

18th of November 2009

Lighting Chains Cross Border Action

Report

Grant agreement 17.020200 / 07 / 472835

Cross border action supported by the European
Commission
DG-SANCO, Consumer Affairs Directorate





Administrative Cooperation



Lighting Chains Cross Border Action

Project preparation and initial design:

Tibor Vincze

Participation:

Tibor Vincze
Andreja.Belavic-Benedik
Teodor Komenda
Franz Gubitz
Evert Van Wilgenburg

Co financing:

DG SANCO, Consumer Affairs Directorate

Support:

Jan Willem Weijland, Prosafe
Prosafe

Contents

<i>Summary</i>	4
<i>Introduction</i>	5
<i>Why Christmas lighting chains</i>	6
<i>Scope of the action</i>	7
<i>Tests</i>	8
Administrative requirements:	8
Markings:.....	8
Additional information required:	8
Protection against hazards arising from the electrical equipment	9
<i>Project preparation and Time scheme</i>	10
Preparation of the action	10
<i>Results</i>	12
Cooperation with customs	12
Administrative requirements, labelling and instruction for use	13
Compliance with technical requirements	14
Categorization of the non-compliances	16
<i>Sanctions</i>	17
<i>Conclusions</i>	19
<i>Recommendations</i>	20
Continuation of market surveillance.....	20
Enforcement communication.....	20
Annex I.....	21
Annex II.....	23

Summary

In 2007 LVD AdCo initiated a cross border project on the safety of lighting chains, most familiarly known as Christmas lighting chains. The action was coordinated by the Hungarian Fogyasztóvédelmi Főfelügyelőség, partly supported by Prosafe. Over the period from November 2007 till the end of December 2008 the market surveillance authorities in 5 Member States sampled and investigated 196 lighting chains. Sampling took place in the period before Christmas and, in cooperation with custom authorities, when shipments arrived and were distributed.

Serious non-compliances, leading to increased risks of electric shocks, fire hazard or both, were found in 30,4% of the investigated lighting chains. Less serious non-compliances were found in 40% of the lighting chains.

The most frequent shortcomings are the use of cables that do not comply with the minimum requirements (almost 28%) and failing cord anchorages; almost 25%. Insufficient cord anchorage may lead to the electric wires coming loose with a high risk of electric shock. High failure rates are also found for the nominal cross sectional area of the conductors ($\approx 23\%$) and for protection against electric shock ($\approx 19\%$). In short: the wiring used is too thin and fragile, which increases the risk of overheating and fire, and the insulation and construction is such that there is a risk to get an electric shock. A number of other technical requirements is less frequently not met.

Lighting chains regularly fail more than one of the safety tests. Two chains failed nine out of 15 tests; 5 or 6 failed test happens regularly. Failing more than one test is likely to increase the risk of the product.

The overall conclusion must be that far too many types of lighting chains do not fulfil the safety requirements the European Union has set for those products. These products do not meet the safety standards and therefore present risks to consumers that are considered unacceptable in the EU. Continuation of market surveillance of lighting chains is therefore advised, preferably in a coordinated approach involving more participating Member States than in this cross border action.

Introduction

The Lighting chains project was initiated and adopted by LVD ADCO as a joint cross border market surveillance action for the seasons 2007 and 2008. Subject of the action were lighting chains, which have been found to frequently fail to comply the essential requirements of the LVD. This cross border action applied for financial report under the joint action program, which was obtained under grant agreement 17.020200 / 07 / 472835.

In the grant agreement Fogyasztóvédelmi Főfelügyelőség, the Hungarian Authority responsible for the market surveillance in the area of the LVD is the coordinator, the co-beneficiaries being the Landesinstitut für Arbeitsschutz und Produktsicherheit im Landesamt für Gesundheit und Lebensmittelsicherheit in Munich, the Slovak Trade Inspection and the Market Inspectorate of the Republic of Slovenia.

Besides these partners in the grant agreement one Member State participated outside the grant agreement: the Netherlands. The Netherlands also provided support in the technical development of the project.

The necessary preparations for the action were developed by Hungary during the second half of 2007. Participants were to start surveying the market and begin taking samples at the end of 2007, then continue sampling till Christmas 2008.

The Fogyasztóvédelmi Főfelügyelőség of Hungary managed the joint action on sunbeds, supported by representatives of the participating organizations. In the later stages of the action Prosafe also supported the management of the action.

Why Christmas lighting chains

Though lighting chains are more generally used for decorative lighting, the vast majority of chains is used during the Christmas time and sold in the months before the Christmas season. Often Christmas chains are offered for very low prices, presumably because consumers do not want to spend much for these products, which only serve for temporary decoration. Because these products are offered very cheap there is strong pressure on the manufacturers and importers to produce and deliver as cheaply as possible.

