

ATLAS

to uniformly discriminate between
portable luminaries for children and adults

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DG of Energy
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Chapter 1

Objective

The objective of this document is to establish an operational practical frame to allow market surveillance authorities to uniformly discriminate between portable luminaries "intended for adults" and "intended for children", that are subjected to the Low-voltage Directive 2006/95/EC (former 73/23/EEC) and sold on the European market. In this frame, plain use is made of the applicable harmonised standards and of the Commission opinion of 3 May 2002 on portable child-appealing luminaires.

As a tool for market surveillance authorities, this Atlas is complementary to the existing relevant standards which are at its roots. It does not replace the standards nor has it any pre-eminence over those standards. It just helps market surveillance authorities to reach a decision on a particular luminaire - in a manner as harmonised as possible throughout Europe - in case of hesitation about the appropriate standard to apply. Use of it by standardization committees in the process of revision of the standards is fostered.

This Atlas is aimed at being a living document in the sense that it just gives the state-of-art of the assessment of such luminaries by the market surveillance authorities at a given moment and that it is periodically amended and improved in function of the experience gathered by the market surveillance authorities.

When changes are proposed by one or several market surveillance authority(-ies), these changes are discussed at meetings between the European administrations in charge of implementing the Low-voltage directive ("LVD-ADCO meetings") and final decisions are taken by consensus. The present document is then changed or not in function of these decisions. When the document is changed, it receives new references of revision and date and the former versions are considered to be obsolete.

In February 2005, the Dutch Authorities held an expert meeting to verify the functionality of the first version of the table and atlas presented here. A panel of ten experts from different organizations involved in consumer product safety (authorities, manufacturers, laboratories, specialists of child behaviour) participated in the session. The results showed that, out of 53 cases, all experts came to the same requirements as proposed 30 times. In 19 other cases, 3 or less participants deviated from the proposed requirements. In 2

cases, there was a small majority for a specific solution and in 2 other cases the voting gave no clear solution. These results are encouraging in view of getting a higher level of uniformity while assessing portable luminaires. However, the discrepancies show that the present document must be kept alive in order to achieve even higher level of uniformity.

In the 2007 revision (rev. 2), oral suggestions made meanwhile by several countries in order to get a better classification for some luminaires have been taken into account, as have also the written comments of November 2006 from the Sustainable Development and Regulation Directorate of the UK Department of Trade and Industry (DTI).

In the present revision (rev. 3), some improvements have been introduced following written suggestions in October 2007 from the Sustainable Development and Regulation Directorate of the UK Department for Business Enterprise and Regulatory Reform (BERR). Also, a written inquiry was made among the Member States regarding the advisability to change 6 luminaires of category. A clear acceptance (above 80 % of the countries having answered) of the proposed changes came out for 2 luminaires and a clear refusal (above 70 %) for 2 others (3-22-42-example 1 and 5-14-example 1). No clear answer was obtained for the 2 remaining luminaires which are still under discussion. Therefore, in the present revision, only 2 luminaires have been changed of category : 3-32-42-example 2 and 2-41-example 1.

This document is intended to be updated on an annual basis.

Chapter 2

Origin

2.1 Available regulatory tools

- **Low Voltage Directive 2006/95/EC (former 73/23/EEC)** : this directive imposes compliance with several essential safety requirements. Though use of standards is not mandatory, the conformity to the relevant Cenelec harmonised standards presumes compliance with the essential safety requirements.
- **Harmonised standard EN 60598-2-4** : This standard is applicable to portable luminaires.
- **Harmonised standard EN 60598-2-7** : This standard is applicable to portable luminaires for gardens.
- **Harmonised standard EN 60598-2-10** : This standard is applicable to portable luminaires for children.
- **Opinion of the Commission of 3 May 2002** : This opinion is applicable to portable child-appealing luminaires (C(2002)1590 Final).

2.2 Luminaires under scope

- **Low Voltage Directive 2006/95/EC (former 73/23/EEC)** : Luminaires with a rated voltage of 50 to 1000 V alternative current (75-1500 V direct current). A project of revision extends these limits to the lower part (0 V).
- **Harmonised standard EN 60598-2-4** : voltage 250 V
- **Harmonised standard EN 60598-2-7** : voltage 250 V
- **Harmonised standard EN 60598-2-10** : 3 cases :
 - Class III (24 V)
 - Class II + transformer 24 V

- Classe II : 250 V with single capped fluorescent lamps (Edison type, Bayonet type).
The fluo-compact lamp is a cool-beam lamp

- **Opinion of the Commission of 3 May 2002** : Portable child-appealing luminaires falling under the Low Voltage Directive 2006/95/EC (former 73/23/EEC) - 3 cases :

- case 1 : voltage 230 V alternative current
- case 2 : voltage 230 V alternative with integrated 24 V transformer
- case 3 : after revision of the Low Voltage Directive, *voltage* < 24 V also included

The luminaries which are under scope in the present document are the portable luminaries with rated voltage from 50 to 250 V and those with integrated 24 V transformer. The other cases do not need particular handling.

2.3 Risk analysis

2.3.1 Introduction

The principle of a risk analysis (RA) to be performed at manufacture stage has been generalized during the last years :

- **Low Voltage Directive 2006/95/EC (former 73/23/EEC)** : The RA is not explicitly foreseen in the present directive, but, as the Low Voltage Directive addresses all risks, some form of risk analysis should be undertaken in order that all risks be identified and addressed.
- **Harmonised standard EN 60598-2-4** : A RA is allowed
- **Harmonised standard EN 60598-2-7** : A RA is allowed
- **Harmonised standard EN 60598-2-10** : A RA is allowed
- **Opinion of the Commission of 3 May 2002** : A RA is needed.

2.3.2 Definition

Definition : There seems to be a general agreement within Europe to consider that a systematic inventory of the conformity of the appliance with the different foreseeable risks, using a check-list, has the value of a risk analysis. The words "risk analysis" are to be understood in a broad sense, not with the meaning that one of the following specific analyses should be performed : Failure Mode and Effect Analysis (FMEA), Fault Tree Analysis (FTA), Event Tree Analysis (ETA), 2-parameters analysis severity/frequency (with indication of the acceptable risk thresholds), etc.

However, the conformity of the appliance with each foreseeable risk must rest on solid arguments (additional tests, calculations, descriptions, ...) which are to be written down by the manufacturer and be made available to the surveying body at any moment on

request.

The manufacturers need to consider how products might be misused, the risks and hazards presented, and take appropriate action to address them. For example some portable luminaries are shaped or decorated, such as a fish or a frog. It is reasonably foreseeable that some such products may be taken into water by young children, a risk not addressed by EN 60598-2-10. Consideration of cultural issues and common practice is also required. For instance, products that are intended as portable electrical equipment for use within bathrooms are not permitted in some countries (e.g. the United Kingdom does not allow socket outlets in bathrooms) while they are permitted in other countries.

2.3.3 Age range of children

As children evolve quickly, it has been considered necessary to take account of their age as an additional parameter. Children are distributed into 3 age ranges based on the recognition that different types of products are used by or associated with these age ranges and that the risks and hazards are different for each age range. The age range must be taken into account in the risk analysis. In the following pages, additional information is given where relevant in order to foster thinking about the risks related to the age range of the children.

Three age ranges are defined :

Very young children (0-1 yr)

Children of 0 to 1 year age are considered to fall under this category (babies). The child will not be able to move freely, it will either be incapable or of an age that parents will ensure that it cannot move far. Such children will be stimulated by many of the luminaries. Indeed some products are aimed specifically at babies. However, luminaries intended for children of this young age are not intended to be operated by them. The instructions should give very precise information to parents (purchasers, installers, operators and maintainers) as to their positioning for safe use and the risks involved and how they are addressed, e.g. in particular positioning of the luminaire, routing of cable, etc., as such young children can have no concept of hazard.

Young children (1-5 yrs)

Here young children of 1 to 5 years age are considered. These children are no longer continuously restrained but both able and allowed to move. Children of crawling/just walking age will fall in this category. Such children will also have little or no concept of risk and, as such, this is probably the most difficult grouping. Luminaries for these children will also be purchased, positioned and operated by responsible adults, older children in this group may make some input as to what they want but the purchasing decision will be made by adults. Positioning is important but, like all items electrical or not, it should be expected the child will attempt to get hold of them, handle them and for the child to have no appreciation of hazard or risk. Luminaries for this purpose should have detailed

instruction for the parent and design features reflecting the heavy abuse and misuse these products can expect to be exposed to during their working life. However, it should be borne in mind that to children of this age all luminaries are likely to be appealing - i.e. stimulate the child to show an interest and to want to touch and handle the luminaire. There may be an argument that any product functioning as a luminaire aimed at this age group should not be encouraged. The child can certainly be expected to come into contact with a number of different types of luminaries and other electrical products - all of which they will attempt to touch and handle.

Older children (5-14 yrs)

Children of 5 to 14 years age would fall under this category. As children develop, they will become more aware of the risks/hazards presented by luminaries. There is evidence that children of 5 years of age have a good appreciation of the risks and hazards presented by luminaries. In this category, children as they become older will participate more fully in the selection and positioning of luminaries, initially under parental guidance, but as they grow they will purchase items, position them and use them with no parental intervention. In these stages, children will have an awareness of the risks and hazards associated with electrical equipment. However, though they can generally be expected to use the products correctly, some form of increased handling, misuse and rough handling should be expected. Specific instructions would not seem reasonable to overcome hazards and the luminaire design will need to address such issues. Though the child will treat the luminaire with due regard to safety, the child can be expected to be playing near the luminaire and the luminaire is likely to be involved - not so much played with but still involved, for example in violent play e.g. pillow fight. It would seem likely that the risks a luminaire would present will depend on the actual age of the child and in the type of play to be expected from children of that age group. Teenage children and those of similar age are, as a group, likely to be as aware as adults of the risks and hazards presented by a luminaire, regardless as to how it is decorated.

