Lenovo RoHS / REACH Engineering Specification
Addendum to Lenovo Environmental Specification 41A7731

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Contents

1.0 Purpose and Scope
2.0 ROHS Requirements
3.0 Substances of Very High Concern (SVHC) in Articles - Reporting Requirements
4.0 Definitions
Appendix: RoHS Guidance: summary checklist
Revision History

1.0 Purpose and Scope

This Specification communicates Lenovo's requirements for Lenovo brand products and materials, parts and assemblies incorporated into Lenovo Brand products worldwide, in accordance with European Union directive for the Restriction of Hazardous Substances (RoHS) and the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) in electrical and electronic equipment, similar regulations in other markets and more stringent limits set by Lenovo.

This Specification does not apply to spare parts for the repair, or reuse, of electrical and electronic equipment put on the market before the date defined by each regional RoHS directive, batteries or process chemicals.

1.1 Other Jurisdictions

There are other jurisdictions, other than the EU Member States, with RoHS types of requirements. The list below is not complete and is provided for information only. In some jurisdictions the product scope and requirements are different from the scope and requirements of the EU Directive. Deliverables to Lenovo which cite this specification must meet the requirements of this specification irrespective of the jurisdiction where the Deliverable is transferred to Lenovo.

- Multiple US States
- New York City
- People's Republic of China
- European Economic Area (EEA) States
- European Free Trade Association (EFTA) States
  EU Candidate Countries - Albania, Montenegro, Macedonia, Serbia, and Turkey
- EU potential Candidate Countries – Bosnia and Herzegovina, Kosovo
- EAEU
- UAE
- Brazil
- Korea
- Ukraine
- Vietnam
- India
- Japan
- Thailand
- SASO

2.0 RoHS Requirements

Lenovo brand products and materials, parts and assemblies in Lenovo brand electrical and electronic products must meet the following requirements:

1. Applicable laws and regulations;
2. Lenovo Engineering Specification 41A7731 Baseline Environmental Requirements for Materials, Parts and Products for Lenovo Hardware Products; and
3. This Lenovo RoHS/REACH Engineering Specification 41A7733.

Homogeneous materials within new Lenovo brand products and parts and assemblies for new Lenovo brand products must comply with the criteria shown in Table 1.

Non-Lenovo brand (i.e., third-party/Supplier logo) products must comply with applicable legal requirements.

Should the requirements of this Specification conflict with applicable governmental regulations or legislation the more stringent requirements shall take precedence.

2.1 Verification

Lenovo follows the guidelines as set forth in European Standard EN IEC 63000:2018 “Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances” to specify evidence requirements for suppliers, materials, components, commodities, parts and products.

Suppliers are required to complete and upload a pre-formatted Microsoft Excel spreadsheet containing Full Material Disclosure (FMD) of chemical/substance information via the Green Data Exchange (GDX), refer to Lenovo Guide to Full Material Disclosures (Version 2).

At Lenovo’s request, the supplier must be able to provide technical documentation in the form of, but not limited to:

- internal design controls,
- supplier data
- analytical test reports
- RoHS test report(s) issued by an EU authorized 3rd party certification agency/test lab

An authorized person, product assurance or similar must also sign the Lenovo Supplier Material Self-Declaration. The latest Lenovo specifications including 41A7731 and 41a7733 and others are available at: https://www.lenovo.com/us/en/sustainability-resources/#res4.

2.2 Substances Prohibited from Use

The DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 bans the use of the following in new electrical and electronic products put on the market after July 1, 2006:

- **Lead (Pb),**
- **Mercury (Hg),**
- **Cadmium (Cd),**
- **Hexavalent chromium (Cr+6),**
- **Polybrominated biphenyl (PBB) flame retardants and**
- **Polybrominated diphenyl ether (PBDE) flame retardants.**
- **Bis (2-ethylhexyl) phthalate (DEHP)[1]**
- **Butyl benzyl phthalate (BBP) [1]**
- **Dibutyl phthalate (DBP) [1]**
- **Diisobutyl phthalate (DIBP)[1]**

[1] On 4 June 2015, the EU commission published a new Directive (EU) 2015/863 to amend Annex II to EU RoHS 2 (Directive 2011/65/EU) to add the following 4 phthalates onto the list of restricted substances. Restrictions became effective July 22, 2019.

This prohibition applies to the above substances and all compounds containing these substances. These substances and compounds must not be in or on any Deliverable above the allowed concentrations found in **Table 1** below; except for the exemptions listed in Section 2.3. The maximum allowable level found in

a Homogeneous Material (e.g., metal, adhesive, paint, plastic, plating), cannot exceed the levels found in the table below.

Table 1: EU RoHS Maximum Concentration Values (MCV)		
Substance	**RoHS Maximum Concentration Value in a Homogeneous Material % by weight or (ppm)**	**Additional application restrictions may apply. See Lenovo specification 41A7731 for more details**
Lead (Pb)	0.1% or 1,000 ppm	Specific applications have more restrictive levels.
Mercury (Hg)	0.1% or 1,000 ppm	Any detectable level must be reported except unavoidable impurities at levels below 10ppm.
Cadmium (Cd)	0.01% or 100 ppm	Any detectable level must be reported for plating and surface coating applications.
Hexavalent chromium (Cr +6)	0.1% or 1,000 ppm	Specific applications have more restrictive levels.
Polybrominated biphenyl (PBB) flame retardants	0.1% or 1,000 ppm	Any detectable level must be reported.
Polybrominated diphenyl ether (PBDE) flame retardants. Note:Lenovo includes Decabromodiphenyl ether in this category	0.1% or 1,000 ppm	Any detectable level must be reported.
Bis (2-ethylhexyl) phthalate (DEHP)	0.1% or 1,000 ppm	Specific applications have more restrictive levels.
Butyl benzyl phthalate (BBP)	0.1% or 1,000 ppm	Specific applications have more restrictive levels.
Dibutyl phthalate (DBP)	0.1% or 1,000 ppm	Specific applications have more restrictive levels.
Diisobutyl phthalate (DIBP)	0.1% or 1,000 ppm	Specific applications have more restrictive levels.

