

Standard application format for RoHS exemption requests on the basis of Article 5(8) Directive 2011/65/EU

Final

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Exemption Request Form

Date of submission: January 15, 2015

1. Name and contact details

1) Name and contact details of applicant:

Company: Sensata Technologies Tel.: +31546879564
Name: Albert van der Kuij E-Mail: a-vdkuij@sensata.com
Function: Business Development & Standards Engineer Address: Kolthofsingel 8, 7602 EM Almelo

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

Company: _____ Tel.: _____
Name: _____ E-Mail: _____
Function: _____ Address: _____

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: Annex III exempt 6(c) Copper alloy containing up to 4% lead by weight and also exempt 6(a) Lead as an alloying element in steel for machining purposes and in galvanised steel containing upto 0.35% lead by weight, and exempt 6(b) Lead as an alloying element in all aluminium containing upto 0.4% lead by weight

- 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: _____

Proposed or existing wording: _____

Duration where applicable: _____

Other: _____

3. Summary of the exemption request / revocation request

Because leaded copper alloys are not cheap, nor light, these materials will only be selected in product designs when needed under harsh mechanical and environmental conditions from the an application and manufacturing point of view. Mostly in small parts, that require smooth surfaces and narrow tolerances alike sliding elements, mechanical contacting elements and electrical applications.

Many tests in the field were done on different leaded and unleaded alloys, mainly in independent research institutes. These results have shown, that the substitution of lead in copper alloys strongly deteriorates technical characteristics like micro- machining, electrical conductivity, galvanic corrosion, mechanical relaxation, tribological behavior, etc.

Review of literature show that it is unlikely that new alloy types will be available for advanced research in the coming decade.

Sensata is using lead in copper alloys mainly in sensor products. Sensata sensor applications are currently predominantly used in the automotive segment under the ELV directive (exempt 3). Automotive associations ACEA, JAMA, JAPIA, KAMA and CLEPA claim that the exemption for leaded copper is still needed because of lack of availability of a viable alternative. There is a growing need in for example household

and industrial applications for mission critical sensors as made by Sensata, to make applications more safe, more energy efficient and less emissive.

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: Sensor and control products

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

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

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

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: Lead in the alloys improves technical characteristics like micro-machining, electrical conductivity, galvanic corrosion prevention, mechanical relaxation, tribological behavior, etc. needed for its specific application areas and machining purposes.

4. Content of substance in homogeneous material (%weight): Lead contained in Copper (up to 4% by weight), Aluminium (up to 0.4% by weight) and Steel (up to 0.35% by weight)

5. Amount of substance entering the EU market annually through application for which the exemption is requested: Not available at Sensata
Please supply information and calculations to support stated figure.

6. Name of material/component: Lead contained as alloying element in Copper, Aluminium and Steel

7. Environmental Assessment: _____

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? Lead in the alloys improves technical characteristics like micro-machining, electrical conductivity, galvanic corrosion prevention, mechanical relaxation, tribological behavior, etc. needed for its specific application areas such as sliding elements, mechanical connecting elements, electric applications and machining purposes.

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

See former 4(B)

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.)

NA, too hard to disassemble for recycling

2) Please indicate where relevant:

- 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 **NA to date**

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**

Review of literature show that it is unlikely that new alloy types will be available for advanced research in the coming decade

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

NA

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.

Alternatives are looked for in all kind of associations in the automotive industry such as CLEPA (Association for automotive suppliers).

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

Alloys should be developed with the suitable combination of characteristics.

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)?

- Authorisation
- SVHC
 - Candidate list
 - Proposal inclusion Annex XIV
 - Annex XIV
- Restriction
- Annex XVII
 - Registry of intrusions
- 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)2 be eliminated?

Yes. Consequences? _____

No. Justification: Lead offer specific characteristics to alloys needed to be used in applications and manufacturing processes

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

Yes.

Design changes:

Other materials:

Other substance:

No.

Justification: See literature studies

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

4. Describe environmental assessment of substance from 4(A)2 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: several suppliers

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? Suitable alternatives should be developed by alloy suppliers having the needed combination of characteristics as described before.

(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: Do not know yet

⇒ 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:

NA

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
