



Corporate General Specification

European Union RoHS Specification

Description: EU RoHS Specification

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SCOPE: This specification establishes the requirements for complying with the European Union's Directive 2002/95/EC, Restrictions of Hazardous Substances in Electrical and Electronic Equipment ("EU RoHS"), as amended. The EU RoHS Directive restricts lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBBs) and/or polybrominated diphenyl ethers (PBDEs) in certain electrical and electronic equipment, except for certain maximum concentration levels in homogeneous materials. This specification applies to all materials, parts, components and/or products (whether finished or semi-finished) that have this specification cited on or in their 3M part number drawing, part or product specifications, sourcing agreements, purchase contracts, purchase orders or other purchasing documentation. This specification does not apply to batteries.¹

1.0 DEFINITIONS:²

"Homogeneous material": A material that cannot be mechanically disjointed into different materials.

The term "homogeneous" means "of uniform composition throughout." Examples of "homogeneous materials" are individual types of: plastics, ceramics, glass, metals, alloys, paper, board, resins, and coatings. For example, 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.³ In this case the limit values of the 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 limit values of the directive would apply to each of the separated materials individually. A semi-conductor package contains many homogeneous materials which include: plastic molding material, tin-electroplating coatings on the lead frame, the lead frame alloy and gold-bonding wires.

¹ The EU RoHS Directive does not apply to batteries, which are subject to other Directives and regulations globally. Accordingly, this RoHS Specification does not apply to batteries. Material content limits on batteries in materials, parts, components and/or products may be specified separately.

² These definitions of "homogeneous materials" and "mechanically disjointed" are contained in the Frequently Asked Questions (FAQs) on RoHS and WEEE, EC Directorate-General Environment (August 2006). Note that this document has been labeled "not legally binding" and therefore these definitions are subject to change.

³ "Other kinds of materials" means another kind of "homogeneous material," as opposed to a compound or substance that is dispersed throughout and mixed with the plastic.

“Mechanically disjointed”: Means that materials can be, in principle, separated by mechanical actions such as for example: unscrewing, cutting, crushing, grinding and abrasive processes.

“EU RoHS”: Refers to the European Union’s Directive 2002/95/EC on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, adopted February 2003, as amended.

“EU RoHS Compliant”: Material, part, product or component that does not exceed the EU RoHS restricted substances levels set forth in Section 2.1 of this Specification or that is exempt under EU RoHS.

2.0 REQUIREMENTS:

2.1 Except as provided for below in Section 3, “Exemptions,” any materials, parts, products and components covered by this specification may not contain more than the Table 1 maximum concentration levels of EU RoHS restricted substances in any “homogeneous materials.”⁴ It is possible that 3M business units may set lower thresholds.⁵ In case of conflicts with product specifications or other written 3M requirements, the more restrictive specification or requirement shall be followed.

Table 1. Maximum Concentration Values

Substance (or compound containing this substance)	Maximum Concentration Level
Lead (Pb)	0.1% by weight/1,000 parts per million (ppm)
Mercury (Hg)	0.1% by weight/1,000 ppm
Hexavalent Chromium (Cr+6)	0.1% by weight/1,000 ppm
Cadmium (Cd)	0.01% by weight/100 ppm
Polybrominated Biphenyl (PBB) flame retardants	0.1% by weight/1,000 ppm
Polybrominated diphenyl ether (PBDE) flame retardants ⁶	0.1% by weight/1,000 ppm

These levels apply to the substance as well as any compounds containing the substance. For additional guidance on the above substances and their compounds, please refer to the JOINT INDUSTRY GUIDE (JIG) “Material Composition Declaration for Electrotechnical Products” JIG-101 Ed 2.0, April 28, 2009

3.0 EXEMPTIONS:

3.1 Certain applications are exempt from the EU RoHS Directive, as listed in the Annex to the original directive (2002/95/EC), as well as amendments based on Commission Decisions, including but not limited to: 2005/618/EC, 2005/717/EC, 2005/747/EC, 2006/310/EC, 2006/690/EC, 2006/691/EC, and 2006/692/EC. Those applications are exempt from Section 2 Requirements of this specification.⁷

4.0 VERIFICATION OF COMPLIANCE:

⁴ These maximum concentration values are specified in the EU RoHS Directive, as amended by EU Commission Decision 2005/618/EC, and apply to electrical and electronic equipment under the scope of this Directive.

⁵ Different restricted levels maximums may exist for these 6 chemical categories due to other laws and regulations or customer requirements, for electrical and electronic equipment and other products, and may be specified separately by 3M businesses.