Persons from 14 to 16 years age can be regarded as young adults who would use luminaries for their intended purpose but some form of misuse and rough handling can still be expected. Persons above 16 years age can generally be regarded as mature and responsible adults (but parties can encourage students and adults to behave and act in a similar manner to children!).

Because it is likely that children of age group 2 (1 to 5 years) will use mains flexes to pull themselves up and will be climbing on anything they can get hold of, the design of the luminaries, the mains flex and the positioning may need to take the above into account even for luminaries intended for adults.

2.3.4 Elderly and disabled persons

In addition to children, the use of the principles of EN 60598-2-10 and of the Opinion of the Commission of 3 May 2002 should be promoted to address risks to other disadvantaged persons in the community such as the older persons and those with physical difficulties. Elderly and disabled persons would certainly benefit from the enhanced safety features of luminaires for children.

2.3.5 Additional documents

Two additional types of documents are foreseen by the Low Voltage Directive and by the Commission's Opinion :

- 1) A technical justification for the use of another standard than the harmonised standard with a description of the diverging issues and of the conformity of the adopted solutions with the essential requirements (application of the Low Voltage Directive 2006/95/EC - former 73/23/EEC)
- 2) A description of the special precautions taken in accordance with appropriate safety concepts and test methods in order to prevent direct access to live parts in foreseeable conditions of overload. This has to be described in the technical documentation (Opinion of the Commission of 3 May 2002 : case of rated voltages higher than 24 V, using other technologies).

Though a risk analysis is not specifically mentioned in the present Directive, Article 2 of the Low Voltage Directive implies that all risks need to be addressed. Manufacturers placing a product are required to place safe products on the market, i.e. "having been constructed to good engineering practice in safety matters in force in the Community, such that it does not endanger the safety of persons, domestic animals or property installed and maintained and used in the applications for which it was made." (Article 2 of the Directive). For a manufacturer to meet this requirement, they will need to identify the risks and hazards, i.e. carry out a risk assessment. As a fundamental principle, the present Directive is always to be considered to implicitly imply the need to carry out a risk analysis as a basic demonstrable way of showing compliance.

2.4 Elements to be more precisely specified

In order to be able to discriminate sufficiently well between the luminaires found on the market, following issues have to be more precisely specified :

- **Harmonised standard EN 60598-2-10** : It is necessary to clearly distinguish what is meant by "designed or clearly intended for adult use" (10.1) and "intended for use by children who may not be under the supervision of more competent persons at the time of use" (NOTE of 10.3.1). Indeed, (1) any device giving light, whether intended for adult use or not, is appealing for a child in early childhood, and (2) any portable luminaire may be put in a room where children play without supervision.

- **Opinion of the Commission of 3 May 2002** : "The question as to whether a luminaire has to be considered as "child appealing" depends on a case-by-case assessment taking into account the specific characteristics of the product in question" (I.4).

It is the aim of the present document to provide some practical guidelines to discriminate between the luminaires found on the market.

2.5 Historical

The question rose when it became obvious that the Member States had sometimes different interpretations on a same device. For instance :

- 1) Some luminaires with 2D-ornament showing persons, with rated voltage of 230 V and manufactured according to EN 60598-2-4, were forbidden in some countries because considered as child-appealing, while they were accepted for sale in other countries because the 2D-pictures were simply fancy-dressed adults;
- 2) Some 3D-design luminaires with a shape of fish or frog, with rated voltage of 230 V and manufactured according to EN 60598-2-4, were forbidden in some countries, because considered as child appealing and because it seemed foreseeable that children would take them to play with in connexion with water, while other countries considered the same luminaires to be intended for adults, due to their design, and that their use would be sufficiently safe because of the difficulty to dismantle or to break them;
- 3) Some luminaires sold as kits, with a final shape of a 3D-fish once set up, with rated voltage of 230 V, manufactured according to EN 60598-2-4, were accepted in some countries because there was a warning "NOT for children" on the packing, while other countries considered them to be child-appealing anyway because of the final shape of a 3D-fish.

Chapter 3

General definitions

3.1 Ornamental elements aimed at being appealing for children

Luminaires may show 2D-reproductions or have a specific 3D-shape with the aim at addressing children instead of teenagers or adults. All elements that children (up to 14 years) are expected to meet during their forthcoming "real life" are considered to be parts of their world. They must also be presented as such in order to be adapted to their life environment. 2-D and 3-D reproductions falling under this definition include polychromatic reproductions of animals, houses, characters and heroes from comics or animated cartoons. Sounds or mobility effects may sometimes increase the child's attention. The reproductions must be of limited shape as the youngest children, i.e. those who have not yet benefitted of extensive adult guiding in safety problems (children of age groups 1 and 2, i.e. up to 5 years) are not tall.

The fact that children would use such luminaires in their games will result from the presence of the luminaires in their daily environment and from the appropriateness of the luminaires to their world.

A study from Intertek commissioned by DTI (UK) gives additional information (ref. Child Appealing Research : Research into Child Awareness of Risk: Use of Electrical Equipment - A REPORT BY INTERTEK RESEARCH & TESTING CENTRE FOR THE DEPARTMENT OF TRADE & INDUSTRY - JULY 2004 - URN 04/1334)

[Reference <http://www.dti.gov.uk/files/file11550.pdf>].

This study analyses several types of electrical devices, however luminaires are an important part of it. According to the study, features of electrical appliances that children find appealing are unique to each child. But most children found the following features appealing, in no particular order, which would encourage them to handle and explore the products: (1) Bright and contrasting colours ; (2) Shape ; (3) Movement ; (4) Adjustment ; (5) Flexible ; (6) Texture ; (7) Smell ; (8) Touch ; (9) Function ; (10) Noise of on/off switch. In addition, power cords would seem particularly attractive to age group 2.

The study adds a dynamic notion, that of **inducing handling** by a child. The product is not just used in a game: it induces the game. A child-appealing product is then a product that is constructed such that due to the design, and regardless of materials used, it may induce or encourage handling by a child. Aspects of such products include representing a model, person, animal (real or character printed), buildings or vehicles; having bright and contrasting colours, and a function, noise or texture consistent with a **childs desire to experiment**.

3.2 Ornamental elements aimed at being appealing for adults

2-D and 3-D ornamental elements for adults have a completely different objective. They are aimed at being inserted into the environment of life of an adult. There is no link to any game or incitement to play with. The ornamental element is such that it can match any given home set of furniture, and is therefore often uniformly coloured. Reproductions may be persons, animals or objects as long as no link can be established with one or the other kind of game. The "design" aspect prevails most of the time.

Chapter 4

Reference Table

According to the Intertek study (2004), children often mistake the identity of child-appealing products, believing them to be harmless and thereby are unaware of the potential hazards. The study analysed accident data records and concluded a.o. that the majority of incidents concerned lighting products and that the incidents involved access to live parts, cuts after lamp breakage and burns.

The study also interviewed school children about their awareness of the dangers of electrical appliances such as luminaires and their wanting to play with. As a conclusion, the "playing" aspect is only appreciated where the manufacturer has introduced it into the product intentionally. The results of the survey of school suggest that a distinction should be made between "playing" and "handling" a product. Most of the school children said that they would not play with any of the electrical products. This suggests that they do not associate the term "playing" with electrical equipment. The children seem to understand most of the potential hazards in using electrical equipment yet they find certain features of the products appealing. It is clear that children associate toys with "playing" but are likely to handle and experiment with electrical equipment where such equipment has particular features that appeal to them, i.e. which would encourage them to handle and explore it. For instance, when switches are put into evidence, there seems to be a strong appeal to handle them.

In the following table, the risks related to sharp edges or access to live parts are already sufficiently covered by the basic standards (EN 60598-1, EN 60598-2-4 and EN 60598-2-7). They are called "Basic risks".

The estimated additional risks in practice are:

- The risk arising from the (partial) dismantling of the product when this easily occurs, i.e. without tools.
- The risk of touching some zones at high temperatures ($T > 70\text{ }^{\circ}\text{C}$).
- The risk arising from the fact that the device can be broken. The related risks include injury, choking, access to live parts after breakage, fire

Three levels of safety are considered in the following table:

1. The luminaire must at least comply with the requirements of EN 60598-1 and EN 60598-2-4 or EN 60598-2-7.
2. The luminaire must at least comply with the requirements of EN 60598-1 and EN 60598-2-4 (or EN 60598-2-7) and there must be a clear warning that the device is not appropriate for children under 14 years (limit taken from EN 60598-2-10). "Clear warning" means that the adult user necessarily reads the warning when he comes to use the device. The adults are indeed those persons who decide at purchasing which product will be used in the life environment of children. In the table and in the following pages, "EN 60598-2-4" holds for "EN 60598-2-4 or EN 60598-2-7".
3. The luminaire must comply with the requirements of the Opinion of the European Commission of 3 May 2002 (EN 60598-2-10 or equivalent): abbreviated "ECop3-5-02". This Opinion is more general than the standard EN 60598-2-10. Indeed, the standard does not cover all the risks for all age groups and scenarios. For example, it does not consider a child pulling itself up by the flex, or the product falling on to the child, in some cases there will be a height/weight issue, or a child taking a product into water, or a child using the luminaire to read in bed (under the blanket). In general, luminaires corresponding to the third level of safety should be more robust (more resistant materials, additional protections, ...). Also, child-appealing portable luminaires typically placed as an extra ornamental element in temporary decorative configurations due to festivities or celebrations (Christmas luminaires, ...) are excluded from the standard. All risks not covered by EN 60598-2-10 must be separately addressed by the manufacturer. In addition, special attention must be taken to age categories. The risks may be different for age ranges 0 to 1, 1 to 5 and 5 to 14 years. However, when the luminaire is not clearly targeted to a given age category, the worst case has to be considered.

To summarize : the labelling "ECop3-5-02 (EN 60598-2-10)" in the table means that standard EN 60598-2-10 or an equivalent standard has been used AND that all additional risks not covered by these standards have been addressed.

