

Lenovo Product Environmental Requirements

Dear Lenovo Supplier,

Lenovo requires our suppliers must comply with the most recent version of Lenovo's Restricted Materials Specifications (41A7731, 41A7733 and packaging requirements) and any applicable laws and regulations prohibiting or restricting specific substances.

Lenovo Environmental Requirements for Suppliers

1. Compliant with Lenovo 41A7731 & 41A7733 & Packaging requirements

Lenovo's specifications are integrated into the product development process and into supplier contracts as part of our standard contract terms and conditions. All materials, parts and products incorporated into Lenovo products or bundled with Lenovo products as part of a delivered solution are required to meet the requirements of applicable laws and regulations, Lenovo's Specification Baseline Environmental Requirements for Materials, Parts and Products (41A7731) and Lenovo's RoHS/REACH Engineering Specification (41A7733) as specified in our contracts, hardware drawings and specifications.

41A7731 - Lenovo Baseline Environmental Requirements can be found here: [link](#)

41A7733 - Lenovo RoHS Engineering Specification, can be found here: [link](#)

Ensuring components and products supplied to Lenovo meet contract requirements and environmental requirements per specifications 41A7731 and 41A7733:

- Requires review of product components and manufacturing processes
- Requires consultation with sub-tier suppliers

Suppliers must complete and return the Lenovo Supplier Material Declaration (by each P/N) and the Conformance Verification Checklist (1 checklist per supplier). At Lenovo's request, the supplier must be able to provide technical documentation in the form of internal design controls, supplier data or analytical test reports.

Non-Lenovo brand products must comply with applicable legal requirements.
All the necessary documents are available in Lenovo web site. [The latest version must be used.](#)

Lenovo packaging requirements can be found at:

https://www.lenovo.com/us/en/global_procurement/Guidelines/Restrictions_and_Packaging.html

Lenovo Product Environmental Requirements

2. Supplier Material Declaration (1752A xml or GDX)

Lenovo requires suppliers to complete and sign a Supplier Material Declaration (1752A xml or GDX), to declare materials, parts and products compliant with Lenovo's Restricted Materials specifications. This Declaration is required to release a part to production.

To sign the Supplier Declaration, the supplier must ensure that the product meets the Lenovo 41A7731 and 41A7733 specifications and record any applicable exemptions.

At Lenovo's request, the supplier must also be able to provide technical documentation in the form of internal design controls, supplier declarations, or analytical test data.

Lenovo's goal is to collect supplier declarations on each part in a product's bill of materials, and it should be collected **no later than SIT exit**. The Supplier Material Declaration covers full material disclosures:

- All substances must compliant with Lenovo requirements as indicated in Threshold Level column.
- **The Supplier Material Declaration is collected at the "purchase" level:**
 - if Lenovo purchases a part - the declaration is for the part
 - if Lenovo purchases a Building Block / Assembly - the declaration is for the Building Block
 - if Lenovo purchases a complete, finished system product - the declaration is for the complete, finished system product

Supplier signs Lenovo Supplier Material Declaration and returns to the Lenovo Requester / Contact. (Follow the 1752A xml format for electronic digital signature or paper copy)

Supplier Material Declaration can be found at <https://www.lenovo.com/us/en/sustainability-resources> -> Procurement/Suppliers -> Lenovo Guide to Full Material Disclosures.

Supplier registers and applies the GDX account first, then submits the data on GDX.

GDX website: <http://www.qpointtech.com/>

New GDX tutorial video from the supplier perspective:

http://www.youtube.com/watch?v=C6_B4fOcayg

Access credentials: You can download the video mp4 files from the Q Point website.

Use the following login information to download the files:

<ftp://qpointtech.com>

Login:.gdx_guest

Password: qpointgdx

3. REACH Regulation

Substances of Very High Concern (SVHC) in Articles - Reporting Requirements

Lenovo requires suppliers to identify if any Substances of Very High Concern (SVHC) present in an Article (Deliverable) at or above the 0.1% weight by weight (w/w) concentration and report the name and CAS number of the SVHC candidate and the quantity on the Supplier Material Declaration (1752A xml form) for the Deliverable. See Table 2 in this section for a list of SVHC which must be reported on the Supplier Material Declaration. The current candidate list of SVHC as published by the EU is located at: http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp. This list is subject to change by the European Chemicals Agency (ECHA).

Two of the SVHC are not included on the table below. They are:

- 5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)
- Alkanes, C10-C13, chloro (Short Chained chlorinated Paraffins)

Lenovo Product Environmental Requirements

It is unlikely that musk xylene is present in electronic hardware and the short chained chlorinated paraffins are banned in Lenovo Deliverables, see Specification 41A7731, Table 1. If these substances are present in a Deliverable please report them on the Supplier Material Declaration (1752A xml form). There is a section for "Other" which can be used for this purpose.

If an SVHC is present in a Deliverable at or above the reporting concentrations, the Supplier must provide a customer communication to Lenovo meeting the requirements of Article 33 of the EU REACH Regulation.

