Exemption Request Form

Date of submission: 20 January 2023

1. Name and contact details

1) Name and contact details of applicant:

Company:	Test & Measurement Coalition	Tel.:	+32 2 735 82 30
Name:	Meglena Mihova	E-Mail:	meglena.mihova@eppa.com
Function:	TMC Secretariat	Address:	Place du Luxembourg 2, 1050 Brussels, Belgium

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

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

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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: 13(a)

Proposed or existing wording: Existing.

"Lead in white glasses used for optical applications."

Duration where applicable: Maximum validity period.

☐ Other: _____

3. Summary of the exemption request / revocation request

Exemption 13(a) is an exemption to allow the addition of lead into glass for specific optical components. These optical components (glass lenses, filters, and fibres) are highly specialised, individually specified components that perform a key part of the functionality of the instruments in which they reside. Their use within the heart of the measurement system is such that replacement of these components, even if an equivalent fit, form, and function part is available must undergo rigorous and extensive testing and validation.

The addition of lead (typically as PbO) into glass introduces unique properties. As lead is a heavy element, it increases the density of the glass, thereby increasing its refractive index. The typical refractive index of lead glass is ~1.6, compared to 1.46 of typical (soda) glass. In addition to increased refractive index, the addition of lead increases the transmission of light through glass, particularly in the UV spectrum.

As further outlined in this submission, the Test & Measurement Coalition has no knowledge suggesting that there is a substitute available that would be suitable for lead-glass in high accuracy measurement instruments. At this point, eliminating the use of leaded-glass is not possible without the reduction of performance of critical instrumentation. The Test & Measurement Coalition therefore applies for a renewal of the exemption 13(a) for the maximum validity period.

A thorough Socio-Economic Analysis was conducted in addition to the technical assessment and attached to this submission, further illustrating the negative socio-economic impacts a non-renewal of exemption 13(a) would have. Overall, the analysis concludes that the total impact of non-renewal of this exemption is monetized in the range of 1.2 billion EUR and 1.6 billion EUR (conservative lower bound estimate).

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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: _____

Industrial test and measurement instruments (category 9 – Industrial under the RoHS Directive) are very different from low mix, high-volume consumer products which are frequently re-designed to follow consumer trends and are placed on the market for a limited duration. Industrial test and measurement are high mix, low volume producers, managing portfolios of thousands of highly complex instruments. Each instrument is intentionally designed for high

reliability and serviceability to support long useful lifespans, and are made available on the market for at least a decade. These instruments are designed: exclusively for professional and industrial use; to meet high performance requirements in critical applications; and last up to 40 years. Redesign is not frequent and happens every seven years on average (as compared to every 1.5 years or less for consumer products). Once test and measurement instruments are placed onto the market, they are typically accompanied with a long-term customer support arrangement to maintain reliability and calibration.

Product portfolios are widely diversified, with T&M Coalition members each having typically 2,000 to 3,000 products currently made available on the market. These are highly complex, sophisticated electronic instruments such as signal generators, power analysers, oscilloscopes, spectrum analysers, digital multi-meters, electron microscopes, chemical and biological analysers, complex chromatography systems and their detectors, each having necessary options and accessories. Each instrument can have a minimum of 2,000 and up to 40,000 parts; requiring a vast supply chain involving tens of thousands of suppliers and hundreds of thousands of unique components.

Considering the EU added-value, test and measurement equipment is manufactured and sold in relatively small volumes (per instrument design) and placed on the global market. There is an added value in community level action, which guarantees more coherent and consistent rules across Europe. But with the expansion of RoHS-like requirements beyond the EU, this creates a risk of discrepancies in RoHS-like national laws adopted in third countries.

