

MATERIAL SPECIFICATION Substances of Concern and Recycled Content

1. **SCOPE**

The purpose of this specification is to define the global restrictions and reporting requirements pertaining to “Substances of Concern” and recycled content that make up the parts and materials sold to Delphi Corporation (Delphi).

2. **REFERENCED STANDARDS**

- Directive 2000/53/EC of the European Parliament and of the Council on End-of-Life Vehicles (ELV) to latest version, Annex II, and supporting amendments.
- Global Automotive Declarable Substance List (GADSL)
- Delphi test specification DX900359
- Directive 2002/96/EC of the European Parliament and of the Council on Waste Electrical and Electronic Equipment (WEEE) and supporting amendments.
- Directive 2002/95/EC of the European Parliament and of the Council on the Restriction of the use of certain Hazardous Substances (RoHS) in electrical and electronic equipment and supporting amendments.
- Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACH) Regulation. EC No.1907/2006 and supporting amendments.

3. **ENVIRONMENTAL AND SAFETY REQUIREMENTS**

The requirements of this specification are in addition to the requirement for submission of a completed Material Safety Data Sheet (MSDS or SDS) with any substance or preparation submission or when a new submission is required due to a change in the material composition.

As of 1 June 2007 the REACH regulation entered into force in the European Union/European Economic Area. The regulation requires that all substances manufactured or imported into the EU/EEA on their own, in preparations¹ and in articles² must be registered if certain criteria are met. Additionally, Substances of Very High Concern (SVHC) from the candidate list require communication, notification and authorisation under certain circumstances. Delphi requires suppliers to submit information about SVHCs on the candidate list if they are present in articles (parts and raw materials that become part of a saleable product) **using** the Global Automotive Declarable Substances List and the International Materials Data System. For more details on REACH and its obligations, a free download of the Automotive Industry Guideline (AIG) on REACH is available at www.clepa.com.

Other legislation concerning restrictions, reducing the use of or the risks from hazardous substances in articles still apply separately from REACH. Examples are the General Products Safety Directive 2001/95/EEC and product specific legislation such as Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), or Directive 2000/53/EC on End of Life Vehicles (ELV).

¹ Preparation means “a mixture or solution composed of two or more substances” (Article 3.2 REACH Directive).

² Article means “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” (Article 3.3 of the REACH legislation). ‘Articles’ include parts and materials that become part of a saleable product. Also reference European Chemicals Agency (ECHA) Guidance on requirements for substances in Articles at <http://echa.europa.eu/>.

In addition to information required for compliance to this Standard, a supplier, upon request, shall provide the composition (chemical identity of each constituent and its proportion by weight) of products supplied or proposed to be supplied and all TOXICITY, HEALTH, SAFETY and DANGEROUS GOODS TRANSPORTATION data/guidance to the requesting Delphi Up-front Environmental Engineer or Design Responsible Engineer (DRE). Prior to making any change to the composition or hazard labeling of such products, the supplier shall advise the Delphi Up-front Environmental Engineer or Design Responsible Engineer (DRE).

4. **MATERIAL PROPERTIES**

Not applicable.

5. **CONFORMANCE REQUIREMENTS**

5.1. **APPLICABILITY**

This specification applies to all parts and raw materials that become part of a Delphi saleable product. This specification does not apply to the process chemicals that are used in manufacturing parts or materials that do not remain in or on the item supplied to Delphi. Reporting must be completed for each Delphi part number.

This requirement also applies to “black-box” parts where the supplier holds design responsibility and to “directed-buy” parts where the customer holds design responsibility for the part or material sold to Delphi.

5.2. **REPORTING REQUIREMENT**

Delphi has reporting requirements for all direct parts and raw materials. Delphi allows the utilization of IMDS and IPC reporting methods per the additional details below. All data and supporting documentation to comply with the requirements of this specification shall be provided in English.

See Appendix C for flowchart.

5.2.1. **REPORTING REQUIREMENTS – Automotive Components/Materials**

Automotive components and materials are to be reported using IMDS (Delphi Company ID=954) .This reporting requires full disclosure to the latest version of the GADSL.