ANNEX XVII: Restrictions on the Manufacture, Placing on the Market and Use of Certain Dangerous Substances, Preparation and Articles

The Annex XVII of the REACH regulation contains the list of restrictions of certain hazardous substances, mixtures and articles for their marketing and use on the European market. A restriction can apply to any substance on its own, in a mixture or in an article, including those that do not require registration.

The current list of restricted substances as published by the EU is located at:
<https://www.echa.europa.eu/substances-restricted-under-reach>.

ANNEX XIV: List of Substances Subject to Authorization

The Annex XVII of the REACH regulation contains a list of substances subject to authorization under EU REACH regulation. Substances on this list are selected from [REACH SVHC list](#) and they cannot be placed on the market or used after a given date ("sunset date"), unless an authorization is granted for their specific use, or the use is exempted from authorization.

The current list of restricted substances as published by the EU is located at:
<https://echa.europa.eu/authorisation-list>.

EC# - found in EINECS (European Inventory of Existing Commercial chemical Substances).

EU REACH Regulation Number 1907/2006 can be found at:
<https://echa.europa.eu/regulations/reach/legislation>

The EU provides guidance documents for REACH, specifically guidance documents for Substances in Articles as well as the candidate list for SVHC at http://guidance.echa.europa.eu/guidance_en.htm

Additional information about REACH can be found at the European Chemicals Agency web site at <http://echa.europa.eu/>

Definitions

REACH: an acronym for the European Commission Regulation Number 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals.

RoHS: European Union Directive [2002/95/EC](#) restriction of the use of certain hazardous substances in new electrical and electronic equipment that became effective July 1, 2006.

Substance(s) of Very High Concern (SVHC)

Lenovo Product Environmental Requirements

1. Substances meeting the criteria for classification in accordance with EU Directive 67/548/EEC:

- Carcinogenic category 1 or 2
- Mutagenic category 1 or 2
- Toxic for reproduction category 1 or 2;

2. Substances which are persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB) in accordance with the criteria set out in Annex XIII of the EU REACH Regulation;

3. Substances- such as those having endocrine disrupting properties or those having PBT properties or vPvB properties which do not fulfill the criteria of 2 above - for which there is scientific evidence of probable serious effects to human health or the environment which give rise to an equivalent level of concern to those of other substances listed in 1 or 2 and which are identified on a case-by-case basis in accordance with the procedure set out in Article 59 of REACH. This definition is from the EU REACH Regulation, Article 57.

Article - an object which during production is given a special shape, surface or design which determines its function to a greater degree than does its chemical composition. This definition is from EU Regulation 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

Deliverable(s): any tangible item(s) delivered by or for a Supplier to Lenovo in accordance with a purchase contract or other agreement with Lenovo. Deliverables include, but are not limited to, components, materials, parts, and products.

Electronic Product Environmental Assessment Tool (EPEAT): based upon IEEE Standard 1680 for the Assessment of Personal Computer Products (1680). Refer to: <http://www.epeat.net/>

Intentionally added: deliberate use in a product, material, part, assembly

Homogenous material: of uniform composition throughout (e.g., plastics, ceramics, glass, metals, alloys, resins, coatings, solder, flux).

Mechanically disjointed: Separated by mechanical actions such as unscrewing, cutting, crushing, grinding, and abrasive processes

ppm = parts per million = mg / kg. Mass of substance as a percentage of the homogenous material,

not the weight of substance in the entire part or product unless otherwise noted. 1000 ppm = 0.1%; 100 ppm = 0.01% by weight

Preparation: a mixture or solution composed of two or more substances, for example paint, lubricant or ink. This definition is found in the EU Council Directive relating to restrictions on the marketing and use of certain dangerous substances and preparations and EU Regulation 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

Substance: a chemical element and its compounds in the natural state or obtained by any manufacturing process, including any additive necessary to preserve its stability and any impurity deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition. This definition is found in the EU Council Directive relating to restrictions on the marketing and use of certain dangerous substances and

Lenovo Product Environmental Requirements

preparations and EU Regulation 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). Substance includes such examples as ethanol and metals. Note: metals are included here not in the form of a part or product such as a heat sink or sheet metal cover but as a metal such as aluminum or aluminum alloy. Substance goes beyond a pure chemical compound defined by a single molecular structure. The definition of the substance includes different constituents such as impurities. Also note the word “substance” is used throughout this specification, only the “Substance” with a capital letter refers to this specific definition.

Threshold level: Concentration limit above which the presence of a substance in a material or product must be declared

4. Additional Requirements for EPEAT Products (Only)

Select desktop, laptop and computer monitor products provided under this contract are required to meet registration requirements and criteria to achieve to Bronze, Silver and Gold ratings under the Electronic Products Environmental Assessment Tool (EPEAT). EPEAT is a procurement tool designed to help large volume purchasers evaluate, compare and select desktop computers, laptops and monitors based upon their environmental attributes as specified in the IEEE Standard for the Assessment of Personal Computer Products (1680). The registration criteria and list of registered products are provided at www.epeat.net.

