EUROPEAN COMMISSION
DIRECTORATE-GENERAL
ENVIRONMENT
Directorate G - Sustainable Development and Integration
ENV.G.4 - Sustainable Production & Consumption

DIRECTIVE 2002/95/EC[1] ON THE RESTRICTION OF THE USE OF CERTAIN HAZARDOUS SUBSTANCES IN ELECTRICAL AND ELECTRONIC EQUIPMENT (ROHS).

CHECK LIST FOR REQUESTS FOR ADDITIONAL EXEMPTIONS

Industry has sent to the Commission's services a number of requests for exemptions from the requirements of the RoHS Directive that are additional to those currently covered by the study and the stakeholder consultation. In most cases these are not substantiated by scientific and technical evidence. The proposed check-list will enable the Technical Adaptation Committee (TAC) to carry out a first screening of the requests received. Proposals that successfully pass the screening process will then be considered for a possible exemption.

Article 4(1) of Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment1 provides 'that from 1 July 2006, new electrical and electronic equipment put on the market does not contain lead, mercury, cadmium, hexavalent chromium, PBB or PBDE.' The Annex to the Directive lists a limited number of applications of lead, mercury, cadmium and hexavalent chromium, which are exempted from the requirements of Article 4(1).

Adaptation to scientific and technical progress is provided for under Article 5 of the Directive. Pursuant to Article 5(1): "Any amendments which are necessary in order to adapt the Annex to scientific and technical progress for the following purposes shall be adopted in accordance with the procedure referred to in Article 7(2):"

Article 5(1)(b) allows the exempting of materials and components of electrical and electronic equipment from Article 4(1) if their elimination or substitution via design changes or materials and components which do not require any of the materials or substances referred to therein is technically or scientifically impracticable, or where the negative environmental, health and/or consumer safety impacts caused by substitution are likely to outweigh the environmental, health and/or consumer safety benefits thereof. <u>These terms of reference mean that the TAC cannot consider exemptions for any other reason, for example a justification based on increased costs.</u>

In order to allow the TAC to consider submissions for additional exemptions, the information in Table I should be provided as a minimum requirement. The request for submissions must fulfil the criteria of Article 5(1)(b). The information provided should be supported, as far as possible, with relevant technical and scientific evidence.

[1] OJ L 37, 13.2.2003, p. 19

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TABLE I – CHECK LIST

PROPOSALS FOR FURTHER EXEMPTIONS FROM THE REQUIREMENTS OF ARTICLE 4(1) OF DIRECTIVE 2002/95/EC FOR SPECIFIC APPLICATIONS OF LEAD, MERCURY, CADMIUM, HEXAVALENT CHROMIUM.

Submitted by: Test and Measurement Coalition

The Test & Measurement Coalition includes six leading companies producing Category 9 type products: Agilent Technologies, Anritsu, Fluke Corporation, Keithley Instruments, National Instruments, and Tektronix.

Criteria	**Information:** **Please provide supporting technical and scientific evidence**
1. Please indicate the specific application for which the exemption is requested and indicate a precise and clear wording for the new exemption. Please describe the material/component of the electrical and electronic equipment that contains the hazardous substance. Please indicate the functionality of the substance in the material of the equipment. Provide a detailed description of the application which explains why the restricted substance is currently required or used. Please indicate the quantity of the hazardous substance present in the whole equipment (Kg).	Lead in glass of electronic components and fluorescent tubes, or in electronic ceramic parts (including dielectric ceramic capacitors) used in monitoring and control instruments (Category 9.) The Test & Measurement Coalition is particularly interested in this exemption as it is used in virtually all equipment. Typical examples of components using these materials are surface-mount resistors, conformal coatings of semi-conductor dies, glass-bodied diodes, LCD frit seals and transformers. We have reviewed the product portfolios of the T&M Coalition members and have identified the following *examples* of lead-glass or lead-ceramic containing components which are used in Category 9 equipment: • Atomic Force Microscope (AFM) • Gas Chromatograph Capillary Tube • Glass Bodied Diodes (Schottky, switching, Zener, PIN) • Glass Capacitors • Hermetic Seals on RF Modules • Hollow Cathode Lamps • Hybrid Circuit Encapsulation Material • Integrated Circuit Die Passivation • Micro-channel Plate Electron multipliers • pH electrodes • Photo-diodes • Photomultiplier tubes • Photo-transistors • Potentiometers • Specialty thick film resistors • UV-EPROMS While many of these are common applications, some are very specialized. One custom use is in the glass capillary tube, composed of more than 20% lead that transports samples into a Mass Spectrometer (MS). The glass for this application needs to be electrically conductive to improve ion transfer into the MS. Non-leaded glass would not work for this application.