The professional test and measurement products provide the tools for engineers to develop new solutions and businesses to bring them to market. These instruments are used in Research, Quality Control and Testing laboratories (including field testing) in Universities, Manufacturing and clinical facilities and by Governmental Agencies for conformance verification and environmental testing. They are essential to the good functioning of electronic communications networks, heavy industrial processes such as steel manufacturing, the testing of vehicles for compliance with emissions standards, and the monitoring of complex and critical systems of all types. The nature of the tests and measurements made by industrial equipment necessitates that the equipment itself is highly complex; with upwards of 40,000 components necessary to produce a single instrument. Even a relatively simple hand-held instrument incorporates significantly more components that a typical consumer product.

Historically, between 25 - 35% of the components used in test & measurement products are custom designed. The features of the TMC manufacturers' equipment necessitate the development and production of unique components that are not commercially made available on the open market and are typically made by sole, boutique suppliers. These components have their own

development lifecycle and take years to bring into production. When these suppliers are unable to deliver compliant parts that meet current RoHS regulations, the product would be stopped from being sold into the EU.

Refer to the table below for a comprehensive list of the relevant product groupings and equipment types relevant to exemption 13(a).

Product Grouping	Equipment Types
Generators, Sources and Power	Waveform and Function Generators
Application-Specific Test Systems and Components	
Photonic Test & Measurement Products	
Laser Interferometers and Calibration Systems	Monolithic Laser Combiners & Precision Optics
Used Equipment	
Liquid Chromatography	
Gas Chromatography	
Cell Analysis	
Laboratory Products and Industrial Monitoring Capital Equipment	Autoclave Sterilizers
	Baths and Circulators
	Biological Safety Cabinets
	Blood Culturing Devices
	Centrifuges
	Chillers
	Electrophoresis
	Environmental Chambers
	Freeze Dryers
	Furnaces
	Heat Controllers/Exchangers
	Ovens
	Refrigerators
	Freezers
	Mixers

	Water Purification
Material and Structural Analysis	Electron Microscopes
	Spectroscopy Equipment

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

☐ 1 ☐ 7
☐ 2 ☐ 8
☐ 3 ☒ 9
☐ 4 ☐ 10
☐ 5 ☐ 11
☐ 6

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

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: The addition of lead (typically as PbO) into glass introduces unique properties. As lead is a heavy element, it increases the density of the glass, thereby increasing its refractive index. In addition to increased refractive index, the addition of lead increases the transmission of light through glass, particularly in the UV spectrum.

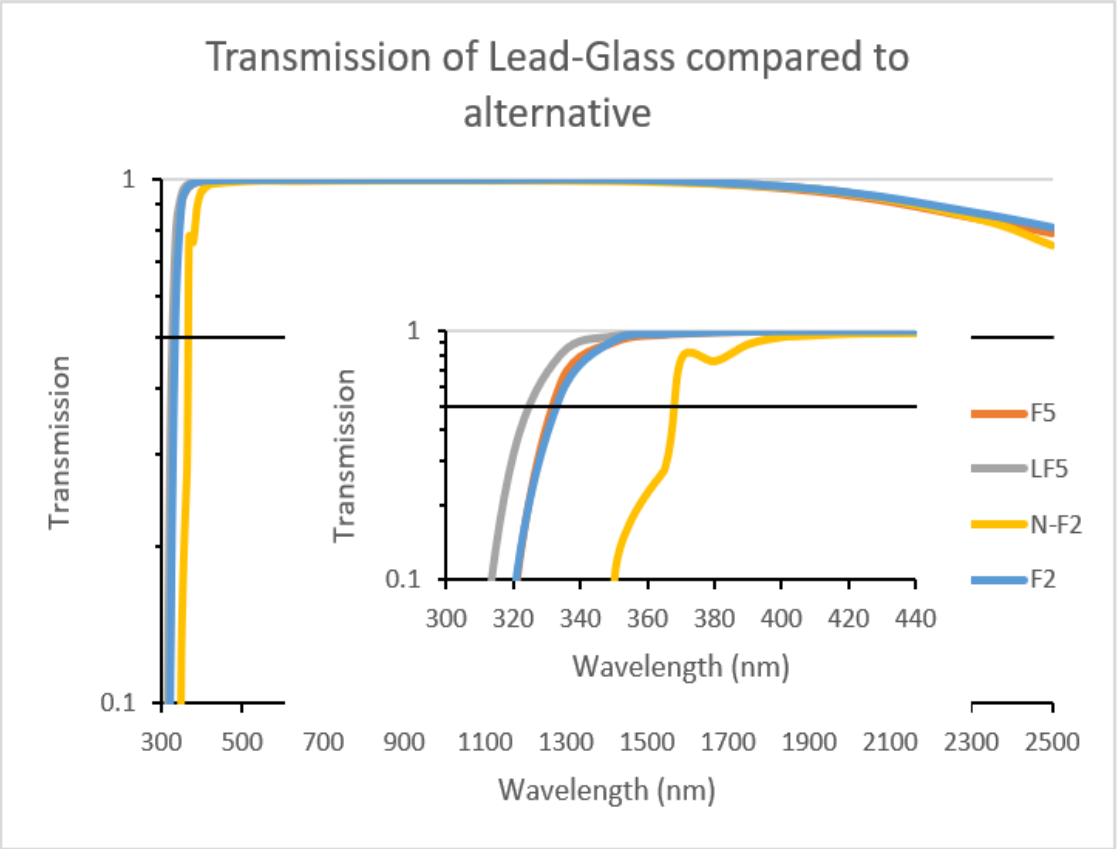
4. Content of substance in homogeneous material (%weight): The quantity of lead utilized in the TMC's homogeneous materials varies based on the application. Therefore, the homogeneous materials can contain between 37% and 65% lead by weight.