Frequently this has led to products where savings in materials and work have led to lighting chains being offered that grossly violate the safety standards in the European Union, as is illustrated by the number of RAPEX notifications concerning lighting chains. Searched for 'lighting chains' the RAPEX site lists a total of 52 notifications for a total of 94 different products over the period 2005 – 2007. These RAPEX notifications usually cited risk of electric shock with regularly also fire hazards, as the main risks of the products against which the notifying authority took action. Common technical shortcomings were insufficient cross sectional area of the conductors, lack of or bad cord anchorages, failing the pull test for lamp holders, etc.

In the period 2000 -2005 there were also 109 safeguard clause notifications according to Article 9 of the LVD for lighting chains. Partly these were informative and some of those also coincide with RAPEX notification for the same product.

Previous experiences in several Member States have also shown that lighting chains frequently fail to comply with the safety requirements of the LVD. For example, in the Netherlands lighting chains have been investigated for several years, but the fraction of non-compliant products remains high.

Scope of the action

Christmas lighting comes in different varieties, not only with respect to the looks of the product, but also in the ways they are constructed. The classic lighting chains use small (pea like) low voltage push in light bulbs (sometimes called pisello bulbs) of which a sufficiently high number is connected in series in order to operate them directly from the 230 V power line. Another popular type of lighting chain uses light bulbs (rice lights) directly soldered to the conductors. Besides lighting chains are offered that operate on low voltages, using transformers or electronic converters, products that use bulbs with E5, E10, E14, E27, B15 or B22 lamp holders, as well as lighting chains based on LED light sources.

These categories of lighting chains differ in both the type and seriousness of the hazards they may present and often require different tests to assess their safety. Addressing all these types therefore would require the testing laboratories to set up a wide array of tests, which would lead to excessive testing costs. To minimize cost the types investigated in this project were restricted to the following types of Christmas lighting chains:

- Lighting chains with small lampholders of the push-in type (the pisello type). The light sources are replaceable. Included are chains with control devices such as music boxes, flasher units, etc.
- Lighting chains not fitted with lampholders, but with the miniature light bulbs (rice lights) connected to the conductors with soldered connections. The light sources are not replaceable. Included are chains with music boxes, flashing circuits, etc.

Both from the experiences in the Netherlands (referred to above) and from the frequency of RAPEX notifications and LVD safeguard clauses, these type appear to be the most hazardous and most frequently not in conformity with the safety requirements of the LVD. Aiming the action at precisely these type of chains is thus expected to contribute optimally to consumer safety.

Specifically excluded from the action were:

- Lighting chains fitted with E5, E10, E14, E27, B15 and B22 lamp holders.
- Lighting chains fitted with replaceable or non replaceable small bulbs and supplied by a lamp control device (e.g. transformer or a.c. supplied electronic step-down convertor).
- Lighting chains fitted with LEDs.
- Sealed chains (a lighting chain enclosed in a rigid or flexible insulating translucent pipe or tube, sealed at the ends and having no joints).

Tests

Harmonized standards that are relevant to the lighting chains investigated and used in this joint action are:

- EN 60598-1:2004, Luminaires. General requirements and tests (marked by A);
- EN 60598-2-20:1997, Luminaires. Part 2-20: Lighting chains (marked by B),
- EN 60598-2-20:1997/A1:1998,
- EN 60598-2-20:1997/A2:2004.

Together these standards prescribe a large number of tests that lighting chains have to pass. However, not all these tests are equally relevant to the safety of the products investigated nor are they equally likely to be failed. To minimize cost those tests thought to be most relevant to safety of the products were selected from the applicable standard tests.

According to the information from RAPEX notifications and LVD safeguard clauses as well as from experiences in the Netherlands, common deficiencies identified are shortcomings in labelling, construction, plug, cord anchorage, wiring, insulation and protection against electric shock. Where for the labelling requirements mainly the warnings are safety relevant, all the technical requirements selected for this joint action directly influence the safety of the product.

The complete test program can be found in the project plan, which is appended to this report (Annex 2). An overview of the requirements to be checked or tested is given below:

Administrative requirements:

- CE marking
- Availability and content of the EC declaration of conformity (DoC)
- Technical documentation (TCD)
- Certificate(s) issued by the competent organisations

Markings:

The presence and durability of the markings prescribed in the applicable standards.

These marking typically include type references, identification of the manufacturer/importer, rated voltage and wattage, where applicable the class symbol, etc.

Additional information required:

This is information the user needs for safe use of the product and which is required by the applicable standard. The language and content of the warnings accompanying the lighting chain is checked. It includes warnings like:

- do not remove or insert lamps while the lighting chain is connected to the supply (standard B, 20.5.1),
- for series-connected lamps, replace failed lamps immediately by lamps of the same rated voltage and wattage to prevent overheating (standard B, 20.5.1),
- etc.

Protection against hazards arising from the electrical equipment

In the action the Christmas lighting chains were checked for compliance with a selection of requirements and tests from the applicable standards EN 60598-1 and EN 60598-2-20. The requirements tested were selected for their relevance with respect to the safety of the chains and because in the past lighting chains have been shown to regularly violate the requirement.