Note:
1 - Certain substances affected by the European Commission's Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) are already restricted by other regulations at concentration levels that are more stringent than those associated with RoHS compliance. Lenovo Engineering Specification 41A7731 provides the detailed requirements for these substances as defined by certain existing legislation and/or Lenovo internal standards.

2 - Test methodology for RoHS substances must be in accordance with the latest version of IEC 62321 series standard– Determination of certain substances in electrotechnical products.

2.3 Exemptions

The following are the applications which are exempt from the requirements of RoHS as cited by the EU Directive, and subsequent amendments. The prohibition, as stated in Section 2.2, is in place for all other applications. Lenovo has determined some of the exemptions will be allowed for Lenovo products. This information is noted by the exemption. Where specified by Lenovo in the procurement documents some of these exemptions may still be used when the order is for spare parts for the repair and reuse of equipment placed on the market prior to a specific date.

The exemptions in **Table 2** shows major common exemptions status for electronic products. Under the RoHS-2 Directive, exemptions remain in effect until a decision is made on the renewal applications that have been submitted. If notification is received from the EU regarding exemption expirations, Lenovo will assess and update this specification and table as necessary.

Note:
A table providing an overview of Annex III and IV exemptions, including their validity status and submitted exemption requests is available for download here.

Table 2: ROHS Exemptions			
Exemption No.	**Description**	**Current EU Expiration Date**	**Current Status**

5(b)	Lead (Pb) in glass of fluorescent tubes not exceeding 0.2% by weight	-	Extension requested for Categories 1 to 7 and 10
6(a)	Lead (Pb) as an alloying element in steel for machining purposes and in galvanized steel containing up to 0.35% lead by weight	11-Dec-2026	Expires on 11 December 2026
6(a)-I*	Lead as an alloying element in steel for machining purposes containing up to 0,35 % lead by weight	30-Jun-2027	Expires on 30 June 2027 for all categories
6(a)-II*	Lead in batch hot dip galvanised steel components containing up to 0,2 % lead by weight	30-Jun-2027	Expires on 30 June 2027 for all categories
6(b)	Lead (Pb) as an alloying element in aluminum containing up to 0.4% lead by weight	11-Jun-2027	Expires on 11 June 2027
6(b)-I*	Lead as an alloying element in aluminium containing up to 0.4% lead by weight, provided it stems from lead-bearing aluminium scrap recycling	11-Dec-2026	Expires on 11 December 2026 for categories 1-7, 10. Expires on 30 June 2027 for categories 9 industrial monitoring and control instruments, and 11.
6(b)-II*	Lead as an alloying element in aluminium for machining purposes with a lead content of up to 0.4% lead by weight	11-Jun-2027	Expires on 11 June 2027 for categories 1-7, 10. Expires on 30 June 2027 for categories 9 industrial monitoring and control instruments and 11.
6(b)-III*	Lead as an alloying element in aluminium casting alloys containing up to 0,3% lead by weight provided it stems from lead-bearing aluminium scrap recycling	30-Jun-2027	Expires on 30 June 2027 for categories 1-8, 9 other than industrial monitoring and control instruments, and 10.
6(c) *	Copper alloy containing up to 4% lead (Pb) by weight	30-Jun-2027	Expires on 30 June 2027
7(a)	Lead (Pb) in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead)	30-Jun-2027	Applies to all categories (except applications covered by point 24 of this Annex) and expires on 30 June 2027.
7(a)-I	Lead in high melting temperature type solders (i.e., lead-based alloys containing 85% by weight or more lead) for internal interconnections for attaching die, or other components along with a die in semiconductor assembly with steady state or transient/impulse currents of 0.1 A or greater or blocking voltages beyond 10 V, or die edge sizes larger than 0.3 mm x 0.3 mm	31-Dec-2027	Applies to all categories (except applications covered by point 24 of this Annex) and expires on 31 December 2027.
7(a)-II	Lead in high melting temperature type solders (i.e., lead-based alloys containing 85% by weight or more lead) for integral (meaning internal and external) connections of die attach in electrical and electronic components, if all the following conditions are met: - the thermal conductivity of the cured/sintered dieattach material is >35W/(m*K), - the electrical conductivity of the cured/sintered dieattach material is >4.7MS/m , - solidus melting temperature is higher than 260°C	31-Dec-2027	Applies to all categories (except applications covered by point 24 of this Annex) and expires on 31 December 2027.
7(a)-III	Lead in high melting temperature type solders (i.e., lead-based alloys containing 85% by weight or more lead) in first level solder joints (internal or integral connections - meaning internal and external) for manufacturing components so that subsequent	31-Dec-2027	Applies to all categories (except applications covered by point 24 of this Annex) and expires on 31 December 2027.