The IMDS Reporting Instruction documents referenced in Section 11 provide further information to ensure compliance to Delphi’s reporting requirements

5.2.2. **REPORTING REQUIREMENTS – Automotive Electronic Components (<5g)**

In order to accommodate electronic component suppliers that also supply to the consumer electronics industry, Delphi is allowing the use of the IPC 1752-1 Materials Declaration Management for some electronic components. This reporting form can be downloaded from:

www.ipc.org.

↳ Knowledge

↳ Standards

↳ IPC free documents

↳ IPC-1752 Materials Declaration Management

Only component parts with a total weight less than 5g can utilize the IPC1752-1 reporting method in place of IMDS. The supplier is to report to Class 3 RoHS Yes/No, JIG Format Substances.

5.2.3. **REPORTING REQUIREMENTS – Consumer Electronic Components**

Suppliers are to report substances of concern using IPC 1752-1 Class 3 RoHS Yes/No, JIG Format Substances reporting method. The reporting form can be downloaded from www.ipc.org.

5.2.4. **REPORTING REQUIREMENTS – Medical Components**

Medical components are currently exempt from Directive of the European Parliament and of the Council on the Restriction of the use of certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment. Delphi and our customers will still be responsible for compliance to Directive of the European Parliament and of the Council on Waste Electrical and Electronic Equipment (WEEE).

Suppliers are still expected to report substances of concern using IPC 1752-1 Class 3 RoHS Yes/No, JIG Format Substances reporting method. The reporting form can be downloaded from www.ipc.org website.

5.2.5. **TIMING**

Proof of acceptable SoC reporting must be provided at time of Production Part Approval Process (PPAP) / Initial Sample Submission or new product introduction for Delphi parts or raw materials that do not utilize the PPAP process. This information may also be requested at prototype for early determinations of compliance.

Where applicable, submission of the Prohibited Substance Approval Form, Appendix A, must be submitted as early as possible in the design process in support of early disclosure and review of the Prohibited Substance and its potential use in Delphi product.

5.2.6. **REPORTING TOOLS**

SoC reporting to Delphi shall be completed using either of the following two (2) tools per the requirements of Section 5.2.1., 5.2.2., 5.2.3. and 5.2.4.:

Option A: IMDS¹ (PREFERRED reporting method for automotive)

- Release all completed IMDS data sheets to **Delphi Corporation, Delphi Troy, IMDS parent code #954.**

Option B: IPC² 1752-1 Class 3 RoHS Yes/No, JIG Format Substances

- Send completed forms to the following Delphi mailbox: DelphiASoCDataJuarez@delphi.com

¹ IMDS - International Material Data System; available at <http://mdsystem.com>

² IPC – Association Connective Electronic Industries; available at <http://www.ipc.org>

5.2.7. SoC REPORTING CONFIRMATION

Upon review of the supplier SoC submission via IMDS or IPC 1752-1 form, Delphi will provide an electronic accept/reject confirmation via e-mail. This confirmation certificate may be needed at PPAP / Initial Sample Submission, or new product introduction (see Section 7 for additional detail).

5.2.8. MATERIAL AND SUBSTANCE RESTRICTIONS AND DECLARATION – Automotive Components/Materials (using IMDS or IPC)

5.2.8.1. REPORTING STRUCTURE

To facilitate ease of reporting and to protect proprietary information, a Flat Bill of Material (Flat BoM) approach per IMDS Recommendations is acceptable. A Flat BoM, while providing an abbreviated part tree structure, must still disclose all materials and substances according to paragraph 5.2.8.3, contained within the part or raw material.

5.2.8.2. MATERIALS

One hundred percent (100%) of the materials must be identified using either specific or generic material designations. Delphi does not accept information classified as confidential or secret material for this reporting requirement.

5.2.8.3. SUBSTANCES

All substances that make up the specific or generic materials must be disclosed. One hundred percent (100%) of the substances must be accounted for and must always be attached to a material. Reporting of the specific substances contained in the material is preferred; however the use of miscellaneous substance categories³ (“wildcard or substance joker” as defined in IMDS Recommendation 001) is acceptable up to 10% by mass in the homogeneous material. The use of pseudo substances and specific CAS# defined substances are preferred.