The hazards addressed by the tests and requirements selected are the hazards associated with electricity and fire hazards. The electrical risks are of course that a consumer can get an electric shock, which, in severe cases, may be deadly. That risk is associated with the construction of the lighting chain, the quality of the insulation, etc. This risk is addressed in a number of tests.

Fire hazard is also dependent on the construction, but also on the cross diameter of the conductors in relation to the current drawn and the fire resistance of the insulation.

Finally, lighting chains may present mechanical hazards when they have sharp edges or points that are accessible during installation, normal use or maintenance.

The tests concerned the following technical aspects:

- EN 60598-1-4.10.2 Assembly gaps
- EN 60598-1-4.10.3 Retainment of insulation
- EN 60598-1-4.25 Mechanical hazard
- EN 60598-1-5.2.2 Cables
- EN 60598-1-5.2.2 Nominal cross sectional area conductors
- EN 60598-1-5.2.6 Cable entries
- EN 60598-1-5.2.10.3 Cord anchorage + pull test
- EN 60598-1-5.2.14 and 5.2.18 Plug
- EN 60598-1- 8.2.1 Protection against electric shock
- EN 60598-1- 8.2.1 Disconnecting device
- EN 60598-1- 8.2.1 Metallic decorations
- EN 60598-1- 8.2.1 Lampholder contacts
- EN 60598-1, 10.2.2. Electric strength test
- EN 60598-1 , 13.3.1 Resistance to fire
- EN 60598-1 , 9.2 Res. to dust, solid obj. moisture
- EN 60598-1, section 5 Internal & external wiring

Note that these are references to EN 60598-1, but that for many of these tests the part of this about lighting chains, EN 60598-2-20, is also relevant. More information can be found in the project plan (Annex II) and in the standards themselves.

Project preparation and Time scheme

Preparation of the action

With support from the Netherlands and Germany, Hungary developed the project program, including sampling schemes, measurement programs and a schedule of the activities. The main aspects of the action are described in the following documents:

- *Grant agreement (agreement number 17020200/472835)*
- *project outline*
- *Project plan*

The project plan and project outline document for the action also mention that a *project guide* (to aid inspectors in sampling and the laboratories in testing) and an excel sheet for data entry of the results of the inspections and laboratory investigations were to be made available. The excel sheet has recently been compiled and made available to the participants in the project.

In addition the project calls for establishing a working relationship with customs and to make use of this relationship for the sampling of imported products in cooperation with the custom authorities.

Time schedule

The following sections gives an overview of the project phases and the planned tasks:

Phase 1: November 2007 - February 2008

Tasks:

- Conduct a market survey identifying the main distribution channels for lighting chains on the basis of the marketed products. This should establish a basis for a representative sampling in the next step, and take samples by random, if the manufacturers or the responsible vendors have been known.
- Take representative samples according to the possibilities and resources of the respective participant; on average, at least 10 samples shall be acquired covering the entire price range.
- Communicate the types selected to the other participants to avoid double testing.
- Perform the tests of the samples.
Summarise the test results in the format specified for the project (continuously).

Phase 2: March 2008 to October 2008

Tasks:

- Take representative samples according to the possibilities and resources of the respective participant; on average, at least 5 samples shall be acquired covering the entire price range.
- Communicate the types selected to the other participants to avoid double testing.
- Perform the tests of the samples.
Summarise the test results in the format specified for the project (continuously).

During the period between March and October many importers specify the batches they want to import for the following Christmas season. Performing inspections in this period aimed to make importers and trade aware of the requirements for Christmas lighting and raise the perceived risk of inspection in the following months.

Phase 3: November 2008 to February 2009

- Continue the market survey identifying the main distribution channels for lighting chains on the basis of the imported (and/or marketed) products. Co-operation with the customs authorities is needed. This should establish a basis for a representative sampling in the next step.
- Take representative samples according to the possibilities and resources of the respective participant; on average, at least 10 samples shall be acquired covering the entire price range.
- Communicate the types selected to the other participants to avoid double testing.
- Perform the tests of the samples.
Summarise the test results in the format specified for the project (continuously).

Phase 4: March 2009 to May 2009

- Evaluate the technical test results
- Categorise the severity of non-conformities and corresponding measures taken by the authorities concerned
- Determine the parameters needed for the identification of a dangerous product
- Summarise the result of risk assessment
- Prepare a draft of the project report
- Organize a meeting for the co-ordination and adoption of the project report
- Finalise the project report
- Evaluation and reporting.

Results

Cooperation with customs

The joint action included establishing of cooperation with the custom authorities. Germany, Slovakia, Slovenia and the Netherlands all reported cooperation with Customs in this Christmas lighting project.

