



**DIRECTIVE 2002/95/EC¹ 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. These terms of reference mean that the TAC cannot consider exemptions for any other reason, for example a justification based on increased costs.

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

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: Andreas Stihl AG & Co. KG

<p>Criteria</p>	<p>Information: Please provide supporting technical and scientific evidence</p>
<p>1. Please indicate the specific application for which the exemption is requested and indicate a precise and clear wording for the new exemption.</p> <p>Please describe the material/ component of the electrical and electronic equipment that contains the hazardous substance.</p> <p>Please indicate the functionality of the substance in the material of the equipment.</p> <p>Provide a detailed description of the application which explains why the restricted substance is currently required or used.</p> <p>Please indicate the quantity of the hazardous substance present in the whole equipment (Kg).</p>	<p>Suggested wording:</p> <p>Lead in solders for the ignition module and other electronic engine controls mounted directly on or close to the cylinder of hand-held engines (classes SH: 1, SH: 2, SH: 3 of 2002/88/EC)</p> <p>These classes of 2002/88/EC cover hand-held non-road mobile machinery like chain saws and hedge trimmers.</p> <p>The ignition module for small spark ignition engines has a compact design and is located in direct proximity to the engine. Therefore it has to withstand high vibrations (> 80g). It also has to operate reliably in a broad temperature range reaching from cold weather conditions up to the operating temperature of the engine (-30°C ... 110°C).</p> <p>Especially the solder joints have to be suited for a high number of temperature cycles between ambient temperature and operating temperature. To withstand these harsh conditions, materials and design had to be optimized and thoroughly tested. For additional mechanical stability and protection against water, fuel and oil the electronic circuits are sealed with epoxy resin.</p> <p>Over the last years, STIHL invested in a considerable R&D effort to include new electronic functions for the reduction of exhaust emissions in the ignition module and minimize the failure rate at the same time. We have now reached a failure rate that allows the ignition module to have the same life-time as the product.</p> <p>A typical ignition module contains about 0,75g lead.</p>
<p>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.</p>	<p>So far we have no reliable data on the use of lead-free solder in ignition modules for small engines.</p> <p>Lead-free solder differs from the solder used today in process temperature (20°C higher), porosity and adhesion on the component.</p> <p>The overall effect poses a high risk for a decrease of durability.</p> <p>Comprehensive study is needed in production and the changed components would have to undergo extensive field testing to minimize the risk.</p>
<p>3. Please indicate if the negative</p>	<p>The module would probably have to be replaced more often during</p>

Criteria	Information: Please provide supporting technical and scientific evidence
<p>environmental, health and/or consumer safety impacts caused by substitution are likely to outweigh the environmental, health and/or consumer safety benefits.</p> <p>If existing, please refer to relevant studies on negative impacts caused by substitution.</p>	<p>the life time of the product. Therefore more waste is produced, which is difficult to recycle because of the necessary sealing with epoxy resin.</p>
<p>4. Please indicate if feasible substitutes currently exist in an industrial and/or commercial (please provide reference for the substitutes).</p> <p>If substitutes exist on the market, please indicate why they are not used. Please indicate in which applications they are used.</p> <p>Please indicate what efforts are being made by your company to develop alternative techniques.</p> <p>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?</p>	<p>Solutions for lead-free soldering exist on the market, but today not all electronic components used in the ignition module are available in a version that is suitable for lead-free soldering.</p> <p>In addition to that, extensive field testing and optimization cycles are needed before the alternative can be used in the market. For that we need to get samples from series production-like processes with the alternative solder for testing.</p> <p>For the coordination of the activities of several suppliers, laboratory and field testing of the samples a longer period for evaluation is needed.</p> <p>The products have an average life-time of over 10 years in the market. Even after the first positive results from the laboratory and field testing it is necessary to reduce the risk and start with a limited number of ignition modules with lead-free solder in the market. Only if these modules prove to have a comparable life-time as today's lead-containing modules, a change for all modules is feasible.</p> <p>If these tests are successful mid 2025 is a realistic date for the availability of a lead-free substitute.</p>
<p>5. Please provide any other relevant information that would support your application for an additional exemption.</p>	<p>See attached slides.</p>

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.