

Exemption Request Form

Date of submission: 2014/12/30

1. Name and contact details

1) Name and contact details of applicant:

Company: RALEC TECHNOLOGY Tel.: +86-512-57709898
(KUNSHAN) CO., LTD.
Name: Cassie Cui E-Mail: cassie.cui@ralec.com
Function: QA Engineer Address: No.333 Huangpujiang
Zhong Road, Kunshan, Jiangsu,
China

2) Name and contact details of responsible person for this application (if different from above):

Company: RALEC TECHNOLOGY Tel.: +86-512-57709898
(KUNSHAN) CO., LTD.
Name: Jason Huang E-Mail: jason.huang@ralec.com
Function: QA Director Address: No.333 Huangpujiang
Zhong Road, Kunshan, Jiangsu,
China

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)-I

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, 2011~ July,2016

Other: _____

3. Summary of the exemption request / revocation request

Request to extend the exemption expiry in Annex III No. of 7(c)-I from July, 2016 to July, 2019.

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 Resistor

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 type="checkbox"/> 3 | <input type="checkbox"/> 9 |
| <input type="checkbox"/> 4 | <input type="checkbox"/> 10 |
| <input type="checkbox"/> 5 | <input checked="" 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: No

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

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: To make the melting point go down during production.

4. Content of substance in homogeneous material (%weight): >201,000ppm

5. Amount of substance entering the EU market annually through application for which the exemption is requested: about 2.27kg
Please supply information and calculations to support stated figure.

- 1) Chip resistor 0402: 0.8 billion pieces / year entering EU market
Weight of 0402 (1 piece): 0.0005725g; Pb content of 0402: 505ppm
The total weight of Pb contained in 0402:
 $(505/1000000)*0.0005725*800000000=231.29(g)$
 - 2) Chip resistor 0603: 18 billion pieces / year entering EU market
Weight of 0603 (1 piece): 0.001941g; Pb content of 0603: 228ppm
The total weight of Pb contained in 0603:
 $(228/1000000)*0.001941*1800000000=796.57(g)$
 - 3) Chip resistor 0805: 12 billion pieces / year entering EU market
Weight of 0805 (1 piece): 0.004418g; Pb content of 0805: 234ppm
The total weight of Pb contained in 0805:
 $(234/1000000)*0.004418*1200000000=1240.57(g)$
- Thus, the total amount of Pb entering the EU market annually is
 $231.29+796.57+1240.57=2268.43(g)\approx 2.27kg$

Remark: For a chip resistor, higher resistance value contains a higher ratio of Pb, so Pb content of 505ppm, 228ppm or 234ppm in above items 1)~3) is just for one resistance value for estimation purpose.

6. Name of material/component: Resistive Paste

7. Environmental Assessment: NA

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 is used in the resistive paste which is one of compositions of a chip resistor.

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

Main composition of the resistive paste is RuO₂, Glass and PbO. Because the melting point of glass is high to 1300°C, Pb is intentionally added into the resistive paste to make the melting temperature down to 850°C to make production available. Until now, there is no substitute of Pb developed in applications. Also,

there is not any resistive paste vender who sucessfully develops a completely Pb-free resistive paste.

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.)

The products that RALEC manufactured are electronic components. They are delivered to the PCBA (SMT) assembly factory for assembly. Then, the PCBA is assembled into the finished goods (3C) such as computers, cell phones, etc. Finally, the 3C products are sold to the EU market. Thus, the end customers will be responsible for waste recycling or reuse.

2) Please indicate where relevant: NA

- 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: NA

- 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 NA (This information should be provided by raw material suppliers, such as SHOEI, SUMITOMO or DuPont, which are all resistive paste suppliers)

(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

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

7. Proposed actions to develop possible substitutes NA (This information should be provided by raw material suppliers, such as SHOEI, SUMITOMO or DuPont, which are all resistive paste suppliers)

(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.

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

8. Justification according to Article 5(1)(a): NA (For RALEC, Pb-free resistive paste is still under developing, so there is no information about the substitute now.)

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

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

- 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? NA

- Yes. Consequences? _____
- No. Justification: _____

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

- Yes.
 - Design changes:
 - Other materials:
 - Other substance:
- No.

Justification: _____

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

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

- 1) Environmental impacts: _____
- 2) Health impacts: _____
- 3) Consumer safety impacts: _____

⇒ Do impacts of substitution outweigh benefits thereof?

Please provide third-party verified assessment on this: _____

(C) Availability of substitutes:

- a) Describe supply sources for substitutes: _____
- b) Have you encountered problems with the availability? Describe: _____
- 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? _____

(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: _____
- ⇒ Provide sufficient evidence (third-party verified) to support your statement: _____

9. Other relevant information

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

At present, new material (Pb-free resistive paste) hasn't been successfully developed, so RALEC hopes to extend the expiry of exemption 7(c)-I in Annex III to be 3 years, i.e. from July, 2016 to July, 2019.

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:

NA