IEC 62474 Declarable Substances: Material Declaration for Products of and for the Electrotechnical Industry.

The IEC 62474 Declarable Substance List (DSL) is a list of regulated substances and substance groups (e.g. lead and lead compounds) that a manufacturer should declare to downstream manufacturers if present in the product. Each substance or substance group entry in the list is accompanied with a reportable application and a reporting threshold level. The supplier that is creating the material declaration will use this information to determine if the substance must be declared.

The DSL may be accessed from the [IEC 62474 database](#) via the menu bar on the left side of the introduction webpage – click on “Declarable substance groups and declarable substances” and then select the substance from the drop down list. For example, selecting “Lead/Lead Compounds” presents five entries with different reportable application / reporting threshold combinations – the first entry corresponds to the RoHS restriction. Clicking on the “Details” button reveals information about reference substances; typical EEE applications, regulations, and other information.

5. Additional Requirements for Server Products (Only)

IBM Baseline Environmental Requirements

IBM Engineering Specification (ES 46G3772) establishes the baseline environmental requirements for supplier deliverables to IBM. ES 46G3772 contains restrictions on materials in products and on certain chemicals used in manufacturing. It also requires suppliers to disclose information about the content of certain materials in their products. In addition, the specification includes requirements for batteries, marking of plastic parts, and other product labeling requirements.

MS Environmental Compliance Specification for Hardware Products for Hyperscale Products (Only)

MS Environmental compliance specification raises restricted substances requirements through control system, specific rules & lab testing. H00642 builds the restricted substances control system for hardware products delivered to MSFT. H00594 sets up substances requirements which lists banned (zero tolerance), restricted

Lenovo Product Environmental Requirements

(allowed with specific limits) and declarable substances and materials used in or during the manufacture of all Products and packaging. H02446 establishes the requirements for analytical laboratory testing requirements.

The MS Environmental compliance specification may be accessed from the websites

<https://www.microsoft.com/en-pk/download/details.aspx?id=11691>.

5. Additional Requirements for Low Halogen Products (Only)

Lenovo "Low Halogen" products, materials, parts and assemblies must meet the following requirements:

Substance	Threshold Level	Reference
All Printed Circuit Board (PCB) and substrate laminates materials must meet Bromine (Br) and Chlorine (Cl) requirements for low halogen as defined in IEC 61249-2-21. Printed Circuit Board (PCB) and substrate laminates do not include the solder mask. Solder mask is considered a separate homogenous plastic material. Bromine (Br) Chlorine (Cl)	Maximum concentration of 900 ppm (0.09%) by weight Maximum concentration of 900 ppm (0.09%) by weight	IEC 61249-2-21 JEDEC - JEP709 EPEAT 4.1.5.2-(IEEE STD 1680.1-2018) EPEAT 6.1.4-(NSF/ANSI 426 – 2018)
All other materials and components, with the exception of Printed Circuit Board (PCB) and substrate laminates, must meet the following requirements: Bromine (Br) in Brominated Flame Retardants (BFRs) Chlorine (Cl) in Chlorinated Flame Retardants (CFRs) or Polyvinyl Chloride (PVC)	Less than 1000 ppm (0.1%) by weight in homogenous materials Less than 1000 ppm (0.1%) by weight in homogenous materials	IEC 61249-2-21 JEDEC - JEP709 JIG 101 Ed. 4.1 EPEAT 4.1.5.2-(IEEE STD 1680.1-2018) EPEAT 6.1.3-(NSF/ANSI 426 – 2018)

Note:

1. Halogens fluorine (F), iodine (I), and astatine (At) are not restricted.
2. Any materials and components other than PCB laminates and prepreg materials fall under item 2 “All other.” in the table above.
3. A listing of BFR compounds may be found in the Joint Industry Guide (JIG) 101-A Annex (www.eia.org).
4. Low Halogen materials, parts and products require a unique part number to differentiate them from "non-low-halogen" versions.
5. Suppliers must submit a Part Change Notice (PCN) identifying alternate materials.
6. Supplier must complete and provide a Lenovo Supplier Material Declaration showing Br and Cl < 900 ppm by weight in any Printed Circuit Board laminates; Br in BFRs < 1000 ppm, Cl in CFRs < 1000 ppm, Cl in PVC < 1000 ppm in homogenous material for other components and materials.
7. Supplier shall provide Lenovo a **Test Report** from a qualified, independent laboratory upon request.

Lenovo Product Environmental Requirements

8. Reactive TBBPA for printed circuit boards is exempt, until acceptable alternative materials are identified.

Exemptions:

Reactive TBBPA for printed circuit boards until acceptable alternative materials are identified

Server and Third-party option products

Parts for standard, "non-low-halogen" products are exempt

We highly appreciate your support in implementing these requirements.

Complement: The terms will be deemed as well communicated and explained to the suppliers, and become effective and binding if no dissension is raised by suppliers

Sincerely,

Thank you