Standards are not mandatory. The indications in the table and in the following Atlas give minimum levels for consideration. Additional risk analysis is always encouraged taking account of the specificities described in chapter 2.3.

(Definitions given after the present table)	9	19 Specific risks : risk at (partial) dismantling	29 Specific risks : access to zones at high temperature ($> 70^{\circ}\text{C}$)	39 Specific risks : can be broken and dangerous after breakage
1 Writing desk luminaire without 2D-reproduction	10 60598-2-4	20 60598-2-4	30 60598-2-4	40 60598-2-4
2 Writing desk luminaire with 2D- reproduction only for adults	11 60598-2-4 + warning	21 60598-2-4 + warning	31 60598-2-4 + warning	41 60598-2-4 + warning
3 Writing desk luminaire with 2D or 3D for children	12 ECop3-5-02 (EN 60598-2-10)	22 ECop3-5-02 (EN 60598-2-10)	32 ECop3-5-02 (EN 60598-2-10)	42 ECop3-5-02 (EN 60598-2-10)
4 Ornamental luminaire without 2D- reproduction	13 60598-2-4	23 60598-2-4	33 60598-2-4	43 60598-2-4
5 Ornamental luminaire with 2D only for adults	14 60598-2-4 + warning	24 60598-2-4 + warning	34 60598-2-4 + warning	44 60598-2-4 + warning
6 Ornamental luminaire with 2D for children	15 ECop3-5-02 (EN 60598-2-10)	25 ECop3-5-02 (EN 60598-2-10)	35 ECop3-5-02 (EN 60598-2-10)	45 ECop3-5-02 (EN 60598-2-10)
7 3D-ornamental luminaire for children 3D and luminaire with music and/or moving parts	16 ECop3-5-02 (EN 60598-2-10)	26 ECop3-5-02 (EN 60598-2-10)	36 ECop3-5-02 (EN 60598-2-10)	46 ECop3-5-02 (EN 60598-2-10)
8 Other type of luminaire (e.g. design, ...)	R A -	17 60598-2-4	27 60598-2-4 + warning	37 60598-2-4 + warning
	R A +	18 60598-2-4 + warning	28 ECop3-5-02 (EN 60598-2-10)	38 ECop3-5-02 (EN 60598-2-10)

Figure 4.1: Classification of portable luminaries in function of their use with children.
(Note: "ECop3-5-02" means "Opinion of the Commission of 3 May 2002")

Chapter 5

Definitions and wording

5.1 Definitions

1. **Writing desk luminaire without 2D-reproduction** : Luminaire foreseen for reading, thus with directed light beam, having one single colour, or showing a neutral 2D-picture such as a Scottish plaid squaring.
2. **Writing desk luminaire with 2D only for adults** : Luminaire foreseen for reading, thus with directed light beam, showing 2D-non neutral graphic representations of persons or animals (actual or fictitious), landscapes
3. **Writing desk luminaire with 2D or 3D for children** : Luminaire foreseen for reading, thus with directed light beam, showing 2D- or 3D-representations referring to the world of childhood, such as characters from tales, comics, strips, cartoons, TV-serials for children, games, etc
4. **Ornamental luminaire without 2D-reproduction** : Luminaire that can be put on a table or a commode etc in the neighbourhood of a child, and that is foreseen to be part of the general room lighting, thus without directed light beam, with one single colour or showing a neutral 2D-picture such as a Scottish plaid squaring.
5. **Ornamental luminaire with 2D only for adults** : Luminaire that can be put on a table or a commode etc in the neighbourhood of a child, and that is foreseen to be part of the general room lighting, thus without directed light beam, with non-neutral 2D-graphic representations of persons or animals (actual or fictitious), landscapes
6. **Ornamental luminaire with 2D for children** : Luminaire that can be put on a table or a commode etc in the neighbourhood of a child, and that is foreseen to be part of the general room lighting, thus without directed light beam, with 2D-graphic representations referring to the world of childhood, such as, for instance, characters from tales, comics, strips, cartoons, TV-serials for children, games, etc
7. **3D-ornamental luminaire for children and luminaire with music and/or moving part** : Luminaire that can be put in the neighbourhood of a child, and

that is foreseen to be part of the general room lighting, thus without directed light beam, with 3D-representations, and that could be touched and handled by a child, or luminaire with music and/or moving parts.

8. **Other luminaire (e.g. design, ...)** : Any kind of luminaire not described in the above definitions, including a.o. "design" luminaries.

5.2 Wording

"Warning" :

a- This is a text written in the national language(s), that is put into evidence through colour or shape, to be found in the directions for use of the device and on its packing or, in absence of it, on the luminaire itself. It is a clear warning (this means that the user cannot make otherwise than to read it when he or she uses the luminaire or before he or she buys it) that the luminaire "is not adapted for use by children under 14 years" with mentioning of the reason ("high temperature risk", "risk of easy dismantling"). The warning can also be written in a positive way, e.g. "This luminaire is adapted for use by children of 5 to 14 years". Note : The ultimate fixing of the content of the warning is left to the standardization bodies.



Figure 5.1: Warning symbol : luminaire not adapted to children under 14



Figure 5.2: Warning symbol : luminaire adapted to a category of children

b- As an alternative to the text on the packing and in order to avoid translations into several languages, a symbol of minimum 3 cm diameter that is put on the packing or, in absence of it, on the luminaire itself can be used. The symbol is similar to the symbol of the "Toys" directive (88/378/EEC), but crossed by e.g. a red (or a black) stroke. As far

as practical, this symbol should be on a prominent position on the luminaire itself, as well as the packaging.

Alternatively, the symbol can be positive, e.g. with a blue circle, without being crossed by a red stroke, showing a smiling child and with indication of the category of age the luminaire is adapted to. Note : The ultimate development and trial of the most appropriate symbol(s) is left to the standardization bodies.

”**RA**” : Risk analysis

”**RA -**” : The person responsible for the risk analysis considers - at the time of first visual check - that the luminaire is intended for adults and that there is little probability for it to be put in the neighbourhood of children which are not under adult supervision, and clearly specifies it in the risk analysis report.

”**RA +**” : The person responsible for the risk analysis considers - at the time of first visual check - that the luminaire is intended for children and that there is a significant probability for it to be put in the neighbourhood of children which are not under adult supervision, and clearly specifies it in the risk analysis report.

”**Statement for RA +**” : Risk analysis is generally encouraged for all luminaries. When such an analysis has been carried out, it is reassuring for consumers that a statement be written in due place, e.g. on the packing, that ”this luminaire can be regarded as reasonably safe when put in the vicinity of children who are not under adult supervision, as all foreseeable risks have been addressed in the design and manufacture of this product”.

Chapter 6

Atlas

6.1 Category 1 Type 10



Figure 6.1: Case Category 1 Type 10 (first example)

Example 1

- Writing desk luminaire without 2D-reproduction.
- *Child-appealing character lies in:* shape and colour, appealing switch and lever.
- *Materials:* steel, plastics
- *Risks:* Only basic risks - (1) Difficult to dismantle, (2) Surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) Difficult to break
- *To follow:* EN 60598-2-4
- *Comments:* Access to bulb. Aimed at adults and teenagers (age group 3).

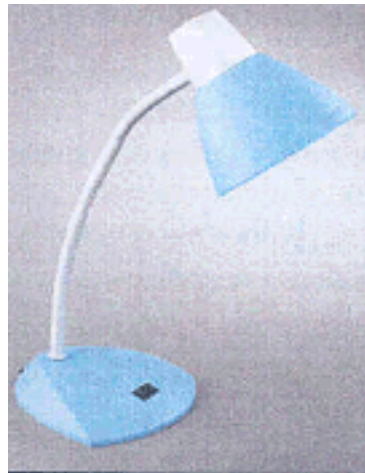


Figure 6.2: Case Category 1 Type 10 (second example)

Example 2

- Writing desk luminaire without 2D-reproduction.
- *Child-appealing character lies in:* colour.
- *Materials:* steel, plastics
- *Risks:* Only basic risks - (1) Difficult to dismantle, (2) Surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) Difficult to break
- *To follow:* EN 60598-2-4
- *Comments:* Access to lamp.

6.2 Category 1 Type 20

Example 1

- Writing desk luminaire without 2D-reproduction.
- *Child-appealing character lies in:* shape and colour.
- *Materials:* steel, plastics
- *Risks:* Basic risks and (1) fun (but not so easy) to dismantle resulting in access to life parts, (2) Surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) Difficult to break
- *To follow:* EN 60598-2-4
- *Comments:* Free access to bulb - All age groups over 5 years.



Figure 6.3: Case Category 1 Type 20 (first example)

6.3 Category 1 Type 20-30



Figure 6.4: Case Category 1 Type 20-30 (first example)

Example 1

- Writing desk luminaire without 2D-reproduction.
- *Child-appealing character lies in:* shape, switch, grids.

- *Materials*: steel, plastics
- *Risks*: Basic risks and (1) fun (but not so easy) to dismantle resulting in access to live parts, (2) Surface $T > 70^{\circ}\text{C}$, (3) Difficult to break
- *To follow*: EN 60598-2-4
- *Comments*: This is Article 9 notification FIN-04-44. In the transformer compartment, both the 12V and the 230V wire connections are soldered and protected with a fibreglass sleeve. The sleeves are loose on the soldering and the sleeves might move in such a way that the 230V and 12V connections make contact. The live connections might also make contact with the fastening nut of the accessible metal arm. The sleeves do not fulfil the high voltage test requirement for reinforced insulation. A breakdown occurred at a voltage of ca 2100V, should withstand at least 3250V. During normal heating test, a temperature of 105C was measured at the point of the transformer where internal wires and supply cord are in contact with, max allowed is 90C. The cross section of the flexible cord is $2 \times 0,5 \text{mm}^2$, should be at least $2 \times 0,75 \text{mm}^2$.



Figure 6.5: Case Category 1 Type 20-30 (second example - DK-02-24)

Example 2

- Writing desk luminaire without 2D-reproduction.
- *Child-appealing character lies in*: shape, switch, fine connections.
- *Materials*: steel, glass, plastics.
- *Risks*: Basic risks and (1) fun (but not so easy) to dismantle resulting in access to live parts, (2) Surface $T > 70^{\circ}\text{C}$, (3) Difficult to break
- *To follow*: EN 60598-2-4



Figure 6.6: Case Category 1 Type 20-30 (second example - DK-04-06)

- *Comments:* This is Article 9 notification DK-02-24. External and internal wiring are connected to the same terminal. After flexing test 1500 cycles on the adjustable joints, all strands of the conductors were broken. The glass protective shield breaks when subjected to 0,35 Nm impact test. The external wiring is clamped against a metal surface in the cord anchorage.

Article 9 notification DK-04-06 is another example. The product did not pass the test for protection against electric shock because the live part of the lampholder can be touched while there is a lamp in the lampholder. The product did not pass the thermal test while abnormal operation because the plastic protection screen around the light source developed smoke after approx. 10 min.

6.4 Category 1 Type 30

Example 1

- Writing desk luminaire without 2D-reproduction.
- *Child-appealing character lies in:* colour, hook.
- *Materials:* steel, plastics
- *Risks:* Basic risks and (1) Difficult to dismantle, (2) Surface $T > 70^{\circ}\text{C}$, (3) Difficult to break
- *To follow:* EN 60598-2-4
- *Comments:* -



Figure 6.7: Case Category 1 Type 30 (first example)



Figure 6.8: Case Category 1 Type 30 (second example)

Example 2

- Writing desk luminaire without 2D-reproduction.

- *Child-appealing character lies in:* shape, colour, alarm-clock, bedside radio.
- *Materials:* steel, plastics
- *Risks:* Basic risks and (1) Difficult to dismantle, (2) Surface $T > 70^{\circ}\text{C}$, (3) Difficult to break
- *To follow:* EN 60598-2-4 (radio system to EN 60950)
- *Comments:* Free access to bulb - All age groups over 5 years.



Figure 6.9: Case Category 1 Type 30 (third example)

Example 3

- Writing desk luminaire without 2D-reproduction.
- *Child-appealing character lies in:* shape, colour, switch.
- *Materials:* steel, plastics
- *Risks:* Basic risks and (1) Difficult to dismantle, (2) Surface $T > 70^{\circ}\text{C}$, (3) Difficult to break
- *To follow:* EN 60598-2-4
- *Comments:* This is Article 9 notification SI-04-03. Possibility of short contact or open junction. Thermal test (under abnormal operation) failed. Case of abnormal condition: e.g. if by accident an adjustable luminaire is bent close to the supporting surface using a force not exceeding 30 N. Measured temperature of surface, illuminated by the lamp after one hour was 194°C , limit 175°C .



Figure 6.10: Case Category 1 Type 20-40 (first example)

6.5 Category 1 Type 20-40

Example 1

- Writing desk luminaire without 2D-reproduction.
- *Child-appealing character lies in:* shape, adjusting rail, balls.
- *Materials:* steel, plastics.
- *Risks:* Basic risks and (1) fancy to dismantle resulting in access to live parts, (2) surface $T \leq 70^{\circ}\text{C}$, (3) easy to break.
- *To follow:* EN 60598-2-4
- *Comments:* Free access to bulb - Looks light weight so likely to be unstable - All age groups over 5 years. By the way, this is Article 9 notification ES-03-01. After the short circuit test, the "test chain" smelts through in 10 seconds and the transformer fails (primary circuit open).

6.6 Category 1 Type 40



Figure 6.11: Case Category 1 Type 40 (first example)

Example 1

- Writing desk luminaire without 2D-reproduction.
- *Child-appealing character lies in:* shape, colour.
- *Materials:* metal, tiffany glass.
- *Risks:* Basic risks and (1) Difficult to dismantle, (2) Surface $T \leq 70^{\circ}C$, (3) Breakable (glass)
- *To follow:* EN 60598-2-4
- *Comments:* Very decorative - For adults, not what a child would want for own use. However breakable, there is low chance that children play with it after breaking.

Example 2

- Writing desk luminaire without 2D-reproduction.
- *Child-appealing character lies in:* shape, rocket aspect, colour.
- *Materials:* metal, glass (?).
- *Risks:* Basic risks and (1) Difficult to dismantle, (2) Surface $T \leq 70^{\circ}C$, (3) Breakable (glass ?)



Figure 6.12: Case Category 1 Type 40 (second example)

- *To follow:* EN 60598-2-4
- *Comments:* Likely to be aimed at adults. May appeal to child as a table lamp. Depending on the shade material, may be breakable, with sharp edge if knocked over. However, there is little chance that children play with after breakage.

6.7 Category 2 Type 21

Example 1

- Writing desk luminaire with 2D reproduction only for adults.
- *Child-appealing character lies in:* shape, colours
- *Materials:* metal, glass mosaics, wood.
- *Risks:* Basic risks and (1) easy to dismantle resulting in access to live parts, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) shade easy to break
- *To follow:* EN 60598-2-4 + warning.
- *Comments:* Sharp edges of the glass especially if knocked over, however unlikely to be played with. This is Rapex notification 0801-06 (HU).



Figure 6.13: Case Category 2 Type 21 (first example)

6.8 Category 2 Type 41



Figure 6.14: Case Category 2 Type 41 (first example)

Example 1

- Writing desk luminaire with 2D-reproduction only for adults.
- *Child-appealing character lies in:* shape, colour, liquid (small lava lamp), switches.
- *Materials:* metal, plastics.
- *Risks:* Basic risks and (1) easy to dismantle but not resulting in access to live parts, (2) surface $T > 70\text{ }^{\circ}\text{C}$, (3) difficult to break
- *To follow:* EN 60598-2-4 + warning.
- *Comments:* Movement may attract young children (covered by instructions).

6.9 Category 3 Type 12



Figure 6.15: Case Category 3 Type 12 (first example)

Example 1

- Writing desk luminaire with 2D or 3D for children.
- *Child-appealing character lies in:* shape, colour, toffy-man.
- *Materials:* plastics.
- *Risks:* Basic risks but (1) difficult to dismantle (except removing the toffy-man, however without danger), (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) difficult to break
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* Exposed bulb - Sharp edges if knocked over. Such luminaire could be aimed at age groups 1 and 2 (under 5 year old) depending on how sweets are marketed.

6.10 Category 3 Type 22



Figure 6.16: Case Category 3 Type 22 (first example)

Example 1

- Writing desk luminaire with 2D or 3D for children.
- *Child-appealing character lies in:* shape, colour, clown.
- *Materials:* plastics, cardboard.
- *Risks:* Basic risks and (1) easy to dismantle resulting in access to live parts, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) difficult to break
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* This is Article 9 notification DE-04-08. Risk of electric shock.

Example 2

- Writing desk luminaire with 2D or 3D for children.
- *Child-appealing character lies in:* shape (crane), toy-like, colour, case for pencils.
- *Materials:* steel, plastics
- *Risks:* Basic risks and (1) easy to dismantle, (2) Surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) Difficult to break
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)



Figure 6.17: Case Category 3 Type 22 (second example)

- *Comments:* Access to live parts - Lack of robustness. The presence of chains and the fact that it is a writing desk luminaire will induce driving rather than dismantling, however manipulation leading to dismantling cannot be excluded. The receptacle for pencils will increase hand contact and likely hood contact. Likely for age group 3.

6.11 Category 3 Type 22-42

Example 1

- Writing desk luminaire with 2D or 3D for children.
- *Child-appealing character lies in:* shape, colour, bird aspect, switch.
- *Materials:* plastics.
- *Risks:* Basic risks and (1) easy to dismantle resulting in access to live parts, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) easy to break
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* Unlikely to be played with - Likely to be handled.

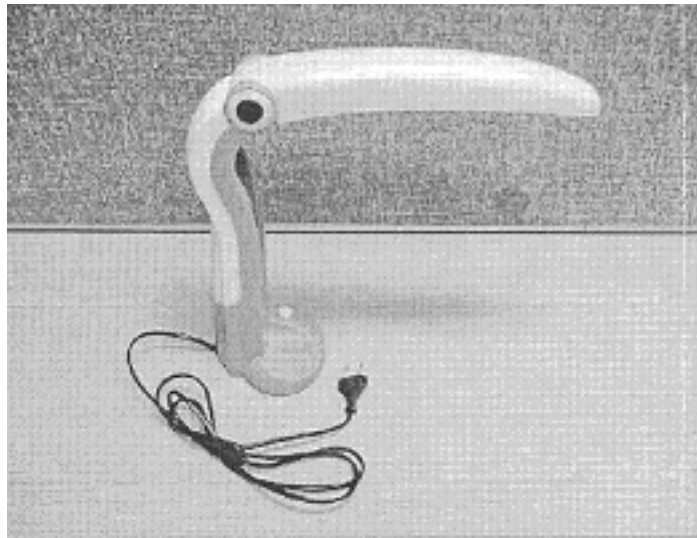


Figure 6.18: Case Category 3 Type 22-42 (first example)



Figure 6.19: Case Category 3 Type 32 (first example)

6.12 Category 3 Type 32

Example 1

- Writing desk luminaire with 2D or 3D for children.
- *Child-appealing character lies in:* colour, switch, shaped decorated and sized like a toy plane ; on articulated stand so can be moved.

- *Materials*: metal, plastics.
- *Risks*: Basic risks and (1) easy to dismantle but not resulting in access to live parts, (2) surface $T > 70\text{ }^{\circ}\text{C}$, surface temperature of the halogen bulb assembly reaches $98\text{ }^{\circ}\text{C}$, (3) difficult to break
- *To follow*: EC opinion 3-5-02 (EN 60598-2-10)
- *Comments 1*: This is an example from the Intertek study (2004). There are no child specific warnings but the instructions do include the following warnings: The plastic ring fitted to the front of the aeroplane is for heat protection DO NOT REMOVE The temperature of the ornamental ring rises very quickly. Be sure not to touch it with fingers when adjusting the luminaire. Always unplug the lamp before replacing bulb.
- *Comments 2*: Summary of childrens comments:
- *Age 4-5 years*: One girl had similar lamp but with the on/off switch on the base.
- *Age 5-6 years*: The children knew the switch turned it on and they all liked the button and the moving aspect. One girl and one boy said they would play with it and four said they liked to move the plane. Only two children had seen a lamp like this before so real a real novelty to the rest. Two thought it was a torch. They all liked the switch, the noise and the action. Four children had similar novelty lamps at home.
- *Age 6-7 years*: The children liked the on/off switch of plane lamp.
- *Age 9-10 years*: (1) First school: The children thought plane lamp was a fan and they liked the on/off switch. (2) Second school: The children liked switch, the colour, the adjustment and the moving stem of plane lamp. Six children had similar novelty lamps such as Flying dogs and Bart Simpson. All the children had lamps in their bedrooms. Six children said they would buy one and admitted they would play with it when not switched on. The children felt it might break if it was bent to far.
- *Age 11-12 years*: The children liked the Plane lamp and loved the flexible aspect. They also liked the on/off switch.

Example 2

- Writing desk luminaire with 2D or 3D for children.
- *Child-appealing character lies in*: Has football shaped switch, with tactile feel and clicking noise. Brightly coloured. Rods are adjustable.
- *Materials*: metal, glass, plastics.



Figure 6.20: Case Category 3 Type 32 (second example)

- *Risks:* Basic risks and (1) easy to dismantle but not resulting in access to live parts, (2) surface $T > 70\text{ }^{\circ}\text{C}$, surface of plastic transparent bulb cover reaches $140\text{ }^{\circ}\text{C}$, (3) difficult to break
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* Summary of childrens comments:
 - *Age 4-5 years:* All the children liked the noise and feel of the football switch. All of the children would like one (including the girls). The children were aware that they shouldnt touch the glass. One child had incurred a burn.
 - *Age 5-6 years:* Four of the children have a novelty lamp of some kind in their bedroom, for example Barbie or horse shaped. Five had one at home in red or blue. They liked the colour, the noise and the adjustment and the feel of the football switch. Three of those five had touched the lamp and injured themselves. Two other children had similar lamps.
 - *Age 6-7 years:* All the children liked the lamp (including the girls). The children particularly liked the football switch. They were aware that the bulb would get hot.
 - *Age 9-10 years:* (1) First school: Two children had similar lamps and all the children they were aware that the bulb would get hot. Some children admitted to having burnt themselves on light bulbs in the past. All the children liked the sound and look of the football switch. (2) Second school: Nine of the children and the teacher had one. All the children would like one (including the girls). They liked the colour, the noise, the adjustment and the feel of the football switch. Three children admitted to

having touched halogen lamps and burnt themselves and twelve children had burnt themselves on lamps generally. The children were aware that the bulb might get hot and not to touch the glass.

- *Age 11-12 years:* Six children had similar lamps and all the children liked the football switch. Half of the children admitted to having burnt themselves on light bulbs or covers in the past.

6.13 Category 3 Type 32-42



Figure 6.21: Case Category 3 Type 32-42 (first example)

Example 1

- Writing desk luminaire with 2D or 3D for children.
- *Child-appealing character lies in:* shape (animal), colour.
- *Materials:* metal, glass, cardboard.
- *Risks:* Basic risks and (1) easy to dismantle but not resulting in access to live parts, (2) surface $T > 70\text{ }^{\circ}\text{C}$, (3) easy to break
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* Purely decorative. Aimed at age group 3.

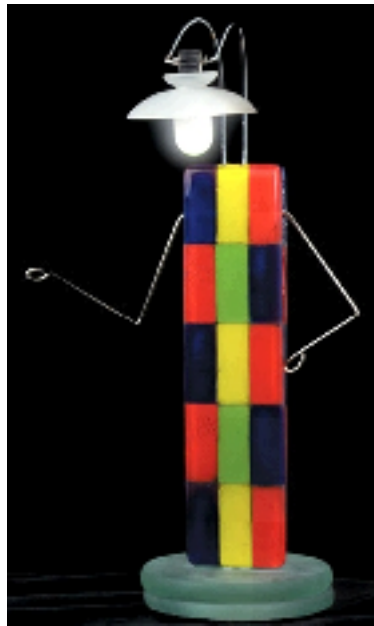


Figure 6.22: Case Category 3 Type 32-42 (second example)

Example 2

- Writing desk luminaire with 2D or 3D for children.
- *Child-appealing character lies in:* shape, colour, manlike figure.
- *Materials:* metal, glass, plastics.
- *Risks:* Basic risks and (1) easy to dismantle resulting in access to live parts, (2) surface $T \leq 70^\circ\text{C}$, (3) easy to deform but difficult to break
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* Exposed bulb - Sharp edges if knocked over.

6.14 Category 4 Type 13

Example 1

- Ornamental luminaire without 2D-reproduction.
- *Child-appealing character lies in:* shape, colour, pet object.
- *Materials:* wood, cardboard.
- *Risks:* Only basic risks - (1) no fun to dismantle, (2) surface $T \leq 70^\circ\text{C}$, (3) difficult to break



Figure 6.23: Case Category 4 Type 13 (first example)

- *To follow:* EN 60598-2-4
- *Comments:* Purely decorative - Looks stable. Not likely to be aimed at children.

6.15 Category 4 Type 23



Figure 6.24: Case Category 4 Type 23 (first example)

Example 1

- Ornamental luminaire without 2D-reproduction.
- *Child-appealing character lies in:* shape, colour, switch.
- *Materials:* metal, glass.
- *Risks:* Basic risks and (1) easy to dismantle with risk of access to live parts, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) difficult to break
- *To follow:* EN 60598-2-4
- *Comments:* Purely decorative. Not likely to be aimed at children.

6.16 Category 4 Type 33



Figure 6.25: Case Category 4 Type 33 (first example)

Example 1

- Ornamental luminaire without 2D-reproduction.
- *Child-appealing character lies in:* shape, colour.
- *Materials:* metal, glass.
- *Risks:* Basic risks and (1) small risk to be dismantled, (2) surface $T > 70\text{ }^{\circ}\text{C}$, (3) small risk to be broken.
- *To follow:* EN 60598-2-4
- *Comments:* Decorative. Not aimed at young children.

6.17 Category 4 Type 43



Figure 6.26: Case Category 4 Type 43 (first example)

Example 1

- Ornamental luminaire without 2D-reproduction.
- *Child-appealing character lies in:* shape, colour.
- *Materials:* glass, plastics.
- *Risks:* Basic risks and (1) small risk to be dismantled, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) could be broken with resulting access to live parts, but a child would probably not play with the luminaire.
- *To follow:* EN 60598-2-4
- *Comments:* Decorative. Not aimed at young children.

Example 2

- Ornamental luminaire without 2D-reproduction.
- *Child-appealing character lies in:* shape, soft light.
- *Materials:* plastics.
- *Risks:* Basic risks and (1) small risk to be dismantled, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) could be broken with resulting access to live parts, but a child would probably not play with the luminaire.
- *To follow:* EN 60598-2-4
- *Comments:* Decorative. Not aimed at young children.

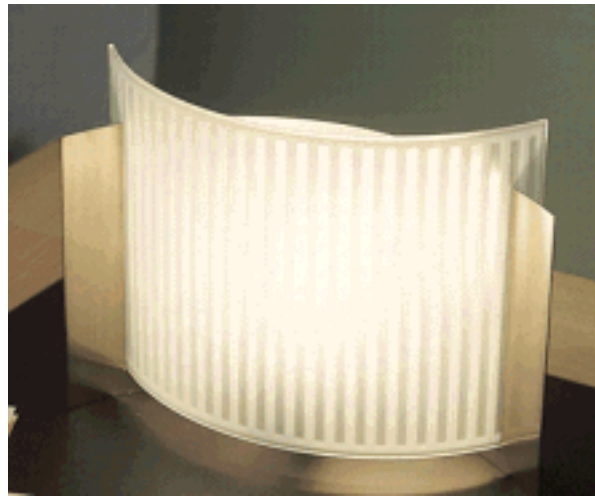


Figure 6.27: Case Category 4 Type 43 (second example)

6.18 Category 5 Type 14



Figure 6.28: Case Category 5 Type 14 (first example)

Example 1

- Ornamental luminaire with 2D only for adults.
- *Child-appealing character lies in:* shape (globe), colours, geography.
- *Materials:* metal, plastics.

- *Risks*: Basic risks and (1) no fun to dismantle, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) could accidentally be broken but child would not play with it after breakage.
- *To follow*: EN 60598-2-4 + warning
- *Comments*: Product in its own right.

6.19 Category 5 Type 34



Figure 6.29: Case Category 5 Type 34 (first example)

Example 1

- Ornamental luminaire with 2D only for adults.
- *Child-appealing character lies in*: shape, colour.
- *Materials*: metal, glass.
- *Risks*: Basic risks and (1) no fun to dismantle, (2) surface $T > 70\text{ }^{\circ}\text{C}$, (3) only the glass is easy to break
- *To follow*: EN 60598-2-4 + warning
- *Comments*: Decorative. Aimed at adults.

6.20 Category 5 Type 44

Example 1

- Ornamental luminaire with 2D only for adults.
- *Child-appealing character lies in*: shape, colour.



Figure 6.30: Case Category 5 Type 44 (first example)

- *Materials:* glass, baked clay.
- *Risks:* Basic risks and (1) difficult to dismantle, (2) surface $T \leq 70^{\circ}\text{C}$, (3) breakable (glass) with resulting risk of access to live parts
- *To follow:* EN 60598-2-4 + warning
- *Comments:* Decorative. Aimed at adults.



Figure 6.31: Case Category 5 Type 44 (second example)

Example 2

- Ornamental luminaire with 2D only for adults.
- *Child-appealing character lies in:* shape, picture.
- *Materials:* porcelain, paper.
- *Risks:* Basic risks and (1) no fun to dismantle, (2) surface $T \leq 70^{\circ}\text{C}$, (3) breakable (porcelain) with resulting risk of access to live parts
- *To follow:* EN 60598-2-4 + warning
- *Comments:* Decorative. Age group 3 upper side. This is Article 9 notification FIN-04-23. Risk of electrical shock. The lamp holder is not locked against rotation and the 2Nm torque test requirement is not fulfilled, connections are stressed due to the rotation of the lamp holder. The protective bushing of the nipple pipe is missing and supplementary insulation requirements are not fulfilled. Basic insulated wire of the flexible cord is in contact with accessible metal part.

6.21 Category 6 Type 15

Figure 6.32: Case Category 6 Type 15 (first example)

Example 1

- Ornamental luminaire with 2D for children.

- *Child-appealing character lies in:* shape, 2D-pictures of planes and helicopters, drawers.
- *Materials:* metal, wood, paper.
- *Risks:* Basic risks and (1) no fun to dismantle, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) breakable but probably only with the intention to remove the drawers.
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* Concerns regular and frequent handling because of the drawers.



Figure 6.33: Case Category 6 Type 15 (second example)

Example 2

- Ornamental luminaire with 2D for children.
- *Child-appealing character lies in:* shape, colour, teddy-bear.
- *Materials:* metal, plastics, wood.
- *Risks:* Basic risks: risk of electric shock
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* This is Article 9 notification DE-04-10. Risk of electric shock.

6.22 Category 6 Type 25



Figure 6.34: Case Category 6 Type 25 (first example)

Example 1

- Ornamental luminaire with 2D for children.
- *Child-appealing character lies in:* shape, car with wheels, ball.
- *Materials:* glass, wood, plastics, metal.
- *Risks:* Basic risks and (1) fancy to dismantle (car, ball), (2) surface $T \leq 70^\circ\text{C}$, (3) breakable but low probability that a child will play with the luminaire after breakage.
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* Surface temperature of the spherical glass lamp shade. Stability problem. Aimed at age group 3 lower end.

Example 2

- Ornamental luminaire with 2D for children.
- *Child-appealing character lies in:* shape, colours, pictures, teddy-bear.
- *Materials:* cardboard, wood.



Figure 6.35: Case Category 6 Type 25 (second example)

- *Risks*: Basic risks and (1) fancy to dismantle (shade, round legs) with resulting risk of access to life parts, (2) surface $T \leq 70^{\circ}\text{C}$, (3) breakable but low probability that a child will play with the luminaire after breakage.
- *To follow*: EC opinion 3-5-02 (EN 60598-2-10)
- *Comments*: Stability problem. Aimed at age group 2.



Figure 6.36: Case Category 6 Type 25 (third example)

Example 3

- Ornamental luminaire with 2D for children.
- *Child-appealing character lies in:* shape, colour, mickeys.
- *Materials:* metal, plastics, paper.
- *Risks:* Basic risks and (1) easy to dismantle resulting in access to live parts, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) difficult to break
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* This is Article 9 notification DK-02-02. One instance has been reported where a child has burnt itself on the light source.



Figure 6.37: Case Category 6 Type 25 (fourth example - 0076-05)



Figure 6.38: Case Category 6 Type 25 (fourth example - LU-04-07)

Example 4

- Ornamental luminaire with 2D for children.
- *Child-appealing character lies in:* shape, colour, pictures (aquarium).

- *Materials*: metal, glass, plastics.
- *Risks*: Basic risks and (1) easy to dismantle resulting in access to live parts, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) difficult to break
- *To follow*: EC opinion 3-5-02 (EN 60598-2-10)
- *Comments*: This is Rapex notification 0076-05 (UK). Electric decorative aquarium lamp, incorporating a mobile phone. Risk of electric shock. Presence of ineffective earth connection; unsafe wires connection; insufficient wires section; accessible live parts; incompliant plug; missing instructions and safety information. Article 9 notification LU-04-07 is another example. Possible detachment of a current-carrying wire at the soldering of the switch, live parts are easily accessible.



Figure 6.39: Case Category 6 Type 25 (fifth example - Rapex 01-04)



Figure 6.40: Case Category 6 Type 25 (fifth example - Rapex 0300-04)

Example 5

- Ornamental luminaire with 2D for children.
- *Child-appealing character lies in*: shape, colour, pictures (aquarium).
- *Materials*: metal, glass, plastics.

- *Risks*: Basic risks and (1) easy to dismantle resulting in access to live parts, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) difficult to break
- *To follow*: EC opinion 3-5-02 (EN 60598-2-10)
- *Comments*: These are Rapex notification (1) Week 10: 01-04 (DE) and (2) 0300-04 (DE). (1) 'Touch Lamp' (switched on and off or dimmed by touch). Risk of electrocution. Due to the lamp's design, when the bulb is changed the base is live and can be touched. The built-in electronics did not pass the voltage test. A spliced wire at the terminal connection renders the leakage paths and air gaps ineffective. (2) Risk of electric shock. Unsafe features for cables fixation; accessible live parts; insufficient wires section.

6.23 Category 6 Type 25-35



Figure 6.41: Case Category 6 Type 25-35 (first example)

Example 1

- Ornamental luminaire with 2D for children.
- *Child-appealing character lies in*: shape, colour, teddy bear.

- *Materials*: wood, glass.
- *Risks*: Basic risks and (1) easy to dismantle with resulting risk of access to live parts, (2) surface $T > 70\text{ }^{\circ}\text{C}$, (3) glass breakable but low chance that children play with it after breaking.
- *To follow*: EC opinion 3-5-02 (EN 60598-2-10)
- *Comments*: this is Article 9 notification DE-04-09. Risk of electrical shock.

6.24 Category 6 Type 35



Figure 6.42: Case Category 6 Type 35 (first example)

Example 1

- Ornamental luminaire with 2D for children.
- *Child-appealing character lies in*: shape, smile, colour.
- *Materials*: plastics.
- *Risks*: Basic risks and (1) no fun to dismantle, (2) surface $T > 70\text{ }^{\circ}\text{C}$, (3) difficult to break.
- *To follow*: EC opinion 3-5-02 (EN 60598-2-10)
- *Comments*: Access to lamp - Surface temperatures - Stability problem.



Figure 6.43: Case Category 6 Type 35 (second example)

Example 2

- Ornamental luminaire with 2D for children.
- *Child-appealing character lies in:* shape, colours, balls.
- *Materials:* plastics, wood, paper.
- *Risks:* Basic risks and (1) could be partially dismantled (remove balls) but with low risk, (2) surface $T > 70\text{ }^{\circ}\text{C}$, (3) difficult to break.
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* Access to lamp. Aimed at males of age group 3.

6.25 Category 6 Type 45

Example 1

- Ornamental luminaire with 2D for children.
- *Child-appealing character lies in:* shape, ghost figure.
- *Materials:* porcelain.
- *Risks:* Basic risks and (1) not to be dismantled by child, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) could be broken in a game.
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* Surface temperatures.



Figure 6.44: Case Category 6 Type 45 (first example)

6.26 Category 7 Type 16



Figure 6.45: Case Category 7 Type 16 (first example)

Example 1

- 3D Ornamental luminaire for children.
- *Child-appealing character lies in:* shape, colour, stars and buttons.

- *Materials*: plastics.
- *Risks*: Basic risks but (1) fun to touch however not to dismantle, (2) surface $T \leq 70^\circ\text{C}$, (3) difficult to break.
- *To follow*: EC opinion 3-5-02 (EN 60598-2-10)
- *Comments*: Very decorative. Aimed at females of age group 3.

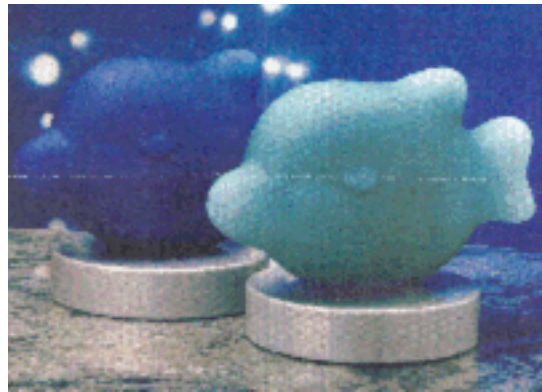


Figure 6.46: Case Category 7 Type 16 (second example)

Example 2

- 3D Ornamental luminaire for children.
- *Child-appealing character lies in*: shape (fish), colour.
- *Materials*: rigid foam, metal.
- *Risks*: Basic risks but (1) difficult to dismantle, (2) surface $T \leq 70^\circ\text{C}$, (3) difficult to break.
- *To follow*: EC opinion 3-5-02 (EN 60598-2-10)
- *Comments*: Not considered as type 8-17 (eg. design luminaire appealing for adults) because a child could be induced to play with the luminaire in connexion with water.

Example 3

- 3D Ornamental luminaire for children.
- *Child-appealing character lies in*: shape (giraffe), colour, texture.
- *Materials*: plastics.



Figure 6.47: Case Category 7 Type 16 (third example)

- *Risks*: Basic risks and (1) difficult to dismantle, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) difficult to break.
- *To follow*: EC opinion 3-5-02 (EN 60598-2-10)
- *Comments*: This is Rapex notification Week 18: 04-04 (DE). Risk of electrocution for children. The lamp operates at 230 volts. Suspected misuse of a safety mark, insufficient labelling.



Figure 6.48: Case Category 7 Type 16 (fourth example)

Example 4

- 3D Ornamental luminaire for children.
- *Child-appealing character lies in*: Shaped and decorated to look like a cow. Whole cow lights up when switched on.
- *Materials*: plastics.

- *Risks*: Basic risks: the lamp is not very stable (due to lightweight construction) and is likely to be accidentally knocked over ; the whole body acts as the shade and lamp-holder mounting which is of a flexible sheet plastic material, therefore the lamp-holder may come into contact with body if knocked over or lamp-holder is not positioned correctly after bulb replacement. The plastic body melts in contact with a 40w bulb, and (1) not fun to dismantle, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) not fun to break.
- *To follow*: EC opinion 3-5-02 (EN 60598-2-10)
- *Comments*: This luminaire comes from the Intertek study (2004). Box had sticker that states: This is not a toy. Not suitable for children under 14 years of age. No specific child related warnings in instructions. Does the manufacturer appear to have considered foreseeable misuse by children?

6.27 Category 7 Type 26



Figure 6.49: Case Category 7 Type 26 (first example)

Example 1

- 3D Ornamental luminaire for children.
- *Child-appealing character lies in*: shape, colour, fishes.
- *Materials*: metal, glass.
- *Risks*: Basic risks and (1) easy to dismantle resulting in access to live parts, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) glass breakable but low chance that children would play with it after breaking.
- *To follow*: EC opinion 3-5-02 (EN 60598-2-10)
- *Comments*: Likely intended for a young child's room. Aimed at age group 2.



Figure 6.50: Case Category 7 Type 26 (second example)

Example 2

- 3D Ornamental luminaire for children.
- *Child-appealing character lies in:* shape, colour, articulated clown.
- *Materials:* metal, plastics.
- *Risks:* Basic risks and (1) fancy to dismantle resulting in access to live parts, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) difficult to break
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* Free access to bulb. Aimed at age group 2. This is Article 9 notification DE-04-07. Risk of electric shock.

Example 3

- 3D Ornamental luminaire for children.
- *Child-appealing character lies in:* shape (fish).
- *Materials:* plastics.
- *Risks:* Basic risks and (1) fancy to dismantle resulting in access to live parts, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) difficult to break

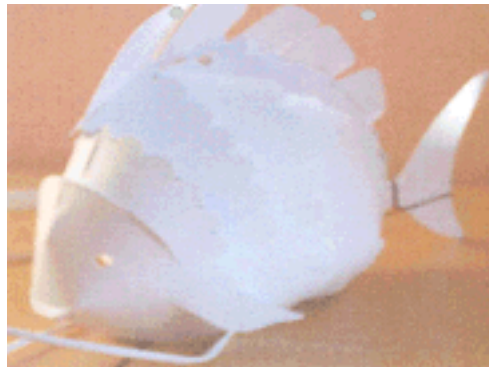


Figure 6.51: Case Category 7 Type 26 (third example)

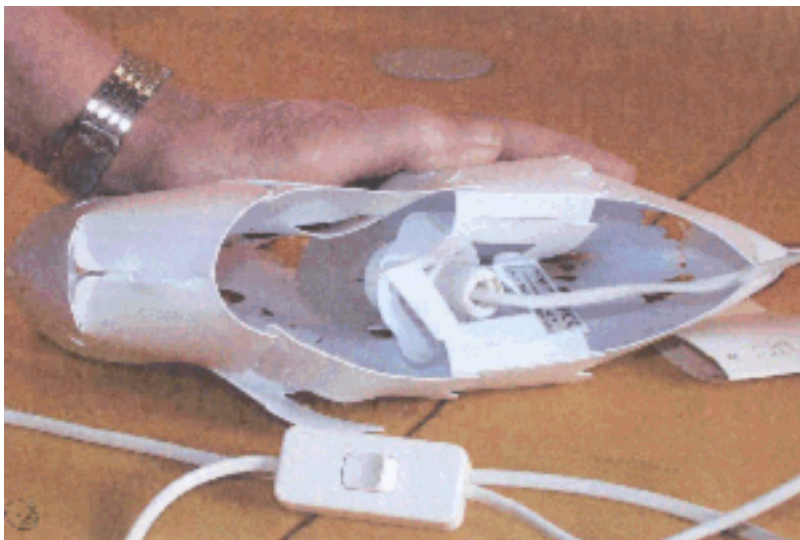


Figure 6.52: Case Category 7 Type 26 (third example - detail)

- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* Surface temperatures - lack of robustness. This is Article 9 notification DK-02-01. In spite of the manufacturer's marking "Not for children" on the packaging, the luminaire is considered appealing for children due to its shape and texture. Access to live parts even if not dismantled.

Example 4

- 3D Ornamental luminaire for children.
- *Child-appealing character lies in:* shape (animal head), colour, texture.
- *Materials:* glass.



Figure 6.53: Case Category 7 Type 26 (fourth example)

- *Risks*: Basic risks and (1) fancy to dismantle resulting in access to liquid, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) difficult to break
- *To follow*: EC opinion 3-5-02 (EN 60598-2-10)
- *Comments*: This is Rapex notification 0333-04 (DE). Chemical risk. The fuel contains hydrocarbons that could be ingested by a child; the bottle cap is not child resistant.

Example 5

- 3D Ornamental luminaire for children.
- *Child-appealing character lies in*: shape (animal), colour, texture.
- *Materials*: plastics.
- *Risks*: Basic risks and (1) fancy to dismantle resulting in access to live parts, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) difficult to break.
- *To follow*: EC opinion 3-5-02 (EN 60598-2-10)
- *Comments*: These are Rapex notifications 0346-04 (LIT) and 0352-04 (LIT). Risk of electric shock.



Figure 6.54: Case Category 7 Type 26 (fifth example - 0346-04)

Example 6

- 3D Ornamental luminaire for children (with moving part).
- *Child-appealing character lies in:* shape, colour, moving aquarium with dolphins.
- *Materials:* metal, plastics.
- *Risks:* Basic risks and (1) fancy to dismantle resulting in access to live parts, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) difficult to break.
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* This is Rapex notification 0367-04 (HU). "Dolphin Lighting" with rotating picture foil. Risk of electric shock and fire. Unsafe wires section and fixation; presence of sharp edges; insufficient electric insulation and live parts accessible; in-compliant plugs and bulbs; insufficient fire resistance; insufficient mechanical resistance.

Example 7

- 3D Ornamental luminaire for children.



Figure 6.55: Case Category 7 Type 26 (fifth example - 0352-04)



Figure 6.56: Case Category 7 Type 26 (sixth example)



Figure 6.57: Case Category 7 Type 26 (seventh example)

- *Child-appealing character lies in:* shape, colour, moving effects, Bright green oil in glass tube, yellow wax. Wax bubbles and moves up and down tube. Children watch movement, and touch the glass tube.
- *Materials:* metal, plastics.
- *Risks:* Basic risks and (1) fancy to dismantle resulting in access to live parts: tube can be removed and bulb surface touched, with bulb removed, live parts in bulb holder are accessible, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) difficult to break.
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* This is the "lava lamp" from the Intertek study (2004). Summary of childrens comments:
- *Age 4-5 years:* All the children liked it but most were unaware of the dangers.
- *Age 5-6 years:* Eighteen children have one at home and liked to turn it on and off. Fourteen of the lamps were located in bedrooms and four were situated in living rooms. They liked the movement of fluid. Didn't play with it because most of them were aware that it was hot. One boy said the glass might break and there may be a danger of sharp edges. The children thought it looked like jelly.

- *Age 6-7 years:* All the children liked it. Some thought it was cheese inside. They would touch it but only to turn it on.
- *Age 9-10 years:* (1) First school: Five of the children had lava lamps and liked to turn it on and off. One said they had burnt themselves on one. (2) Second school: Nine children have lava lamps in their bedrooms. They were aware of that the lamp was hot. They knew not to drink the fluid. The children liked the colours and the internal shapes and they would touch it but only to turn it on.
- *Age 11-12 years:* Four children had similar lamps. They were aware of hot surfaces. Most were placed in bedrooms. One younger brother had drunk contents and was very ill.

6.28 Category 7 Type 26-36



Figure 6.58: Case Category 7 Type 26-36 (first example)

Example 1

- 3D Ornamental luminaire for children (with moving beams).
- *Child-appealing character lies in:* shape (animal), colour, texture, moving light beams.
- *Materials:* plush, plastics.
- *Risks:* Basic risks and (1) could be dismantles resulting in access to live parts, (2) surface $T > 70^{\circ}C$, (3) difficult to break.
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* This is Rapex notification Week 26: 01-04 (ES). Lamp projecting moving beams of light. Risk of electric shock, non-earthed metal parts accessible and temperature exceeding the permitted limit (overheating). Deficient labelling.

Example 2

- 3D Ornamental luminaire for children.



Figure 6.59: Case Category 7 Type 26-36 (second example)

- *Child-appealing character lies in:* colour, shaped and decorated to look like a frog. Surface texture has an appealing feel and is pliable.
- *Materials:* foam, plastics.
- *Risks:* Basic risks and (1) fancy to dismantle: the lamp holder can easily be removed from the base of the lamp giving access to the bulb, with the bulb removed access to live parts in the holder is possible, (2) surface $T > 70\text{ }^{\circ}\text{C}$: there is no marking of the maximum power of bulb to be fitted therefore higher wattage bulbs could easily be fitted, and hence surface temperatures could be higher, (3) breakable but more likely to be dismantled.
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* Problem of robustness - Could be taken into water. This luminaire comes from the Intertek study (2004). Summary of childrens comments:
- *Age 4-5 years:* Loved the frog shape and the colour, but would not play with it. The children were aware that it might get hot.
- *Age 5-6 years:* All the children liked the shape, the glittery effect and wanted to squeeze and feel it. One girl liked to play with switch and four other children liked the fact that the switch was separate. All of the children would like one in their bedroom. One girl thought it was a toy and half of the children said they would play with it. The children were aware that the switch or bulb might break and the product may get hot or they might get an electric shock.
- *Age 6-7 years:* The children liked the frog-like shape and colour although they said they would not play with it as it might electrocute them and it might break. The children were aware that it might get hot after a while.
- *Age 9-10 years:* (1) First school: The children loved the frog lamp and all of them would like one in their bedroom but thought it was fragile. The children felt they

might cut themselves if the bulb smashed or get a burn from the hot bulb. (2) Second school: The children loved the frog shape and the colour. Some of the children said they would not play with it as it might electrocute them and it might break although most of the children would play with it but not when it is switched on. They were aware that the lamp might be hot.

