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ISSUE	ORIGINATOR	DETAILS OF CHANGE	DATE
O	P. Morgan	Initial Release	09-Apr-96
A	J. Prichard	Updated notes	17-Sep-96
B	R. Franz	Added response sheet	7-Aug-98
C	W. Scheffrahn	Updated supplier response sheet	21-Aug-98
D	J. Plyler	Updated all sections to reflect changes in terminology and the list of materials. Replaced list of Banned and Reportable Materials with the Eco-Design list of Controlled, Restricted and Reportable Substances. Revised reporting form.	18-Apr-01
E	S. Scheifers R. Franz M. Loch	Complete rewrite of all sections to simplify document for suppliers. Revised structure and appendices. Also revised to be consistent with Eco-Design List and Eco-Design to be consistent with Eco-Design List and Eco-Design. Added section to report on recycled content, new group reporting format, and web links to aid in supplier disclosure. Added law dept. recommended terminology.	14-Jun-02
F	S. Scheifers B. Kierl G. Avila	Controlled substances list updated with Proposition 65 settlement, azo dyes, specific glycol ethers, and new thresholds. Legal clause was removed and inserted into vendor compliance certification specification. An official electronic reporting form is incorporated by reference with this specification. The document has been reformatted for better clarity.	31-Mar-03
G	S. Scheifers G. Avila	This minor revision adds a new Acceptance Criteria to Appendix C as Section 4 – End-Of-Life Vehicle Directive (ELV) and adds a part description field to Section 1 in the Supplier Disclosure Form in Appendix D.	25-Sep-03
H	W18 Team M. Murdock	This major revision: provides guidance for embedded batteries; consolidates definitions; introduces new definitions/processes such as Banned Substances, Compliance Connect and EEE; discontinues use of the Supplier Disclosure Form and requires homogeneous material reporting via Compliance Connect; removes legal references; streamlines reporting requirements and consolidates Banned, Controlled and Reportable Substance reporting thresholds in Appendix A; revised most acceptance criteria thresholds to align with regulatory requirements and referenced these requirements; updated Global Acceptance Criteria exemptions to include EU Directive 98/101/EC requirements for batteries.	21-Feb-05
J	PRSS Environmental COP	This minor revision includes: simplification of scope; the addition/or minor modification of definitions for better clarity; introduction of the IPC1752-1 reporting form for use on an exception basis; addition of recommended print reference language; changes to the reporting of "Misc."; minor changes to the Appendix A list; synchronization of exemptions to those in the EU RoHS and ELV Directives. Inclusion of requirements for global battery and packaging regulations.  Note: All acceptance criteria for this revision ("J") are considered equal to or less stringent than the prior revision "H". Parts qualified to revision "H" will meet this revision's requirements.	03-Apr-06

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K	W18 Team J. Plyler	This revision includes: revision of referenced documents; clarification of supplier responsibilities; addition of Perchlorates and Radioactive substances to the Reportable List; transfer of "Arsenic and arsenic compounds", "Brominated Flame Retardants", and "PVC and vinyl chloride monomer" from Reportable to Controlled status; addition of Product Acceptance Criteria for ECOMOTO products (new Appendix C Section 1); and, updates to Appendix C Section 2, 3 and 4 criteria and exemptions. The changes in this version will have the greatest impact on batteries, wood packaging, and parts used by the Mobile Devices business.	06-Aug-07
L	W18 Team W. Janisch	This revision includes: the addition of Section 5 to document unique compliance criteria for the Mobile Devices business (MDb). MDb is no longer governed by Section 2. Phthalates, PFAS, PFOS, and Nickel are moved from Reportable to Controlled status. The Motorola 1202897W19 has been added as a reference document.	01-April-08
M	W18 Team Matt Norton	Removed DecaBDE exemption language per EC ruling; Deleted Exemptions not applicable or observed for clarity and EDM processing including exemption 16 in Section 2 and 13 in Section 5 (unused).; Removed Section 3 US Requirements per Product Stewardship Team Direction; Removed Section 4 for Automotive (basically harmonized with RoHS in 2008 and limited use); Added Formaldehyde to reporting; Added specific substances, PAH/PCAH and Polychlorinated Naphthalenes as notes to specific categories; Revised Section 8 document maintenance responsibility to EHS; Added Phthalates to Ecomoto Appendix C section 1; Eliminated Appendix C note on part qualification; Editorial revision to Section 6 regarding acceptance criteria revised to reflect current practices. Removed "in EEE" after Chromium and Lead in Appendix A reporting section.	01-May-08

**1. SCOPE:**

This specification sets forth Motorola's materials disclosure requirements for items and materials used in the manufacture and delivery of products to Motorola customers. The list of substances that Motorola has targeted for exclusion, reduction or reporting is contained in Appendix A.

