



LIGHTINGEUROPE
THE VOICE OF THE LIGHTING INDUSTRY

COMMENTS OF LIGHTINGEUROPE ON
THE DRAFT RECOMMENDATION OF
SUBSTANCES FOR INCLUSION IN
ANNEX XIV

SILICIC ACID, LEAD SALT

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SUMMARY

LightingEurope is an industry association of 33 European lighting manufacturers, national associations, and companies producing materials. LightingEurope members represent over 1,000 European companies, a majority of which are SMEs; a total workforce of over 100,000 people in Europe; and an annual turnover estimated to exceed 20 billion euros. LightingEurope is dedicated to promoting efficient lighting practices for the benefit of the global environment, human comfort, and the health and safety of consumers.

In the context of REACH, LightingEurope members are downstream users of chemicals and therefore are greatly impacted by the authorization of chemicals in the EU market. Authorization has a direct impact on the sourcing of substances that are essential to the manufacturing of lamps and special glass applications.

LightingEurope would like to submit the following information to the public consultation on silicic acid, lead salt that ECHA has launched in the context its inclusion in the authorization list.

Research studies in the last decades did not find alternatives with the same performance levels.

We thank you in advance for your kind consideration to our request and remain at your disposal should you need additional information.

USE OF SUBSTANCE

Silicic acid, lead salt as a raw material used as intermediate in the production of lead containing glass. Some exemplary uses are described in the below chapters in more details.

LEAD- AND LEADSILICATE GLASS FOR SPECIAL APPLICATION

- Lead and leadsilicate glass used for the manufacturing of microchannel plates used in a variety of applications including image intensification, remote detection, surface science, space science, high energy physics, and massspectrometry and micropore optics (MPO). MPOs (micro pore optics) used for X-ray imaging applications on interplanetary space missions and for X-ray, UV and EUV optical instrumentation.

- Lead glass used in fibre optic glass.
- Reference glass for e.g. XRF equipment

SILICIC ACID, LEAD SALT IN SEALING GLASS, TO SEAL GLASS, METAL OR CERAMIC MATERIALS IN SPECIAL APPLICATIONS

- Lead glass used as sealing glass for the manufacturing of microchannel plates used in a variety of applications including image intensification, remote detection, surface science, space science, high energy physics, and massspectrometry and micropore optics (MPO). MPOs (micro pore optics) used for X-ray imaging applications on interplanetary space missions and for X-ray, UV and EUV optical instrumentation.
- Lead glass used as sealing glass in temperature sensors. The sealing glass provides a high electrical resistance, a high chemical durability against exhaust gases and suppresses devitrification.
- Lead glass used as sealing glass in radiation detectors.

FUNCTION OF LEADCONTAINING INGREDIENTS IN GLASS APPLICATIONS MENTIONED

Leadoxide (from the raw material silicic acid, lead salt) takes part in the network structure of glass and give the glass more stable properties as a result. It decreases the tendency to crystallize and increases the chemical resistance and with Al₂O₃ a favorable influence on tensile strength. Leadoxide increases the refractive index substantially which is important for (fibre) optic glass.

Lead (oxide) as constituent in special glass is used for micro channel plates and plays the key role in the function of this device and its related products: generating secondary electron emissions.

In applications, like Micro pore Optics, lead oxide as constituent of special glass is also responsible for the absorption of X-rays.

Leadoxide in glass plays an important role to have controlled forming processes to manufacture products.

In frit glass leadoxide decreases the softening point and impart a good adhesion with the metal, glass or ceramic part without influencing the dimensions of the parts to be the processed.

GENERAL COMMENTS AND EXEMPTION

GENERAL FEATURES OF GLASS

Glass is an inorganic material obtained from different inorganic raw materials, which react at high temperature. During this process, the raw materials form a new random network, where different cat-ions are linked together by oxygen bridges and therefore the original substance is not anymore present in the final material. (see: position paper of Glass Alliance)

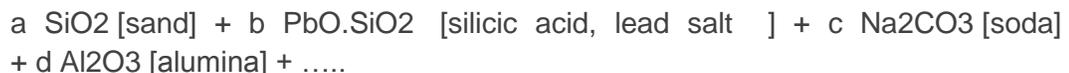
Raw materials, used in the manufacture of glass meet the definition of intermediates as much as they are transformed into a new substance, namely glass. They are transported isolated intermediates, since they are produced elsewhere and transformed at the sites of LightingEurope member companies

Lead oxides are used to manufacture the glass article, they are not present in the final article anymore as glass is a non-crystalline or virtuous inorganic macromolecular structure, which does not contain the chemical components of the different raw materials.

The main function of lead in a glass is to reduce the melting point and improve the flow properties of the glass, reducing the occurrence of glass cracks, improving chemical durability, influencing the tensile strength and the refractive index and in special applications generating secondary electron emissions

CHEMICAL EQUATION OF THE SYNTHESIS

In the case of glass, silica and leadoxides are network formers of the glass structure and the simplified formula is:



All raw materials used in a glass formulation undergo similar physical (melting) and chemical (formation of the network) processes.

During the chemical reaction to form glass, different crystalline substances (A, B, C, D, E, ...) are transformed to a non-crystalline vitreous substance (X). In glass, the chemical elements are incorporated via strong new chemical bonds and become an integral part of the glass' three-dimensional structure (CAS number is 65997-17-3)

EXEMPTION FROM REGISTRATION INFORMATION UNDER REACH ANNEX V:

Under REACH glass is classified as a UVCB substance (substance of unknown or variable composition, complex reaction products or biological materials - CAS number is 65997-17-3). It is exempted from the registration requirement under REACH under certain conditions laid down in Annex V (11) REACH.

SOCIO-ECONOMIC CONSEQUENCES

The substance is used for the production of highly reliable energy saving lamps, and contribute to the EU2020 Strategy – including CO2 reduction, energy efficiency and resource efficiency.

Today, on the market, there is no alternative known with the same performance levels.

Workers use Personal Protective Equipment like dust mask, safety goggles, gloves and protective clothing, to prevent inhalation and skin contact of the boric acid used in the lamp making processes, as mentioned in the MSDS of Boric acid. The main reason for using protective measures is the dust from the particle size of the chemicals of the process and actually not needed for the Boric Acid.

Alternatives are tested, however not feasible for high-reliability applications.

The original substance is not present anymore in the glass as it is transformed in another chemical substance.

An authorization process will not improve the safety of the workers as currently all measures mentioned in the MSDS sheets are already implemented.

CONCLUSION

Today, the substance is an essential ingredient and there is no alternative known on the market with the same performance levels. We therefore request an exemption from authorization for this use.