5. Amount of substance entering the EU market annually through application for which the exemption is requested: Approximately 0.9 kg of Pb.
   Please supply information and calculations to support stated figure.
   The amount of substance entering the EU market annually through application for which the exemption is requested is based on the replies provided by the TMC members (for the preparation of the Socio-Economic Analysis – see attached).
6. Name of material/component: Bulk glass, optical components.

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?

The addition of lead (typically as PbO) into glass introduces unique properties. As lead is a heavy element, it increases the density of the glass, thereby increasing its refractive index. The typical refractive index of lead glass is ~1.6, compared to 1.46 of typical (soda) glass. In addition to increased refractive index, the addition of lead increases the transmission of light through glass, particularly in the UV spectrum. Figure 1 shows the transmission of various lead glasses (F5, LF5, F2) compared to a substitute glass (N-F2) not containing lead. Although throughout the spectrum the transmission is similar, there is a difference above ~2400nm in the infra-red, and a substantial difference in the UV below 370nm.



Optical systems require specific tuning to the application, depending on the signal, optical source, and required measurement accuracy. Test and measurement instruments are typically measuring extremely weak signals. As an example, Raman spectroscopy which is often used for material classification, threat detection, and quality control has an inherently weak signal, typically 0.001% of the source. As such, the optical design for each product is unique, providing stability with the light source (which often subjects the optics to a substantial heat load), such that the measurement can be relied upon. Lead glass is a critical component in these designs. The enhanced refractive index allows for thinner optics, with less chromatic aberration, and the high transmission over a large wavelength range allows for spectroscopic measurements over the full spectrum.

Fibre optics are utilised for both communications, but also where a detection or imaging cannot be placed close to the signal source. This is common in test and measurement instrumentation, where typically a measurement signal is generated in a complex environment which is not compatible with the sensitive light manipulation and detection process. Transferring the signal can be provided by the use of fibre optics, however, the transmission must be as high as possible in order to optimise the measurement. Where the light signal is of a known particular wavelength, then the specific glass fibre can be selected to have a transmission peak corresponding to the signal wavelength. More commonly, multiple wavelengths are needed, either for colour imaging purposes, or for multiple excitation signals. Such measurements demand fibres with a high transmission curve throughout the optical spectrum. Figure 1 shows the necessity of

leaded glass for this application, providing high transmission though UVA (320nm), optical and including the near-infra red (2500nm).