**2. DEFINITIONS:**

Assembly - An Assembly is a collection of components and materials that are not intended to be disassembled, or cannot reasonably be disassembled without the use of a specialized tool, by the end user. Products are considered to be assemblies.

Banned Substances - These substances are not allowed for use at any level unless noted as an exemption in the acceptance criteria.

CAS Number - or CAS (Chemical Abstract Service) Registry Number (CASRN) is a unique number identifying chemical substances. CASRNs, assigned by the CAS Registry, a division of the American Chemical Society, are the only method in existence for identifying discrete substances. CASRNs may be obtained from raw material suppliers or directly from the CAS Registry.

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Compliance Connect, W18 Electronic Reporting Tool, eW18 - Compliance Connect is an industry standard collection tool for the automotive industry, adopted by Motorola. Additional information is available at <http://www.motorola.com/citizenship/materialsdisclosure>.

Controlled Substances - These substances are limited for use in the manufacturing process or in certain applications at the levels specified in Appendix C.

EEE – Electrical and Electronic Equipment

Homogeneous Material - A material, as defined by the European Union Technical Adaptation Committee, that cannot be mechanically disjointed into different materials; homogenous materials are materials "of uniform composition throughout." Ceramics, glass, metals, alloys, paper, board, resins, coatings are provided as examples. The term "mechanically disjointed" would mean "that the materials can be, in principle, separated by mechanical actions such as for example: unscrewing, cutting, crushing, grinding and abrasive processes."

The following examples are provided:

- A plated lead frame has two materials, the plating material and the lead frame, that must be independently evaluated for controlled materials.
- A plastic cover is a "homogeneous material" if it consists of one type of plastic that is not coated with, or has attached to it or inside it, any other kinds of materials. In this case, the Maximum Concentration Values (MCV) of the RoHS directive would apply to the plastic.
- An electric cable that consists of metal wires surrounded by non-metallic insulation materials is an example of a "non-homogeneous material," because the different materials could be separated by mechanical processes. In this case the MCVs would apply to each of the separated materials individually.
- A semiconductor package contains many homogeneous materials, including plastic molding material, tin-electroplating coatings on the lead frame, the lead frame alloy and gold-bonding wires.

IPC1752-1 - IPC1752 is a standard for electronic data exchange for Environmental Data developed by IPC with participation from major OEMs, Contract Manufacturers, Component Manufacturers and Material suppliers. The "-1" nomenclature represents a specific form number developed under this standard which supports "Yes/No" declaration of RoHS control substances; Joint Industrial Guide (JIG101) Annex A & B substances; and additional Manufacturing Related information.

Intentionally Added - "Intentionally Added" shall mean "deliberately utilized in the formulation of a material or part where its continued presence is desired in the final product to provide a specific characteristic, appearance or quality". Intentionally Added substances and materials can occur at any point in the supply chain, i.e. a sub-tier supplier may add a material or substance that a tier 1 supplier must report to Motorola. Further, catalysts introduced during processing are always considered to be intentionally added materials. The use of recycled materials as feedstock for the manufacture of new products, where some portion of the recycled materials may contain amounts of regulated metals, is not to be considered as intentionally added.

Material - Materials are items used to construct parts. A "Material" is made up of one or more "Substances". Note: Very few materials are composed of only one substance (e.g., all metals contain other substances at low concentrations either as unintentional contaminants or purposely introduced alloying agents).

Part - A Part is any item or assembly that a supplier sells to Motorola that is incorporated into Motorola's products.

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Post-Consumer Recycled Content – Recycled content in products or parts which have been assembled using material that has completed its original life cycle and has been recycled into another part rather than having been disposed of as solid waste.

