Consultation Questionnaire Exemption 9 of RoHS Annex III

Current wording of the exemption:

Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0.75 % by weight in the cooling solution

Expires in 21. July 2021 for cat. 1-7 and 10

# ACRONYMS AND DEFINITIONS

Cr6+, Cr(VI) hexavalent chromium

EEA European Economic Area

EEE electrical and electronic equipment

GAHP gas absorption heat pump

HCr hexavalent chromium

# INTRODUCTION

## Background

Bio Innovation Service, UNITAR and Fraunhofer IZM have been appointed[[1]](#footnote-2) by the European Commission through for the evaluation of applications for the review of requests for new exemptions and the renewal of exemptions currently listed in Annexes III and IV of the RoHS Directive 2011/65/EU.

Ariston Thermo SpA submitted a request[[2]](#footnote-3) for the renewal and change of wording of the above-mentioned exemption. The request has been subject to a first completeness and plausibility check. The applicant has been re-quested to answer additional questions and to provide additional information, available on the request webpage of the stakeholder consultation.[[3]](#footnote-4)

The stakeholder consultation is part of the review process for the request at hand. The objective of this consultation and the review process is to collect and to evaluate information and evidence according to the criteria listed in Art. 5(1)(a) of Directive 2011/65/EU.[[4]](#footnote-5)

To contribute to this stakeholder consultation, please answer the below questions until the 27th of May 2021.

## Summary of the Exemption Request

Ariston Thermo SpA applies for an Authorisation for the “use of sodium chromate as an anticorrosion agent of the carbon steel in sealed circuit of gas absorption appliances up to 0.70 % by weight (as Cr-VI) in the refrigerant solution”.

Ariston Thermo SpA states that: “*Gas Absorption Heat Pumps (GAHP) and refrigerators use scientifically and technologically the same thermodynamic principles. More precisely, refrigerators and GAHP are:*

* *Identical from the operating principle*
* *Extremely similar from the operating conditions*
* *Identical from the metallurgy/corrosion/construction point of view*

*Therefore, Ariston Thermo SpA is requesting within this application to change the wording of the current exemption to additionally cover gas absorption heat pumps.*

*GAHP is the most promising thermally driven heat pump category. It is perceived as the technology to replace the conventional gas boiler technology in support of the energy transition and therefore it is instrumental to accelerate the energy transition toward hydrogen. “*

Furthermore Ariston Thermo SpA states about the substance that “*Chromium VI is used as anticorrosion agent in the refrigerant solution. The inhibitor function is proved and tested for GAHP.*

*In basic media Cr-VI oxidises iron on the steel surface and forms a protective layer which contains iron oxide and chromium (III) oxide.
Cr-VI itself is reduced to Cr-III to build the protective layer.*

*9 Fe + 8 Na2CrO4 + 8 H2O → 3 Fe3O4 + 4 Cr2O3 + 16 Na OH*

*This passivating film builds a very effective protection of carbon steel against corrosive processes and possesses self-healing ability*”.

# Questions

Ariston Thermo SpA requests the modification of the above exemption for cat. 1 with a validity of 5 years with the following wording:

*Therefore, in place of the current wording:*

*"Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0.75 % by weight in the cooling solution"*

*The following wording is proposed:*

*“Hexavalent chromium as an anticorrosion agent of the carbon steel sealed circuit in gas absorption driven appliances up to 0.75 % by weight in the refrigerant solution”*

The consultants proposed that instead of amending this exemption to add a separate exemption[[5]](#footnote-6) to Annex III. This is due to the fact that Exemption 9 is restricted to electrical and electronic equipment (EEE) of categories 8, 9 and 11 and the gas absorption heat pumps (GAHPs) are categorized as equipment of category 1 (large household appliances).

1. The following wording is agreed with the applicant:

*“Hexavalent chromium as an anticorrosion agent of the carbon steel sealed circuit in gas absorption heat pumps up to 0.75 % by weight in the refrigerant solution”*

* 1. Please let us know whether you support or disagree with the wording, scope, and re-quested duration of the exemption. To support your views, please provide detailed technical argumentation / evidence in line with the criteria4 in Art. 5(1)(a).
	2. If applicable, please suggest an alternative wording and duration and explain your proposal.
1. Please provide information concerning possible substitutes or elimination possibilities at present or in the future so that the requested exemption could be restricted or revoked.
	1. Please explain substitution and elimination possibilities and for which part of the ap-plications in the scope of the requested exemption they are relevant.
	2. Please provide information as to research to find alternatives that do not rely on the exemption under review (substitution or elimination), and which may cover part or all of the applications in the scope of the exemption request.
	3. Please provide a roadmap of such on-going substitution/elimination and research (phases that are to be carried out), detailing the current status as well as the estimated time needed for further stages.
2. Do you know of any applications of the GHPs in EEE of RoHS category 11?
3. Do you know of other manufacturers producing devices of comparable features and performance like the ones in the scope of this exemption request that do not depend on RoHS-restricted substances, or use smaller amounts of these substances compared to the applications in the scope of this exemption?
4. As part of the evaluation, socio-economic impacts shall also be compiled and evaluated. For this purpose, if you have information on socioeconomic aspects, please provide details in respect of the following:
	1. What are the volumes of EEE in the scope of the requested exemptions which are placed on the market per year?
	2. What are the volumes of additional waste to be generated should the requested ex-emption not be renewed or not be renewed for the requested duration?
	3. What are estimated impacts on employment in total, in the EU and outside the EU, should the requested exemption not be renewed or be renewed for less than the re-quested time period? Please detail the main sectors in which possible impacts are expected – manufacturers of equipment in the scope of the exemption, suppliers, re-tail, users of MRI devices, etc.
	4. Please estimate additional costs associated should the requested exemption not be renewed, and how this is divided between various sectors (e.g. private, public, industry: manufacturers, suppliers, retailers).
5. Is there any additional information which you would like to provide?

**Please note that answers to these questions can be published in the stakeholder consultation, which is part of the evaluation of this request. If your answers contain confidential information, please provide a version that can be made public along with a confidential version, in which proprietary information is clearly marked.**

**Please do not forget to provide your contact details (Name, Organisation, e-mail and phone number) so that the project team can contact you in case there are questions concerning your contribution.**

1. It is implemented through the specific contract 070201/2020/832829/ENV.B.3 under the Framework contract ENV.B.3/FRA/2019/0017 [↑](#footnote-ref-2)
2. Exemption request available at :

<http://www.rohs.biois.eu/RoHS_exemption_Application_for_Ariston_Thermo_SpA.pdf> [↑](#footnote-ref-3)
3. Clarification questionnaire available at:

[http://www.rohs.biois.eu/E9(a)-II\_Annex-III\_Questionnaire\_Consultation\_Ariston.docx](http://www.rohs.biois.eu/E9%28a%29-II_Annex-III_Questionnaire_Consultation_Ariston.docx) [↑](#footnote-ref-4)
4. Directive 2011/65/EU (RoHS) available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32011L0065:EN:NOT> [↑](#footnote-ref-5)
5. This does not anticipate that the consultants will recommend granting the exemption since this decision will be based on the review process once it is completed. [↑](#footnote-ref-6)