	mounting of electronic components onto subassemblies (i.e. modules, sub-circuit boards, substrates, or point-to-point soldering) with a secondary solder does not reflow the first level solder. This sub-entry excludes die attach applications and hermetic sealings		
7(a)-IV	Lead in high melting temperature type solders (i.e., lead-based alloys containing 85% by weight or more lead) in second level solder joints for the attachment of components to printed circuit board or lead frames: 1. in solder balls for the attachment of ceramic ballgrid-array (BGA) 2. in high temperature plastic overmouldings (> 220 °C)	31-Dec-2027	Applies to all categories (except applications covered by point 24 of this Annex) and expires on 31 December 2027.
7(a)-V	Lead in high melting temperature type solders (i.e.,lead-based alloys containing 85% by weight or more lead) as a hermetic sealing material between: 1. a ceramic package or plug and a metal case, 2. component terminations and an internal sub-part	31-Dec-2027	Applies to all categories (except applications covered by point 24 of this Annex) and expires on 31 December 2027.
7(a)-VI	Lead in high melting temperature type solders (i.e., lead-based alloys containing 85% by weight or more lead) for establishing electrical connections between lamp components in incandescent reflector lamps for infrared heating, high intensity discharge lamps, or oven lamps	31-Dec-2027	Applies to all categories (except applications covered by point 24 of this Annex) and expires on 31 December 2027.
7(a)-VII	Lead in high melting temperature type solders (i.e., lead-based alloys containing 85% by weight or more lead) for audio transducers where the peak operating temperature exceeds 200°C	31-Dec-2027	Applies to all categories (except applications covered by point 24 of this Annex) and expires on 31 December 2027.
7(c)-I	Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound	30-Jun-2027	Applies to all categories and expires on 30 June 2027.
7(c)-II	Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher excluding applications covered by point 7(c)-I or 7(c)-IV.	31-Dec-2027	Applies to all categories (except applications covered by point 7(c)-I or 7(c)-IV) and expires on 31 December 2027.
7(c)-V	Electrical and electronic components containing lead in a glass or glass matrix compound that fulfils any of the following functions: 1) for protection and electrical insulation in glass beads of high-voltage diodes and glass layers for wafers on the basis of a lead-zinc-borate or a leadsilica-borate glass body; 2) for hermetic sealing between ceramic, metal and/or glass parts; 3) for bonding purposes in a process parameter window for < 500 °C combined with a viscosity of 1013.3 dPas ('glass-transition temperature'); 4) for use as a resistive material such as ink, with a resistivity range from 1 ohm/square to 1 megohm/square, excluding trimmer potentiometers; 5) for use in chemically modified glass surfaces for microchannel plates (MCPs), channel electron multipliers (CEMs) and resistive glass products (RGPs).	31-Dec-2027	Applies to all categories and expires on 31 December 2027.
7(c)-VI	Electrical and electronic components containing lead in a ceramic that fulfils	31-Dec-2027	Applies to all categories (except applications covered by points 7(c)-

	any of the following functions (excluding items covered by points 7(c)-II, 7(c)-III and 7(c)-IV of this Annex as well as point 14 of Annex IV): 1) for use in piezoelectric lead zirconium titanate (PZT) ceramics; 2) for providing ceramics with a positive temperature coefficient (PTC).'.		II, 7(c)-III and 7(c)-IV of this Annex as well as point 14 of Annex IV) and expires on 31 December 2027.'
8(b)-I	Cadmium and its compounds in electrical contacts used in: - circuit breakers, - thermal sensing controls, - thermal motor protectors (excluding hermetic thermal motor protectors), - AC switches rated at: o 6A and more at 250V AC and more, or o 12A and more at 125V AC and more, - DC switches rated at 20 A and more at 18 V DC and more, and - switches for use at voltage supply frequency ⩾ 200 Hz.	-	Extension requested for categories 1 to 7 and 10
9(a)-II	Up to 0,75% hexavalent chromium by weight, used as an anticorrosion agent in the cooling solution of carbon steel cooling systems of absorption refrigerators: - designed to operate fully or partly with electrical heater, having an average utilised power input ⩾ 75 W at constant running conditions; - designed to fully operate with non-electrical heater.	-	Extension requested for categories 1 to 7 and 10
13(b)	Cadmium and lead in filter glasses and glasses used for reflectance standards	-	Expired for Categories 1 to 7 and 10 ---------- Extension requested for Categories 8, 9 and 11
13(b)-(I)	Lead in ion coloured optical filter glass types	-	Extension requested Categories 1 to 7 and 10
13(b)-(II)	Cadmium in striking optical filter glass types; excluding applications falling under point 39 of this Annex	-	Extension requested for Categories 1 to 7 and 10
13(b)-(III)	Cadmium and lead in glazes used for reflectance standards	-	Extension requested for Categories 1 to 7 and 10
15	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages	-	Expired for Categories 1 to 7 and 10 Extension requested for Categories 8, 9 and 11
15(a)	Lead in solders to complete a viable electrical connection between the semiconductor die and carrier within integrated circuit flip chip packages where at least one of the following criteria applies: —a semiconductor technology node of 90 nm or larger; —a single die of 300 mm2 or larger in any semiconductor technology node; —stacked die packages with die of 300 mm2 or larger, or silicon interposers of 300 mm2 or larger. Applies to categories 1 to 7 and 10 and expires on 21 July 2021.	-	Extension requested for Categories 1 to 7 and 10
24	Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors	-	Extension requested for Categories 1 to 7 and 10
34	Lead in cermet-based trimmer potentiometer elements	-	Extension requested for Categories 1 to 7 and 10

