

IMDS User convention2022
IMDS professional
environmental product compliance
25 May 2022

Looking beyond the horizon: Prospective changes to the RoHS exemptions

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Outline

- ▶ ebm-papst: General information
- ▶ General information on RoHS and the new "Pack 22" exemptions
- ▶ Evaluation of the new RoHS exemptions and their impact on ebm-papst
- ▶ Closer look at the critical exemptions 6b, 6b-I, 6b-II
- ▶ Next steps for implementation
- ▶ Conclusions

1. ebm-papst: General Information

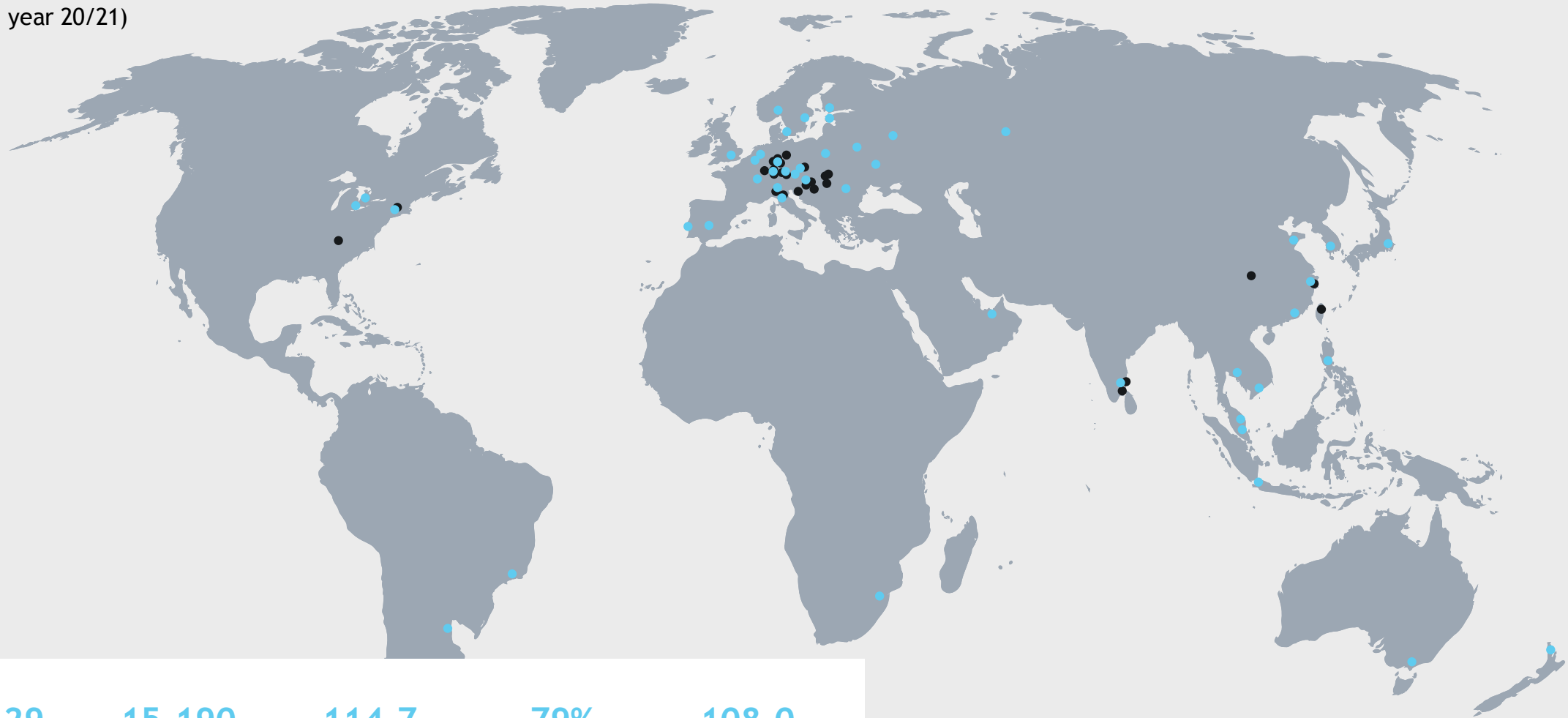
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Worldwide

ebm-papst in figures

(Fiscal year 20/21)



2.129
million
euros sales

15.190
Employees

114,7
million euros
R&D expenditure

79%
international

108,0
million
euros
investments

- 29 production sites
- 51 sales offices

Innovative aerodynamics and drive engineering

Perfect system solutions for our markets



Mulfingen
Refrigeration & Air
Conditioning



St. Georgen
Compact Air Technology



Landshut
Household Appliances



Mulfingen
Industrial & Ventilation
Technology



St. Georgen
Industrial Drive Technology



Landshut
Heating Technology



St. Georgen
Automotive

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2. General information on RoHS and the new "Pack 22" exemptions

