | **Central Experience Exchange Office (ZEK), Central Authority of Federal States for Safety (ZLS). German committee ”Technische Arbeitsmittel und Verbraucherprodukte (AtAV)**  **Document: ZEK 01-08** | **External Applications in certain Products**  (See Note **A3**) | 0.0010 (10 PPM) |
| **All Other Applications** | 0.0200 (200 PPM) |
| **Perfluorooctane sulfonates (PFOS)** | **2006/122/ECOF the 30th amendment to 2006/769/EEC** | **All Applications** | 0.1000 (1000 PPM) |
| **Certain Phthalates:**  **di(2-ethylhexyl) phthalate (DEHP), dibutyl phthalate (DBP), benzyl butyl phthalate (BBP)** | **EU Phthalate Directive (Toys) (2005/84/EC)** | **All internal and external Plasticized materials in certain toy products**  (See Note **A3** and See Note **A4**) | 0.1000 (1000 PPM)  Cumulative: Sum of three |
| **CA Proposition 65:** [**Safe Drinking Water and Toxic Enforcement Act of 1986**](http://www.oehha.org/prop65/law/P65law72003.html) |
| **Certain Phthalates:**  **di-isononyl phthalate (DINP), di-isodecyl phthalate (DIDP), di-n-octyl phthalate (DNOP)** | **EU Phthalate Directive (Toys) (2005/84/EC)** | **External plasticized materials in certain products**  (See Note **A3** and See Note **A4**) | 0.1000 (1000 PPM)  Cumulative: Sum of three |
| **CA Proposition 65:** [**Safe Drinking Water and Toxic Enforcement Act of 1986**](http://www.oehha.org/prop65/law/P65law72003.html) |
| **Certain Phthalates: Dimethoxyethyl phthalate (DMEP), Di-n-hexyl phthalate (DnHP)** | **CA Proposition 65:** [**Safe Drinking Water and Toxic Enforcement Act of 1986**](http://www.oehha.org/prop65/law/P65law72003.html) | **External plasticized materials in certain products**  **(**See Note **A3** and See Note **A4)** | 0.1000 (1000 PPM)  Cumulative: Sum |
| **Antimony** | **Toy Safety Directive (88/378/EEC)** | **External Applications in certain Products**  (See Note **A3**) | Limit of element migration from toy materials:  0.0060 (60 PPM) |
| **Arsenic** | **Toy Safety Directive (88/378/EEC)** | **External Applications in certain Products**  (See Note **A3**) | Limit of element migration from toy materials:  0.0025 (25 PPM) |
| **Barium** | **Toy Safety Directive (88/378/EEC)** | **External Applications in certain Products**  (See Note **A3**) | Limit of element migration from toy materials:  0.1000 (1000 PPM) |
| **Cadmium** | **Toy Safety Directive (88/378/EEC)** | **External Applications in certain Products**  (See Note **A3**) | Limit of element migration from toy materials:  0.0075 (75 PPM) |
| **Chromium** | **Toy Safety Directive (88/378/EEC)** | **External Applications in certain Products**  (See Note **A3**) | Limit of element migration from toy materials:  0.0060 (60 PPM) |
| **Lead** | **Toy Safety Directive (88/378/EEC)** | **External Applications in certain Products**  **(**See Note **A3)** | Limit of element migration from toy materials :  0.0090 (90 PPM) |
| **Mercury** | **Toy Safety Directive (88/378/EEC)** | **External Applications in certain Products**  **(**See Note **A3)** | Limit of element migration from toy materials :  0.0060 (60 PPM) |
| **Selenium** | **Toy Safety Directive (88/378/EEC)** | **External Applications in certain Products**  **(**See Note **A3)** | Limit of element migration from toy materials:  0.0500 (500 PPM) |

Notes

1. **RoHS Substances**: These substances shall not be present above trace background levels in homogeneous materials used in Microsoft hardware products, except as permitted by exemptions allowed per EU Directive 2002/95/EC “Use of Certain Hazardous Substances In Electrical and Electronic Equipment” (“RoHS Directive”). As of July 1, 2008 deca-BDE, is no longer an exempt application under EU RoHS, and is restricted in the same manner as other PBDEs.
2. **Regarding test equipment manufactured for Microsoft**: Lead use is permitted in category 9 equipment (Monitoring and control instruments) due to their exclusion from the RoHS regulation, except for restrictions on lead use in PVC and plastics. Hexavalent chromium use is also permitted in category 9 equipment.
3. The following is a list of Products and Accessories that Microsoft policy requires to comply with Toy Safety, EU Phthalate Directive testing and California Proposition 65. Microsoft may exercise its discretion to require that other products must comply with such testing requirements in addition to those outlined below
   1. Wired video game controllers
   2. Wireless video game controllers
   3. Racing game wheels
   4. Wireless trivia game controllers
   5. Instant Messaging (IM) Pad for connecting to video game controllers
4. New headset and earphone products developed and introduced after the effective date of this specification revision, April 30, 2008 shall be phthalate free as feasible substitutes are available that meet our safety and performance requirements.
   1. Headsets
   2. Earphones

Section B: Reportable Substances

Substances listed in *Table B* shall be disclosed on the Supplier’s Declaration of Conformity (Declaration approved in H00642) if present in Microsoft hardware products above the stated reportable limit. Reportable brominated flame retardants which are not restricted must be disclosed and listed on the declaration with their chemical name, CAS number, or class of chemical.