Criteria	Information: Please provide supporting technical and scientific evidence
2. Please explain why the elimination or substitution of the hazardous substance via design changes of materials and components is currently technically or scientifically impracticable.	The use of lead is critical for Category 9 products to guarantee high and long term reliability. There are no suitable alternatives available to date. Due to the unique nature of many of the components used in Category 9 equipment, the refusal of the exemption request would drive design changes to the individual component and potentially design changes to the application where the component is utilized. Due to the changed scope of the revised exemption language used in the recast of the RoHS Directive, it is not possible to map suppliers' data previously collected for these components into the new exemption structure.
3. Please indicate if the negative environmental, health and/or consumer safety impacts caused by substitution are likely to outweigh the environmental, health and/or consumer safety benefits. If existing, please refer to relevant studies on negative impacts caused by substitution.	Oeko Institute summarises in its report of 19 Feb. 2008 the limited environmental impact of lead in glass application vs. the substantial risks for environmental and health which may arise from using unsafe alternatives: "As the lead is bound within the glass there is no direct health or environmental risk of it in this application because the possibility of release to the environment is greatly reduced. According to some stakeholders there are several applications of Lead-glass in electronic components providing the function of security devices. A substitute of inferior quality might have disastrous consequences to personnel and to the environment in case of failure." The environmental impacts of any substitutes can only be established once a technical substitute has been proven.
4. Please indicate if feasible substitutes currently exist in an industrial and/or commercial (please provide reference for the substitutes). If substitutes exist on the market, please indicate why they are not used. Please indicate in which applications they are used. Please indicate what efforts are being made by your company to develop alternative techniques. Please indicate if the alternative techniques will be available by 1 July 2006 or at a later stage. If not by that date, please indicate when you expect an alternative to be available?	The Test & Measurement Coalition is a downstream user of the generic components containing lead. The major world producers of those components have conducted research and continue efforts to find suitable alternatives. However, no technically feasible substitutes are available for many applications. The lack of available substitutes has been recognized by Oeko Institute in their report of 19 Feb. 2008. Applications specific to our Category have not had research invested to identify alternatives because it was understood the previous exemption would be made available for our sector. Historically, material or component substitutions have been validated through a number of tests under extreme conditions. Testing programmes can last one or two years. **We therefore request that the exemption applies until 2021 for all Monitoring and Control products (aligned with typical product lifecycles and the first review of Exemptions for Category 9.)**

Criteria	Information: Please provide supporting technical and scientific evidence
5. Please provide any other relevant information that would support your application for an additional exemption.	If the exemption is not granted for Category 9 Monitoring and Control the additional time needed for adaptation and redesign of the sector's portfolios would be considerable. This change of direction due to unavailability of this substance exemption would cause massive withdrawal of products from the EU market. This would have very serious consequences, not only for Category 9 producers, but also on client industries which are of key importance for the EU economy and competitiveness such as communication, defense, research & development, aerospace, electronic manufacture, etc. The effort and costs required to recollect part data, review and redesign products is disproportionate compared to gains that can be obtained in other areas. Furthermore, we would have to recollect approximately 60% of all part data that utilizes any exemption that has been collected to date. Continuing to allow monitoring and control instruments to utilize all capacitors that contain lead in dielectric ceramic also avoids the need to review and redesign products in development, or already released to the market, which were expected to meet the RoHS substance restrictions utilizing the original exemptions. **Specificity of Category 9 Sector** Professional Test & Measurement products include a wide range of sophisticated electronic instruments including electronic counters, signal generators, logic analyzers, oscilloscopes, network analyzers, spectrum analyzers, power meters, multi-meters, signal analyzers, chemical and biological analyzers, and communications test equipment. The instruments are used by laboratories (for research and compliance evaluation), universities (for technical training and education), manufacturers (for product development and manufacturing of their products), and governmental agencies for conformance verification. They are essential to the good functioning of electronic communications networks, heavy industrial processes such as steel manufacturing, the testing of vehicles for compliance with emissions standards, and the monitoring of complex systems of all types. Due to the specialized nature of the Test & Measurement subset of Category 9 products they contain a relatively high ratio of custom designed components compared to off-the-shelf components. Customers require that Test & Measurement products have greater bandwidth, speed, accuracy, and measurement precision than the products they themselves are producing. Most of these Category 9 products serve industrial monitoring applications and are produced in vastly smaller quantities

Criteria	Information: Please provide supporting technical and scientific evidence
	compared to categories already in scope of RoHS. The entirety of Category 9 product volumes in total is representative of less than 0.25% of e-waste, of which industrial Test & Measurement is a subset. Test & Measurement instruments are designed for high reliability and are considered company capital assets – not personal use products. Customers expect to use these instruments for a minimum of ten years and for manufacturers to provide upgrades to expand instrument functionality on the basis of both number and type of measurements as well as additional analytical functionality during product life. The ERA study did not consider this exemption in detail since it was foreseen to be available for medical or monitoring and control products. No detailed impact assessment has been undertaken for Category 9 products as our sector has been out of scope prior to July 2011. Availability of the original set of RoHS Exemptions had been assumed as intimated from relevant parties including the EU Commission during the development of the RoHS Recast. Consequently, the long-term reliability of all alternatives has not been fully evaluated for our applications. Our products have long life time of 10 years on average; therefore substitutes should be tested not only for meeting reliability requirements but also for long term performance, going substantially beyond the one of consumer goods applications. Any forced change would require significant data collection from the supply chain, product review, redesign and requalification. This effort and cost would be disproportionate to the benefits of short-term substitution for the limited application of these parts in the monitoring and control sector. **References**: Oeko Institute report “Adaptation to scientific and technical progress under Directive 2002/95/EC, 19 February 2009.”

Additional guidelines

To support your application, it may be useful to provide, in addition, an assessment of your application from an independent expert. These should be accompanied by information that will allow the Commission and TAC to be satisfied that the consultant is independent and is qualified to assess the application.

Explain the reasons why potential alternative materials, designs or processes are unsuitable with quantitative data wherever possible. If possible, provide photographs or diagrams to illustrate claims. Sources of information should be referenced where possible.