⁶ As of August 15, 2004, the European Union has prohibited placing on the market any substances, preparations, or articles or flame retardant parts thereof that contain either of two types of PBDEs (pentabromodiphenyl ether and octabromodiphenyl ether) at more than 0.1% by mass. Directive 2003/11/EC, Official Journal of the European Union 15.2.2003.

⁷ For example, exempt applications include but are not limited to mercury in certain lamps, and lead or cadmium in certain applications. See the EU RoHS Directive and amendments for a complete listing.

- 4.1 At 3M's request, suppliers will complete 3M Supplier Questionnaires that certify/verify that the supplied products are EU RoHS Compliant. In addition, at 3M's request, the supplier will verify that products are EU RoHS Compliant at supplier's expense via analytical testing by an independent third party laboratory as per Section 4.2 below. Supplier must maintain records on EU RoHS compliance, including all analytical test data regarding EU RoHS substances and any test data or EU RoHS certifications provided to suppliers by their suppliers. At 3M's request, suppliers must make these records available to 3M. At the reasonable request of suppliers, 3M is willing to enter into confidentiality agreements regarding these records.
- 4.2 Any analytical testing should be performed on "homogeneous materials." In addition, certified analyses should be conducted (including for purposes of sample preparation and test standards). A certified analysis is defined as the use of a referenced EPA (or equivalent)⁸ test method that is performed at an ISO17025 accredited laboratory (or equivalent⁹). Representative certified test methods include but are not limited to the listing in Table 2

Table 2. Certified Analytical Test Methods^a

Substance	Test Method	Method Summary
Cadmium, Lead, Mercury	<i>Preparation</i> EPA 3052	Total decomposition with various acids (microwave)
	<i>Analysis</i> EPA 6010B EPA 7471A	ICP-AES for Cd and Pb CVAAS for Hg
Chromium (VI)	<i>Preparation</i> EPA 3060A	Alkaline digestion
	<i>Analysis</i> EPA 7196A	IC or Diphenylcarbazide adsorption
Polybrominated biphenyl (PBB),	<i>Preparation</i> EPA 3540C	Soxhlet extraction
Polybrominated diphenyl ether (PBDE)	<i>Analysis</i> EPA 8082 (modified)	GC/MS and/or LC/MS

^a Recommended test method or equivalent. Certified analysis includes two matrix spike samples and two duplicate samples for each test matrix.

5.0 REFERENCES:

EU RoHS Directive 2002/95/EC on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, as amended:

http://ec.europa.eu/environment/waste/weee_index.htm

⁸ Equivalent test methods in the EU can be determined as follows, based on equivalency of quality control methods. An analytical method is considered "equivalent" to a referenced EPA method if the method is technically equivalent and includes at a minimum the quality control elements of duplicate sample analyses and duplicate matrix spike analyses for every test matrix (e.g., for every homogeneous sample matrix). BS EN 13346:2000 applied with the additional quality control elements of duplicate sample analyses and duplicate matrix spike analyses for every homogeneous sample matrix is considered "equivalent" to EPA 3052.

⁹ ILAC full signatory members are accreditation bodies that are equivalent to ISO/IEC 17025 accreditation bodies. According to the ILAC Mutual Recognition Arrangement each full member (signatories) agrees to maintain conformance with ISO/IEC Guide 58 (guidance for accrediting bodies) and ensure that all accredited laboratories comply with ISO/IEC 17025 (laboratory accreditation standard). Therefore, any labs accredited by ILAC accreditation bodies are recognized as ISO/IEC 17025 compliant.

<http://www.ilac.org/>

EU Directive 2003/11/EC Relating to Amendments to Restrictions on the Marketing and Use of Certain Dangerous Substances and Preparations (pentabromodiphenyl ether, octabromodiphenyl ether), as corrected:

<http://eur-lex.europa.eu/LexUriServ/site/en/consleg/2003/L/02003L0011-20030215-en.pdf>

Frequently Asked Questions (FAQs) on RoHS and WEEE, EC Directorate-General Environment (August 2006):

http://ec.europa.eu/environment/waste/pdf/faq_weee.pdf

JOINT INDUSTRY GUIDE (JIG) “Material Composition Declaration for Electrotechnical Products” JIG-101 Ed 2.0, April 28, 2009

http://www.jedec.org/DOWNLOAD/search/JIG101_E2.pdf

United States Environmental Protection Agency, “Test Methods for Evaluating Solid Waste,” SW-846, 3rd Edition:

<http://www.epa.gov/epaoswer/hazwaste/test/main.htm>

United Kingdom Department for Business, Innovation and Skills “RoHS Regulations Government Guidance Notes” (June 2009):

<http://www.berr.gov.uk/files/file52010.pdf>

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