Reportable substance disclosures will be used by Microsoft to make China Management Method and EU Waste Electrical and Electronic Equipment declarations; therefore, they must be thorough and complete.

Table B: Reportable Substances

| **Restricted Substance (See note B1)** | **Reportable Applications** | **Reportable Limit Weight % (PPM)** |
| --- | --- | --- |
| **Arsenic/ Arsenic compounds** | **All Applications** | 0.1000 (1000 PPM) |
| **Beryllium Oxide** | **All Applications** | 0.1000 (1000 PPM) |
| **All other Beryllium / Beryllium Compounds** | **All Applications** | 0.1000 (1000 PPM) |
| **Bisphenol-A** | **All Applications** | 0.1000 (1000 PPM) |
| **Brominated Flame Retardants (other than PBBs or PBDEs which are banned in Section A)** | **All Applications** | 0.1000 (1000 PPM) |
| **Perfluorooctanoic acid (PFOA)** | **All Applications** | 0.1000 (1000 PPM) |
| **Polyvinyl Chloride (PVC)** | **All Applications** | 0.0900 (900 PPM) |
| **Antimony/ antimony compounds** | **All Applications** | 0.1000 (1000 PPM) |
| **Bismuth/ bismuth compounds** | **All Applications** | 0.1000 (1000 PPM) |
| **Nickel (See note B2)** | **All External Applications** | 0.1000 (1000 PPM) |
| **Certain Phthalates: DEHP, DBP, BBP, DINP, DIDP, DNOP** | **All Applications** | 0.1000 (1000 PPM) |
| **Certain Phthalates: Dimethoxyethyl phthalate (DMEP), Di-n-hexyl phthalate (DnHP)** | **All Applications** | 0.1000 (1000 PPM) |
| **Selenium/ selenium compounds** | **All Applications** | 0.1000 (1000 PPM) |
| **Reportable Substance Thickness** | **Reportable Applications** | **Reportable Limit in Microns (µm)** |
| **Chromium and Chromium VI plating thickness (See note B3)** | **All Applications** | Intentionally added |

*Notes*

1. Please refer to the Electronic Industries Alliance (EIA) standard Joint Industry Guide (JIG), Annex F for the detailed chemical lists with CAS-Numbers.
2. Please refer to the JIG, Annex B for the details on Nickel in external applications.

**Reference JIG on the EIA website or email ecteam@microsoft.com.**

1. Chromium and Chromium VI plating thicknesses are necessary to determine concentrations. Section C: Battery Content Restrictions

*Table C* specifies material restrictions for batteries supplied to Microsoft. Background weight percentage limits in *Table A* provide for trace amounts of naturally occurring or unintentional impurities in materials only. Please reference the Microsoft Battery Specification H08224 for additional battery information.

Table C: Battery Content Restrictions

| **Battery Material** | **Background Limit**  **Weight % (PPM)** | **Battery Chemistry** |
| --- | --- | --- |
| **Lead and its compounds** | 0.00400% (40 PPM) | All |
| **Cadmium and its compounds** | 0.0020% (20 PPM) | All |
| **Mercury and its compounds** | 0.0005% (5 PPM) | All |

Section D: Policy and Procedure for Identifying and Restricting Additional Substances

Microsoft is committed to phasing out the use of substances in its consumer hardware electronic products that pose a risk or threatened risk to human health or the environment. We try to restrict the use of such substances and that is why our starting point is the precautionary principle. The precautionary principle was defined in the UN Rio declaration as “Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.” We believe acting preventatively to reach a sustainable use of natural resources and a sound environment creates better products.

Microsoft has, to this end, developed a procedure for identifying and restricting additional substances. Microsoft has prepared an initial list of substances and established time frames within which these substances will be restricted from its products as follows:

Table D: Timeframe for Phase-out of Substances

|  |  |  |  |
| --- | --- | --- | --- |
| **Substance** | **Restricted Applications** | **Background Limit Weight % (PPM)** | **Restriction Date** |
| **Brominated Flame Retardants (BFR)** | All Applications | 0.0900 (900 PPM) Cumulative: Sum of all | December 31, 2010 |
| **Phthalates** | All Applications | 0.1000 (1000 PPM) Cumulative: Sum of all | December 31, 2010 |

Microsoft may amend Table D from time to time at its sole discretion based on its assessment of feasibility, appropriate human health or environmental studies, research or other scientific information. As of the Restriction Date, these substances will be added to Table A. In addition, Microsoft will monitor its substance restriction schedule against substances identified by appropriate regulatory agencies and/or the scientific community to present the risk or threatened risk of toxicological, carcinogenic, mutagenic, teratogenic, endocrine disruptive harmful to human health or the environment. Examples of such lists include California Proposition 65 List and the Canada Environmental Protection Act Domestic Substance List (collectively “Listed Substances”). Furthermore, Microsoft will stay abreast of exempted applications of potentially hazardous substances included in the EU RoHS Directive (2002/95/EC) and other material restriction requirements, and evaluate all such applications for elimination or substitution.

The procedure requires Microsoft suppliers to fully identify and declare all substances used as materials in Microsoft products. These declared substances will be monitored against Listed Substances and Microsoft’s schedule of restricted substances.