37	Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body	21-July-2024	Expired for Categories 1 to 7 and 10
39(a)	Cadmium selenide in downshifting cadmium-based semiconductor nanocrystal quantum dots for use in display lighting applications (less than 0.2 microgram Cd per mm2 of display screen area)	21-November-2025	Expired for Categories 1 to 7 and 10
39(b)	Cadmium in downshifting semiconductor nanocrystal quantum dots directly deposited on LED semiconductor chips for use in display and projection applications (< 5 µg Cd per mm2 of LED chip surface) with a maximum amount per device of 1 mg	31-December-2027	Valid

(*) The exemption shall not cover EEE for supply to the general public where the EEE or accessible part thereof may, during normal or foreseeable conditions of use, be placed in the mouth by children. However, the exemption shall apply where the following can be both demonstrated:
—the rate of lead release from such an EEE or any accessible part, whether coated or uncoated, does not exceed 0,05 µg/cm^2 per hour (equivalent to 0,05 µg/g/h),
—for coated articles, that the coating is sufficient to ensure that this release rate is not exceeded for a period of at least two years of normal or reasonably foreseeable conditions of use of the EEE.
For the purpose of this footnote, it is considered that an EEE or accessible part of an EEE may be placed in the mouth by children if it is smaller than 5 cm in one dimension or has a detachable or protruding part of that size.'.

2.5 Product Marking and Information Disclosure

2.5.1 Products for Japan: must meet the requirements of Japanese Industrial Standard for The Marking the presence of the Specific Chemical Substances for electrical and electronic equipment (JIS C 0950:2021, "J-MOSS"). Product development teams must provide product conformity declarations to Lenovo's Japan Environment representative before offering product for sale in Japan.

1. Mandatory "R" mark if the product does not meet the requirements of the RoHS Directive.
2. Optional* green "G" mark to show no such substances are contained (*not required by Lenovo).
3. Product material declaration table in Japanese on external Lenovo Japan Environmental website

2.5.2 "Korea RoHS": must meet the requirements of The Act for Resource Recycling of Electrical and Electronic Equipment and Vehicles ("Korea RoHS"). Product development teams must provide product conformity declarations to Korea's Country Manager representative before offering product for sale in Korea. Product declarations must be on the Korea ECOAS (http://www.ecoas.or.kr/) web page before offering product for sale in Korea.

2.5.3 Products for Turkey: must meet the requirements of Turkey's Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) regulation. Product development teams must provide product conformity declarations to Lenovo's Turkey Country Manager representative, annually beginning June 2009 for submission to the Turkey Ministry of Environment and Forestry.

2.5.4 Products for People's Republic of China: must meet requirements of "Management Methods for Restricted Use of Hazardous Substances in Electrical and Electronic Products" ("China RoHS"). The official documents are in Chinese at chn153715.pdf

2.5.4.1 China RoHS labeling requirement
1. China RoHS label
Electronic and electrical products, parts, accessories, options, Field Replacement Units (FRUs) and Customer Replaceable Units (CRUs) for "independent commercial sale" in China must be marked with one of two labels:

Label Ⅰ: "e" inside circle indicates product is compliant with requirements of concentration limits for certain substances in electrical and electronic products GB 26572-2025 **or**

图1 标志I

图2 标志II

Label Ⅱ: Environment-friendly use period (EFUP) in years in circle indicating product is not compliant with requirements of concentration limits for certain substances in electrical and electronic products GB 26572-2025

Normally, the label of restriction on the use of hazardous substances in electrical and electronic products should be directly labeled on the visible part of the product by molding, laser engraving, spraying, sticking, printing and other means.

If the product is equipped with a graphic display function, China RoHS label can be digitally embedded in the system software of the product.

Exception:

- The product itself belongs to the electrical and electronic products, but only as other electrical and electronic products internal components, such as display components, circuit boards, resistors, etc., when they are put on the market individually and sold to consumers or end-users, they may not be directly marked China RoHS label on the product surface, but it shall be indicated in the documentation of the product.
- Product total surface area is <50cm^2
- irregular shape, such as cables with a large surface area but particularly thin and long
- cannot be marked on the surface of the product due to the surface material or function

EFUP Mark artwork, color, size, font specifications are provided in: Labeling Standard SJ/T 11364-2024

- Label Ⅰ Green Mark: C:85,M:30,Y:85,K:20; Label Ⅱ Orange Mark: C:0,M:75,Y:100,K:0
- Minimum 5 mm x 5 mm mark size

There are no marking color restrictions as long as the mark is visible (black and white is acceptable). The color green should not be used for Label Ⅱ.

2. Substance Disclosure Table

Products that require **Label Ⅱ** must have a Substance Disclosure Table in the product documentation. Or QR code can be used to enable users to scan the contents of the table.