In cooperation with the Custom Authority the German Market surveillance authorities developed a "risk profile" for Christmas lighting. For this purpose the RAPEX-alerts from 2006 and 2007 were evaluated. The risk profile is operative since Nov. 2007. Together with the risk profile a "Guide: Information on lighting chains" has been issued for use by customs officials. If goods with given risk characteristics are declared, the profile activates an alert and the products can be checked. If necessary the market surveillance authorities will be informed.

A similar procedure is in operation in the Netherlands, where the market surveillance authorities were informed of shipments possibly containing lighting chains. The Slovenian Market Inspectorate also cooperated with customs; during this action the Inspectorate was informed about every import of lighting chains from July 2008 till the end of 2008.

In Slovakia seven samples of lighting chains were taken in the cooperation with customs (under Regulation 339/93) and tests were performed within the three day period. The tests showed that all of these 7 sampled lighting chains did not comply with the safety requirements of the LVD. The products were classified as unsafe products and they were not released into the free circulation. Information about these dangerous products was also notified via the RAPEX system (notifications no.490/08, 497/08 and notifications for information only- info 114/08, info 115/08 and info 121/08.)

Samples

Over the period from November 2007 till the end of December 2008 the participating market surveillance organization sampled a total of 196 Christmas lighting chains. The number of samples actually taken exceeds the number of samples originally planned (125 lighting chains) to be taken (125 lighting chains) considerably. **Table 1** summarizes the samples taken by each of the participants during the different phases of the project.

Table 1: overview of sampling by participant

	planned	total nr of samples taken	phase 1	phase 2	phase 3
Hungary	25	23*			
Germany	25	62		36	26
Slovakia	25	50**	34		18
Slovenia	25	34	9	1	24
Netherlands	25	25	10	5	10
total	125	194			

* only the total number of samples was reported

** data reported for 50 samples; 52 samples taken

The project plan required these samples to be selected randomly after a market survey was performed. This implies that the results obtained in this action reflect the current market situation with respect to the safety of lighting chains. However, the results should be approached with some caution. Samples are drawn by market surveillance inspectors, who are generally trained to search for products that do not comply with legislation. This may well have led to a selection that is not altogether random.

The great majority of lighting chains sampled were of the type with serially connected bulbs; only 3 of the 169 chains for which data were available had parallel connected bulbs. Chains for outdoor use were also rare between the samples; only 13 out of 169 were meant for outdoor use. Twelve of the lighting chains were > IP21; all the rest IP20.

The source of the lighting chains was China in 81 cases. Other sources were Taiwan (n=3), Germany (n=4), France (n=3), Sweden (n=2), the Netherlands (n=3), Hungary (n=2) and Austria (n=1). For 91 of the lighting chain the source could not be traced, though from the labelling it appears that many of these originated in the Far East.

In the Netherlands an additional 56 samples were taken and investigated, but with a reduced test program, consisting of checking only the labelling requirements and, in this case, the Lampholder contacts (EN 60598-1- 8.2.1). This follows the reasoning that a reduced program allows more samples tested for the same financial resources, which contributes to the visibility of market surveillance in the industry, which in turn raises the perception of the likelihood of inspection in the industry. The increased perceived risk of inspection stimulates good compliance behaviour of the economic operators involved.

Administrative requirements, labelling and instruction for use

The LVD requires that the manufacturer or the importer in the European Union performs a conformity assessment on the product before he can apply CE marking and introduction into the European Union. As part of the conformity assessment procedure he is obliged to keep technical documentation about the product and its conformity assessment available to the authorities and to draw up a Declaration of Conformity. Every electrical product introduced therefore has to carry CE marking, or it may not be introduced on the European Market. Nevertheless, seven from the 196 lighting chains sampled in this action did not carry the mandatory CE-marking.

Part of the labelling , warnings and directions for use required by EN 60598-1 and EN 60598-2-20 are more safety relevant than CE marking, since they are meant to convey the information the consumer needs to know for safe use of the product. They include for example directions on how to exchange failed lamps, type of lamps to use when changing lamps, indoor and outdoor use, etc.. An extensive list of the warnings and instructions that were investigated is listed in the project plan.