A pseudo-substance⁴ gives an accurate description of the substance or the substance group, but does not have an associated CAS number. Some examples are “acrylic resin” or “cotton fiber”. These substances are accepted as basic substances and are not considered jokers or wildcards, therefore their use is not restricted by the 10% rule.

Delphi requires the declaration of all prohibited and declarable substances as specified in the Global Automotive Declarable Substance List (GADSL⁵, the EU Directive 2000/53/EC of the European Parliament and of the Council on End-of-Life Vehicles (ELV) and supporting amendments⁶, and Delphi 10949001 Appendix B (Delphi-specific requirements). A declaration level of 0.1g/100g (0.1% weight) non-separable, homogeneous material shall be used as the reporting threshold unless otherwise specified in the GADSL or Delphi 10949001 Appendix B. Any reportable substance below the declaration level does not need to be reported. Any updates or revisions to the aforementioned documents become effective immediately upon publication.

Miscellaneous joker/wildcard or pseudo-substance classifications cannot contain or be used in lieu of any prohibited or declarable substance as defined in the GADSL.

³ Miscellaneous substance categories are those that have a Chemical Abstract Service number (CAS #) designated as “system” in the IMDS.

⁴ Pseudo-substances are those that have “-“ for the CAS number designation in the IMDS.

⁵ The Global Automotive Declarable Substance List may be found at <http://www.gadsl.org/>.

⁶ EU ELV Directive and related documents may be found at http://www.europa.eu.int/comm/environment/waste/elv_index.htm.

5.2.8.4. **RECYCLED MATERIAL CONTENT.**

Reporting in IMDS of recycled content (post-industrial and post-consumer) is required for polymeric materials only. Recycled content for metallic and other materials is not required at this time.

5.2.9. **MATERIAL AND SUBSTANCE RESTRICTIONS AND DECLARATION** – Automotive Electronic Components (<5g), Consumer Electronics & Medical (using IPC 1752 reporting)

5.2.9.1. **MATERIALS/SUBSTANCES**

Delphi requires the declaration of materials and substances for compliance to Directive of the European Parliament and of the Council on the Restriction of the use of certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment and Directive of the European Parliament and of the Council on Waste Electrical and Electronic Equipment (WEEE) utilizing the Joint Industry Guide – JIG⁷ 101 Level A and Level B Categories and applicable thresholds. Reporting is to be accomplished using the IPC 1752-1 Material Declaration form.

Lead used in solder is prohibited for automotive electronic components as of Model Year 2009 products; however not currently for medical components. It is prohibited for consumer electronics components and materials. See Appendix B and Delphi part print for additional details and specific requirements.

5.2.10. **PROHIBITED SUBSTANCES**

In addition to the above material and substance disclosures, all Prohibited (P) Substances as defined in the GADSL, the EU Directive 2000/53/EC of the European Parliament and of the Council on End-of-Life Vehicles (ELV) and supporting amendments, and Delphi 10949001 Appendix B must be declared and approved prior to use. Declaration shall be made via completion and submission of the Delphi Prohibited Substance Approval Form, included in Appendix A of this document.

This form is not required for Declarable substances or those substances exempted per EU Directive of the European Parliament and of the Council on End-of-Life Vehicles (ELV) and supporting amendments.

Where Prohibited Substances are present, the form must be completed and submitted early in the development cycle. Delphi requires a review of prohibited substances early in order to complete the waiver process or redesign as necessary. Upon review of the submitted Prohibited Substance Reporting Form, Delphi will provide a signed copy back to the submitter, indicating either approval or rejection. This form must be submitted and approved in time for its inclusion in the production part approval submission (PPAP / Initial Sample Submission, initial product introduction).

