

Microsoft Analytical Laboratory Approval Process and Testing Requirements

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**Document:** H02446

**Revision:** J

**Date:** August 19, 2008

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|  Tier 1 suppliers  |
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| **Revision** | **Date** | **ECO** | **Description** | **Author / Revised by** |
| A | 12/07/04  | C08735  | Initial Release  | Bahram Fallah  |
| B | 01/12/05  | C08893  | Intertek labs added  | Bahram Fallah  |
| C | 05/09/05  |   | Test methods added, removed Excel spreadsheet and added approved lab list tables in Word document in the Appendices.  | Bahram Fallah  |
| D | 07/08/05  |   | Bureau Veritas labs, ALS (HK) and Lab approval process added.  | Bahram Fallah  |
| E | 08/18/05  |   | TYCO Electronics, CTI Shenzhen, and ALS Singapore labs added.  | Bahram Fallah  |
| F | 10/10/2006  |   | Added Wistron, NMB/SST, included all CTI, all ALS labs, and Balazs.  | Bahram Fallah  |
| G | 03/16/07  |   | Changed document title, added a section for analytical testing process, and testing methodologies, including Phthalate and Toy.  | Bahram Fallah  |
| H | 11/21/07 |  | Removed Wistron lab. Added Celestica, ETC, Amlab, and TUV Rheinland to approved lab list. Expanded SGS labs for Toy testing. All Professional Labs with ISO 17025 accreditation are now qualified to do RoHS testing. Removed references to H03562. | Bahram Fallah |
| J(No Rev I) | 7/31/08 |  | Added Supplier in-house lab’s addresses. NMB Thailand and Foxlink Gung Le Fu Yao labs removed (no longer test for Microsoft). Included PAH test Requirements. Expanded Intertek and SGS location for phthalate testing. | Bahram Fallah |

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 **Forward**

This document is organized into two sections. Section 1 outlines Microsoft’s lab approval process and lists approved labs. Section 2 outlines the analytical testing process, requirements and test methodologies.

While Microsoft tests certain components and products, it does not guarantee or represent any certification of compliance. The supplier is solely responsible to deliver fully compliant components and/or products. Microsoft does not, by its provision of this testing process assume any responsibility for supplier’s compliance or the compliance of any supplier manufactured component and/or product, nor does Microsoft guarantee that supplier’s compliance with this process will ensure that the component and/or product manufactured by the supplier is compliant. Each supplier will be solely responsible for any non-compliant component and/or product as well as any related corrective actions and/or resulting damages in accordance with the contract between Microsoft and the supplier.

###

 Environmental Statement and Marking Specification for Microsoft Hardware Products

 H02462

Battery Specification for Environmental and Safety Requirements

H00594 – Restricted Substances Specification

H00642 – Restricted Substances Control System

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

H02050

Social & Environmental Accountability

S002689

Environmental Requirements for Packaging

 H08224

H00875 – Microsoft Audit Protocol for Quality & Compliance

Supplier Declarations

Supplier

Test Reports

Figure 1: Relationship of Microsoft Environmental Specifications

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

**1.0 Section 1 – Laboratory Approval Process and Approved Labs**

**1.1 Purpose**

This section lists those laboratories (labs) that have been approved by Microsoft to conduct restricted substance analytical testing. It also describes the process for approving analytical labs to conduct specific analytical testing. Unless otherwise specified by Microsoft, only test reports furnished by Microsoft Approved Laboratories will be accepted as compliance documentation.

**1.2 Scope**

Microsoft approved supplier’s labs are listed in Appendix A, and shall be used exclusively for their respective in-house testing. All other suppliers are encouraged to use the professional services of those labs listed in Appendix B. Suppliers who cannot meet this condition may use analytical services of any professional lab that is accredited by the local government agency. Exceptions may be allowed on a case-by-case basis.

**Note:** Not all Microsoft approved labs are approved to perform all test methods. See relevant details in Appendices A and B.

**1.3 Approval Process**

The following is the approval process for Microsoft suppliers’ in-house lab and for third-party professional labs.