Post-Industrial Recycled Content – Recycled content in product parts or materials which have been diverted from the production stream and are industrial waste or by-products (sometimes referred to as factory scrap). Post-industrial scrap can be used to produce materials or parts in the same or a different process than the original.

Reportable Substances - These substances are not currently banned or controlled for use but a ban or voluntary phase-out is likely or they have an impact on the end-of-life management of the finished product.

Reporting Threshold – Concentration level which defines the limit equal to or above which the presence of a substance or material must be reported.

Substance - A “Substance” is a chemical element, compound, or polymer and has a CAS number. For example: stainless steel is a material typically composed of the following substances: Iron; Carbon; Manganese; Silicon; Chromium; Nickel; and others. The polymer Polycarbonate is a “Substance” because there is a CAS number (25037-45-0) for it. Lexan is the brand name for a Material. Lexan is not a “Substance” because it includes other constituents in addition to the Polycarbonate Substance and because it does not have a CAS number.

Substance Concentration - Motorola uses parts per million (ppm) to express the concentration of substances. The formula for parts per million (ppm) is  $1,000,000 * \text{mass substance} / \text{mass of the homogeneous material}$ . Concentrations are unit-less, for example  $100 \text{ ppm} = 0.01\% = 100 \text{ mg/kg}$ .

Sub-Tier Supplier - Any company selling or providing a material or part that is incorporated into Motorola products but is not directly sold to Motorola.

Supplier - The Company selling or providing a material part, or assembly to Motorola that Motorola intends to use in its products. Supplier, tier 1 supplier, and vendor are used interchangeably.

### 3. MOTOROLA'S RESPONSIBILITIES:

It is the responsibility of Engineering and personnel who prepare component specifications to:

3.1. Ensure the appropriate reference to this specification on all prints for Motorola Items as follows:

3.1.1. All prints for Motorola Items must include a reference to the 12G02897W18.

3.1.2. Print notes must include a reference to the appropriate section in Appendix C applicable to the Motorola Item, and should detail any exemptions which will be permitted.

3.1.3. Print notes may include the current version of the W18 (e.g., “Rev K”) immediately following the specification number.

3.1.4. Recommended language for use in prints:

“Supplier must provide all required information and comply with Motorola's Controlled and Reportable Materials Disclosure 12G02897W18 requirements. MOTOROLA WILL NOT QUALIFY PARTS THAT DO NOT MEET THE ACCEPTANCE CRITERIA AS OUTLINED IN APPENDIX C, SECTION [insert “1”, “2”, “3”, “4” or “5”] OF THIS SPECIFICATION. [If applicable – The following exemptions may not be applied...]”

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3.2. Ensure that materials and parts specified for designs comply with this specification, including OEM materials and parts.

#### 4. SUPPLIER'S RESPONSIBILITIES:

It is the responsibility of all suppliers to:

- 4.1. Comply with the reporting requirements listed in Section 5 of this specification for all parts and assemblies sold to Motorola.
- 4.2. Report Controlled and Reportable substances using Compliance Connect, eW18 (hereafter referred to as the eW18). To ensure use of the latest acceptable version, download the tool from: <http://www.motorola.com/citizenship/materialsdisclosure>. Instructions on how to complete this form are available at this same website.
- 4.3. Material content data reported should be the worst case if more than one bill of material or production operation exists.
- 4.4. Cascade the requirements in this specification to their sub-tier suppliers. Sub-tier supplier data input is a must for complete material and substance data determination.
- 4.5. Report any change to the material content of an approved part or assembly by re-submitting an updated report using the eW18 and complying with all other applicable Motorola change control requirements.

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4.6. Motorola may allow the use of the IPC1752-1, Declaration Class "3" or better, in specific limited applications. The supplier must receive prior authorization from the in-business product compliance organization, with the concurrence of Environmental Health and Safety (EHS), to report using any format other than the eW18. Note the Mobile Devices Business will only allow use of the eW18 Material Disclosure.

4.7. **All authorized IPC forms shall be generated and provided by Motorola.** Supplier shall not download the IPC 1752-1 directly from <http://www.ipc.org/>. Instructions on how to complete this form are available at <http://www.motorola.com/citizenship/materialsdisclosure>.

4.8. Completion of this report and submission to Motorola constitutes a testament that all the information is true and correct to the best of the supplier's knowledge.