Prohibited Substances not approved for use by Delphi must be eliminated from the part or material. Approval will only apply to the specific application and a specific Delphi division. Additional approvals will be required for each Delphi division and application that uses parts or raw materials that contain a Prohibited Substance. Prohibited Substance deviations may be granted on a case-by-case basis, depending on commercial application of the product.

⁷ JIG – Joint Industry Guide, Material Composition Declaration for Electronic Products, may be found at <http://www.jedec.org>

5.2.11. DELPHI-SPECIFIC REQUIREMENTS

In addition to the substances and requirements as specified in the GADSL, EU Directive of the European Parliament and of the Council on End-of-Life Vehicles (ELV), and Directive of the European Parliament and of the Council on the Restriction of the use of certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment and supporting amendments, Delphi may specify other content or reporting requirements. Delphi-specific requirements, when they exist, are included in Appendix B and are subject to all reporting and approval requirements as stated in this document. **Substances classified as “D/P” on the GADSL should be considered (P)rohibited for non-exempt applications per the EU Directive 2000/53/EC of the European Parliament and of the Council on End-of-Life Vehicles (ELV) and supporting amendments, and all others with this classification listed as exempt are (D)eclarable unless otherwise specified in Appendix B of this document.**

5.2.12. PPAP REQUIREMENT

“Substances of Concern” reporting per Delphi 10949001 is a requirement of Production Part Approval Process (PPAP) / Initial Sample Submission, or initial product introduction. See Section 7.0 for required documentation at time of PPAP / Initial Sample Submission, or initial product introduction.

5.2.13. SoC REPORTING RE-SUBMISSION

SoC reporting re-submission will be required with any significant change, defined as any of the following:

- The addition of any new prohibited or declarable substance as defined in this document.
- A change in mass of an already reported prohibited or declarable substance as defined in this document equal to or exceeding $\pm 10\%$ of the originally reported value in the homogeneous material, or if the change in mass exceeds a critical legal threshold.
- The addition or deletion of any new material in the product sold to Delphi.
- A change in mass of a material in a single part equal to or exceeding $\pm 10\%$ of the originally reported value.
- A mass change in the assembly sold to Delphi equal to or exceeding $\pm 10\%$ of the originally reported value, or a mass change of more than 50 grams.
- A change in DUNS or supplier code
- A new Delphi P/N is assigned

Prior SoC submissions that do not exceed the “significant change” threshold as described above, may be used for subsequent PPAP submissions.

6. METHOD OF MANUFACTURE

Not applicable.

7. CERTIFICATION OF COMPLIANCE

Proof of acceptable SoC reporting must be provided as part of the PPAP / Initial Sample Submission, or initial product introduction by inclusion of one of the following documents:

- **Option A:** The Delphi “Substance of Concern Confirmation of Receipt” letter provided to the supplier via return e-mail at time of IMDS, IPC 1752-1,. (Note: This is the only option if submitting SoC data via IPC 1752 form.)
- **Option B:** An electronic copy of the IMDS Recipient Screen **after** Delphi acceptance of the data in IMDS.
- **Option C:** Notation of the IMDS ID / Version in the comments section of the PPAP / Initial Sample Submission Production Submission Warrant (PSW) **after** Delphi acceptance of the data in IMDS.

For parts or raw materials being re-submitted for PPAP, previous compliance certification may be used if thresholds in Section 5.2.13 have not been exceeded.

For parts or raw materials being Published in IMDS by suppliers which require PPAP approval by Delphi, the supplier or Delphi PPAP coordinator should contact DelphiASoCDataJuarez@delphi.com to receive a “substance of concern confirmation of receipt” (option A) as an acceptable SoC reporting document.

Additionally, if the item contains a Prohibited Substance, the PPAP / Initial Sample Submission, or initial product introduction must also include the pre-approved Prohibited Substance Reporting Form (see Section 5.2.11).

Failure to provide the required SoC documentation may result in a rejection of the PPAP / Initial Sample Submission, or initial product introduction. (See section 5.0 Conformance Requirements).

8. PACKAGING

Not applicable. Is not reported in the IMDS but under REACH it is considered an article and communication may be required.

9. INSPECTION AND REJECTION:

Not applicable.

10. APPROVED SOURCES

Not applicable.

11. RELATED DELPHI INFORMATION

Supporting substances of concern reporting documentation and information is posted on the Delphi Covisint Supplier Portal at the following hyperlink and menu path.

Hyperlink: [Delphi 10949001 Specification Related Documents](#)

Menu Path from Delphi Corporation Home Page:

www.delphi.com

↳ Suppliers

↳ Public Pages of Delphi Supplier Community Portal

↳ Materials Specifications / Substances of Concern

Additional information and instructions for SoC reporting are included in the following documents, also available at the above location:

- Delphi IMDS Reporting Instructions

Additional Information:

- IMDS FAQ and Recommendations on <http://mdsystem.com> also provide additional useful information and tips

Questions and submission inquiries should be directed to either of the following:

- E-mail address: DelphiASoCDataJuarez@delphi.com – or – krakow.packard.request.imds@delphi.com
- Telephone: +1 (915) 612-8692 ; +1 (915) 612-1322

12. REVISION RECORD:

Reference Revision Code	Date	Originated By	Description
A,001,1	23DE99	Clemente Marquez	Release
B,002,2	16FE00	Clemente Marquez	Incorporated clarifications.
C,003,3	12MY03	MTG and DfE Teams	Complete re-write of spec. Revised substance list. Revised declaration form and associated descriptors.
D,004,3	14JL03	MTG and DfE Teams	Updated Appendix B Divisional Mailboxes
E,005,4	27MY04	SoC TT and MTG	Re-write with new requirements to IMDS STD101 ILRS, new reporting instructions and FAQs
F, 006	8SEP05	SoC TT and MTG	Update ILRS to GADSL; WEEE/RoHS reference; added B-2 and B-3 to Appendix B
G, 007	31Oct06	SoC TT and MTG	Update to include IPC1752-1 for electronics
H,008	15DEC08	SoC TT	Update to include Annex II version 2008/689/EC, REACH; update Timing, Reporting tools, Certification of compliance, Appendix B adding B-3, B-4 and deleting chromium VI.
I, 009	21MY09	SoC TT	Update to include Chromium VI test method in Appendix B
J, 010	24MAR10	SoC TT	Update to include latest version of referenced standards.

Appendix A

Instructions for Completing the Prohibited Substance Reporting Form for Delphi Specification 10949001

The Prohibited Substance Reporting Form shall be completed electronically by using the Microsoft Word Document located on the Delphi Community Supplier Portal (see Section 11 of this specification for URL address). Submission of all Prohibited Substance Reporting Forms for Delphi review and approval shall be done electronically by sending the completed form as an attachment to the following Delphi e-mail address: **DelphiASoCDataJuarez@delphi.com**.

The Prohibited Substance Reporting Form is **not** to be used as a tool for SoC Reporting. It is to be used as a request for deviation to obtain approval to supply parts or materials to Delphi containing a Prohibited Substance as defined in the GADSL or Appendix B. This form is not required for Declarable substances or those substances exempted per EU Directive of the European Parliament and of the Council on End-of-Life Vehicles (ELV) and supporting amendments.

The Prohibited Substance Reporting Form must include the reason for using the Prohibited Substance and a plan to eliminate its use. The plan shall include timing and identification of potential replacement substances. The approval will only be applicable to a specific application and a specific Delphi Division. Additional approvals will be required for each Delphi Division and application that uses parts or raw materials that contains a Prohibited Substance.

For parts with a material that contains a Prohibited Substance, the percentage of the Prohibited Substance is reported as the mass percent of the substance in the homogeneous material contained in the part.

For raw materials that contain a Prohibited Substance, the percentage of the Prohibited Substance is reported as the mass percent of the substance in the homogeneous raw material.

In the context of this specification, “material” is defined as the primary medium containing the substance of concern, and “substance” is defined as the basic chemical or chemical compound listed in the GADSL as a “Prohibited Substance” (*ex. In electrical wiring, polyvinylchloride (PVC) used for the wire insulation is the “material” containing the “substance” lead salt*). The supplier must detail all parts and raw materials that contain Prohibited Substances.