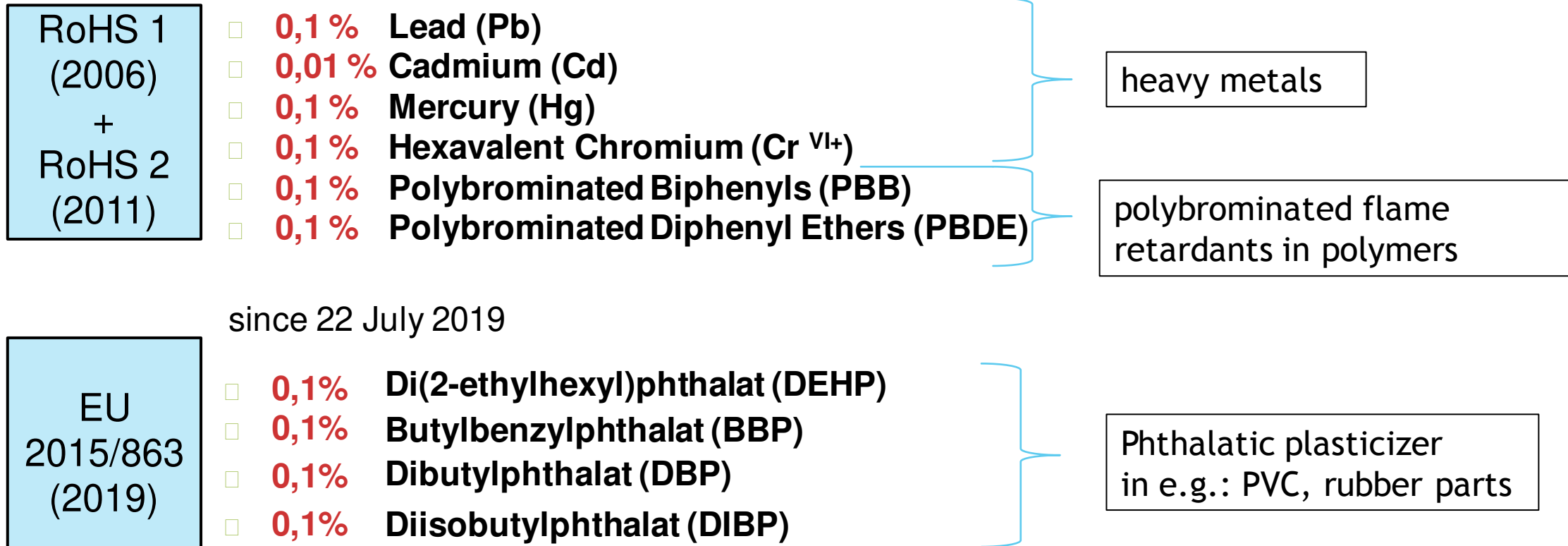
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RoHS Regulated Substances

Article 4 Prevention (Directive 2011/65/EU):

- (1) Regulated substances in electrical and electronic equipment, see Annex II of the Directive
- (2) Reference basis -- Homogeneous materials with regard to maximum concentration values listed in Annex II
- (6) Exemptions in Annexes III and IV of the listed uses.



RoHS exemption

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For the substance restrictions of the RoHS, the application of exemption rules, e.g. for technical reasons, is permitted.

The exemptions are always limited in time and are regularly reviewed by external institutes, commissioned by the EU for a possible extension.

Requirement of the EU
(2011/65/EU -Art. 5)

The most important exemptions for ebm-papst have now been re-evaluated and published by the Oeko-Institute in Freiburg in the so-called "RoHS Pack 22" report [Template FWC Waste Oeko-Institut](#)