Optical systems and fibre optics are used in a wide variety of test and measurement instrumentation over large application areas. Some of the instrumentation using leaded glass optics and fibre optics include cell imaging systems, multimode UV/visible plate readers, and chromatography systems. This enables spectroscopy and imaging techniques to measure over much broader spectrum. These extreme ends of the spectrum are critical to measurements in the life sciences (Figure 2),[1] [2] material analysis[3] chemical analysis.[4]

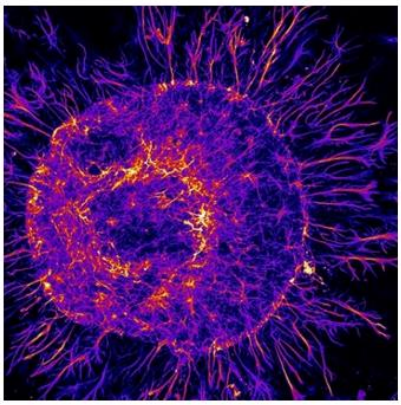


Figure 2: An example of cellular Imaging. A collection of astrocyte cells (glial cells present in brain and spinal cord). Image taken using a cell imaging system based on an optical system containing lead-glass components.

[1] How imaging techniques are innovating drug discovery, Lu Rahman, *Drug Discovery World*, 20 May 2021.

[2] An automated, single cell quantitative imaging microscopy approach to assess micronucleus formation to assess genotoxicity and chromosome instability, Chloe C Lepage et al. *Cells*, 9(2), p. 344 (2020).

[3] High-Performance Liquid Chromatography (HPLC): A Review, A. Hussen Ali, *Annals of Advances in Chemistry* 6, 010-020, (2022)

[4] Size-exclusion chromatography as a useful tool for the assessment of polymer quality and determination of macromolecular properties, D. Helt and P. Kilz, *Chemistry Teacher International*, 3(2), pp 77, (2021)

Figure 3: Example of a chromatography system. This instrument is for the analysis and separation of molecules within a liquid by size, and is typically used to separate proteins and other water soluble polymers. Such device is highly complex with over 7000 parts. This spectroscopy system contains optical fibres containing lead-glass.

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

Please refer to point (B).

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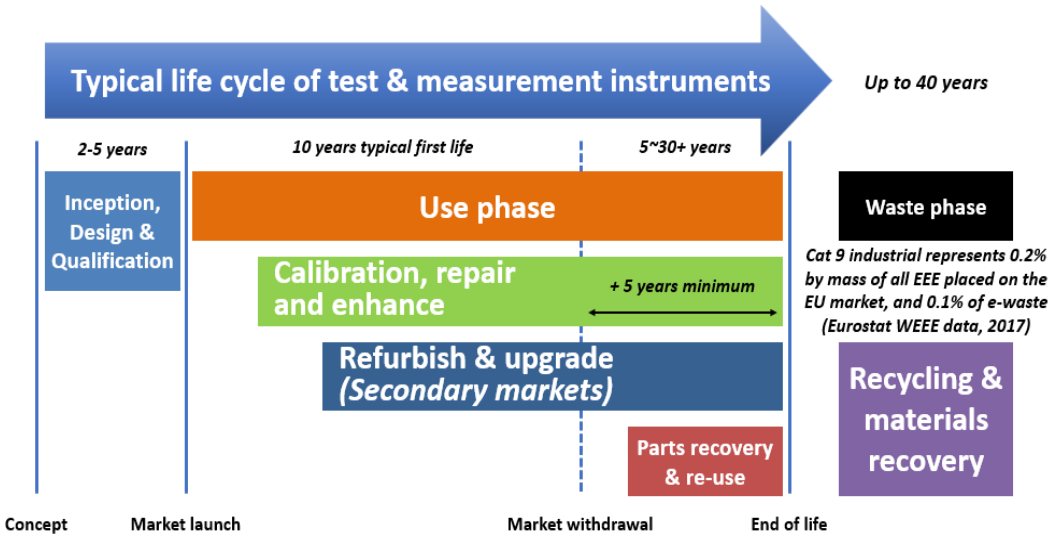
5. Information on Possible preparation for reuse or recycling of waste from EEE and on provisions for appropriate treatment of waste

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.)

