GEN - 125

ams-OSRAM AG Environmental Standard for Suppliers

Validity Area(s): ams-OSRAM AG Semiconductor sites

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Company Confidential

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1 Objectives

This specification *ams-OSRAM AG Environmental Standard for Suppliers* is to provide information of environmental-related initiatives and requirements towards Supplier and/or its Affiliates[1] directly or indirectly[2] providing products and/or services to ams-OSRAM AG and/or its Affiliates ("ams OSRAM").

This standard applies to all direct material suppliers (BOM material and non-BOM material) as well as packaging material suppliers. Moreover, this standard is valid for all external manufacturer suppliers (e.g., foundry, assembly, testing, grinding, sawing, etc.).

All restrictions and requirements are derived from applicable national or international regulations and directives, as well as our standards and policies. As we are highly committed to manufacturing and providing products to the market that are environmentally friendly and protect human health, our standards may go beyond regulatory requirements.

The *Supplier Compliance Initiative* is established in order to receive supplier's commitment for mandatory declarations, confirmations and guarantee letters on regulations/directives/certificates/etc. As mentioned above, all supplier categories are in the scope of the *Supplier Compliance Initiative*. The participation and therefore the cooperation in activities related to the *Supplier Compliance Initiative* are obligated.

Questions regarding this standard can be directed to EPE-SupplierCompliance@ams-osram.com (Environmental product-related topic) and Supplier-Management@ams-osram.com (contract-related topic).

2 Scope

This specification is applicable to all relevant suppliers of ams OSRAM semiconductors sites.

3 Reference Documents

GEN – 123 Supplier Non-Use of Hazardous Substances Declaration

GEN – 122 Supplier's Declaration on non-use of Hazardous Substances in Packaging Materials

GEN – 177 ams OSRAM AG Responsible Sourcing and Conflict Minerals Due Diligence Procedure

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[1] **"Affiliate"** means for the purpose of this declaration any existing or future entity, (i) directly or indirectly controlling a party; (ii) under the same direct or indirect control as a party; or (iii) directly or indirectly controlled by a party. For the purposes of this definition "control" means (i) the ownership of the majority of a company's voting stock or the majority of its voting rights, (ii) the right directly or indirectly to appoint the majority of the members of the managing or administrative board (or of a similar managing authority with the power to represent the company) or (iii) the power to direct, or cause the direction of, the management by contract or otherwise.

[2] **"indirectly"** means that products, packaging materials and/or services are provided indirectly to ams OSRAM, e.g., via its contract manufacturers, distributors or other intermediaries, and the Supplier is aware that ams OSRAM is the final customer or intended recipient of such material, packaging material and/or services.

4 General Information

4.1 Definition of Terms

4.1.1 Homogeneous Material

According to the definition of Directive 2011/65/EU on the Restriction of the Use of certain Hazardous Substances in Electrical and Electronic Equipment (RoHS 2):

One material of uniform composition throughout or a material, consisting of a combination of materials, that cannot be disjointed or separated into different materials by mechanical actions such as unscrewing, cutting, crushing, grinding and abrasive processes.

4.1.2 Safety Data Sheet (SDS)

A Safety Data Sheet (SDS, formerly commonly referred to as MSDS) is a document used to communicate information on hazardous substances and mixtures, including classification, labelling, safe handling, exposure controls, storage, transport, disposal and regulatory information. In the European Union, SDS requirements are laid down in REACH Regulation (EC) No 1907/2006, Article 31 and Annex II, as amended by Commission Regulation (EU) 2020/878.

4.1.3 Packaging and Packaging Waste Regulation, Regulation (EU) 2025/40, PPWR

Regulation (EU) 2025/40 on packaging and packaging waste, PPWR, establishes harmonised EU requirements for packaging and packaging waste. It applies to all packaging, regardless of material used, and to all packaging waste, whether such packaging is used in or originates from industry, other manufacturing, retail or distribution, or further.

The PPWR includes requirements for substances in packaging, recyclability, recycled content in plastic packaging, compostable packaging, packaging minimisation, reusable packaging, labelling, technical documentation and conformity assessment.

4.1.4 Packaging Materials

Packaging materials and packaging components, in the context of this document, mean all items made of any material that are intended for containment, protection, handling, delivery, storage, transport or presentation of products.

4.1.5 European Regulation EC 1907/2006 - REACh

REACh is a regulation of the European Union for Registration, Evaluation, Authorization and restriction of Chemicals.