- *Age 11-12 years:* Nine children liked the frog lamp and only one child did not like the shape. The children were aware that it might get hot. They said they would buy it for a younger brother or sister but felt it would get sat on. They all thought younger children would love it.

6.29 Category 7 Type 36



Figure 6.60: Case Category 7 Type 36 (first example)

Example 1

- 3D Ornamental luminaire for children.
- *Child-appealing character lies in:* shape, colour, mouse.
- *Materials:* plush, plastics.

- *Risks*: Basic risks and (1) fancy to dismantle (remove mouse) but without resulting access to live parts, (2) surface $T > 70\text{ }^{\circ}\text{C}$, (3) breakable but more likely to be dismantled.
- *To follow*: EC opinion 3-5-02 (EN 60598-2-10)
- *Comments*: -



Figure 6.61: Case Category 7 Type 36 (second example)

Example 2

- 3D Ornamental luminaire for children.
- *Child-appealing character lies in*: colour, pictures, moving items.
- *Materials*: plastics, glass.
- *Risks*: Basic risks and (1) difficult to dismantle, (2) surface $T > 70\text{ }^{\circ}\text{C}$, (3) difficult to break.
- *To follow*: EC opinion 3-5-02 (EN 60598-2-10)
- *Comments*: This is Rapex notification Week 42: 09-04 (CY). Luminaire incorporating three revolving frames (representing cartoon pictures), and an alarm clock. Risk of electric shock; Unsafe features for: wire fixations, plug (requiring a universal adaptor provided with the lamp).

6.30 Category 7 Type 26-46

Example 1

- 3D Ornamental luminaire for children.
- *Child-appealing character lies in*: shape (frog), colour. Surface texture has an appealing feel and is pliable.
- *Materials*: pliable texture.

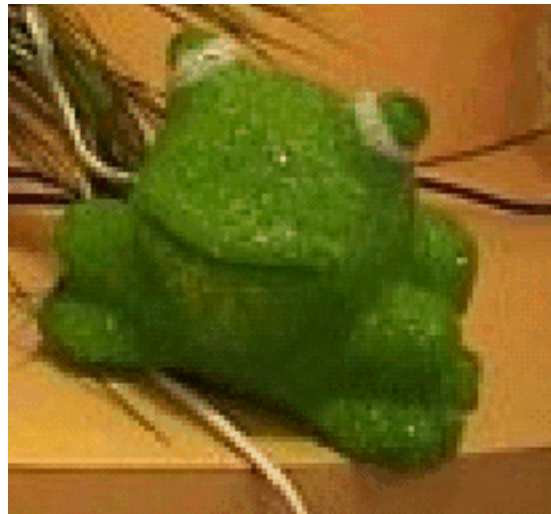


Figure 6.62: Case Category 7 Type 26-46 (first example)

- *Risks*: Basic risks and (1) the lamp holder can easily be removed from the base of the lamp giving access to the bulb - with the bulb removed access to live parts in the holder is possible, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$ however there is no marking of the maximum power of bulb to be fitted therefore higher wattage bulbs could easily be fitted, and hence surface temperatures could be higher, (3) easy to break (pliable texture)
- *To follow*: EC opinion 3-5-02 (EN 60598-2-10)
- *Comments*: Problem of robustness - Could be taken into water. This is Product P4 in the Intertek study (2004). Written warning on label attached to cord near plug: Not intended as a toy and Keep out of reach of children under the age of 14. This is not sufficient to prevent use by children. Here are the comments made by children in the Intertek study (2004):
- *Aged 4-5*: Loved the frog shape and the colour, but would not play with it. The children were aware that it might get hot.
- *Aged 5-6*: All the children liked the shape, the glittery effect and wanted to squeeze and feel it. One girl liked to play with switch and four other children liked the fact that the switch was separate. All of the children would like one in their bedroom. One girl thought it was a toy and half of the children said they would play with it. The children were aware that the switch or bulb might break and the product may get hot or they might get an electric shock.
- *Aged 6-7*: The children liked the frog-like shape and colour although they said they would not play with it as it might electrocute them and it might break. The children were aware that it might get hot after a while.

- *Aged 9-10* (school 1): The children loved the frog lamp and all of them would like one in their bedroom but thought it was fragile. The children felt they might cut themselves if the bulb smashed or get a burn from the hot bulb.
- *Aged 9-10* (school 2): The children loved the frog shape and the colour. Some of the children said they would not play with it as it might electrocute them and it might break although most of the children would play with it but not when it is switched on. They were aware that the lamp might be hot.
- *Aged 11-12*: Nine children liked the frog lamp and only one child did not like the shape. The children were aware that it might get hot. They said they would buy it for a younger brother or sister but felt it would get sat on. They all thought younger children would love it.



Figure 6.63: Case Category 7 Type 46 (second example)

Example 2

- 3D Ornamental luminaire for children.
- *Child-appealing character lies in:* shape (octopus), texture, colour.
- *Materials:* glass or plastics.
- *Risks:* Basic risks and (1) difficult to dismantle, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) easy to break (glass or plastics)
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* Lack of robustness - Could be taken into water. Aimed at age group 2.



Figure 6.64: Case Category 7 Type 46 (third example)

Example 3

- 3D Ornamental luminaire for children.
- *Child-appealing character lies in:* shape (dog), texture, colour.
- *Materials:* glass or plastics.
- *Risks:* Basic risks and (1) difficult to dismantle, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) easy to break (glass or plastics)
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* This is Article 9 notification DK-02-23. The 3 mm screws which fix the lampholder inset and are used during changes of lamps did not resist a torque test of 0.5 Nm. After the heating test, the luminaire was a little deformed.

Example 4

- 3D Ornamental luminaire for children.
- *Child-appealing character lies in:* shape (pinocchio), texture.
- *Materials:* wood or plastics.
- *Risks:* Basic risks and (1) difficult to dismantle, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) can be broken (wood or plastics)
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* This is Article 9 notification F-02-02.



Figure 6.65: Case Category 7 Type 46 (fourth example)

Example 5

- 3D Ornamental luminaire for children.
- *Child-appealing character lies in:* shape (elder man), texture.
- *Materials:* glass or plastics.
- *Risks:* Basic risks and (1) difficult to dismantle, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) can be broken (glass or plastics)
- *To follow:* EC opinion 3-5-02 (EN 60598-2-10)
- *Comments:* This is Article 9 notification F-02-03.

6.31 Category 8 Type 18

Example 1

- Design luminaire (RA+ : could be attractive for children).
- *Child-appealing character lies in:* texture, easy to take in hands.



Figure 6.66: Case Category 7 Type 46 (fifth example)



Figure 6.67: Case Category 8 Type 18 (first example)

- *Materials:* metal, glass.
- *Risks:* Basic risks and (1) can be dismantled (but must be systematic to become

dangerous), (2) surface $T \leq 70 \text{ }^\circ\text{C}$, (3) easy to break (but must be systematic to become dangerous)

- *To follow:* EN 60598-2-4 + warning
- *Comments:* -

6.32 Category 8 Type 28

Example 1



Figure 6.68: Case Category 8 Type 28 (second example - 0336-04)



Figure 6.69: Case Category 8 Type 28 (second example - 0368-04)

Example 2

- Design luminaire (RA+ : could be manipulated by children).
- *Child-appealing character lies in:* shape, texture, clock.

- *Materials*: metal, porcelain.
- *Risks*: Basic risks and (1) can be dismantled, (2) surface $T \leq 70\text{ }^{\circ}\text{C}$, (3) difficult to break.
- *To follow*: EC opinion 3-5-02 (EN 60598-2-10)
- *Comments*: These are Rapex 0336-04 (HU) and 0368-04 (HU) notifications. Risk of electric shock and fire. The mains cables only have a basic insulation; insufficient wires cross sections; inadequate connecting plugs and wire fixations; live parts easily accessible; insufficient fire resistance.

6.33 Category 8 Type 38

Example 1



Figure 6.70: Case Category 8 Type 38 (second example)

Example 2

- Design luminaire (RA+ : could be manipulated by children).
- *Child-appealing character lies in*: shape, guitar playing arms.
- *Materials*: metal, pig bladder.
- *Risks*: Basic risks and (1) not to be dismantled, (2) surface $T > 70\text{ }^{\circ}\text{C}$, (3) difficult to break.
- *To follow*: EC opinion 3-5-02 (EN 60598-2-10)

- *Comments:* This is Rapex notification Week 45: 05-04 (SLK). Risks of electric shock/fire. Insufficient wire cross-sections; unsafe lamp holder; possible contacts with live parts; insufficient resistance to burning.

6.34 Category 8 Type 47



Figure 6.71: Case Category 8 Type 47 (first example)

Example 1

- design luminaire not really for children.
- *Child-appealing character lies in:* shape.
- *Materials:* metal, plastics.
- *Risks:* Basic risks and (1) no obvious reason of wish to dismantle, (2) surface $T \leq 70^\circ\text{C}$, (3) easy to break and access to live parts
- *To follow:* EN 60598-2-4 + warning
- *Comments:* This is Article 9 notification DE-04-12. Plastics cover at foot of luminaire easy to remove by hand. Basic isolation of inner conductors come in direct contact with the metal housing. Insufficient isolation of condensators of the switch.