There is no specific closed loop system in place. Please find below some specific considerations on the typical End-to-Life Cycle of category 9 industrial Test and Measurement instruments:

The market sectors addressed by industrial test and measurement equipment can in some cases require that the instruments can be maintained in use for decades. The end-to-end lifecycle model below helps to illustrate how the members contribute to the circular economy by assuring the materials they consume to produce the equipment are kept in use for as long as possible.



The nature of industrial test and measurement instrument applications demand highly accurate and reproducible results throughout their life. With a typical first use of 10 years and a total life of up to 40 years, great care is taken during the design and qualification phases to ensure that the stringent performance and reliability requirements are met and must incorporate design for serviceability. This provides a continuous supply chain of equipment for refurbishment with extended life through resale providing great economic and environmental benefit. Whilst the instruments are designed for long-term reliability, failures do occur during such an extended period of use requiring ability to service and replace parts. After market withdrawal, equipment is normally supported for a minimum of five years. Moreover, refurbishing and reselling on the secondary market are crucial in this sector and often account for 4–5% of producer turnover for test and measurement manufacturers.

Due to the cost, reliability, and unique applications of T&M equipment, many customers do not dispose of the equipment, but instead keep it for use at a later date or place it on the secondary market. Therefore, Category 9 Industrial equipment's contribution to the Waste Electrical and Electronic Equipment stream is very small (0.2% by weight of EU WEEE) with industrial WEEE being collected through B2B systems. Consequently, the environmental impact of industrial test and measurement products is negligible. Nevertheless, test and measurement equipment does enter the waste stream, typically many decades after it is placed on the EU market.

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:

No detailed data available.

☐ In articles which are refurbished _____

☐ In articles which are recycled _____

☐ In articles which are sent for energy return _____

☐ In articles which are landfilled _____

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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

To the best knowledge of the Test & Measurement Coalition, there is no substitute available that would be suitable for lead-glass in high accuracy measurement instruments. There are many available alternative glasses that do not contain lead, and low-grade consumer optics are now commonly manufactured from plastics. As shown in Figure 1, the alternatives do not match the optical properties of lead-glass, and even throughout the visible spectrum many of these alternatives have a decrease in transmission leading to losses in the signal. As spectroscopy and imaging plays a greater role in the scientific industries from chemistry to drug discovery and environmental monitoring, it is essential that the industries are able to use the most sensitive and accurate instrumentation.

Since the introduction of RoHS 1, and the restriction of the use of lead, there has been a dramatic improvement in the availability of lead-free glass, and where appropriate these glasses are used. This investment in new glass types continues, and as lead-free glasses approach the performance characteristics of leaded glass then the use of lead glass will naturally diminish. We anticipate that, with continued technical advances, the use of lead glass may reduce to negligible levels within the next two decades. However, at this point, eliminating the use of leaded-glass is not possible without the reduction of performance of critical instrumentation.

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

Please refer to point A.

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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.

Research has already been carried out for all applications and in the cases where lead-free alternatives have been found, they are being used. In virtually all applications of optical glass, a combination of three or more properties contribute to the technical performance of lead-based optical white glasses; it is therefore not possible to pick a single property as a criterion of distinction under RoHS. The renewal of exemption 13(a) should accordingly be granted on the ground that there are no alternatives available for the use of lead in white glasses used for optical applications.

