

Fixed Extinguishing Installations



Position Paper on the RoHS Directive / ElektroStoffV

Consequences for Fixed Extinguishing
Systems in Buildings

On July 21, 2011, the amended RoHS Directive (Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment) came into effect. In Germany, it is implemented through the "Elektro- und Elektronikgeräte-Stoff-Verordnung" (abbreviated as ElektroStoffV), in force since May 9, 2013. For manufacturers of fixed extinguishing systems in buildings, this raises the question to what extent the provisions of the regulation apply for fittings in their systems and if the restrictions on substances must be observed, especially in terms of lead and hexavalent chromium. Another question is whether a RoHS declaration of conformity is necessary or even mandatory.

This position paper depicts the main contents of the RoHS Directive and the German ElektroStoffV. It describes their respective scopes with a focus on fixed extinguishing systems in buildings. The crucial point in this connection will be the determination if fixed extinguishing systems in buildings are considered large-scale fixed plants and, subsequently, whether the parts of an extinguishing system with electronic components fall under the regulation or not.

The paper shall help manufacturers to comply with the requirements of the EU act, i.e. enable them to decide if their products are within the scope or the exemptions.

RoHS and ElektroStoffV

The amended RoHS Directive from July 21, 2011 was implemented in Germany through adoption of the ElektroStoffV on April 19, 2013. This regulation was published and put into effect on May 9, 2013.

Scope of the ElektroStoffV

In general, the ElektroStoffV applies to the placing and provision of new electrical and electronic devices on the market. According to the definition of the ElektroStoffV, an "electrical and electronic device", is a device designed for operation with alternating current (maximum of 1,000 Volts) or direct current (maximum of 1,500 Volts) that depends on electrical currents or electromagnetic fields for its normal operation or is meant for the creation, transmission or measurement of such fields and currents.

Categories

According to the ElektroStoffV, electrical and electronic devices are classified into the following categories:

- 1 Large household appliances,
- 2 Small household appliances,
- 3 IT and telecommunications equipment
- 4 Consumer equipment,
- 5 Lighting equipment,
- 6 Electrical and electronic tools,
- 7 Toys, leisure and sports equipment,
- 8 Medical devices,
- 9 Monitoring and control instruments including industrial monitoring and control instruments,
- 10 automatic dispensers,
- 11 Other electrical and electronic devices not covered by the above numbers 1 to 10.

Fire alarms and control centers for extinguishing systems fall under category 9.

Restricted substances

According to the RoHS Directive, any member state must guarantee that all electronical and electric devices (including cables and spare parts for repair, re-use, update of features or enhancement of efficiency) put on the market do not contain any of the substances listed in Annex II.



Maximum concentrations in so-called homogenous materials according to Annex II will be tolerated. According to the given definition, a homogenous material is a material of uniform composition throughout or a material consisting of a combination of materials that cannot be disjointed or separated into different materials by mechanical actions.

For the following materials listed in Annex II of the RoHS Directive including the addition by Directive 2015/863 from March 31, 2015, the admissible maximum concentration is 0.1% (with the exemption of Cadmium, with only 0.01%):

- Lead
- Mercury
- Cadmium
- Hexavalent Chromium
- Polybrominated Biphenyls (PBB)
- Polybrominated Diphenyl ethers (PBDE)
- Di(2-ethylhexyl) phthalate (DEHP)
- Butyl benzyl phthalate (BBP)
- Dibutyl phthalate (DBP)
- Diisobutyl phthalate (DIBP)

Exemptions

In Article 1, the regulation lists several exemptions, for example:

- Large-scale fixed installations (5): In Annex III, the RoHS Directive lists applications excluded from the restrictions for alloys that are occasionally used for fittings in fire extinguishing systems
- Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0.35% lead by weight (6a)
- Lead as an alloying element in aluminium containing up to 0.4% lead by weight (6a)
- Copper alloy containing up to 4.0% lead by weight (6c)

The manufacturer must reapply for the exemption on a regular basis. On this occasion, it will be verified if alternatives to the substances are available.

Large-scale fixed installations

The exemptions the ElektroStoffV makes for fixed installations are of major importance for fixed extinguishing systems in buildings.

Definition according to ElektroStoffV

A large-scale fixed installation is a large-scale combination of several types of apparatus and, where applicable, other devices which

- a) are assembled and installed by professionals and
- b) are intended for permanent use in a pre-defined and dedicated location and must be de-installed by professionals.

In the reasons for the regulation, it is further exemplified under point B of Article 2 on Number 3:

Large-scale fixed installations can be found in industrial, commercial and public (e.g. in hospitals, at airports) as well as in private/domestic (e.g. residential buildings) environments. Large-scale installations are considered fixed if no change of the location is intended during the utilization phase. Also large-scale tools with mobile components are fixed systems. Other examples for large-scale fixed installations include elevators, baggage conveyor belts, automated storage systems, transport systems and escalators.

Explanations of the European Commission

Further explanations can be found in the RoHS-FAQ. It offers the following guidance for large-scale installations:

- the components of the installation do not fit in an ISO 20-foot container of 5,71 m x 2,35 m x 2,39 m
- the combined weight of all components is more than 44 tons and the system cannot be transported on a single truck

- the installation must be assembled and dismantled using a heavy-duty crane
- the building of the installation location requires amendments for assembly the installation, e.g. entrance, foundations
- the power input exceeds 375 kW.

If these criteria do not permit a clear classification, the complexity of the system may be taken into consideration.

An example is a system consisting of several hundred components forming subsystems who allow for the operation of the system.

Fixed extinguishing systems in buildings as large-scale fixed installations

Fixed extinguishing systems fulfil the requirements applicable for large-scale fixed installations according to ElektroStoffV because they:

- are a comprehensive system of devices
- are meant to be operated permanently in the same place
- are assembled, installed and dismantled by professionals.

Additionally, a fire extinguishing system is a complex system covering several levels or areas of a building and consisting of several components for fire detection, controls, supply of extinguishing agents, distribution piping and outlet facilities.

Moreover, extinguishing systems usually are part of industrial, commercial, public and private/domestic applications - places where large-scale installations are generally found according to the explanations to the ElektroStoffV.

A large-scale installation does not necessarily exceed the size of the ISO container or the weight limit for truck transport. These criteria may be taken as one reference point for the decision if a system is a large-scale fixed installation in the event the provisions of the RoHS Directive/ElektroStoffV are not clear.

The FAQ document of the EU explicitly refers to the manufacturer's responsibility to conduct the classification of his product or installation and to check for applicability of the exemptions.

Summary

A fixed extinguishing system (including its integrated fittings) in buildings may be considered a large-scale fixed installation according to Article 2 Number 3 of the ElektroStoffV. Therefore, it is not within the scope of Article 1 (2) Number 5 of the regulation.

Therefore, a RoHS declaration of conformity through CE label for fittings of extinguishing systems with electronic components as part of a large-scale fixed installation is not possible. The restrictions on substances of the RoHS Directive/ElektroStoffV do not apply for this specific case.