## 5. REPORTING:

When a lab analysis is used to determine the composition of a homogeneous material, it should be performed per international standards, such as those currently under development by the IEC. Note: Material assay is not intended to fulfill all requirements of this specification.

5.1. Reporting instructions are as follows:

5.1.1. Report 100% of the homogeneous materials that are in the part or assembly.

5.1.2. Report all Controlled and Reportable Substances with concentrations in excess of the reporting thresholds noted in Appendix A as contained within each homogenous material.

- Example: A eutectic Sn/Pb solder coating is used as a finish on a capacitor. This would require reporting the Pb concentration based on the weight of that coating. Because this is a eutectic solder, the concentration of Pb is well known at 37%. In other cases, the weight of the homogeneous material (in this case Sn/Pb) would have to be known to calculate the concentration.

5.1.3. Report Recycled Content. Determine the percentage by weight of Recycled Content in the part as shipped to Motorola. Recycled Content should be expressed as Post-Industrial Recycled Content and Post-Consumer Recycled Content.

5.1.4. When reporting the composition of homogenous materials, the use of "Misc." (Miscellaneous) may be used but must not exceed 10% of the homogeneous material except under the following conditions:

5.1.4.1. There is no suitable CAS number / name found for the substance in the Compliance Connect pull-down menu; or

5.1.4.2. The actual CAS number / name is known but can not be reported for Intellectual Property reasons; and

The supplier has confirmed that none of the Banned, Controlled, and Reportable substances per Appendix A of this specification are present above the reporting thresholds; and

The supplier includes the reason(s) for reporting greater than 10% Misc. per (5.1.4.1) or (5.1.4.2) above in "Remarks" field for that material on the "Materials" tab of the

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Compliance Connect file to communicate this understanding with the individuals reviewing the data. Acceptable remarks include:

“CAS number not available in this file, actual CAS number is: xxx-xx-x”; or

“IP issue with supplier or material supplier”

5.1.5. A battery in an assembly (e.g. button cell on a PWB) must be reported on the Part Tree tab as a sub-part of the Compliance Connect, W18 Electronic Reporting Tool. Materials and substances in the battery must be reported on the Part Detail tab. Further, the word “battery” must be used in the part name field.

5.1.6. The supplier is responsible to ensure that any units used are consistent and provide an accurate accounting of the substance concentration.

Finally, do not confuse Part Acceptance Criteria and the related exemptions with reporting requirements. Reporting a substance or material is always required even if it is exempt or meets the Part Acceptance Criteria. For example, lead in ceramics must be reported.

#### 6. PART ACCEPTANCE CRITERIA:

Motorola will assign a compliance status for parts based on the acceptance criteria of the various sections of Appendix C. This status will determine the acceptability of parts for use. Motorola requires all parts to meet the acceptance criteria as outlined in Appendix C unless granted a formal waiver as defined in the internal exception policies (eg- for some spare and replacement parts, customer specification required parts, specific markets, etc). This applies to parts that reference this specification and the corresponding acceptance criteria of this specification.

Note that reporting per this specification is always required, whether or not the acceptance criteria is met.

#### 7. REFERENCE DOCUMENTS:

**1210601A Packaging Requirements for Inbound Shipments to Motorola** – a global Motorola specification available at <http://compass.mot.com/go/globalspecs/1210601A.pdf>.

**12G13933E15 Motorola Global Packaging, Environmental Requirements Document** – a global Motorola specification available at <http://compass.mot.com/go/globalspecs/1213933E15.pdf>.

**A3025 Procedure to Select & Specify Requirements for Environmentally Preferred Products** – an internal Motorola document available at: <http://compass.mot.com/go/98731228>. This document is not a requirement for suppliers

**1202897W19 Restricted Materials Testing Requirements** –This specification defines the minimum restricted materials testing requirements for Motorola. The test requirements will serve to support the 12G02897W18 material disclosures for certain commodities. The specification is available at: <http://compass.mot.com/doc/261577120/1202897W19.pdf>

Additional information is available at <http://www.motorola.com/citizenship/materialsdisclosure>. For a copy of the above specification refer to your Motorola contact or Schedule Sharing.

#### 8. REVISIONS:

Changes to the Banned, Controlled, and Reportable substance lists in this document must adhere to Motorola Corporate EHS Procedure, A3019. The Motorola EHS Department manages this document.