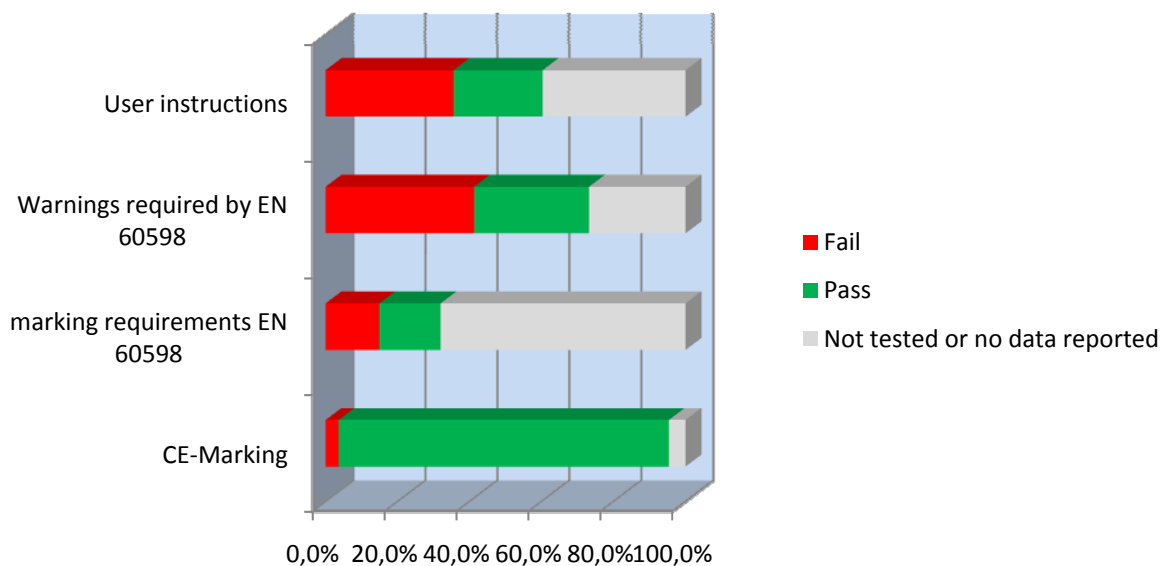


Figure 1: overview of compliance with labelling requirements

Figure 1 summarizes the compliance of the investigated lighting chains with the main labelling requirements. Though for an appreciable fraction no clear data were reported or listed as not tested or not applicable, the figure clearly shows that many lighting chains do not fulfil these requirements. Nearly 15% of the samples did not carry the ‘technical’ markings required by EN 60598 and, more important, warnings were lacking in 41% of the samples and proper user instructions in almost 35% of the samples. Probably the real percentages are higher, because it is highly likable that between the chains for which no data were reported additional non compliances can be found.

Compliance with technical requirements

Figure 2 presents an overview of the compliance of the lighting chains with each of the technical requirements that were tested during this joint action. The figure shows in a glance which type of shortcomings occur most frequently in lighting chains. The most frequent shortcoming is found for the requirement of EN 60598-1,5.2.2 (and EN 60598-2-20, 20.10.1) *Cables*, where 27,8% failed. Remarkably the frequency of this shortcoming varies between the participant’s regions, hardly occurring in the Netherlands and Germany, but frequently reported by the other participants

The second most frequent shortcoming is failing cord anchorages; almost 25% of the sampled chains failed this test. High failure rates are also found for the nominal cross sectional area of the conductors ($\approx 23\%$) and for protection against electric shock ($\approx 19\%$). Other requirements that are regularly not met include EN 60598-1-4.10.2 (Assembly gaps; $\approx 14\%$), the electric strength test ($\approx 13\%$), EN 60598-1-5.2.14 and 5.2.18 (\approx Plugs; 12%), lampholder contacts ($\approx 11\%$) and EN 60598-1-5.2.7 (Cable entries; $\approx 10\%$)