- Text must be in Simplified Chinese (except for "O" and "X" and substance abbreviation)
- Table must include Part Name(s), Insert "O" or "X" for each key part.
- If the content of each hazardous substance in a part meets the requirements of GB 26572, the part does not need to be listed in the table.
- See the example table below

产品中有害物质的名称及含有的信息表										
部件名称	有害物质									
	Pb	Hg	Cd	Cr(VI)	PBBs	PBDEs	DBP	DIBP	BBP	DEHP

注 1：○：表示该有害物质在该部件所有均质材料中的含量均不超出电器电子产品有害物质限制使用国家标准要求。

×：表示该有害物质至少在该部件的某一均质材料中的含量超出电器电子产品有害物质限制使用国家标准要求。

注 2：以上未列出的部件，表明其有害物质含量均不超出电器电子产品有害物质限制使用国家标准要求。

The carrier of the product documentation can be a paper manual, CD/DVD, packaging, built-in system software, company website. If the built-in system software or webpage is used as the table carrier, the manufacturer or importer of the electrical and electronic products shall indicate the method of viewing in the paper instruction/description CD-ROM of the product or on the package.

For more detailed requirement, please refer to SJ/T 11364-2024.

2.5.4.2 China RoHS Conformity Assessment System
According to Arrangements for the Implementation of the RoHS Conformity Assessment System for Electrical and Electronic Products (hereinafter referred to as “Arrangements”), which are hereby announced. All products that are included in the Management Catalogue of Electrical and Electronic Products(EEP) that Should Meet the RoHS Standards and are shipped out of factory or imported after November 1, 2019 shall meet the requirements of the Arrangements.

Modes of Conformity Assessment

- The unified voluntary RoHS certification scheme introduced by the State for EEPs (hereinafter referred to as “State-introduced voluntary certification”)
- The supplier’s declaration of RoHS conformity for EEPs (hereinafter referred to as “SDoC”)

The supplier of an EEP included in the Management Catalogue shall choose the State-introduced voluntary certification mode or SDoC mode to complete the RoHS conformity assessment. Product conformity information should be submitted to China RoHS public service platform within 30 days after the product is put on the market. And Enterprise self-declaration and technical support documents are conformity information for SDoC mode.

Labels of Conformity Assessment
The below Design I will be used as the conformity assessment label for the products undergoing the State-introduced voluntary certification, and The identification of the certification authority in the box should be confirmed with the corresponding certification authority. While Design II will be used as the conformity assessment label for the products going through the SDoC procedure.

Vector drawings of basic patterns of green product identification can be downloaded on the information platform. Green product labels can be scaled up or down, and should be clearly identifiable after labeling.

Unless otherwise required by relevant systems or certification bodies, enterprises can independently choose any manufacturing process (such as printing, molding, etc.) to use or display the green product logo on the product body, nameplate, packaging, attached documents (such as instruction manual, qualification certificate, etc.), operating system, electronic sales platform, etc.

The color of green product logo should be white background plate, green pattern.

Design II

Design I

For China RoHS and China RoHS Conformity Assessment related requirement,please refer to http://www.cesi.cn/rohs/page/fgptbz.jsp?catalog=/001/001-008/001-008-006/001-008-006-001

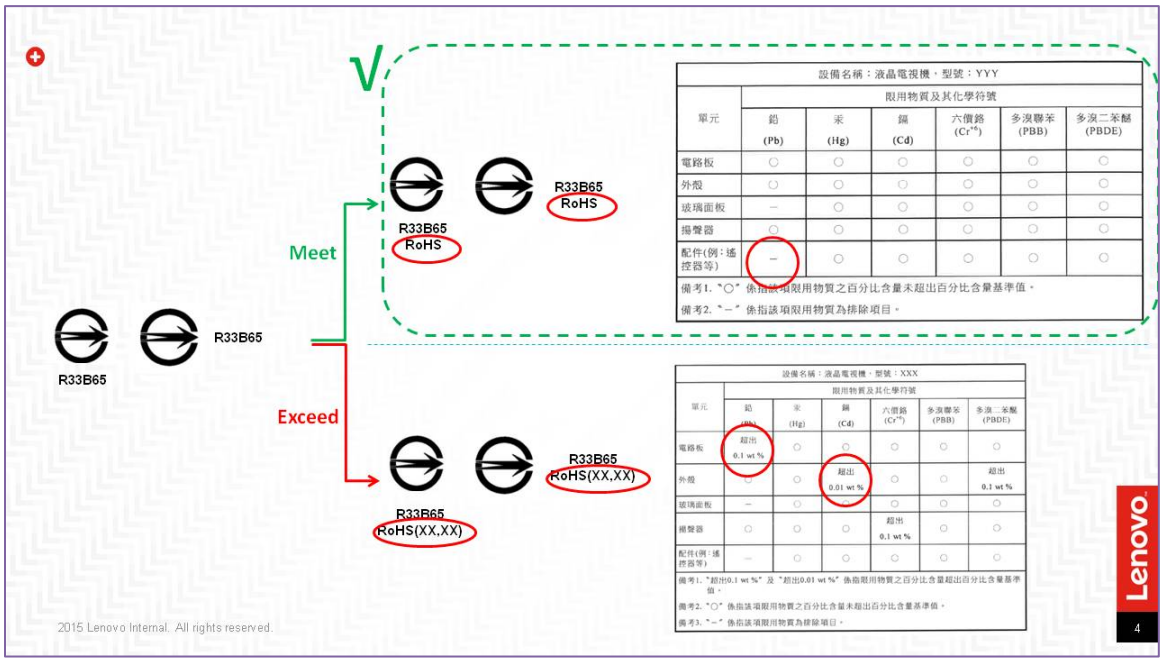
2.5.5 Vietnam RoHS: must meet the requirements of Circular, provisionally stipulating allowable limit contents of a number of toxic or hazardous chemicals in electric or electronic products (“Vietnam RoHS”). Product development teams can choose one of following disclosure to show the information on the allowable limits of restricted substances before offering product for sale in Vietnam:

- Upload on Website of company
- User’s guide / Instruction manual of product

- Information in electronic form (e.g. CD)
- Printing on the product or packaging

2.5.6 Taiwan RoHS: Must meet the requirements for the certified national standards, Guidance for the reduction of restricted chemical substances in electrical and electronic equipment (CNS15663). This provides the product categories, types of restricted hazardous substances, quantity standards and standardisation methods.