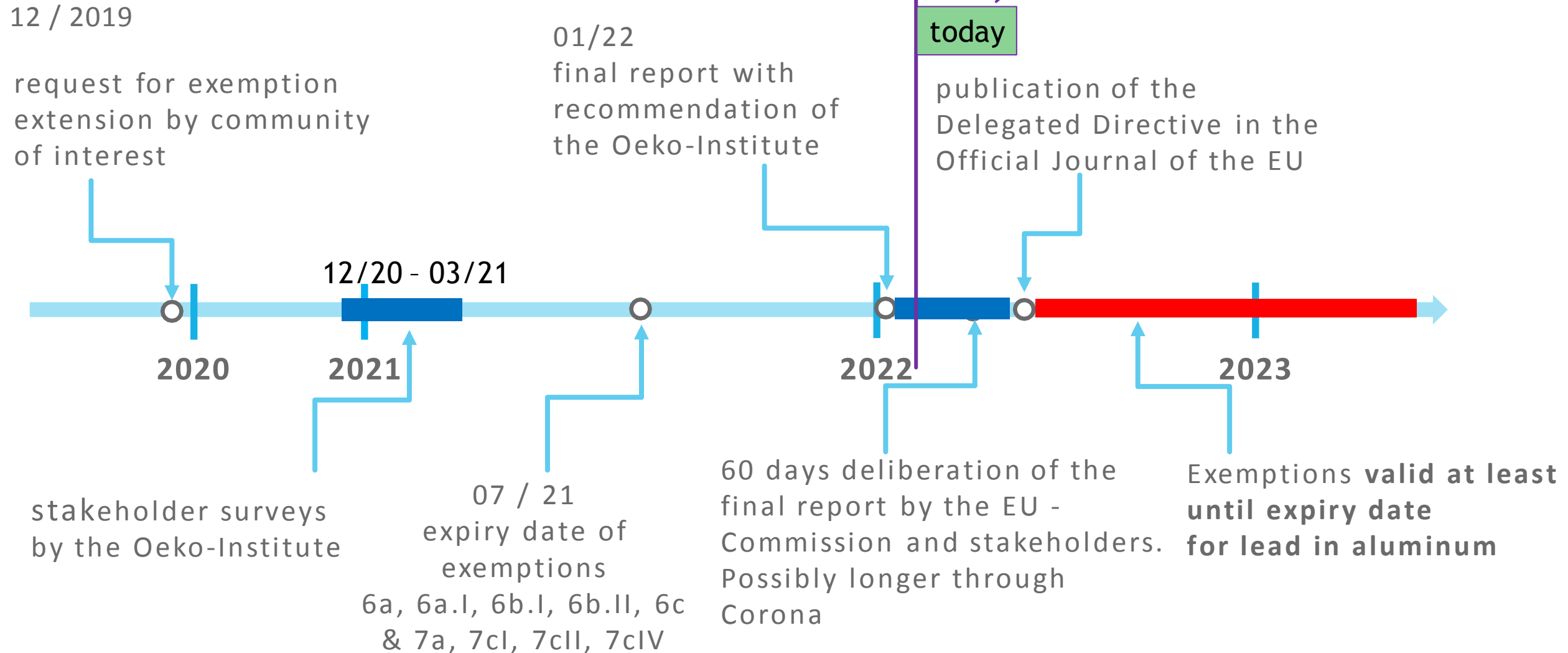
Implementation
of the prospective
EU regulation

Roadmap for Exemption Requests "RoHS Pack 22"

Time line

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3. Evaluation of the new RoHS exemptions and their impact on ebm-papst

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Data Collection - Relevant Parts

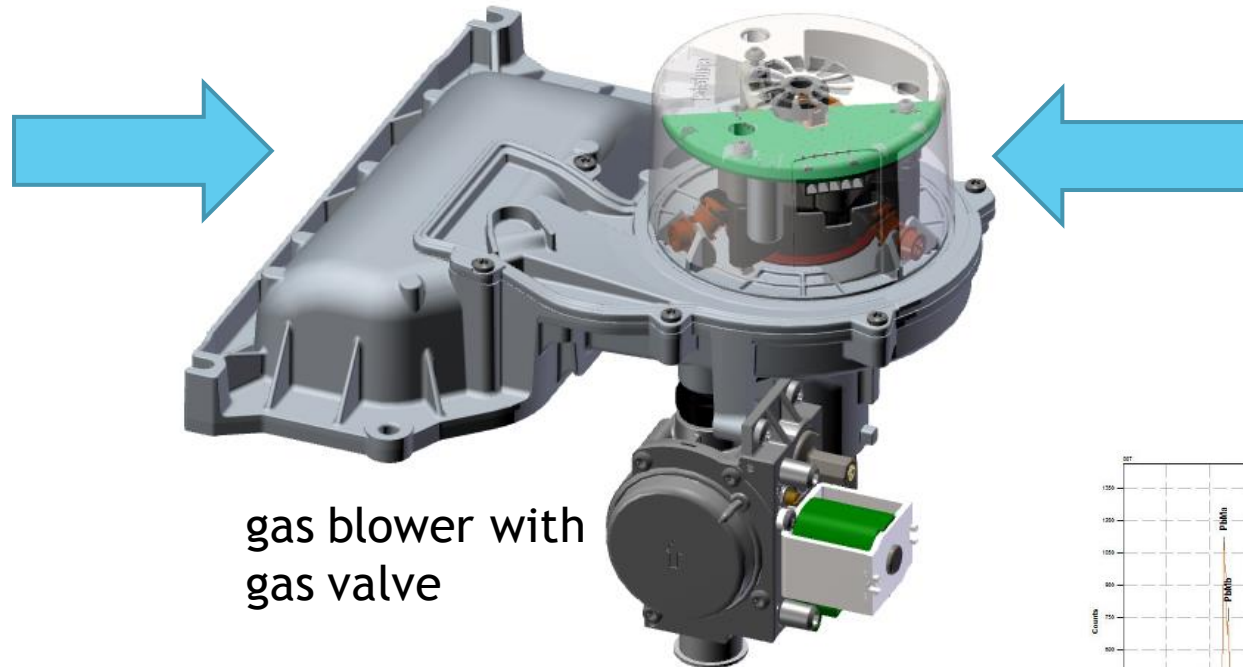
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database