**1.3.1 Supplier’s In-House Lab:**

Microsoft suppliers who wish to have their internal lab approved by Microsoft to conduct limited testing (testing for Cadmium and Lead in plastic and PVC/cables), per Appendix A of this document, must meet all the following:

1. • The lab must be set up in accordance with ISO 17025 standards.
2. • The lab must obtain national accreditation certificate before, or within one year of, becoming a Microsoft Approved lab. (For example: China CNAS, Taiwan CNLA, Korea KOLAS, Hong Kong HOKLAS, Singapore SINGLAS). A copy of a current certificate must be furnished to Microsoft as soon as it becomes available.
3. • Lab technician responsible for the management of the lab must answer Microsoft Lab Questionnaire (see Appendix C).
4. • The lab must complete restricted substance analytical testing on a set of samples provided by Microsoft. Results must be in appropriate format as described in Microsoft H00642, and sent to Microsoft via email.
	* + 1. • Supplier must send Microsoft a presentation on lab’s capability, analytical instrumentations, sample preparation, and process flow chart.
5. • Lab Quality Manual (based on ISO 17025) along with current copies of lab staff training certificates must be provided.
6. • The lab staff must have thorough knowledge of sample preparation to meet “homogeneous” material testing.
7. • Upon the completion of all the above requirements, Microsoft will arrange for an on-site lab visit, which must be completed to Microsoft’s satisfaction. The visit may be performed by a Microsoft-designated third-party.

**Note**: Supplier’s in-house lab capabilities may be expanded and approved by Microsoft to cover additional testing such as testing for PBBs/PBDEs using GCMS, Hg using EPA 3052 method, and others. Suppliers should notify their Microsoft FM (Factory Manager) or representative that they are ready for this type of testing. Microsoft representative will notify a member of Microsoft environmental compliance team to initiate the approval process.

**1.3.2 Third Party Professional Lab:**

In order to provide more choices for those suppliers who need to utilize the services of an independent third party lab, Microsoft selects certain professional labs to conduct restricted substances testing. These labs are listed in Appendix B of this document. In addition, Microsoft accepts analytical test reports from any professional (third party) lab that meets the following minimum requirements:

* Thorough knowledge of RoHS testing methodology and the knowledge of component sample preparation (which is vital to material testing).
* The lab must conduct correlation testing frequently enough to ensure reliable results between each lab location throughout the region.
* Results must be in appropriate format as described in Appendix C of this specification.
* The lab must have local accreditation (based on ISO 17025) from relevant agencies (e.g., CNAS, CNLA, HOKLAS, SINGLAS, KOLAS).

**2.0 Section 2–Testing Process, Requirements and Test Methodologies**

**2.1 Purpose**

This section describes analytical testing process, requirements, and testing methodologies.

On a regular and periodic basis, Microsoft will require Tier 1 suppliers to provide samples of final products to be sent to a Microsoft Approved Laboratory (MAL) for Restricted Substances testing.

**Note: *Suppliers should not confuse this Microsoft Restricted Substances testing program with their own responsibility to provide substantiated evidence in the form of declarations and test reports that attest to the absence of restricted substances in their products outlined in Microsoft H00642.***

**2.2 Scope**

This testing process is a part of the Microsoft Entertainment and Devices Division and applies to all Microsoft hardware products including (but not limited to) Mice, Keyboards, webcams, XBOX Consoles and Accessories, Surface, GPS, Zune and Accessories products manufactured for Microsoft by hardware product suppliers.

**2.3 FPP Testing Overview**

Suppliers are required to submit two freshly manufactured (less than one day old) Finished Packaged Product (FPP) in sustaining phase to a 3rd party lab. The Environmental Compliance Team (ECT) member in close collaboration with Microsoft Factory Managers (FMs) will determine what products should be tested at each supplier and at what frequency. The frequency and number of samples required for testing may vary depending on product type. All requirements will be communicated through the FMs or ECT. Please refer to Microsoft document H00642 for additional information on testing frequency.