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## 9. APPROVALS:

<b>Business</b>	<b>Approver Name</b>	<b>Approver Signature</b>	<b>Date</b>
Mobile Devices	Dennis Bartelt		
Home and Networks Mobility	Joseph DiBiase		
Corporate Quality	Fred Kowitz		
Government and Public Safety	Fred Moloznik		
Product Configuration Management	Karen Pauwels		
Corporate EHS	Jodi Shapiro		

## 10. APPENDICIES:

TITLE: **Controlled and Reportable Materials Disclosure**REVISION DATE: **15 -May-2008**MEMO: **GS2757**ISSUE: **M**PAGE: **9** OF **19****Appendix A: Banned, Controlled and Reportable Substances****All substances in this appendix must be reported per Section 5. Thresholds apply to naturally occurring contaminants within each homogeneous material.**

Substances	Motorola Category	Reporting Threshold (ppm at a homogenous level unless otherwise indicated)
Asbestos, asbestos compounds	Banned	-
Chlorofluorocarbons and halons (Class I and II Ozone Depleting Chemicals) [1, 4]	Banned	-
Halogenated dioxins and furans	Banned	-
Polychlorobiphenyls and derivatives (PCBs)	Banned	-
Polychloroterphenyls and derivatives (PCTs)	Banned	-
Azo Dyes in leathers and textiles	Controlled	1
Arsenic and arsenic compounds [4]	Controlled	100
Brominated Flame Retardants (other than PBBs or PBDEs) (e.g. Tetrabromobisphenol-A)	Controlled	100
Ethylene Glycol Monomethyl Ether and its acetate	Controlled	1
Ethylene Glycol Monoethyl Ether and its acetate	Controlled	1
Cadmium and cadmium compounds	Controlled	10
Chromium (VI) compounds	Controlled	100
Chromium (VI) compounds in leather and textiles	Controlled	1
Lead and lead compounds	Controlled	100
Lead in cable jackets [2, 3]	Controlled	100
Mercury and mercury compounds [2]	Controlled	1
Polybrominated biphenyls (PBBs) [2]	Controlled	100
Polybrominated diphenyl ethers (PBDEs) (including Nonabromodiphenyl ether)	Controlled	100
PVC and vinyl chloride monomer	Controlled	100
Aluminum and aluminum compounds	Reportable	100
Amines, aliphatic	Reportable	100
Aniline salts	Reportable	100
Anthracene	Reportable	100
Antimony and antimony compounds	Reportable	100
Aromatic amines and dyes	Reportable	100
Aromatic compounds as monomers (except where listed separately)	Reportable	100

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Poly Aromatic Hydrocarbons (PAH and PCAH)	Reportable	100
4-Aminobiphenyl	Reportable	100
Barium compounds, except barium sulfate	Reportable	100
Beryllium and beryllium compounds	Reportable	100
Bismuth and bismuth compounds	Reportable	100
Certain short and medium chained chlorinated paraffins	Reportable	100
Chromium(III) and chromium compounds	Reportable	100
Cobalt and cobalt compounds	Reportable	100
Copper and copper compounds	Reportable	100
Ferrosilicon and alloys	Reportable	100
Formaldehyde	Reportable	100
Gold and compounds	Reportable	100
Halogenated aromatic compounds as monomers (Including Polychlorinated Naphthalenes)	Reportable	100
Halogenates that produce acidic vapor with water	Reportable	100
Iron and iron compounds	Reportable	100
Magnesium and magnesium compounds	Reportable	100
Nickel and nickel compounds	Controlled	100
Organic azo and azo-oxy compounds	Reportable	100
Organic halogen compounds (except where listed separately)	Reportable	100
Organic phosphorous compounds	Reportable	100
Organic silicon compounds	Reportable	100
Palladium and palladium compounds	Reportable	100
Perchlorates	Reportable	6 ppb
Perfluoro alkyl sulfonates (PFAS), and derivatives (including PFOS)	Controlled	100
Perfluorocarbons	Reportable	100
Phthalates	Controlled	100
Polybrominated Terphenyls	Reportable	100
Radioactive substances	Reportable	100
Selenium and selenium compounds	Reportable	100
Silver and silver compounds	Reportable	100
Small Fibers - All products containing fibers or fibrils 5um (microns), or less, in diameter with a length: diameter ratio equal to or greater than 3:1	Reportable	100
Sulfur hexafluoride	Reportable	100
Tantalum and tantalum compounds	Reportable	100
Tellurium and tellurium compounds	Reportable	100
Tetramethylthiuram disulfide (Thiram )	Reportable	100

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Thallium and thallium compounds	Reportable	100
Tin and tin compounds (Not TBT, TPT, or TBTOs)	Reportable	100
Tributyl Tin Oxide (TBTO)	Reportable	100
Tributyl Tin (TBT) and Triphenyl Tin (TPT)	Reportable	100
Zinc and zinc compounds	Reportable	100

1. Ozone depleting substances must also be reported if they are used in any processing of the part by the Motorola supplier.
2. Substance may not be intentionally added.
3. The concentration is based on the weight of the external cable jacket not including any conductors, sheathed conductors or ground jackets.
4. Banned in packaging and as a fumigation technique for wood pallets and other wood packaging (includes methyl bromide).

**Appendix B: Reserved**

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Note: Specific Motorola customer requirements may be more restrictive than the criteria set forth in Appendix C. Acceptance Thresholds are applied at the homogenous material level unless specified otherwise.

**Section 1: ECOMOTO Product Acceptance Criteria.**

In addition to Appendix C section 2, the following substances that are listed cannot exceed the specified limit except where exemptions are noted:

Substances	Motorola Category	Acceptance Threshold (ppm at a homogenous level unless otherwise indicated)
Brominated Flame Retardants (other than PBBs or PBDEs) (e.g. Tetrabromobisphenol-A)"	Controlled	1000
<u>PVC</u> and vinyl chloride monomer	Controlled	1000
<u>Phthalates</u>	Controlled	100

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Substances	Motorola Category	Acceptance Threshold (ppm at a homogenous level unless otherwise indicated)	Reference
Asbestos, asbestos compounds [4]	Banned	-	<a href="#">EU Directive</a>
Chlorofluorocarbons and halons (Class I and II Ozone Depleting Chemicals) [1]	Banned	-	<a href="#">EU Regulation</a>
Halogenated dioxins and furans	Banned	-	<a href="#">German Regulation</a>
Polychlorobiphenyls and derivatives (PCBs)	Banned	-	<a href="#">EU Directive</a>
Polychloroterphenyls and derivatives (PCTs)	Banned	-	<a href="#">EU Directive</a>
Azo Dyes in leathers and textiles	Controlled	30	<a href="#">EU Directive</a>
Arsenic and arsenic compounds in wood products as a preservative	Controlled	[4]	EU Directive [2003/2/EC]
Ethylene Glycol Monomethyl Ether and its acetate	Controlled	5	<a href="#">California Reg</a>
Ethylene Glycol Monoethyl Ether and its acetate	Controlled	5	<a href="#">California Reg</a>
Cadmium and cadmium compounds	Controlled	100	<a href="#">RoHS</a>
Cadmium, Chromium (VI), Lead and Mercury metals and compounds in packaging	Controlled	sum of listed metals not to exceed 100 ppm based on total package weight	EU Packaging Directive; various US states
Cadmium and cadmium compounds in "portable" batteries	Controlled	20 ppm of the total battery cell weight.	EU Battery Directive
Chromium (VI) compounds	Controlled	1000	<a href="#">RoHS</a>
Chromium (VI) compounds in leather and textiles	Controlled	3	German Regulation
Lead and lead compounds	Controlled	1000	<a href="#">RoHS</a>
Lead in cable jackets [2, 3]	Controlled	300	Prop 65
Mercury and mercury compounds [2]	Controlled	1000	Swiss Regulation, Northeast USA

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Mercury and mercury compounds in batteries [2]	Controlled	5 ppm of the total battery cell weight	EU Battery Directive
Nickel and nickel compounds [5]	Controlled	100	Motorola Initiative
Polybrominated biphenyls (PBBs)	Controlled	1000	<a href="#">Canada Regulation, EU Directive</a>
Polybrominated diphenyl ethers (PBDEs)	Controlled	1000	<a href="#">EU Directive; Illinois, USA</a>
Perfluoro alkyl sulfonates (PFAS), and derivatives (including PFOS)	Controlled	100	EU Directive [2006/122/EC]

- Ozone depleting substances must also be reported if they are used in any processing of the part by the Motorola supplier.
- Substance may not be intentionally added.
- The concentration basis is based on the weight of the external cable jacket not including any conductors, sheathed conductors or ground jackets.
- Banned in packaging and as a fumigation technique for wood pallets and other wood packaging (includes methyl bromide).
- Controlled in surface preparations of products and parts intended to come into direct and prolonged contact with the skin. Such products and parts must be evaluated by a materials testing laboratory in accordance with EN1811:1999 to validate that the Nickel ion release rate is < 0.5 µg/cm<sup>2</sup>/week. A supplier must provide a declaration of compliance with this standard along with their material disclosure for affected products and parts.

**Exemptions to Global Compliance Acceptance Criteria:**

- Mercury in compact fluorescent lamps not exceeding 5 mg per lamp.
- Mercury in straight fluorescent lamps for general purposes not exceeding:
  - halophosphate 10 mg
  - triphosphate with normal lifetime 5 mg
  - triphosphate with long lifetime 8 mg.
- Mercury in straight fluorescent lamps for special purposes.
- Mercury in other lamps not specifically mentioned in this Annex.
- Lead in glass of cathode ray tubes, electronic components and fluorescent tubes.
- Lead as an alloying element in steel containing up to 0.35 % lead by weight, aluminum containing up to 0.4 % lead by weight and as a copper alloy containing up to 4 % lead by weight.
- Lead in:
  - High melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead). [EU – 2005/747/EC]
  - Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signaling, transmission as well as network management for telecommunications. [EU – 2005/747/EC]
  - Lead in electronic ceramic parts (e.g. piezoelectronic devices). [EU – 2005/747/EC]
- Cadmium and its compounds in electrical contacts and cadmium plating except for applications banned under Directive 91/338/EC (1) amending Directive 76/769/EEC (2) relating to restrictions on the marketing and use of certain dangerous substances and preparations. [EU – 2005/747/EC]
- Lead use in compliant pin connector systems. [EU – 2005/747/EC]

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10. Lead as a coating material for the thermal conduction module c-ring. [EU – 2005/747/EC]
11. Lead and cadmium in optical and filter glass. [EU – 2005/747/EC]
12. Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80% and less than 85% by weight. [EU – 2005/747/EC]
13. Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages. [EU – 2005/747/EC]
14. Lead in all batteries and cadmium in industrial, professional and automotive batteries
15. Lead in finishes of fine pitch components other than connectors with a pitch of 0.65 mm or less with NiFe lead frames and lead in finishes of fine pitch components other than connectors with a pitch of 0.65 mm or less with copper lead-frames [2006/691/EC]

**Section 3: Reserved****Section 4: Reserved**



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Substances	Motorola Category	Acceptance Threshold (ppm at a homogenous level unless otherwise indicated)	Reference
Asbestos, asbestos compounds	Banned	-	<a href="#">EU Directive</a>
Chlorofluorocarbons and halons (Class I and II Ozone Depleting Chemicals) [1, 4]	Banned	-	<a href="#">EU Regulation</a>
Halogenated dioxins and furans	Banned	-	<a href="#">German Regulation</a>
Polychlorobiphenyls and derivatives (PCBs)	Banned	-	<a href="#">EU Directive</a>
Polychloroterphenyls and derivatives (PCTs)	Banned	-	<a href="#">EU Directive</a>
Azo Dyes in leathers and textiles	Controlled	30	<a href="#">EU Directive</a>
Arsenic and arsenic compounds in wood products as a preservative	Controlled	[4]	EU Directive [2003/2/EC]
Ethylene Glycol Monomethyl Ether and its acetate	Controlled	5	<a href="#">California Reg</a>
Ethylene Glycol Monoethyl Ether and its acetate	Controlled	5	<a href="#">California Reg</a>
Cadmium and cadmium compounds	Controlled	100	<a href="#">RoHS</a>
Cadmium, Chromium (VI), Lead and Mercury metals and compounds in packaging	Controlled	sum of listed metals not to exceed 100 ppm based on total package weight	EU Packaging Directive; various US states
Cadmium and cadmium compounds in "portable" batteries	Controlled	20 ppm of the total battery cell weight.	EU Battery Directive
Chromium (VI) compounds	Controlled	1000	<a href="#">RoHS</a>
Chromium (VI) compounds in leather and textiles	Controlled	3	German Regulation
Lead and lead compounds	Controlled	1000	<a href="#">RoHS</a>
Lead in cable jackets [2, 3]	Controlled	300	Prop 65