initial sample
test report

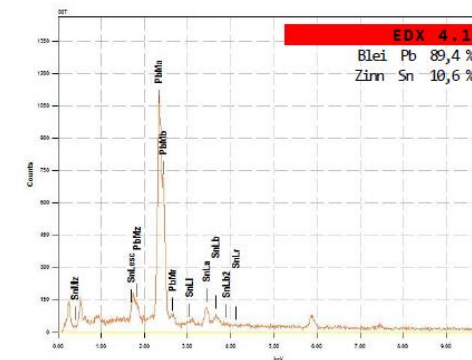


gas blower with
gas valve

instrumental analytics
internal / external



SEM / EDX
EVO25, Zeiss



EDX 4.1: Lot in NTC

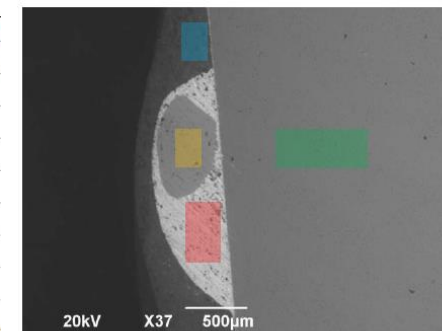
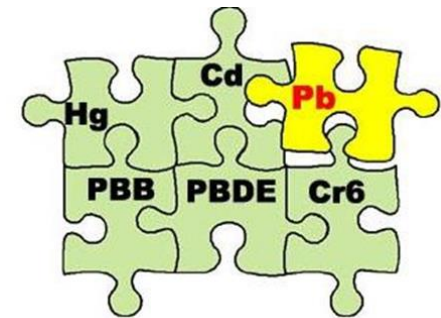


Abb. 4.1: NTC im Querschliff

Impact Analysis for ebm-papst

| | | |
|-------|----|--|
| 6a | Pb | Lead as an alloying element in steel for machining purposes and in galvanized steel with a mass fraction of lead not exceeding 0.35%. |
| 6aI | Pb | Lead as an alloying element in steel for machining purposes with a mass fraction of lead not exceeding 0.35% and in components made of hot-dip galvanized steel with a mass content of lead not exceeding 0.2%. |
| 6b | Pb | Lead as an alloying element in aluminum with a mass fraction not exceeding 0.4%. |
| 6bI | Pb | Lead as an alloying element in aluminum with a mass fraction of up to 0.4% lead, provided it originates from recycled aluminum scrap containing lead. |
| 6bII | Pb | Lead as an alloying element in aluminum for machining purposes with a mass fraction of up to 0.4% lead. |
| 6c | Pb | Copper alloy with a mass fraction of up to 4% lead. |
| 7a | Pb | Lead in high-melting solders (i.e. lead-based solder alloys with a mass fraction of at least 85% lead). |
| 7c.I | Pb | Lead -containing electrical and electronic components in glass or ceramic materials other than dielectric ceramics in capacitors, e.g., piezoelectronic devices, or in a glass or ceramic compound. |
| 7c.II | Pb | Lead in dielectric ceramic of capacitors for a rated voltage of 125 V AC or 250 V DC. Does not apply to uses covered by entries 7c.I and 7c.IV of this Annex. |

Focus:
Lead (Pb)
„Pack 22“



- = Need for action, since changes in limit values are to be expected.
- = More detailed examination required, as the electr. components are specified more precisely in the proposal.
- = No acute need for action, since no relevant changes to the exceptions are to be expected.

Exemption 6b, 6b-I und 6b-II: Need for action

Proposal of Oeko-institute

Table 1-1: Overview of the exemptions requested for renewal, associated recommendations and expiry dates

| Ex. Req. No. | Requested exemption wording | Applicant/s | Recommendation | Expiry date & scope |
|------------------------|--|--|--|---|
| Annex III, 6(b)/6(b)-I | "Lead as an alloying element in aluminium containing up to 0,4 % lead by weight" and "Lead as an alloying element in aluminium containing up to 0,4 % lead by weight, provided it stems from lead-bearing aluminium scrap recycling" | European Aluminium; The Umbrella Project | 6(b)-I: Lead as an alloying element in aluminium containing up to 0,4% lead by weight provided it stems from lead-bearing aluminium scrap recycling | Expires 12 months after the decision for all categories |
| | | | 6(b)-III: Lead as an alloying element in aluminium casting alloys containing up to 0,3% lead by weight provided it stems from lead-bearing aluminium scrap recycling | Expires on 21 July 2026 for all categories |

| Ex. Req. No. | Requested exemption wording | Applicant/s | Recommendation | Expiry date & scope |
|--------------------|---|----------------------|---|---|
| Annex III, 6(b)-II | "Lead as an alloying element in aluminium for machining purposes with a lead content up to 0,4 % by weight" | The Umbrella Project | 6(b)-II: Lead as an alloying element in aluminium for machining purposes with a lead content up to 0,4 % by weight. | Expires 18 months after the decision for all categories |
| | | | 6(b)-IV: Lead as an alloying element in aluminium for machining purposes with a lead content up to 0,4 % by weight in gas valves applied in category 1 EEE (large household appliances) | Expires on 31 December 2024 |

assessment by ebm-papst

❖ Exemption

Pb in Aluminium

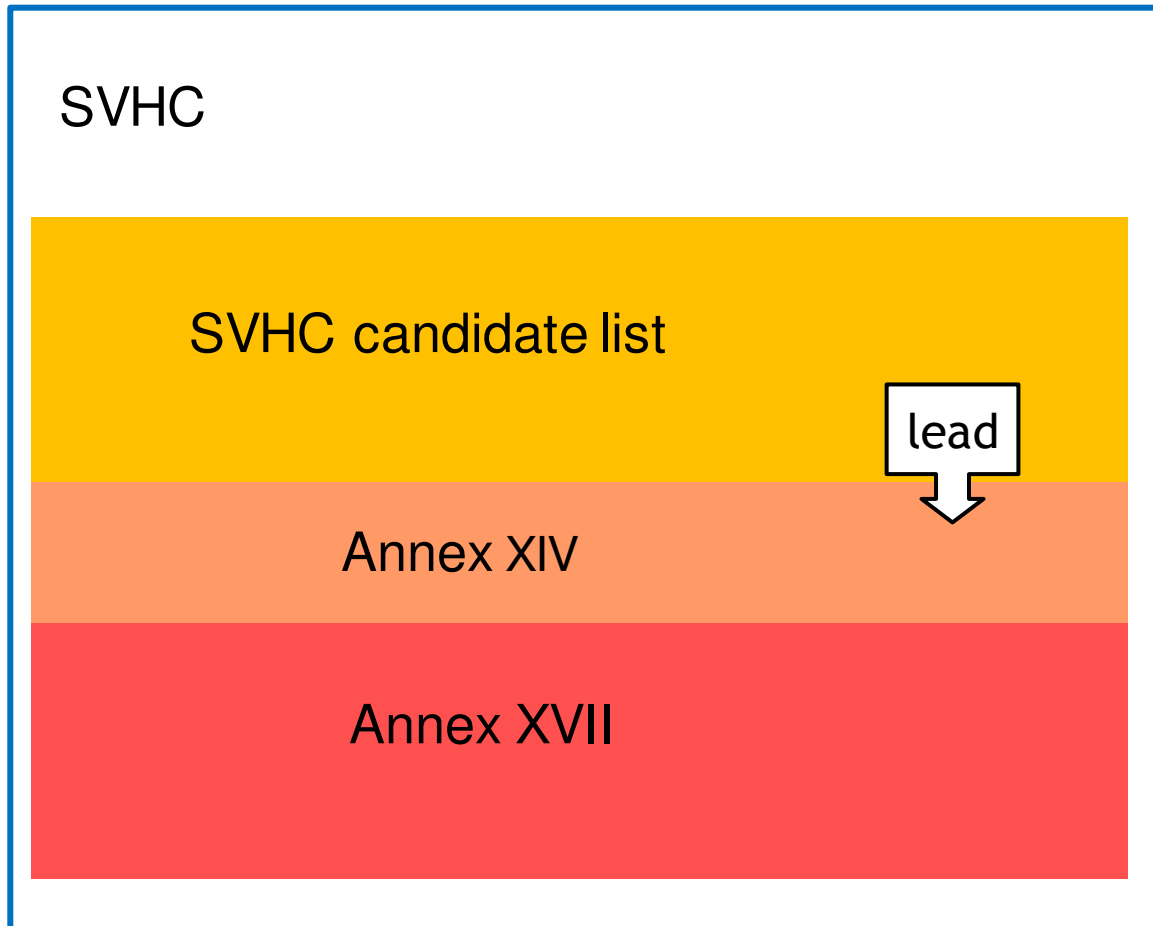
Limit values are reduced

**Measures:
Research material alternatives**

**100% recycling of aluminum in casting alloys
(6b-I from 0.4% to 0.3% Pb)
⇒ suppliers' declarations**

**Machined aluminum
(6b-II from 0.4% to <0.1% Pb;
except for gas valves)
=> check supplier declarations;
possibly material change**

Status of lead in Reach



General term

potential SVHC with subject to declaration in the EU: 223 (latest update 2022-01-17)

in the EU banned substances, but can be allowed depending on application

Substances banned in the EU in certain applications (formerly Chemicals Prohibition Regulation)

Annex XIV: Proposal for inclusion of lead by ECHA - Timetable

- **There will be two parallel consultations on the draft Recommendation for REACH authorisation**
 1. European Chemicals Agency (ECHA) - [consultation](#)
 2. European Commission - [consultation](#)

until 1 May 2022
- Responses can be submitted by individual companies as well as jointly by stakeholders & industry associations
 - **2 May 2022 - October 2022** - Responses to the consultation will be compiled and summarized in a report
 - **October 2022 - February 2023** - Opinion-forming and discussions in the Member State Committee, taking into account the comments received during the comments received during the previous consultation
 - **Until April 2023 - Finalization of the final recommendation**, which lists the respective conditions for lead
 - **2024~2025** - Discussion and vote on the proposal in the REACH Committee of the Member States
 - **~2025** - Amendment of Annex XIV of the REACH Regulation by the European Parliament and the Council
 - **~2026** - Latest date for application for authorization (standard is 18 months)
 - **~2028** - Possible sunset date for the use of lead in the EU (?)

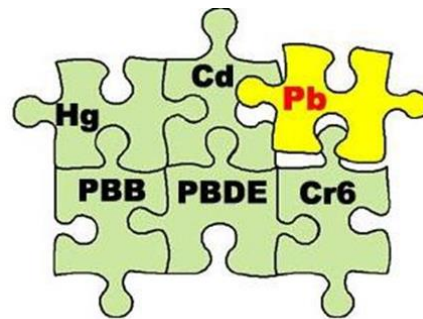
Prospective regulation of lead by RoHS and REACH Annex XIV

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According to the evaluation of the current RoHS exemptions in the so-called "Pack 22", the use of lead in many components is significantly restricted.



According to the proposal of ECHA, lead is to be included in Annex XIV of the REACH Regulation.

It is highly recommended that lead-containing components be replaced with appropriate alternatives as quickly as possible and to avoid the use of lead in the new components and end products.

Exemption 6b, 6b-I und 6b-II: Need for action

Proposal of Oeko-institute

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| | | | 6(b)-IV: Lead as an alloying element in aluminium for machining purposes with a lead content up to 0,4 % by weight in gas valves applied in category 1 EEE (large household appliances) | Expires on 31 December 2024 |

assessment by ebm-papst

❖ Exemption

Pb in Aluminium

Limit values are reduced

**Measures:
Research material alternatives**

**100% recycling of aluminum in casting alloys
(6b-I from 0.4% to 0.3% Pb)
⇒ suppliers' declarations**

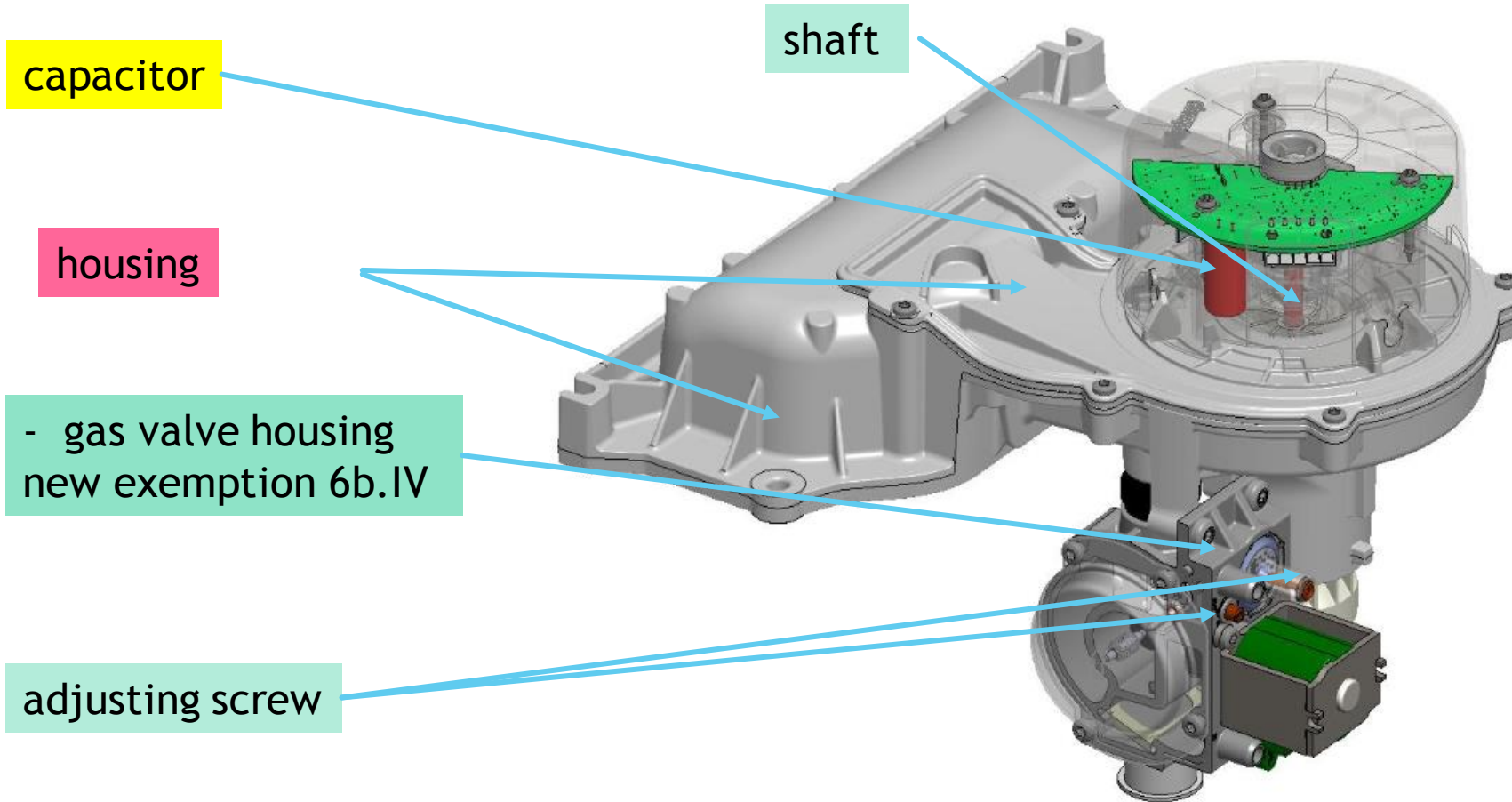
**Machined aluminum
(6b-II from 0.4% to <0.1% Pb;
except for gas valves)
=> Suppliers' declarations;
possibly material change**