Art. 33 thereof is of high importance regarding the use of SVHC (Substances of Very High Concern) on the so-called Candidate List. Suppliers are required to report the use of SVHC

exceeding 1000 ppm (0.1%w/w) per article. For REACH Article 33 reporting, “article” shall be understood in accordance with REACH Regulation (EC) No 1907/2006 as an object which during production is given a special shape, surface or design which determines its function to a greater degree than its chemical composition. The current list of REACH SVHC can be found here: Candidate list - ECHA CHEM.

Art.67 mandates that a substance on its own, in a preparation or in an article, for which Annex XVII contains a restriction shall not be manufactured, placed on the market or used unless it complies with the conditions of that restriction.

4.1.6 Directive 2011/65/EU – RoHS 2 including amendment (EU) 2015/863

EU RoHS Directive restricts the use of 10 hazardous substances in electrical and electronic equipment (EEE) as listed in Annex II of the Directive:

The regulation defines threshold limits for these substances to be applied at homogeneous material level (refer to above definition). Similar RoHS regulations exist and are in development in other countries and regions.

Substance	Threshold Limit [ppm] in homogeneous material
Cadmium (Cd)	<100
Mercury (Hg)	<1000
Lead (Pb)	<1000
Hexavalent chromium (Cr^{+6})	<1000
Polybrominated biphenyls (PBB)	<1000
Polybrominated diphenyl ethers (PBDE)	<1000
Bis(2-Ethylhexyl) phthalate (DEHP)	<1000
Dibutyl phthalate (DBP)	<1000
Benzyl butyl phthalate (BBP)	<1000
Diisobutyl phthalate (DIBP)	<1000

4.2 Supplier Compliance

4.2.1 Categories in Scope

Supplier Category	Sub-Category
External Manufacturing Supplier	-
Direct Material Supplier	BOM Material
	Non-BOM Material
Packaging Material Supplier	-

4.2.1.1 Initial Request

During supplier qualification process, ams OSRAM requests the below listed declarations, confirmations and certifications as far as applicable - meaning if the nature of the product/ service provided makes the specific requirement necessary.

All communication regarding the *Supplier Compliance Initiative* is directed via EPE-SupplierCompliance@ams-osram.com (Environmental product-related topic) and Supplier-Management@ams-osram.com (contract-related topic).

4.2.1.2 Continuous Request

As legal and customer requirements are changing, suppliers will be asked to submit the respective updated declarations, confirmations and/or certifications. Suppliers will answer these requests within reasonable requested time.

We understand these requests as most important to ensure supplier's commitment to our company's standards and therefore a basis for a good business relationship.

4.3 Overview of Required Supplier Compliance Documents

Document (declaration, confirmation, certificate) / *Supplier Category*	External Manufacturing Supplier	Direct Material Supplier – BOM Material	Direct Material Supplier – Non-BOM Material	Packaging Material Supplier
ISO 14001 Certificate (Environmental Management System)	x	x	x	
Conflict Minerals Reporting (CMRT, EMRT)	x	x		
Supplier Non-Use of Hazardous Substances Declaration (GEN - 123)	x	x	x	
Supplier's Declaration on non-use of Hazardous Substances in Packaging Materials (GEN - 122)				x

5 Compliance Demonstration for External Manufacturing Suppliers and Direct Material Suppliers – BOM Material

All external manufacturing suppliers and direct material suppliers for BOM material are obliged to demonstrate compliance within their manufacturing activities and materials/substances used.

These suppliers are committed to creating and providing the following documents to demonstrate compliance, upon our request:

- Full Material Declaration (FMD)/Material Declaration Forms (MDF)
- Safety data sheets (SDS)
- Inductive coupled plasma reports (ICP)/Test reports

We expect these suppliers to have an environmental quality assurance process in place, in order to control and maintain environmental product compliance.

5.1 Full Material Declaration/Material Declaration Form

Full material declaration (FMD) or material declaration form (MDF) is a document that discloses the types of substances that a product contains such as the amount of metals, alloys, plastics or chemicals. Examples of material declarations are IPC-1752, FMD, IMDS (for automotive products), etc. All material declaration forms must meet the following requirements:

- FMD/MDF must show all homogeneous materials of the product, and listing composition including all substances contained. All substances contained must be declared – substances declared with “Trade secret” are not acceptable.
- The individual substances in the FMD/MDF are classified by the chemical symbol, the CAS number, the input ratio by reference on the individual homogeneous material [%], the unit weight [mg], unit weight by reference on the total package weight [%], and ppm per homogeneous material.

5.2 Safety Data Sheet (SDS)

A safety data sheet (SDS) is a document that contains information on the potential health effects of exposure to chemicals, or other potentially dangerous substances, and on safe working procedures when handling chemical products. All safety data sheets must meet the following requirements:

- SDS for homogeneous material.
- SDS must be composed according to the commission regulation (EU) REACH EC 1907/2006, article 31 and Annex II, as amended by Commission Regulation (EU) 2020/878.
- SDS require the update when hazardous information becomes available, information is added/deleted/revised, or an authorization under REACH is granted/refused. It is the supplier’s obligation to notify us and re-issue the SDS.

5.3 Inductively coupled plasma reports/Test Reports

Test reports or analysis certificates are authenticated documents, issued by ISO/IEC 17025 certified laboratories, that certify the quality and purity of products such as but not limited to an ICP report.

The maximum concentration level at which the presence of a substance (refer to below list of substances, column Substance Compliance) can be tolerated in a homogeneous material is defined in *GEN – 123 Supplier Non-Use of Hazardous Substances Declaration*.

5.3.1 Minimum Substances for Testing in Materials

The table below defines minimum testing expectations. The legally and customer-driven substance restrictions, scope, exemptions and threshold values are governed by the latest valid version of GEN-123.

Homogeneous Material	Substance Compliance	Testing Method
All homogeneous materials, except testing for PBB, PBDE, DEHP, BBP, DBP, DIBP in metals, glass, ceramic	*RoHS Directive 2011/65/EU:* Lead (Pb) Mercury (Hg) Cadmium (Cd) Hexavalent chromium (Cr^{+6}) Polybrominated biphenyl (PBB) Polybrominated diphenyl ether (PBDE) Bis(2-Ethylhexyl) phthalate (DEHP) Dibutyl phthalate (DBP) Benzyl butyl phthalate (BBP) Diisobutyl phthalate (DIBP)	IEC 62321
Metals, ceramics	Beryllium (Be)	US EPA 3050B US EPA 3052
All homogeneous materials except metals and ceramics	*Halogen free IEC 61249-2-21:* Bromine (Br) Chlorine (Cl)	EN 14582 EPA SW-846 5050/9056
Inks, paints, coatings	Perfluorooctane sulfonates (PFOS) Perfluorooctanoic acid (PFOA)	US EPA 3540C US EPA 3550C DIN CEN/TS 15968
Finished Product (complete) (5)	Total volatile organic compounds (TVOC) Toluene (C_7H_8) Benzene (C_6H_6) Formaldehyde (CH_2O)	HS-GC/FID

(5) The supplier is obligated to perform testing for specific substances and provide its results in an inductive coupled plasma report (ICP), upon our request.

All test reports must meet the following requirements:

- Each test report shall include the following information as a minimum:
    - Test reports are accompanied with a cover page to clearly identify the supplied material. Shall be written in English language or with English translation.
    - Date(s) of testing and report date (the report date begins the date/time period for its validity)
    - Supplier name (supplier of the sample for testing)
    - Sample description (color, vendor, vendor material, type formula etc.)
    - Photo(s) of the sample being tested (photograph must be clear for identification)
    - Substance being tested and the test method used for testing
    - Measurement flow chart (simple schematic or step listing for every indispensable banned substance must be included in the relevant measurement flow chart)
    - Sample preparation method(s) prior to testing (preprocessing)
    - Detection limit of the method and measuring equipment
    - Measurement results (ppm/weight) of substance
    - Laboratory information
    - Laboratory name
    - Laboratory address
    - Laboratory report number
    - Person(s) performing the test
    - Signature, written name, and title of the responsible person for the test report and its result
- Test reports must be issued by certified laboratories ISO/IEC 17025. Examples of certified test labs are SGS, Orga Lab, Setsco, Amtek, IAS, IMR, Intertek, Bureau Veritas, TÜV, CTI.
- Test reports or analysis certificates must be no more than one-year old (issuing date).
- Test reports must be on a homogeneous level. Test samples made up of several homogeneous materials are not acceptable (e.g., semiconductor packages are made of several individual homogeneous materials such as mold compound, lead frame, lead frame plating, wires, adhesive, etc.).
- Test reports based on X-ray Fluorescence Spectroscopy (XRF) are not acceptable.
- Upon the expiration of test reports (test report issuing date is older than one year), the supplier must submit renewed test reports. It is the supplier's responsibility to provide test reports at their expense.