Suppliers must complete Product Testing Application Form in Appendix D of this document for every FPP sample. This completed form must be sent along with the samples to the lab. Suppliers may invoice Microsoft for the cost of the FPPs and shipping costs. The Purchase Order (PO) information is available upon request, by contacting ecteam@microsoft.com. Test results will be posted to eCRM site for suppliers to access and will also be communicated with the FMs.

**2.4 Analytical Testing**

Microsoft lists restricted substances in its specification H00594. Following are the analytical methods that must be used to report the concentrations of substances in products, made for Microsoft.

**2.4.1 Restricted Substances Analytes**

**All Products Homogeneous Material Testing**

Every homogenous material in all components compromising Microsoft FPP will be tested for EU RoHS substances, namely:

* lead (Pb),
* cadmium (Cd),
* mercury (Hg),
* hexavalent chromium (Cr VI),
* polybrominated biphenyls ethers (PBB), and
* polybrominated diphenyl ethers (PBDE)

In addition to the above analytes, Microsoft now requires suppliers to test for 16 Polycyclic Aromatic Hydrocarbons (PAHs) in external applications.

* Naphthalene (Nap),
* Acenaphthylene (AcPy),
* Acenaphthene (Acp),
* Fluorene (Flu),
* Phenanthrene (PA),
* Anthracene (Ant),
* Fluoranthene (FL),
* Pyrene (Pyr),
* Chrysene (CHR),
* Benzo[a]anthracene (BaA),
* Benzo[b]fluoranthene (BbF),
* Benzo[k]fluoranthene (BkF),
* Benzo[a]pyrene (BaP),
* Dibenzo[a,h]anthrancene (DBA),
* Indeno[c,d]pyrene (IND), and
* Benzo[g,h,i]perylene (BghiP)

**Toy Product Testing**

Those products categorized as toy according to Microsoft Restricted Substances specification, H00594, will be tested for 8 toy metals and 8 phthalates, namely:

* antimony (Sb),
* arsenic (As),
* barium (Ba),
* cadmium (Cd),
* chromium (Cr),
* lead (Pb),
* mercury (Hg), and
* selenium (Se)

The 8 phthalates substances are:

* di(2-ethylhexyl) phthalate (DEHP),
* dibutyl phthalate (DBP),
* benzyl butyl phthalate (BBP),
* di-isononyl phthalate (DINP),
* di-isodecyl phthalate (DIDP),
* di-n-octyl phthalate (DNOP),
* dimethoxyethyl phthalate (DMEP), and
* di-n-hexyl phthalate (DnHP)

**Please refer to H00594 for further details on external and/or internal restriction**. Internal parts do not have to be tested for externally restricted substances.

Analytical test methods employed by Microsoft internal laboratory and 3rd party laboratories are as follows:

1. • XRF: used to scan and screen every material and components
2. • Restricted substances detected by XRF will be further quantified by ICP, GCMS, and UV analytical instrumentations, if need be.
3. • The following table describes testing method for restricted substances.

|  |  |  |
| --- | --- | --- |
|  | **Directive**  | **Test Method**  |
| **Phthalates**  | EU Phthalate 2005/84/EC, California Prop 65  |  EN 14372, followed by GCMS   |
| **Bioavailability Substances (eight metals: Sb, Ba, As, Cd, Hg, Cr, Se, and Pb**  | Toy Safety 88/378/EEC | EN 71-3, followed by ICP  |
| **Pb**  | EU RoHS 2002/95/EC  | EPA 3050B in plastics, EPA 3052 for other materials, followed by ICP or AA  |
| **Cd**  | EU RoHS 2002/95/EC  | EN 1122 and 3050B or 3052 for other materials, followed by ICP or AA  |
| **Hg**  | EU RoHS 2002/95/EC  | EPA 3052, followed by ICP  |
| **Cr VI**  | EU RoHS 2002/95/EC  | EPA 3060A and 7196A, followed by UV-VIS and HPLC; non metal only. For metals: Spot test or ISO 3613 to be used for metal coating, zero tolerance limit.  |
| **PBBs**  | EU RoHS 2002/95/EC  | EPA 3540C and 8082, followed by GCMS and HPLC  |
| **PBDEs**  | EU RoHS 2002/95/EC  | EPA 3540C and 8082, followed by GCMS and HPLC  |
| **PAHs** | German Law doc ZEK 01-08 | EPA 8270D, analysis followed by GCMS |