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Mercury and mercury compounds [2]	Controlled	1000	Swiss Regulation, Northeast USA
Mercury and mercury compounds in batteries [2]	Controlled	5 ppm of the total battery cell weight	EU Battery Directive
Nickel and nickel compounds [7]	Controlled	100	Motorola Initiative
Perfluoro alkyl sulfonates (PFAS), and derivatives (including PFOS)	Controlled	100	EU Directive [2006/122/EC]
Polybrominated biphenyls (PBBs) [2]	Controlled	1000	<a href="#">Canada Regulation, EU Directive</a>
Polybrominated diphenyl ethers (PBDEs)	Controlled	1000	<a href="#">EU Directive; Illinois, USA</a>
Brominated Flame Retardants (other than PBBs or PBDEs) [5]	Controlled	1000	Motorola Initiative
PVC and vinyl chloride monomer [6]	Controlled	100	Motorola Initiative
Phthalates [6]	Controlled	100	Motorola Initiative

- Ozone depleting substances must also be reported if they are used in any processing of the part by the Motorola supplier.
- Substance may not be intentionally added.
- The concentration basis is based on the weight of the external cable jacket not including any conductors, sheathed conductors or ground jackets.
- Banned in packaging and as a fumigation technique for wood pallets and other wood packaging (includes methyl bromide).
- The use of Brominated Flame Retardants (other than PBBs or PBDEs) is controlled for the following parts and products:

Printed Circuit Boards, Flex Boards, all other parts not shown	Effective 4/1/08
Integrated Circuits	Effective 7/1/08
Batteries	Effective 1/1/09
Accessories, ODM products, 3 <sup>rd</sup> party products	Effective 7/1/09

- The use of PVC and vinyl chloride monomer and Phthalates is controlled for the following parts and products:

All parts other than those noted below	Effective 4/1/08
Batteries	Effective 1/1/09

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party products

Effective 7/1/09

7. Controlled in surface preparations of products and parts intended to come into direct and prolonged contact with the skin. Such products and parts must be evaluated by a materials testing laboratory in accordance with EN1811:1999 to validate that the Nickel ion release rate is  $< 0.5 \mu\text{g}/\text{cm}^2/\text{week}$ . A supplier must provide a declaration of compliance with this standard along with their material disclosure for affected products and parts.

**Exemptions to MDb Compliance Acceptance Criteria:**

1. Mercury in compact fluorescent lamps not exceeding 5 mg per lamp.
2. Mercury in straight fluorescent lamps for general purposes not exceeding:
  - a. halophosphate 10 mg
  - b. triphosphate with normal lifetime 5 mg
  - c. triphosphate with long lifetime 8 mg.
3. Mercury in straight fluorescent lamps for special purposes.
4. Mercury in other lamps not specifically mentioned in this Annex.
5. Lead in glass of cathode ray tubes, electronic components and fluorescent tubes.
6. Lead as an alloying element in steel containing up to 0.35 % lead by weight, aluminum containing up to 0.4 % lead by weight and as a copper alloy containing up to 4 % lead by weight.
7. Lead in:
  - d. High melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead). [EU – 2005/747/EC]
  - e. Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signaling, transmission as well as network management for telecommunications. [EU – 2005/747/EC]
  - f. Lead in electronic ceramic parts (e.g. piezoelectronic devices). [EU – 2005/747/EC]
8. Lead use in compliant pin connector systems. [EU – 2005/747/EC]
9. Lead as a coating material for the thermal conduction module c-ring. [EU – 2005/747/EC]
10. Lead and cadmium in optical and filter glass. [EU – 2005/747/EC]
11. Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80% and less than 85% by weight. [EU – 2005/747/EC]
12. Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages. [EU – 2005/747/EC]
13. Lead in finishes of fine pitch components other than connectors with a pitch of 0.65 mm or less with NiFe lead frames and lead in finishes of fine pitch components other than connectors with a pitch of 0.65 mm or less with copper lead-frames [2006/691/EC]