

Adaption to scientific and technical progress under Directive 2002/95/EC

Results previous evaluation
Exemption No. 25

“Lead oxide in plasma display panels (PDP) and surface conduction electron emitter displays (SED) used in structural elements; notably in the front and rear glass dielectric layer, the bus electrode, the black stripe, the address electrode, the barrier ribs, the seal frit and frit ring as well as in print pastes”

(Excerpt from Öko-Institut Report 2006; Annex 1 Monthly Report 4)

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Furthermore lead oxide-free glasses would require more energy due to the high softening temperature of these glasses.

- From a toxicological point of view all raw and basic materials used for possible substitutes are critical.

5.4.3 Final recommendation

Data and information given by the applicant are complete and comprehensible. Basically this exemption request should be granted according to Article 5 (1) b, as at the moment no substitutes are existent providing the functionality of the seal frit adequately.

Analogous to the above mentioned exemption requested by ELCF and considering running activities in developing lead oxide-free substitutes the exemption at hand should be reviewed again latest in 2010 if not part of the four-yearly review of the RoHS Annex before.

In the second monthly report a wording was recommended for request 16 set 1 which restricted a possible exemption to the application mentioned therein (*"Lead as glass solder typically with 70wt%PbO in mercury free flat panel lamps type PLANON"*). Since now nearly full accordance between request 16 set 1 and request 9 set 2 has been assessed, a common wording encompassing both requests should be used for granting an exemption. **Thus the original wording for request 16 set 1 is herewith withdrawn and should therefore not be used for further decision making!**

Against this background we suggest the following wording for both request 16 set 1 and request 9 set 2:

"Lead oxide in glass used for bonding front and rear glass substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCD)."

5.5 Lead in lead oxide glass plasma display panels and other technology large-sized flat display panels – JBCE/JEITA (set 1 request No. 6); lead in lead oxide glass used in plasma display panel (PDP) – KEA (set 2 request No. 19)

5.5.1 Requested exemption

The Japan Business Council in Europe (JBCE), the Korea Electronics Association, LG Electronics and Samsung SDI request an exemption for lead in lead oxide glass used in plasma display panel (PDP). Furthermore JBCE stated in February 2005 that surface conduction electron emitter display (SED) was meant to refer to "other technology large-

sized flat display panels”³: Due to the fact that the reasons are almost similar for using lead oxide glass both for Plasma Display Panels (PDP) and for Surface-Conduction Electron-emitter Display panels it is meaningful to cover these requests simultaneously. Moreover there are overlapping issues to the use of lead oxide in seal frit.⁴

For both display technologies lead oxide glass is used for the main structural elements of the panel except the substrates.

For PDP the following elements are made of materials containing lead oxide:

- Front and rear glass dielectric layer
- Bus electrode
- Black stripe
- Address electrode
- Barrier ribs
- Seal frit
- Frit Ring

Although there are considerable differences between PDP and SED both technologies are currently using lead oxide glass for sealing of casing (glass frit) and print pastes.

On a quantity basis the front and rear glass dielectric layer, the barrier ribs and the seal frit are the most relevant part concerning the usage of lead oxide glass.

According to the assumption of the applicants the total amount of lead oxide in glass used for PDP accounts all together for about 400.000 kg p.a. (EU figures). Due to the fact that SED technology is still under development annual quantities can not be estimated at this moment.

5.5.2 Summary of justification for exemption

The request for exemption is mainly based on technical criteria. According to data and information given by the applicants the main reasons for using lead oxide glass can be summarised as follows:

No substitute glass material exists covering the needs

- for electric specifications (contact resistance) and colour specifications of bus electrode and black stripe;
- for colour specifications of dielectric layer;

³ This wording was used in the earlier checklist submitted by JBCE in September 2004.

⁴ See set 1 request No. 16; final recommendation in report 2 section 5.8 and set 2 request No. 9, final recommendation in this report section 5.4

- for dielectric and discharge specifications for rear panel;

Furthermore no substitute glass material exist which gives a low softening point available for sealing.

Based on additional data and information given by the applicants there are several approaches for realising lead-free PDP. Comparable to lead in seal frit used for making BLU (Back Light Unit Lamp) possible substitutes for PbO are bismuth glass, zinc borate glass, and tin phosphate glass). Nevertheless according to the applicants the first lead-free PDP will not be introduced before 2006-2007.

5.5.3 Final recommendation

Data and information given by the applicants are complete and comprehensible. The presented arguments are plausible and supported by appropriate documentation. Basically this exemption request should be granted according to Article 5 (1) b, as at the moment no substitutes are existent providing the functionality of lead oxide glass.

Taking into account running activities in developing lead oxide-free substitutes the exemption at hand should be reviewed again latest in 2010 if not part of the four-yearly review of the RoHS Annex before.

We suggest the following wording for the exemption:

“Lead oxide in plasma display panels (PDP) and surface conduction electron emitter displays (SED) used in structural elements; notably in the front and rear glass dielectric layer, the bus electrode, the black stripe, the address electrode, the barrier ribs, the seal frit and frit ring as well as in print pastes.”

5.6 Cadmium sulphide photocells – Perkin Elmer/Philips (set 1 request No. 21_a/b); cadmium in opto-electronic components – TESLA (set 2 request No. 10)

5.6.1 Description of requested exemption

All three requests (request No. 21_a/b set 1 and request No. 10 set 2) refer to the same general application: the use of cadmium compounds in photocells (i.e. photoresistors). The different applicants though name different specific kinds of application for which they require an exemption.

Perkin Elmer requests an exemption for

“Cadmium sulphide photocells for burner controls, automatic light switches, commercial light control systems and audio equipment, safety relevant controls in automotive appliances”.

Philips requests an exemption for

“Use of CdS photocells in daylight responsive dimming systems”.