**Appendix A: List of Supplier’s Approved Labs, Test Methods and Conditions**

***IMPORTANT NOTE:* The following labs are approved to analyze Polyvinylchloride (PVC) and similar soft plastic materials only,** using the following required methods: Digestion of Cadmium per EN 1122 and Lead per EPA 3050B, followed by Analysis using EPA 6010, 6020, 7420, 7421 or equivalent AA/ICP methods.

While supplier’s may also test **complex or mixed matrix materials** (metals and/or hard plastic) as part of their internal QA/QC processes, these **test results are not accepted by Microsoft as compliance documentation.** When compliance documentation for Microsoft is required, these materials must be tested by a third party professional lab listed in Appendix B.

Suppliers are also encouraged to use XRF **as screening** method prior to conducting digestion analysis. The use of XRF requires special training in safety, sample preparation, and results interpretation. It must be used with adequate understanding of XRF analytical limitations and an understanding that **XRF results are not accepted by Microsoft for compliance documentation.**

|  |  |
| --- | --- |
| **Lab Name**  | **Contact Numbers**  |
| **\* BizLink Technology** No.1 Industrial Zone,Fenghuang Village, FuyongTown, Baoan District,Shenzhen City, Guangdong, Province 518103, PRC | Tel: (755) 2730 6898, ext. 268Fax: (755) 2730 6382  |
| \* **Celestica Failure Analysis Lab**Northern Area, Songshan Lake,Science and Technology Industrial Park, Dongguan City, Guangdong, PRC, 523808 | Tel: (86-769)22899333 ext. 2038Fax: (86-769)22899292 |
| \* **Chicony Electronics (Dongguan) Co., Ltd.** San Zhong Guan Li QuQingxi, Dongguan, China | Tel: (769) 7311 688, ext. 2205/2300  |
| **\* Foxconn FuHong Precision Component** (Shenzhen) Co., Ltd. 10th Yousong Industrial District, Longhua Sub-District, Baoan, Shenzhen, Guangdong, 518109, China | Tel: (755) 28177688, ext. 35255 Fax: (755) 28177801  |
| **\* Foxlink / Fu Gang Electronic (Dong Guan) Co.,Ltd** Industry street, Dong-Keng, Dong-Guan, Guang-Dong, China | Tel: (769) 3882225  |
| **\* JI-HAW ELECTRONICS (Kunshan) CO., LTD.** No.288,Jin-Hao Road.,Economic & Technology Zone,Kunshan,Jiangsu Province,P.R.C | Tel : (520) 733 0288  |
| **\* Kinpo Electronics (China) Co., Ltd.** SHA TOU Village, Chang an Town, DongGuan City, GuanDong, PRC | Tel: (769) 532 1555, ext. 3140 Fax: (769) 532 8215  |
| **\* KYE** Baodun Industrial District, Houjia TownDongguan City, Guangdong Province, China 523961 | Tel: (769) 582 5810, ext. 3290  |
| **\* NMB/SST Shanghai** No. 8313 Huqingping Rd, Jinze Town, Qingpu, Shanghai, PRC | Tel: (86) 139 1637 9663  |
| **\* TYCO Electronics** Dajing, Houjie Town, Dongguan City, GuangdongProv 523958 PRC | Tel: (769) 5990287 Fax: (769) 5819130  |

**(\*) These labs have been approved to conduct in-house testing only. Suppliers shall not offer testing services to any other supplier without prior permission from Microsoft. See Section 1.2**

**Appendix B: List of Third Party Professional Labs with Conditions**

 For your convenience, the following table lists some of these labs in various geographic areas.