APPENDIX A – Form: Prohibited Substance Approval Form for Delphi Specification 10949001

e-mail completed form to: DelphiASoCDataJuarez@delphi.com

Information regarding the ITEM sold to Delphi (assembly, sub-assembly, part or material)		Manufacturer / Supplier Information	
Item Name: _____	Delphi Division Supplied to: _____	Company Name: _____	Manufacturing Address: _____
Item Part Number: _____		Contact Name: _____	Phone: _____
Revision Level: _____		Email: _____	Fax: _____
Revision Date: _____	Total Mass (g): _____	Mail Code: _____	Supplier Mfg Site DUNS #: _____

A	B	C	D	E	F	G	H
Item or Part Name Containing the Prohibited Substance	Part Number of Item in Column "A"	Mass (g) of Item in Column "A"	Name of Material in Item "A" that contains the "Prohibited Substance"	Mass (g) of Material in Column "D"	Name of "Prohibited Substance" Contained in Material listed in Column "D"	CAS# of "Prohibited Substance" in Column "F"	Mass (%) of "Prohibited Substance" in Column "G"

Reason for Using the Above Prohibited Substances: _____

Action Plan to Eliminate Prohibited Substance(s): _____

Supplier Authorization:

Signature (optional): _____
 Printed Name: _____
 Title: _____
 Phone: _____
 Fax: _____
 E-Mail: _____
 Date: _____

Delphi Divisional Information:

Signature: _____
 Printed Name: _____
 Title: _____
 Phone: _____
 Fax: _____
 E-Mail: _____
 Date: _____

Approved **Not Approved**

Approval Restrictions:

APPENDIX B: Delphi-Specific SoC Requirements

Due to customer or other requirements that differ from the Global Automotive Declarable Substance List, Delphi has implemented the additional requirements for SoC content and reporting as detailed below in Table 1.

Table 1
Additional Substance / Material Restrictions

<u>Requirement Designation</u>	<u>Substance</u>	<u>CAS #</u>	<u>Type of Restriction (P) or (D)</u>	<u>Application(s)</u>	<u>Applicable Threshold</u>	<u>Effective Date</u>	<u>See Note</u>
B-1	Lead	7439-92-1	(P)rohibited	Solder and pre-solder finishes/plating	0.1% wt/wt	May 2009	1
B-2	Triorganotin Compounds	Various	(P)rohibited	Biocide	0.01% wt/wt	Jan 2006	2
B-3	Decabromo diphenyloxide	1163-19-5	(P)rohibited	Flame retardant	0.1% wt/wt	July 1, 2010	3
B-4	Formaldehyde	50-00-0	(P)rohibited	Interior part	>10ppm=0.001%	Jan 2009	4
B-5	Chromium (VI) Salts	Various	(P)rohibited	Corrosion preventative coatings	0.1% wt/wt 0.01 µg/cm ² (test per DX900359)	Oct 2004	5

Notes:

1. Due to customer requirements, and EU ELV Annex II, 2010/115/EC, Delphi is prohibiting the use of lead solder finishes/platings generally for all model year 2009 and later parts. See your Delphi contact for specific part requirements.
2. Prohibited per Ford WSS-M99P9999-A1, 2006.
3. Prohibited per Ford WSS-M99P9999-A1, 2008.
4. GMW3059 Restricted and Reportable Substances for Parts per GM, 2007.
5. Due to customer requirements, Delphi is prohibiting the use of hexavalent chromium in corrosion protection finishes for all model year 2006 and later parts and materials. After October 1st, 2004 the 10949001 Prohibited Substance Reporting Form will be required for corrosion protection applications containing hexavalent chromium concentrations exceeding 0.01 µg /cm² per Delphi test specification DX900359⁸. At that time, Divisional approval of the form will be required for all such applications of hexavalent chromium on model year 2006 and later Delphi products.

⁸ DX900359 may be obtained from <http://www.ihserc.com/>.

APPENDIX C – Delphi 10949001 Reporting Flowchart