- We reserve the right to request a test report from its suppliers that is not older than half a year upon special request from our customers.
- In case of any product change, due to the change of the part number or the materials composition, the supplier is obliged to notify us and submit new test reports.
- The supplier is obliged to retain compliance documents (e.g., analysis reports) for a minimum of ten years. The digital format is acceptable.

5.4 Direct Shipments from External Manufacturing Supplier toams OSRAM Customers

We expect external manufacturing supplier who ship to our customers directly, to consider and be compliant with applicable national and/or international regulations for packaging materials. Our external manufacturing supplier select and use packaging materials, which comply with substance restrictions referring chapter 6.

In this special case, our external manufacturing supplier are obligated to commit and sign the *GEN – 122 Supplier's Declaration on non-use of Hazardous Substances in Packaging Materials*.

6 Compliance Demonstration for Packaging Material Suppliers

All our packaging material suppliers are obliged to demonstrate compliance for materials/substances used. Our environmental compliance is based on global regulatory and customer requirements. Our packaging material suppliers are committed to create and provide upon the request, the following documents to demonstrate compliance:

- Inductive coupled plasma reports (ICP)/Test reports

We expect its packaging material suppliers to have an environmental quality assurance process in place, in order to control and maintain environmental product compliance.

6.1 Minimum Substances for Testing in Packaging Materials

The supplier is obligated to create and provide the **analysis report**, only upon special request.

Substances and Application	Testing Method
Heavy metals according to Regulation (EU) 2025/40, PPWR Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent chromium (Cr^{+6}), threshold limit [6] Cd + Hg + Pb + Cr^{+6} ≤100 ppm	IEC 62321
Phthalates example: DEHP in packaging materials, e.g., foils, with a threshold limit [6] ≤1000 ppm	ASTM D3421-75, EN 14372:2004, US EPA, 3540C, US CPSCCHC1001-09.1, EPA 0506, KSM 1991
Formaldehyde in wooden materials and fibers, threshold limit [6] <0.1 ppm	EPA TO-11A, ISO 16000-3, KS M ISO 16000-3, KS M 1998-1~4
Ozone depleting substances (ODS) in all packaging materials, threshold limit[6]: Not intentionally added [7]	EPA-8021B, EPA-524.1, EPA-524.2
Arsenic in wood material, threshold limit [6] ≤2 ppm	EPA-3050B, EPA-3051, EPA-3052, ISO 6101-2, EPA200.8, EPA6020, EPA6010B
Biocides wood products preservatives and fungicides, threshold limit [6]: Not intentionally added [7]	EPA 0280, DIN 38407

[6] The maximum concentration level at which the presence of a substance can be tolerated in a packaging material.

[7] Intentionally added: Substance deliberately used in the formulation of a material or component where the presence of the substance in the final product provides a specific characteristic, appearance or quality.

All test reports must meet the requirements as described in **chapter 5.3**.

7 Supplier Compliance Confession on Environmental Incidents

Suppliers in the scope have to inform ams OSRAM immediately if authorities are taking actions against them due to severe breaches of environmental protection regulations that could harm ams OSRAM's reputation or that could endanger production of goods. All relevant penalties or fines over EUR 10,000 per fiscal year imposed to them because of breaches of environmental protection rules have to be reported to ams OSRAM immediately after becoming legally effective.

Submitted and agreed:

Supplier name: .....

Address: .....

Name: .....

Title, Function: .....

Date: .....

Signature/Company Seal: .....