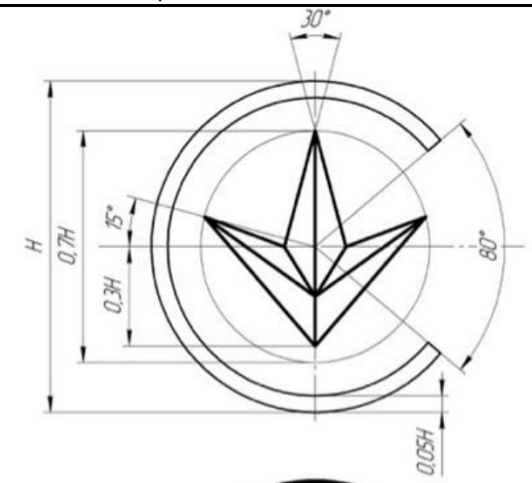
The presence restricted substances requires the use of the following mark and disclosure table on the body, packages, stickers, or user documentation:



2.5.7 Ukraine RoHS: Must meet the requirements in accordance with Decree #139 of the Council of Ministers of Ukraine. This provides the product categories, types of restricted hazardous substances, quantity standards and standardization methods.

Beginning July 23, 2018 the national conformity mark of Ukraine must be placed directly on the EEE or on a nameplate with the technical specifications of the equipment. The mark must be visible, clear and indelible. If this is not possible or feasible due to the nature of the product, then the national conformity mark must be placed on the packaging and the accompanying documentation.

The general principles of placing the national mark of conformity are set out by Decree No. 1184, 2015. The Decree provides for the description of the national mark of conformity and the rules of its application.



3.0 REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation
3.0.1 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 or Sub-Deliverable as defined by latest EU Article definition) 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 Full Material Disclosure (FMD) via the Green Data Exchange (GDX), refer to Lenovo Guide to Full Material Disclosures (Version 2), for the Deliverable/Sub-Deliverable.

The current candidate list of REACH SVHC as published by the EU is located at:

https://echa.europa.eu/candidate-list-table.

This list is subject to change by the European Chemicals Agency (ECHA); contains 253 unique substances/entries on the date this specification was published. Also refer to Lenovo Engineering Specification 41A7731 Annex DD for the list of SVHC Candidate Substances as of the date of this document.

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.

Additionally, from 5 January 2021, Suppliers supplying articles containing SVHCs in a concentration of 0.1% w/w or above will be required to notify their information via the new SCIP database as prescribed by ECHA under the Waste Framework Directive (WFD). SCIP stands for **S**ubstances of **C**oncern **I**n articles, as such or in complex objects (**P**roducts).

The SVHC Candidate List is updated twice a year by the European Chemicals Agency (ECHA). All suppliers are requested to update SVHC declaration information and associated SCIP data in GDX per the latest SVHC Candidate List.

The new database, which will be made available to waste operators and consumers, ensures that information on products containing SVHCs is available throughout the product's whole lifecycle, including the waste stage. See the info here for more details: https://echa.europa.eu/scip-database

See the info here for details regarding submission of the SCIP Notification information in GDX: http://apps.gpointtech.com/redmine/projects/gdxhelp/wiki/SCIP_Notification_in_GDX

EU REACH Regulation Number 1907/2006 can be found at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02006R1907-20140410

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

3.0.2 Restricted Substances (Annex XVII) - Requirements

Lenovo requires all materials/parts/products meet EU REACH Restriction Substances (Annex XVII) requirement. If there is any substances, even if the substance concentration less than the prescribed restriction conditions under Annex XVII , suppliers shall report the name and CAS number of the restricted substance and the quantity on Full Material Disclosure (FMD) via the Green Data Exchange (GDX), refer to Lenovo Guide to Full Material Disclosures (Version 2), for the Deliverable/Sub-Deliverable.

The latest substances list of REACH Restricted Substances as published by the EU is located at:

https://echa.europa.eu/substances-restricted-under-reach.

This list is subject to change by the European Chemicals Agency (ECHA); contains 78 unique substances/entries on the date this specification was published.

EU REACH Regulation Number 1907/2006 can be found at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02006R1907-20140410

The EU provides guidance documents for REACH at https://echa.europa.eu/guidance-documents/guidance-on-reach

4.0 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 2011/65/EU 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)
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 composed of one or more substances or mixtures which during production is given a special shape, surface or design which determines its function to a greater degree than does its chemical composition. Every single component in a product can also be defined as an article. 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 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.