|  |  |  |
| --- | --- | --- |
| **Lab Name** | **Selected Contact Numbers (refer to web sites for lab locations not listed)** | **Restriction on Approved Testing**  |
| **ALS Technichem** **(www.alsenviro.com)**  | Hong Kong Tel: (852) 2610-1044Fax: (852) 2610-2021 | All restricted substances in all matrices, except phthalates and bioavailability. |
| Shanghai Tel: (86) (21) 5834 3336 Fax: (86) (21) 5834 2991 |
| Singapore Tel: (65) 6283-9268 Fax: (65) 6283-9689 |
| **Amlab Services Pte Ltd (www.amlab.com.sg)** | Singapore Tel: (65) 6663-9824Fax: (65) 6261-8875 | All restricted substances in all matrices, except phthalates and bioavailability. |
| [**Balazs Analytical Services (www.balazs.com )**](http://www.balazs.com/)  | Fremont, CA Tel: (510) 657 0600 Fax: (510) 623 5365 | All restricted substances in all matrices, except phthalates and bioavailability. |
| **Bureau Veritas** **(www.bureauveritas.com)** | Taipei Tel: (886) (2) 8809-2200 Fax:(886) (2) 8809-3583 | All analytes in all matrices all locations worldwide. Toy (phthalates and 71-3) testing in Hong Kong only. |
| Shanghai Tel: (86) (21) 6489-3004 Fax: (86) (21) 6489-5391 |
| Shenzhen Tel: (86) (755) 8600-0151 (ext 101/102)Fax: (86) (755) 8600-0157 |
| Hong Kong Tel: (852) 2494-1423Fax: (852) 2429-9572 |
| **CTI (www.cti-cert.com)** | Shenzhen Tel: (86) (755) 3330 7999 Fax: (755) 3330 7988 | All restricted substances in all matrices, except phthalates and bioavailability. |
| Shanghai Tel: (86) (21) 5031 2800Fax: (86) (21) 5854 3828 |
| **ETC (www.etc.org.tw)** | Taipei Tel: (886-3) 328-0026Fax: (886-3) 327-6177 | All restricted substances in all matrices, except phthalates and bioavailability. |
| **Intertek** **(www.intertek.com)** | Taipei Tel: (886) (2) 6602 2227 Fax: (886) (2) 6602 2410 | All analytes in all matrices all locations worldwide including Toy (phthalates and 71-3). |
| Shanghai Tel: (86) (21) 6495 2121 Fax: (86) (21) 6495 0740 / 5426 2033 |
| Shenzhen Tel: (86) (755) 2683 7000 Fax: (86) (755) 2683 7118~9 |
| Hong Kong Tel: (852) 2173 8888Fax: (852) 2786 1903 |
| **SGS (www.sgs.com)** | Taipei Tel: (886) (2) 2299 3279, ext. 3100 Fax: (886)(2) 2299 3237  | All analytes in all matrices all locations worldwide including Toy (phthalates and 71-3) . |
| Shanghai Tel: (86) (21) 6495 1616, ext. 714Fax: (86)(21) 6495 3679  |
| Guangzhou Tel (86) (20) 82169300, ext.155 Fax: (86) (20) 8216 9558  |
| Hong Kong Tel: (852) 2774 7123 Fax: (852) 2334 2461  |
| **TUV Rheinland** **(www.tuv.com)** | Taipei: Tel: (886-2) 2783-6650Fax: ((886-2) 2783-7117 | All restricted substances in all matrices, except phthalates and bioavailability. |
| Shenzhen: Tel: 86-755-8268 1188Fax: + 86-755-2603 7102 |

**Appendix C: Sample Preparation Procedure and Lab Questionnaire**

**Sample Preparation Procedure**

Please ensure the following requirements (items 1, 2 and 3) are included in analytical lab methods & reporting requirements for Microsoft products:

***Calibration Methods***

Linear calibration curve procedures for ICP and AA analyzers must include standard solution concentrations which span the range of equivalent concentrations for Pb and Cd reported in samples analyzed, and include equivalent concentrations for Pb and Cd at the specification limit in samples. Concentrations equal to the Pb and Cd at the specification limit in samples can be calculated as follows for the standard digestion and analysis methods:

Conc. of analyzer calibration std solution= Spec limit (ppm) X Weight of sample (in grams)/100

For a 0.5 gram sample, the calculations are shown below assuming standard methods with no dilution (DF=1):

Conc. of Pb calibration std (ppm)=Pb Spec limit (100 ppm) X 0.5 gram/100 = 0.5 ppm

Conc. of Cd calibration std (ppm)=Cd Spec limit (75 ppm) X 0.5 gram/100 = 0.375 ppm

**Analysis methods**

Each batch of samples processed for analysis must include spike and blank samples which are digested and analyzed along with the samples. The spike sample concentration should equal the Pb and Cd specification limit values (100 ppm for Pb; 75 ppm for Cd).

**Reporting**

Any result which is below the PQL calculated for the sample must be reported as non-detect (ND) at the PQL. For example, if the analyzer result is calculated to be equivalent to 2 ppm for a sample with a PQL of 5 ppm, the result is reported as "ND". Reporting of results must include the following:

* Sample identification, sample analysis result, PQL for sample.
* Blank identification, blank analysis result, PQL for blank.
* Spike identification, spike concentration, spike analysis result, % recovery.
* Any abnormalities occurring during sample preparation, digestion or analysis.

**Table 1 – Information Required in Analytical Test Reports**

|  |  |  |
| --- | --- | --- |
|  | Information Required | Examples |
| Supplier/Vendor Information  | Supplier Company Name  | ABC Ltd  |
| Address  | 1234 He Ping Rd Dongguan, China  |
| Tel/Fax/email  | Tel: 12345678 Fax: 12345678 Email: wang jia@abc.com |
| Contact Person  | Mr. Jia Wang  |
| Sample Description | Product/component Sample description  | Cable overmold  |
| Quantity (numbers or weight)  | 10 pieces; 250 grams  |
| Microsoft Product P/N  | X01-12345  |
| Microsoft Component P/N  | C01-12345  |
| Manufacturer P/N  | M01-12345  |
| Name of Component Vendor  | China Plastic  |
| Component Lot Number  | MX-888-777-01  |
| Country of Origin  | China  |
| Sample’s Photo | Digital Photo(s) of sample(s) after being prepared  | JPG embedded in each test report  |
| Analytical Information | Sample preparation  | Shaved  |
| Test Method  | Cd - EN 1122 and EPA 3050B Pb – EPA 3050B  |
| PQL and/or MDL  | <2 ppm  |
| Name of Analyzer  | ICP  |

 **Note 1:**  Suppliers:

Obtaining Microsoft Qualified Analytical Lab Status will require satisfactory completion of the following:

1. 1. ISO/IEC 17025 documentation package
2. 2. Audit of lab procedures (& lab questionnaire)
3. 3. Analysis report of 5 qualification test samples. For this report only, please attach a spreadsheet which shows the calculation of the sample result for each sample, blank and spike. This calculation should show how the value reported for each sample was calculated from the analyzer reading, and should include at a minimum the following variable: Sample identification (MS sample #), sample weight, analyzer result, dilution factor, PQL calculation and reported sample concentration for both Pb and Cd analyses.

**Note 2:**

If you are equipped with an x-ray analyzer (XRF), please answer the section pertaining to XRF in the questionnaire.

If equipped with XRF: Please conduct XRF analysis for all the samples ***BEFORE*** you begin the digestion test.

**Lab Evaluation Questionnaire**

***Methods & analysis measurements***

1. What instruments do you use for metals analysis?

1. 2. Describe the difference between a digestion method and an analysis method.
2. 3. What digestion methods do you use for metals?
3. 4. What analysis methods do you use for metals?
4. 5. Describe the purpose of method EPA 3050B.
5. 6. Describe the purpose of method EPA 6010B.
6. 7. Describe the purpose of method EN 1122. Can this method be used for lead analysis? Explain why or why not.
7. 8. Describe the difference in the results obtained from using methods EN 71-3 versus methods EN 1122 for Cd analysis. Include analysis method used.
8. 9. Describe the difference in the results obtained from using methods EN 71-3 versus methods EPA 3050B for Pb analysis. Include analysis method used.
9. 10. What is the instrument detection limit for the following: Pb, Cd, Hg, Cr?
10. 11. What is the minimum sample mass required to achieve these limits?
11. 12. What is the purpose and recommended frequency of blank sample analysis?
12. 13. What is the purpose and recommended frequency of a spiked sample analysis?
13. 14. Describe the procedure for preparation and analysis of blank and spike samples.
14. 15. What is the practical quantization limit (PQL) for a metals analysis? Show how this is calculated for a particular sample. For what sample mass does the PQL equal the instrument detection limit of your lab for Pb? For Cd?

 ***Quality Control***

1. 1. What grade of chemical reagents are used for sample preparation and analysis?
2. 2. What supplier is used for lab chemicals?
3. 3. How are standard samples prepared?
4. 4. What is the expected shelf life of standard solutions?
5. 5. Are standard samples traceable to any reference standards?
6. 6. How are samples labeling and identified throughout the analysis process?
7. 7. How are results reported?
8. 8. How are sample log books maintained?
9. 9. How often are analyzers calibrated?
10. 10. How are analyzers maintained and maintenance records updated?
11. 11. How are lab chemicals and samples disposed of?

 ***Lab Management & Personnel***

1. 1. What is the background & training of the lab manager?
2. 2. What are the background & training of the lab workers?
3. 3. How are training records documented?
4. 4. How are workers trained to operate specific instruments?
5. 5. What plans do you have to accommodate additional restricted substance testing requirements for compliance with the European RoHS directive?

 ***Please answer the following if your lab has XRF capability.***

***X-Ray Fluorescence Spectrometer***

1. 1. Does your lab have x-ray fluorescence spectrometers (XRF or EDXF), hand-held or desktop? If no, are you planning to get one? If yes, answer the following:
2. 2. What is the model name of your XRF and what are its specs?
3. 3. How do you isolate sample material for direct read?
4. 4. How do you calibrate this instrument?
5. 5. How do you distinguish elements that are too close on the periodic table from one another? How do you read the spectrum and analyze x-ray peaks

**Appendix D: Microsoft Restricted Substance Final Product Testing Application Form**

|  |
| --- |
| **To be completed by Suppliers**  |
| Microsoft Supplier Company Name:  |
| Supplier Address:  |
| Supplier Contact person: Tel: Fax:  |
| Supplier Email address:  |
|  **Please test the FINAL PRODUCT identified as follows:**  |
| Final Product Description (no need to send in packaging):  |  *Product ID or S/N including date code:*  |
| SKU:  | Microsoft Part Number (MPN):  |
| Tests to be performed:  [ ]  RoHS [ ]  PAH [ ]  8 Phthalates [ ]  71-3 [ ]  Others (specify):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Notes:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  |
|  Microsoft ECT Contact Name:  |
| *Lot number, if applicable:* |
| *Plastic Type (if applicable, e.g., HDPE, PE, ABS, etc.):*  |
| Is this a retest sample? Yes No If yes, previous sample number is:  |

  **NOTE: This form must be submitted with EVERY sample(s).**

 **All testing reports will be provided to Microsoft for all tests conducted on behalf of Microsoft.**

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Signature

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Company

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Date (see next page for further instructions)

Sample Shipping Instructions

* Ship products in the least number of boxes possible
* Product packaging is not required; however, all associated batteries, adapters, cables, covers, carrying cases, etc. must be submitted for testing.
* If multiple colors or versions of the same product exist, submit one representative sample and the different parts only. For example if a product comes in 3 different colors, submit complete product in one color and only the plastic casings for the remaining colors.

**Lab address and contact information:**

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