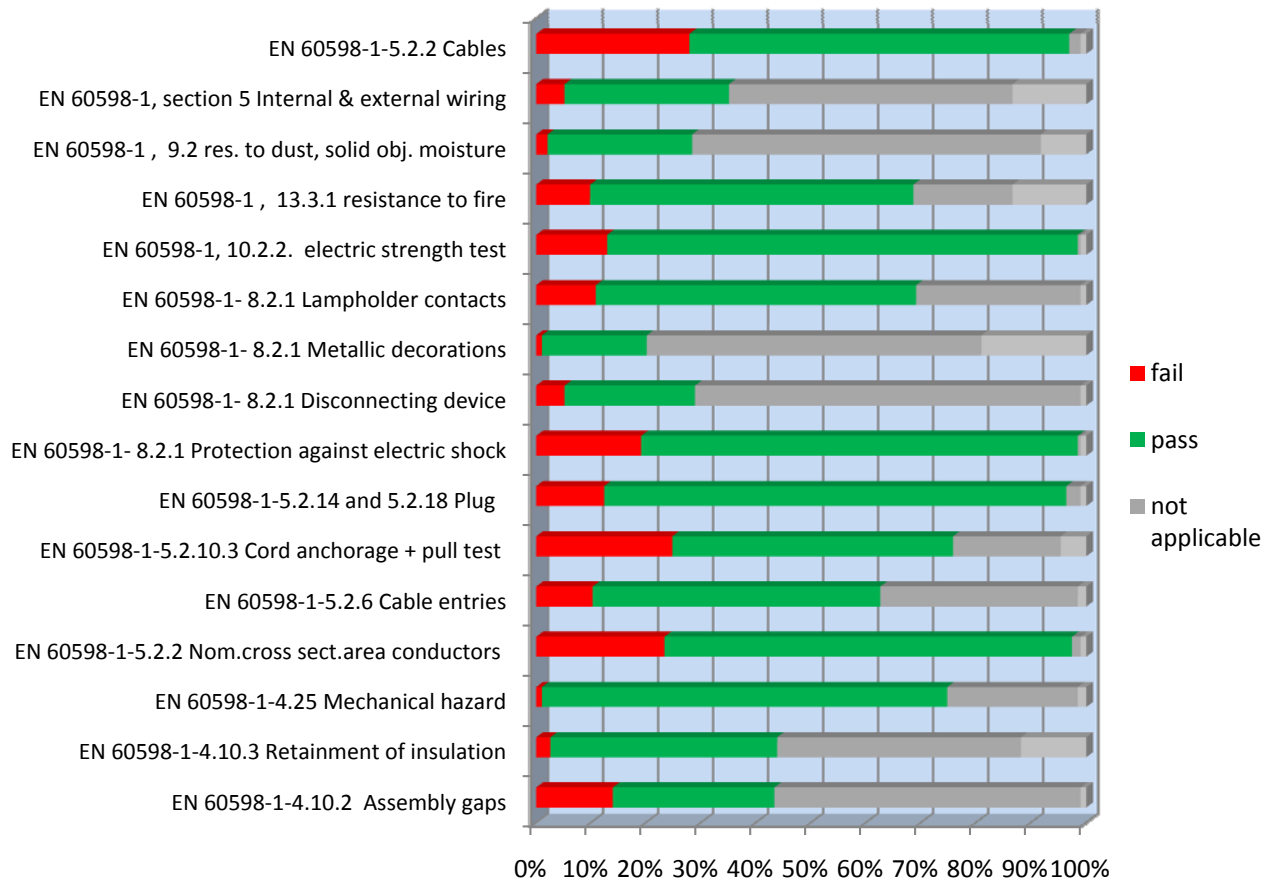


Figure 2: overview of technical shortcomings

It should be realized that lighting chains regularly fail more than one of the tests, which may increase the risk the product presents. For example, 12 samples failed both the test for the cross sectional area and the test for resistance to fire, increasing the fire hazard.

Multiple shortcomings occur regularly, as is shown in **Figure 3: bar graph of number of samples (X-axis) that failed multiple tests (Y-axis)**. Some lighting chains failed nearly all the technical tests and many failed 4 to 7 tests.

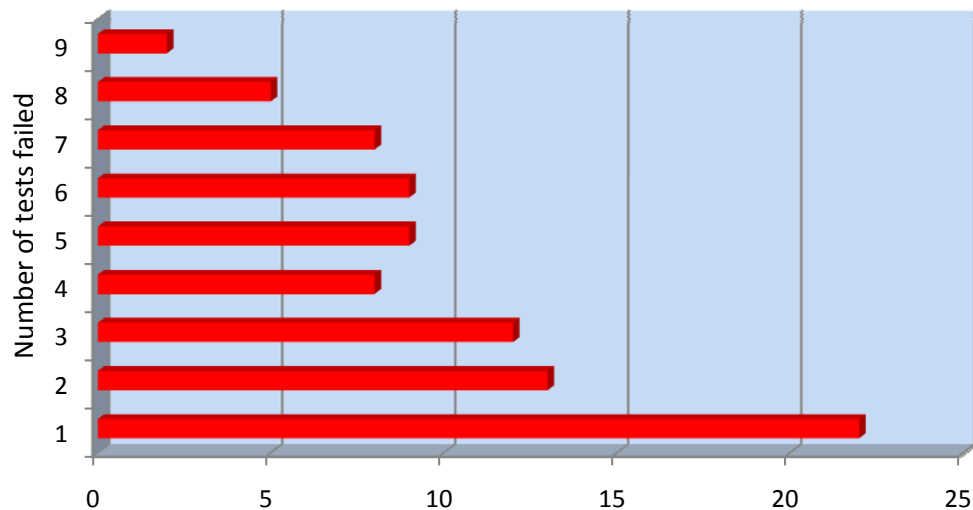


Figure 3: bar graph of number of samples (X-axis) that failed multiple tests (Y-axis)

Figure 3: *bar graph of number of samples (X-axis) that failed multiple tests (Y-axis)* shows only those samples which failed on or more requirements or tests. Overall 104 of the samples passed all the technical requirements or tests. A total of 88 samples (45,8%) scored at least one shortcoming. The conclusion is that nearly half of the samples did not comply with the technical requirements.

Categorization of the non-compliances

Not all non-compliances are equally serious; omitting some of the required labelling does not immediately jeopardize the safety of the user, while some of the technical shortcomings can present serious risks. The risk presented by the product plays a major role when the market surveillance authority decides on appropriate interventions and legal measures. Indeed, interventions have to be proportional to the risk presented by the product.