Appendix: Guidance: RoHS summary checklist			Requirement Met	
1. General			**Yes**	**No**
a. Lenovo Environmental Specifications 41A7731, 417733	Requirement:	Mandatory for new Lenovo brand products, materials, parts and assemblies incorporated into Lenovo Brand products worldwide*.		
	Affected Parts:	Electronic Hardware parts / Products		
	Supplier must declare compliance by:	Lenovo Supplier Material Declaration		
b. European Union RoHS Compliance	Requirement:	Mandatory for new Lenovo brand products, materials, parts and assemblies incorporated into Lenovo Brand products worldwide*.		
	Affected Parts:	New electronic Hardware products and parts. Does not apply to spare parts for equipment put on the market before July 1, 2006, batteries.		
	Supplier must declare compliance by:	Lenovo Supplier Material Declaration		
c. "China RoHS" Compliance	Requirement:	Mandatory for products offered for sale in the People's Republic of China		
	China Affected Parts:	Electronic hardware parts / products		
	Mark requirements:	For all Electronic hardware parts 1. China RoHS Mark on the product/option (or on the Pubs if the product is small or of irregular shape) 2. Substance Disclosure Table inside the product box shipping into China (must be in Chinese, except "O", "X") 3. Date of manufacture in YYYY-MM-DD format on the product or on the product's sales package 4. "China RoHS" Packaging Recycle Marks For products listed in the Management Catalogue Add China RoHS Conformity assessment labels at mentioned in section 2.5.4.2		
	Technical requirements	For all products listed in the Management Catalogue shall meet the requirement of GB 26572 and its amendments		
	Conformity assessment requirements	For all products listed in the Management Catalogue shall complete China RoHS conformity assessment within 30 days after the product is put on the market.		
d. "J-Moss" Compliance	Requirement:	Mandatory for products imported into or manufactured in Japan		
e. "Turkey RoHS" Compliance	Requirement:	Mandatory for products offered for sale in the Republic of Turkey		
	Affected parts:	New products, options and parts must comply with Turkey RoHS material restrictions (same as European Union RoHS material restrictions)		
	Supplier must declare compliance by:	Lenovo Supplier Material Declaration Keep all information and documents showing that products they sale to Lenovo meet the technical criteria mentioned in this Regulation for 5 years starting from the date the product is released to the market. Retain information in Lenovo Filenet(ECM)-Worldwide Supplier Material Declarations		
f. "Korea RoHS" Compliance	Requirement:	Mandatory for products for Korea. Product Declaration required on Korea website before product is offered for sale		

Appendix: Guidance: RoHS summary checklist			Requirement Met	
g. Supplier RoHS-compliance	Supplier responsibility	Mandatory. Supplier maintains effective compliance process including technical documentation which demonstrates actions to verify RoHS-compliance. Upon request by Lenovo the supplier will verify compliance of materials, parts, components, and/or products to Lenovo's RoHS Specification via analytical testing or other suitable means.		
h. Lenovo approved Lead (Pb)-free solder	Supplier	Lenovo approved lead (Pb)-free solders: Tin-silver-copper (Sn-Ag-Cu (SAC)) solder. Other lead (Pb)-free solders must be approved by Lenovo, on a case by case basis		
i. Lenovo approved Lead (Pb)-free printed circuit board finish	Supplier	. Lenovo approved lead (Pb)-free Printed Circuit Boards finishes: Organic Solder Preservatives (OSP). Other materials may be approved by Lenovo, on a case by case basis		
j. Whisker Mitigation	Supplier	Suppliers shall implement whisker growth countermeasures. Reference: JEDEC Standard JESD22-A121 Lenovo reserves the right to request Supplier tin whisker test data		