Further research, by the optical glass manufacturers, into alternative designs is uncertain and may never be successful due to the demanding combinations of essential characteristics obtained when using lead in white glass. It is therefore not possible for the test and measurement equipment manufacturers, who use the optical glass to predict how much time this type of R&D will take or whether substitutes can be found for all of the diverse applications. It is very probable that it will never be possible to replace leaded glass in all applications. Lead-based glass manufacturers constantly review the published literature on new glass formulations but, in recent years, no new glass types have been discovered that could replace lead-based optical glass. Unless a new formulation is discovered, it is difficult to see what other steps can be taken by glass manufacturers to replace lead. Equipment manufactures also regularly review their design to assess whether lead-free glass can be used but, for the reasons discussed above, this has not been possible. This echoes the findings in RoHS Pack 23 published on the 19th of December 2022.5

Where substitution has been possible, it has largely been carried out. Only the applications for which lead-glass is essential remain on the market for reasons related to technical performance. As optical components are essential for these applications and as no comparable lead-free substitutes are likely to be developed in the foreseeable future and by extension the validity period for this exemption, a renewal of exemption 13(a) should be granted.

The argumentation presented by the Test & Measurement Coalition in this renewal application is quintessentially already acknowledged by the Commission's external consultants, who assessed the previously submitted application dossiers of other business and industry stakeholders.[6] The report states that in "light of the lack of sufficient alternatives to allow for substitution elimination of the need for lead in white optical glasses in the full product range, an exemption would be justified in line with the Article 5(1)(a) criteria."[7]

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[5] Study to assess requests for renewal of 12 exemptions to Annex III of Directive 2011/65/EU. Available at: https://rohs.biois.eu/RoHS_Pack-23_Report_Final_20221220.pdf

[6] Assistance to the Commission on Technological Socio-Economic and Cost-Benefit Assessment Related to Exemptions from the Substance restrictions in Electrical and Electronic Equipment. Available at:

https://rohs.exemptions.oeko.info/fileadmin/user_upload/reports/20160129b_RoHS_Exemptions_Pack7_Final_Report.pdf

[7] Ibid, p. 45

Independent of these findings, the Test & Measurement Coalition has contacted their component suppliers to inquire if since the submission of the renewal request by other stakeholders (e.g., Spectaris) new technological developments have occurred that would allow the substitution of cadmium and lead as used in RoHS exemption 13(a). It was reported back that no alternative substance with the same required characteristics of lead and cadmium for the respective components is known to the manufactures of those components.

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

There are currently no suitable lead-free alternatives that meet RoHS exemption criteria on the EU market for test & measurement industrial type products and that re-designing of the test & measurement equipment could take four to five years.

The optical components that utilise lead-glass, as outlined above, perform part of sensitive measurement systems. The optical design is often the first part of the instrument to be designed, as this defines the parameters of the device. Once the optical design has been finalised, the instrument is then designed around this. Therefore, changing any part of layout of the optical system is typically considered a major redesign, and can be as challenging as designing from scratch. Industrial instrumentation is designed to continuously function reliably and accurately For the optical systems, not only do the measurements have to be accurate, but they must be stable over time, and not be affected by the heat load of the source, or any other environmental parameters. As such, validation and testing require extended performance assessment to determine the reliance of the system for the expected usage throughout the lifetime of the device.

Members of the Test & Measurement Coalition have pointed out that they principally rely on their suppliers to find alternatives since most of the exemptions used in their products are not produced by the companies but bought off-the-shelf from suppliers (and so forth, potentially many levels down). Implementation of change necessitated by regulatory pressures typically starts with raw material manufacturers and the end-product manufacturers (e.g., Test and Measurement suppliers) who have the largest economic stake. Intermediate manufacturers are geographically and jurisdictionally diverse and are often SMEs. As such, this part of the supply chain is slower and more inconsistently able to adapt. Assuring full adaption in the supply chain and validating the alternatives in the final product application can and often does require up to 4 years. The general process involves communicating with the supply chain, evaluating samples, conducting design impact studies, reconfiguring the instrument and its software where necessary and testing in manufacture and validating the final assembly.