8 Document History

Revision		
Revision	Description	Originator
1.0	Original revision- Initial released	Marlies Radl
1.1	Added supplier approval sheet	Marlies Radl
2.0	1) Chapter 3.5.2: include Directive (EU) 2015/86, 4 phthalates 2) Chapter 4.2: delete requirement for ams Code of Conduct, ISO 9001, ISO TS 16949, ISO 50001, ISO 27001, Supplier Certificate of REACH Compliance; include Supplier Environmental and Code of Conduct Self-Assessment; ISO 14001 checked in irregular intervals 3) Chapter 4.2.1, 4.2.2: delete requirement for ISO 9001, ISO TS 16949, ISO 50001, ISO 27001, Supplier Certificate of REACH Compliance; include Supplier Environmental and Code of Conduct Self-Assessment 4) Chapter 4.2.3: delete requirement for ams Code of Conduct, ISO 9001, Supplier Certificate of REACH Compliance 5) Chapter 4.2.4: delete requirement for ams Code of Conduct, ISO 9001, Supplier Certificate of REACH Compliance, Supplier Non-Use of Hazardous Substances Declaration 6) Chapter 4.2.5: delete requirement for ISO 9001 7) Chapter 5.3.1: removed all threshold limits; RoHS test report --> include testing for DEHP, DBP, BBP, DIBP, RoHS scope --> except testing for PBB, PBDE, DEHP, BBP, DBP, DIBP in metals, glass, ceramic; Beryllium scope --> metals, ceramics; delete requirement for PVC, organic tin compounds, arsenic 8) Chapter 8.1: delete ams Standard List of Banned and Controlled Substances (GEN – 124), Supplier Certificate of REACH Compliance Regulation (GEN – 120) 9) Chapter 8.2: paste sample of new MDF report 10) Chapter 4.2: remove ISO 14001 requirement for direct material suppliers 11) Chapter 4.1.1, 4.1.2: include responsibility for SQE or Purchasing department 12) chapter 5: include direct material suppliers --> changed header to: “Compliance Demonstration for Subcontractors and Direct Material Suppliers”	Dianne Gutierrez, Marlies Radl
3.0	1. Chapter 1 Scope: Simplify statement and added footnote definition. 2. Chapter 2 Revision History: Insert statement for change description in separate file and remove the history table. 3. Chapter 3 Definitions: a. Transfer Section 5.2 Material Safety Data Sheet (MSDS) to Section 3.2 and update the statements.	Marlies Radl

Revision		
	b. Updated Section 3.3 Packaging and Packaging Waste, Directive 94/62/EC (as amendment from Directive EU/2018/852. c. Updated statements in Section 3.5 European Regulation EC 1907/20006 – REACh. d. Updated Section 3.6 statements and omitted the schedule of implementation in Category 8 and Category 9.4. Chapter 4 Supplier Compliance: a. Added Section 4.1 ams Supplier categories in Scope and updated the supplier categories table. b. Updated statements in Section 4.2 ams Supplier Compliance Initiative. c. Updated statement in Section 4.2.1 Initial Request and Section 4.2.2 Continuous Requested. d. Updated Table of Document requirement and Supplier category Matrix, omitted Waste Treater, and added footnotes for requirement frequencies in Section 4.3 Overview of Required Supplier Compliance Documents. e. Change Section 4.3.1 Title from "Sub-contractors" to "External Manufacturing Supplier", updated statements, added IntegrityNext and GEN – 123. f. Updated title and statements, added Corporate Responsibility Self-assessment, IntegrityNext, exemption for Conflict Minerals Reporting, and GEN – 123 in Section 4.3.2 Direct Material Supplier – BOM Material. g. New Section 4.3.3 Direct Material Supplier – Non-BOM Material h. Updated Section 4.3.4 Packaging Material Suppliers statements, added Code of Conduct, Corporate Responsibility Self-assessment, IntegrityNext, and Supplier's Declaration on non-use of Hazardous Substances in Packaging Materials (GEN 122) i. Omitted Section for Waste Treater 5. Chapter 5 Compliance Demonstration for External Manufacturing Suppliers and Direct Material Suppliers – BOM Material: a. Updated Chapter Title and updated the chapter statements. b. Updated Section 5.2 Material Safety Data Sheet Statements c. Simplify statements in Section 5.3.1 Minimum Substances for Test Report in Materials d. Updated Section 5.4 title and statements. 6. Chapter 6 Compliance Demonstration for Packaging Material Suppliers: a. Updated to simplify the chapter statements. b. Updated terminologies in Section 6.1.1 Minimum Substances for Test Report in Packaging Materials 7. Chapter 8 Appendix: Omitted Sections 8.1, 8.1.1, 8.1.2, while retained the Material Declaration Form – Example.	
4.0	1. Replaced ams AG with ams-OSRAM AG. Removed ams AG mentioned after Objectives. 2. Removed "Article" definition in Section 5.1.2. 3. Removed specific detail of RoHS Annex II in Section 5.1.6.	Eloisa Ramirez

Revision		
	4. Transfer 5.2.2 Supplier Compliance Initiative to Section 1. 5. Removed Code of Conduct and Corporate Responsibility Self-Assessment in the table and annotations in Section 5.3. 6. Removed supplier category descriptions from Sections 5.3.1 to 5.3.4. 7. Rephrased Section 9.	
4.1	Update format and correct heading numbering	Eloisa Ramirez
5.0	1. Substitute Directive 94/62/EC to the new PPWR throughout the document 2. Updated chapter 4.1 Definition of Terms 3. Remove appendix chapter 8 Material Declaration Form Example General correction of typos	Marlies Radl