Revision History

Version	Date	Change Description
0	Jun 2006	Initial issue
1	Nov 2006	Added EU RoHS exemptions 22-29, Revised Cd threshold from 75 to 100 ppm, Added requirement for Supplier Test Report upon request, Defined OEM-contract manufacturer responsibility for Supplier Material Declaration, Added reference to China RoHS, J-Moss, US RoHS regulations
2	Jun 2007	Updated to include systems, printers, options, visual display devices, Deleted expired RoHS exemption for Cr6, Updated Packaging Specification Reference
3	Dec 2007	Added reference to Korea RoHS Declaration, ppm calculation, exemption 9a may not be used, Added Consumer product signoff
4	Aug 2008	EC M07149H. Added Lenovo RoHS Checklist, China RoHS Supplier Letter, J-Moss marks.
5	October 2008	Cr6 threshold changed to intentionally added; corrected typo (Table 1: 0.01 corrected to 0.1 for lead), added reference to Turkey RoHS effective June 2009); added 3 new RoHS exemptions 30. Cadmium alloys as electrical/mechanical solder joints to electrical conductors located directly on the voice coil in transducers used in high-powered loudspeakers with sound pressure levels of 100 dB (A) and more. 31. Lead in soldering materials in mercury free flat fluorescent lamps (which e.g. are used for liquid crystal displays, design or industrial lighting). 32. Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes
6	March 2010	Added REACH information (requirements, SVHC listing, etc.); added/updated EU RoHS exemptions 33-38 (Cadmium, Lead, Mercury); updated Turkey RoHS information.
7	September 2012	Updated RoHS exemption list; updated REACH SVHC listing
8	September 2013	Updated and included other jurisdictions with RoHS requirements. Updated RoHS exemption list per Directive 2011/65/EU. Updated REACH SVHC listing per 20 June 2013 Candidate List. Updated Environmental Protection Use Period (EPUP) information to reflect current regulation requirements. Added information describing Vietnam RoHS requirements. Updated EU Directive to reflect the current version.
9	July 2014	Updated REACH SVHC listing per 16 June 2014 Candidate List
10	March 2015	Updated REACH SVHC listing per 17 December 2014 Candidate List. Update: 600ppm allowance for PBBs, PBDEs, excluding DecaBDE in PCC recyclate and plastic resins.
11	August 2015	Added 4 phthalates per new Directive (EU) 2015/863 to amend Annex II to EU RoHS 2 (Directive 2011/65/EU). Updated REACH SVHC listing per 15 June 2015 Candidate List
2016-1	March 2016	Updated REACH SVHS listing per 17 December 2015 Candidate List. Added Taiwan RoHS mark and Disclosure table information.
2016-2	October 2016	Added: Section 2.3 Substances Prohibited from Use Updated: Table 1: EU RoHS Maximum Concentration Values (MCV) Added: Section 2.4 Exemptions Added: Table 2: ROHS Exemptions Removed: Table 2. Lenovo Maximum Concentrations for Substances of Very High Concern (SVHC) Revised: Section 3 to refer to ECHA online candidate list of SVHC Update: Lenovo Guide to Full Material Disclosure (Version 2); new link Update: Lenovo Supplier Material Self-Declaration; new link
2017-1	March 2017	Update/corrected: Table of Contents. Update: Removed RoHS exemptions 13(b), 34, 38 that were not renewed by the EU. Update: Section 3 – number of unique substances in SVHC candidate list (173). Update: Taiwan RoHS mark and Disclosure table information.
2018-1	April 2018	Update: Section 3 – number of unique substances in SVHC candidate list (181).
2018-2	September 2018	Update: Added Section 2.5.7 – Ukraine RoHS requirements. Update: Section 3 – number of unique substances in SVHC candidate list (191).
2018-3	November 2018	Update: Table 2: RoHS Exemptions – expiration dates for multiple exemptions.
2019-1	January 2019	Update: Added reference to RoHS 3 effective date for 4 phthaltes (DEHP, DPB, BBP, DIBP). Update: Section 3 – number of unique substances in SVHC candidate list (197).Update: Listed a link to a table providing an overview of Annex III and IV exemptions, including their validity status and submitted exemption requests Update: Hyperlinks for Lenovo Guide to Full Material Disclosures (Version 2), Lenovo Supplier Material Self-Declaration, Lenovo Japan Environmental website, EU REACH Regulation Number 1907/2006

2019-2	September 2019	Update: Various url's and hyperlinks to new Lenovo sustainability web pages Update: Added sec 2.5.4.1 China RoHS Conformity Assessment System Update: Section 3 – number of unique substances in SVHC candidate list (201).
2020-1	May 2020	Update: Section 3 – number of unique substances in SVHC candidate list (205). Update: Section 3 – added REACH Restricted Substance requirement
2020-2	June 2020	Update: Section 3 – number of unique substances in SVHC candidate list (209).
2021-1	February 2021	Update: Section 3 – number of unique substances in SVHC candidate list (211); Update: Section 3 - added SVHC SCIP database notification requirements under the Waste Framework Directive; added link to GDX data submission requirements.
2021-2	August 2021	Update: Section 3 – number of unique substances in SVHC candidate list (219);
2022-1	February 2022	Update: URL/link to Lenovo specifications Update: Description of technical documentation requirements Update: Replace reference of EN 50581:2012 to EN IEC 63000:2018 Update: Section 3 – number of unique substances in SVHC candidate list (223) Update: Link to Candidate List of substances of very high concern for Authorisation
2022-2	August 2022	Update: Section 3 – number of unique substances in SVHC candidate list (224)
2023-1	February 2023	Update: Section 2.2 – removed reference to 1752A XML format for FMD disclosures Update: Section 2.4 - Table 2: RoHS exemptions Update: Section 3 – number of unique substances in SVHC candidate list (233) Update: Section 3 - removed reference to 1752A XML format for FMD disclosures
2023-2	December 2023	Update: Section 2.3 -Update IEC 62321 name and remove EN 50581 in note 2 Update: Section 3.0.1 – number of unique substances in SVHC candidate list (235) Update: Section 3.0.2 -Update candidate substance into restricted substance; number of unique substances/entries in restricted substances (73)
2024-1	February 2024	Update: Update number of REACH restricted substances (73) Update: Update number of SVHC Candidate List substances (240) Update: JIS C 0950:2005 has been updated into JIS C 0950:2021; hyperlink updated
2024-2	September 2024	Update: Section number of 2.2/2.3/2.4 Update: Section 2.2- Hyperlinked URL Update: Table 2 - ROHS Exemptions Update: Section 3.0.1-number of unique substances in SVHC candidate list (241) Update: Appendix: Guidance: RoHS summary checklist -"China RoHS" Compliance Update: Section 3.0.2 Restricted Substances Update: Update number of REACH restricted substances (74)
2025-1	February 2025	Update: Section 3.0.1-number of unique substances in SVHC candidate list (247) Update: Section 2.5.4.1- update China RoHS labeling requirement in 2.5.4.1 Update: Change 2.5.4.1 into 2.5.4.2
2025-2	September 2025	Update: Section 3.0.1-number of unique substances in SVHC candidate list (250) Update: Section 3.0.2-number of REACH restriction(77) Update: GB/T 26572 into GB 26572-2025 Update: Table 2 – RoHS Exemptions
2026-1	March 2026	Update: Section 3.0.1-number of unique substances in SVHC candidate list (253) Update: Section 3.0.2-number of REACH restriction (78) Update: Table 2 – RoHS Exemptions