4. Closer look at the critical exemptions 6b, 6b-I, 6b-II

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Result of the data collection



gas blower with gas valve

Where is exemption 6b, 6b-I and 6b-II used ? (manufacturing site epL)

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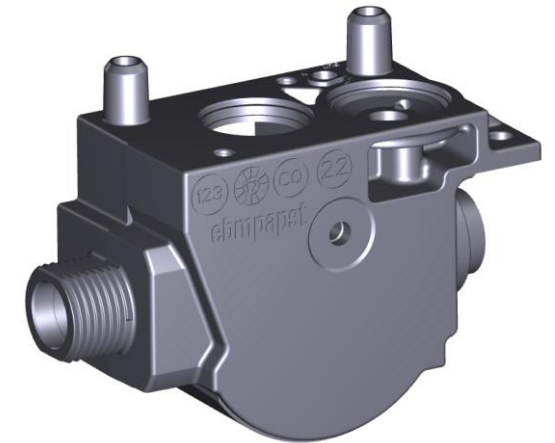
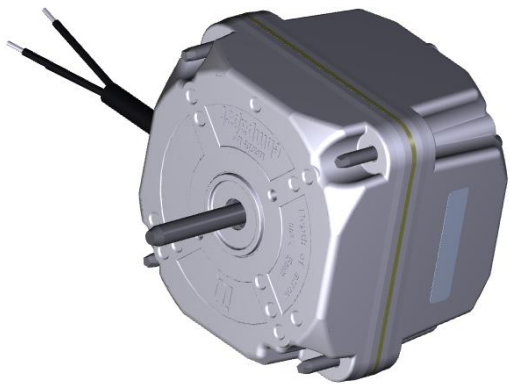


Affected parts:

Approximately 1000 parts in products.
Aluminium die casting made of alloy No.231 und alloy No.226.

Hint:

Products have to be registered in the SCIP database



**New exemption 6b-IV
gas valve**

Limits according to ebm-papst specification and DIN standard in Al castings

Alloy 226 according to ebm-papst specification

| | ebm-papst Spec. | standard for alloy | | |
|----|-----------------|--------------------|------------------|-------------|
| | EN AC-46000 | EN AC-46000 | | |
| Si | | | | |
| Fe | | | | |
| Cu | | | | |
| Mn | | | | |
| Mg | | | | |
| Cr | | | | |
| Ni | | | | |
| Zn | | | | |
| Pb | | | max. 0,29 % | max. 0,35 % |
| Sn | | | Pb reduced value | |
| Ti | | | | |

Alloy 231 according to DIN EN 1706

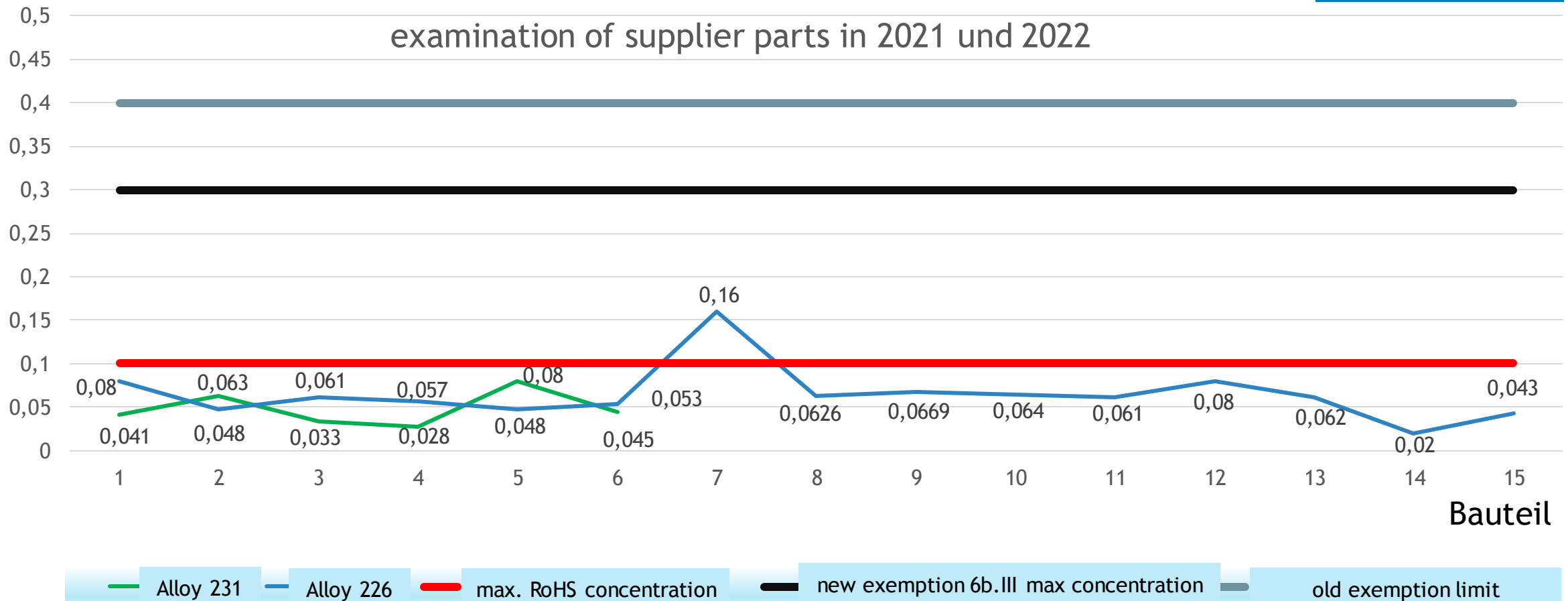
| | ebm-papst Spec. | standard for alloy | | |
|----|-----------------|--------------------|----------------------|------------|
| | EN AC-47100 | EN AC-47100 | | |
| Si | | | | |
| Fe | | | | |
| Cu | | | | |
| Mn | | | | |
| Mg | | | | |
| Cr | | | | |
| Ni | | | | |
| Zn | | | | |
| Pb | | | max. 0,2 % | max. 0,2 % |
| Sn | | | Pb is equal to value | |
| Ti | | | | |

limit value of Pb < 0.3% is already specified by epL today.
Since all aluminum castings consist of 100% secondary aluminum,
the new exception 6b-III can be used.

Lead content according to initial sampling in aluminum castings (selected samples)

Amount of Pb (%)

examination of supplier parts in 2021 und 2022



It might suggest that the supplier of the raw material could meet the proposed new limit of < 0.1% lead.

Communication with supplier: Limit of lead concentration < 0.1% in Al die cast

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Request related to restrictions on the use of Lead in products.

With this statement, we hereby request that all your products, Aluminium alloys EN AB-46.000, EN AB-46.100 and EN AB 47.100, supplied from you must comply with the following restriction:

- that Lead content in our products does not exceed 0,1% by weight;

This request will be updated and re-issued by us in the event of legislative changes or if the customers request so or if the production process changes in such a way as to influence the conformity of the product.

**The first supplier has confirmed,
that compliance with the
Pb content of < 0.1%
is already feasible today.**

5. Next steps for implementation

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Step 1: Updating the internal databases (erp)

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Database



| generell evaluation | | |
|---------------------|-------------------------------------|------------------------|
| description | M. | value |
| RoHS status | <input checked="" type="checkbox"/> | RoHS compliant with Ex |
| RoHS exemption | <input type="checkbox"/> | 6b. → 6b.III |
| RoHS substance | <input type="checkbox"/> | 7439-92-1 |
| RoHS weight % | <input type="checkbox"/> | 0,40 % → 0,3 % |

- Adjustment of the lead values, for the individual components concerned
- to be checked: Adjustment of the lead values in the SCIP registered terminals

Step 2: Communication to suppliers

First steps in the communication with our suppliers

- ❑ Adjustments to the specifications for the suppliers
- ❑ Reduction of the Pb content in Al parts to $< 0.1\%$
- ❑ Examination of the use of alternative materials



Conclusions

- ▶ The RoHS exemptions from Pack 22 have changes from the previous exemptions 6b-II and 7a and 7c-I.
- ▶ While the exemptions at 7a and 7c-I are less critical for ebm-papst, it is advisable to take a closer look at exemption 6b-II.
- ▶ An initial check showed that some components made of die-cast aluminum already meet the requirements. However, documents would still have to be adapted. For turned and milled parts, alternative materials must be sought, qualified and approved.
- ▶ Further effects on declarations of the SVHC candidate list are to be foreseen. Likewise, it must be examined how these effects on possible registrations in the SCIP database can be implemented simply and pragmatically.
- ▶ The implementation of Pack 22 is feasible, but some consequences cannot yet be fully assessed. Further development is to be observed.

Thank you for your Interest

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