In the lighting chain action the authorities reported an overall assessment of the seriousness of the non-compliances found, using the following designations:

- F1 (Remark): A deviation from the product provisions which is not a direct safety hazard for persons, domestic animals or property
- F2 (Criticism): Deviations which can be a direct safety hazard for persons, domestic animals or property
- F3 (Serious criticism): Obvious and direct safety hazard for persons, domestic animals or property.
- P (passed the test parameters)

These codes basically follow the Nordic Market Surveillance Codes for Common Deficiencies. This code system corresponds to the seriousness of the shortcoming, whereby F1 is the lowest level of non-compliance, and classifications F2 and F3 correspond to increasingly serious shortcomings.

Figure 4 summarizes the overall seriousness of the non-compliances of lighting chains by participant. (See also the table 4 in Annex 2).

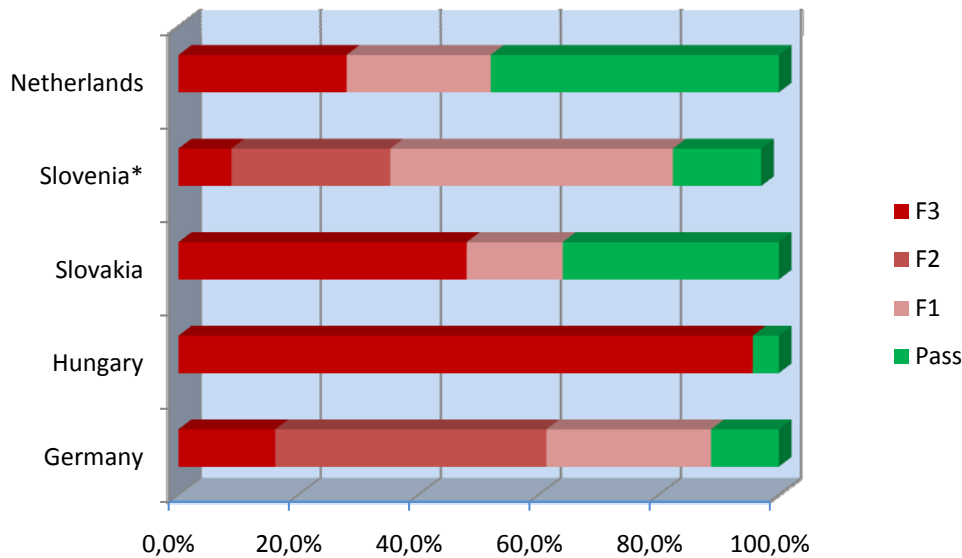


Figure 4: categorization of shortcomings

*Slovenia: 1 classified F1/2

The fraction of lighting chains with serious non-compliances (F3) varies from 8,8% in Slovenia up to 95,7% in Hungary. The fractions classified as F2 (criticism) and F1 (minor non-compliance) also vary between the participants, both between 0,0% and ≈45%.

The best chances to obtain lighting chains that fulfil the legal requirements are found in Slovakia and the Netherlands, where respectively 36% and 44% of the investigated samples passed all tests. For the Netherlands the relatively “high” fraction of compliant chains may be the results of market surveillance activities in this field having been performed for many years. In the countries of the other participants the fraction of samples passing the tests is less than 15%.

In all the participating Member States together serious non-compliances were found in 30,4% of the investigated lighting chains. Less serious non-compliances were found in 19,1% (F2) and 21,1% (F1) of the lighting chains. An additional 7,2% of the chains were reported not to comply, but the seriousness of the shortcomings is unknown.

The 56 samples taken in the Netherlands and investigated with a reduced program were not taken into account in the figures given above. Of these 56 samples 27 failed the lampholder test (the only technical test performed). These samples were probably investigated on the suspicion that they would not comply and are not reliable as an estimate of the percentage non compliant. However, the number of failing products shows that finding lighting chains which do not comply is easy.

Sanctions

Only three of the participants reported the actions taken and sanctions imposed against the lighting chains that violated the legal requirements.

Slovakia reported that all products with shortcomings classified as F3 were given a ban on further sale (20 products) and in three cases a voluntary recall followed. For 9 lighting chains an obligation to mark the products according to the legal requirements was imposed.

18th of November 2009

Hungary reported to have imposed withdrawal from the market of 13 lighting chains (all F3). For all of these a public recall was also imposed. For 9 products no information was obtained, except that action was taken.

The Netherlands imposed a sale ban in 7 cases (all with shortcomings classified as F3), while 6 times a remark was issued to remedy shortcomings classified F2. In addition, on all products tested F3 and F2 with the reduced program (27 of 56) a sales ban was imposed.

Conclusions

Over the period from November 2007 till the end of December 2008 the market surveillance authorities in 5 Member States sampled and investigated 196 lighting chains. Sampling took place in the period before Christmas and, in cooperation with custom authorities, when shipments arrived and were distributed.

Serious non-compliances, leading to increased risks of electric shocks, fire hazard or both, were found in 30,4% of the investigated lighting chains. Less serious non-compliances were found in 19,1% (F2) and 21,1% (F1) of the lighting chains. An additional 7,2% of the chains was reported not to comply, but the seriousness of the shortcomings is unknown.