The companies reported that the validation period alone would take a minimum of 6 months and up to a year after the delivery of suitable alternatives per product. It is significant to note that this validation period would only apply if the component were a fit, form, and function drop-in replacement. If any design changes to the exemption-free part of the product would be required to accommodate for the alternative, an additional validation period would be required for each redesigned product that used to utilize the component that relied on the exemption. Moreover, the validation would lead to the organizations incurring additional expenses. These include labour costs and costs arising from potential product resubmission requirements for testing to various notified bodies to ensure that substitution does not create any electrical and functional safety concerns.

Should new lead-free optical parts become available, the participating companies would need to perform a variety of tasks in order to qualify a new part from suppliers. This would divert resources from other projects. It would also increase the cost to ensure the continued availability of the device due to the additional resources required by optics manufactures and by the T&M members. The validation and testing processes would vary according to part complexity and impact upon the final product design which can be categorized as either be of a medium or high complexity:

- **Medium complexity** optical parts are when a like-for-like replacement can be substituted and when the part performs a relatively simple optical function. Despite these characteristics, the change in the optical parameters will require testing and performance validation. The average time to switch a medium complexity part for production is reported to range from **6 to 12 months**.
- **High complexity** parts are optical components that perform a complex function or are part of an optical subassembly. These parts will be critical to the performance and accuracy of the device and will require extensive characterisation as the first step of the replacement process. The output of the characterisation will likely impact other parts of the instrument (for example, the analysis/interpretation software). Once fully characterised, these high complexity optical parts will require testing and validation for their performance and functionality in the instrument. Depending on the application, updated documentation of the device may require notification to the appropriate competent authorities or regulatory bodies. The average time that it would take to perform a high complexity component change for production is between **2 and 5 years**

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 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: Technically not feasible.
2. Can the substance named under 4.(A)1 be substituted?
   - ☐ Yes.
     - ☐ Design changes:
     - ☐ Other materials:
     - ☐ Other substance:
   - ☒ No.

     Justification: Technically not feasible.
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: Please refer to point 7 of the submission form.

b) Have you encountered problems with the availability? Describe: Please refer to point 7 of the submission form.

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: Possible economic impacts in the EU.

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

A thorough Socio-Economic Analysis has been performed by EPPA[8] at the request of Test & Measurement Coalition (TMC), in view of providing regulators with strong evidence-based findings on the expected social and economic impacts that are expected to occur should the use of lead (Pb) be impacted by the non-renewal of the RoHS exemption.

In line with the existing official guidance from ECHA on the preparation of the Socio-Economic Analysis,[9] the SEA therefore gathers technical and economic information to describe ex-ante in both qualitative and (if feasible) quantitative terms the (orders of magnitude of) socio-economic impacts TMC as well as the relevant EEA supply chain and society are expected to face from the non-renewal

[8] www.eppa.com

[9] The ECHA Guideline for the SEA preparation as a part of Application for Authorization is available at:
https://echa.europa.eu/documents/10162/23036412/sea_authorisation_en.pdf/aadf96ec-fbfa-4bc7-9740-a3f6ceb68e6e ;
The ECHA layout for an SEA to be used in Application for Authorization is available at:
https://echa.europa.eu/documents/10162/13637/sea_format_with_instructions_v4_en.docx/0cbc5102-6ba2-2170-480a-0061d2798f55

of the lead (Pb) exemption in white glasses used for optical applications, which would otherwise expire on 21 July 2024. Please see the respective SEA attached.

Overall, the main findings from the SEA conclude that, the total impact of a non-renewal is monetized in the range of 1.2 billion EUR and 1.6 billion EUR (conservative estimates in net losses; potential gains for suppliers of other components have been already taken into account), consisting of: economic impacts (EBIT loss); substitution costs and social impacts (i.e., unemployment in the EU-27) for test and measurement industrial type products' manufacturers.

9. Other relevant information

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

See Socio-Economic Analysis report attached.

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: