

To whom it may concern:

Thanks for reading this letter. This is Ryan Liu, Manufacturing Technology Manager. On behalf of Yageo Corporation, Resistor Chip Business Group, I am writing to apply for renewing the exemption of Directive 2011/65/EU (Rohs 2) Annex 7(C)-1 *“Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound”*.

Since last review, scientists and material engineers all over the globe have continued to be devoted to the innovation of removing lead in resistors. Some specific products did have realize lead-free objectives, while some still need more effort and time to have remarkable breakthrough. This is because the physical specification of lead provides the stability, higher performance and better tolerance that other materials cannot compete.

The reasoning we argued in last requirement for extension is still valid. Even though the industries of resistor and capacitor keep working on the elimination of lead, there is no better substitute and no prospect to get rid of that before next review. We thereafter contribute to this consultation and promise we are planning to figure out a way to replace lead in electronic component industry.

Enclosed are the application form and relevant scientific evidence to support our proposal. Please let me know if there are more data or document that we shall prepare for the consultation.

Thank you again for considering our application. We would appreciate your evaluation and feedbacks. Looking forward to hearing from you soon.

Sincerely yours,  
Ryan Liu  
MTC Manager, Yageo Corporation

# Exemption Request Form

Date of submission: 2020-01-15

## 1. Name and contact details

### 1) Name and contact details of applicant:

Company: <u>YAGEO Corporation</u>	Tel.: <u>+886.7.9616999 ext.3608</u>
Name: <u>Pei-Yun Hsiao</u>	E-Mail: <u>Pei-Yun.Hsiao@yageo.com</u>
Function: <u>Engineer</u>	Address: <u>No. 101-2, Qinan Rd., Dashe Dist., Kaohsiung City, Taiwan (R.O.C.)</u>

## 2. Reason for application:

Please indicate where relevant:

- Request for new exemption in:
- Request for amendment of existing exemption in
- Request for extension of existing exemption in
- Request for deletion of existing exemption in:
- Provision of information referring to an existing specific exemption in:
  - Annex III
  - Annex IV

No. of exemption in Annex III or IV where applicable: 7(C)-1

Proposed or existing wording: Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound.

Duration where applicable: July, 2016 ~ July, 2021

Other: \_\_\_\_\_

## 3. Summary of the exemption request / revocation request

Proposed Annex III 7(C)-1 extension for another 5 years.

## 4. Technical description of the exemption request / revocation request

**(A) Description of the concerned application:**

1. To which EEE is the exemption request/information relevant?

Name of applications or products: Chip resistors

a. List of relevant categories: (mark more than one where applicable)

- |                                       |                             |
|---------------------------------------|-----------------------------|
| <input type="checkbox"/> 1            | <input type="checkbox"/> 7  |
| <input type="checkbox"/> 2            | <input type="checkbox"/> 8  |
| <input checked="" type="checkbox"/> 3 | <input type="checkbox"/> 9  |
| <input type="checkbox"/> 4            | <input type="checkbox"/> 10 |
| <input type="checkbox"/> 5            | <input type="checkbox"/> 11 |
| <input type="checkbox"/> 6            |                             |

b. Please specify if application is in use in other categories to which the exemption request does not refer: Electronic component

c. Please specify for equipment of category 8 and 9:

The requested exemption will be applied in

monitoring and control instruments in industry

in-vitro diagnostics

other medical devices or other monitoring and control instruments than those in industry

2. Which of the six substances is in use in the application/product?

(Indicate more than one where applicable)

Pb     Cd     Hg     Cr-VI     PBB     PBDE

3. Function of the substance: Enhance resistor stability

4. Content of substance in homogeneous material (%weight): 0.311%

5. Amount of substance entering the EU market annually through application for which the exemption is requested: 996 kg/yr

Please supply information and calculations to support stated figure.

( 75B pcs/yr x 4.27 g/Kpcs x 0.311%)

6. Name of material/component: chip resistor

7. Environmental Assessment: ISO-14001

LCA:  Yes

No

**(B) In which material and/or component is the RoHS-regulated substance used, for which you request the exemption or its revocation? What is the function of this material or component?**

Pb, the function is enhance resistor stability.

**(C) What are the particular characteristics and functions of the RoHS-regulated substance that require its use in this material or component?**

Stabilize resistance value & reliability performance.

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**5. Information on Possible preparation for reuse or recycling of waste from EEE and on provisions for appropriate treatment of waste**

**1) Please indicate if a closed loop system exist for EEE waste of application exists and provide information of its characteristics (method of collection to ensure closed loop, method of treatment, etc.)**

YAGEO is Chip resistors manufacturer & ship the components to our customer who assemble components into end products. End customer should follow the requirements of regulation for waste treatment.

**2) Please indicate where relevant: N/A**

Article is collected and sent without dismantling for recycling

Article is collected and completely refurbished for reuse

Article is collected and dismantled:

The following parts are refurbished for use as spare parts: \_\_\_\_\_

The following parts are subsequently recycled: \_\_\_\_\_

Article cannot be recycled and is therefore:

Sent for energy return

Landfilled

**3) Please provide information concerning the amount (weight) of RoHS substance present in EEE waste accumulates per annum:**

In articles which are refurbished \_\_\_\_\_

In articles which are recycled \_\_\_\_\_

In articles which are sent for energy return \_\_\_\_\_

In articles which are landfilled \_\_\_\_\_

## 6. Analysis of possible alternative substances

- (A) Please provide information if possible alternative applications or alternatives for use of RoHS substances in application exist. Please elaborate analysis on a life-cycle basis, including where available information about independent research, peer-review studies development activities undertaken

N/A ( This information should be provided by our raw material suppliers)

- (B) Please provide information and data to establish reliability of possible substitutes of application and of RoHS materials in application

NO sufficient information now.

## 7. Proposed actions to develop possible substitutes

- (A) Please provide information if actions have been taken to develop further possible alternatives for the application or alternatives for RoHS substances in the application.

We are pushing the materials suppliers to provide the lead free paste and so far they have not yet committed any time line or firm decision. Yageo as a chip resistor component supplier is constrained by the paste supplier and we will do the best effort to push for it.

- (B) Please elaborate what stages are necessary for establishment of possible substitute and respective timeframe needed for completion of such stages.

We are pushing the materials suppliers to provide the lead free paste and so far they have not yet committed any time line or firm decision. Yageo as a chip resistor component supplier is constrained by the paste supplier and we will do the best effort to push for it.

## 8. Justification according to Article 5(1)(a):

### (A) Links to REACH: (substance + substitute)

1) Do any of the following provisions apply to the application described under (A) and (C)? N/A

- Authorisation
  - SVHC
  - Candidate list
  - Proposal inclusion Annex XIV
  - Annex XIV
- Restriction
  - Annex XVII
  - Registry of intentions
- Registration

2) Provide REACH-relevant information received through the supply chain.  
Name of document: \_\_\_\_\_

### (B) Elimination/substitution:

1. Can the substance named under 4.(A)1 be eliminated?

Yes. Consequences? \_\_\_\_\_

No. Justification: No sufficient information from material suppliers.

2. Can the substance named under 4.(A)1 be substituted?

- Yes.
- Design changes:
  - Other materials:
  - Other substance:

No.

Justification: No sufficient information from material suppliers

3. Give details on the reliability of substitutes (technical data + information):

No sufficient information now.

4. Describe environmental assessment of substance from 4.(A)1 and possible substitutes with regard to

1) Environmental impacts: N/A

2) Health impacts: N/A

3) Consumer safety impacts: N/A

⇒ Do impacts of substitution outweigh benefits thereof?

Please provide third-party verified assessment on this: N/A

**(C) Availability of substitutes:**

- a) Describe supply sources for substitutes: N/A
- b) Have you encountered problems with the availability? Describe: Yes, Material / Technology
- c) Do you consider the price of the substitute to be a problem for the availability?  
 Yes       No
- d) What conditions need to be fulfilled to ensure the availability? Lead-free materials should meet resistor performance.

**(D) Socio-economic impact of substitution:**

- ⇒ What kind of economic effects do you consider related to substitution?
  - Increase in direct production costs
  - Increase in fixed costs
  - Increase in overhead
  - Possible social impacts within the EU
  - Possible social impacts external to the EU
  - Other: Lead –free materials should meet resistor performance
- ⇒ Provide sufficient evidence (third-party verified) to support your statement: N/A

**9. Other relevant information**

**Please provide additional relevant information to further establish the necessity of your request:**

Our customers may face components shortage if extension request is not accepted.

**10. Information that should be regarded as proprietary**

**Please state clearly whether any of the above information should be regarded to as proprietary information. If so, please provide verifiable justification:**

Yes, company proprietary.

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# Yageo Lead free product (Exemption free) FAQ

**December 2019**  
**R-Chip Marketing**



## ● Regulations

EU RoHS 2011/65/EU (Lead <1000ppm)

## ● 7(c)-1 Exemption

Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, or in a glass or ceramic matrix compound

Q1

EU RoHS (2011/65/EU) might be renewed in July, 2020. Does it mean Rchip production will be required with 100% lead free in accordance with EU RoHS (2011/65/EU) ?

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21<sup>st</sup> July, 2020, as EU RoHS's periodical review timing, all contents will be updated. Yet it is not certain that 7C-1 exemption will be terminated.

Q2

Why does Yageo need to apply for the renewal of 7C-1 exemption?

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Yageo is in development of lead free (<1000ppm) products, meanwhile, also applied for the renewal of 7C-1 exemption in January this year due to :

At the present stage, raw material cannot fulfill all resistance ranges and series. Yageo must coordinate with our suppliers on the progress of raw material development.

The result of the renewal application will be announced on 21<sup>st</sup> July , 2020.

Q3

What is Yageo's output plan? Does Yageo consider mass production?  
 What if there are demands for quotation, samples or orders of lead free products?

**Yageo solution for RoHS Compliant, without exemption:**

Product Series		Lead free status
Thick Film Lead Free	RC_P	<b>Sample available</b> (RCxxxxxx-xxxxxxP) compliant with RoHS (Lead <1000ppm) Exemption free
Thin film high precision	AT	
Current sensor	PE,PA,PS,PU...	<b>Mass production</b> compliant with RoHS (Lead <1000ppm) Exemption free
	RL, PT	
Thin film high precision	RT	<b>In feasibility study</b> based on the progress of raw material development
Thick film array/network	YC, TC	
Thick Film General Purpose	RC	
Precision Thick film	RE	
Automotive, Anti- sulfur Thick film	AC,AA	
Surge	SR	
High voltage	RV	

*Innovative Service Around the Globe* **YAGEO**

Thank you