The most frequent shortcomings are the use of cables that do not comply with the minimum requirements (almost 28%) and failing cord anchorages; almost 25%. Insufficient cord anchorage may lead to the electric wires coming loose with a high risk of electric shock. High failure rates are also found for the nominal cross sectional area of the conductors ($\approx 23\%$) and for protection against electric shock ($\approx 19\%$). In short: the wiring used is too thin and fragile, which increases the risk of overheating and fire, and the insulation and construction is such that there is a risk to get an electric shock. A number of other technical requirements is less frequently not met.

Lighting chains regularly fail more than one of the safety tests. Two chains failed nine out of 15 tests; 5 or 6 failed tests occurs regularly. Failing more than one test is likely to increase the risk of the product.

The overall conclusion must be that far too many types of lighting chains do not fulfil the safety requirements the European Union has set for those products. These products do not meet the safety standards and therefore present risks to consumers that are considered unacceptable in the EU.

Recommendations

Continuation of market surveillance

Given the results of this joint action on lighting chains there is an urgent need to improve the levels of compliance of these products. That raises the question how this can be achieved. Previous experiences in several Member States have shown that even surveillance and enforcement actions repeated over several years had limited effect. Nevertheless continuation of enforcement is recommended. To make further enforcement actions optimally effective, a coordinated approach with participation of as many European market surveillance authorities as possible is recommended.

Further actions should be aimed at manufacturers and first importers into the EU, with preference for those manufacturers and importers that ship the highest volumes. Making full use of cooperation with customs can help to identify trade volumes, importers and destinations.

To increase the perceived enforcement pressure further actions should preferably investigate a limited number of requirements in many samples instead of investigating few samples against an extensive set of test parameters. That way more businesses are inspected and market surveillance increases its visibility to the target enterprises.

To reduce cost simple and cheap tests are preferable over complicated and expensive tests. The parameters to be tested may be chosen from the results of this action and could include cable, nominal cross sectional area of the conductors, cord anchorage and pull test.

Enforcement communication.

The effect of enforcement is enhanced when the perceived risk of being inspected can be increased in the target group of enterprises. The perception that one can be inspected stimulates compliance behaviour. To increase the perception of this risk the target group should be informed about the enforcement action. Usable communication channels include direct (E-) mail, press and media coverage, the internet. At the same time publicity can be used to raise awareness of the applicable regulations.

Annex I

Additional tables

Table 2: compliance with labelling and marking requirements and user instructions

	Fail	Pass	Not tested or no data reported
CE-Marking	3,6%	91,8%	4,6%
marking requirements EN 60598	14,9%	17,0%	68,0%
Warnings required by EN 60598	41,2%	32,0%	26,8%
User instructions	35,6%	24,7%	39,7%

Table 3: Overview of compliance with technical requirements

Requirement	fail	pass	not applicable	not tested
EN 60598-1-4.10.2 Assembly gaps	13,9%	29,4%	55,7%	1,0%
EN 60598-1-4.10.3 Retainment of insulation	2,6%	41,2%	44,3%	11,9%
EN 60598-1-4.25 Mechanical hazard	1,0%	73,7%	23,7%	1,5%
EN 60598-1-5.2.2 Nominal.cross sectional.area conductors	23,3%	74,1%	1,6%	1,0%
EN 60598-1-5.2.6 Cable entries	10,3%	52,3%	35,9%	1,5%
EN 60598-1-5.2.10.3 Cord anchorage + pull test	24,7%	51,0%	19,6%	4,6%
EN 60598-1-5.2.14 and 5.2.18 Plug	12,4%	84,0%	2,6%	1,0%
EN 60598-1- 8.2.1 Protection against electric shock	19,1%	79,4%	0,5%	1,0%
EN 60598-1- 8.2.1 Disconnecting device	5,2%	23,7%	70,1%	1,0%
EN 60598-1- 8.2.1 Metallic decorations	1,0%	19,1%	60,8%	19,1%
EN 60598-1- 8.2.1 Lampholder contacts	10,8%	58,2%	29,9%	1,0%
EN 60598-1, 10.2.2. Electric strength test	12,9%	85,6%	0,5%	1,0%
EN 60598-1 , 13.3.1 Resistance to fire	9,8%	58,8%	18,0%	13,4%
EN 60598-1 , 9.2 Resistance to dust, solid obj. moisture	2,1%	26,3%	63,4%	8,2%
EN 60598-1, section 5 Internal & external wiring	5,2%	29,9%	51,5%	13,4%
EN 60598-1-5.2.2 Cables	27,8%	69,1%	2,1%	1,0%

Table 4: Characterization of non-compliances

- F1 (Remark): A deviation from the product provisions which is not a direct safety hazard for persons, domestic animals or property
- F2 (Criticism): Deviations which can be a direct safety hazard for persons, domestic animals or property
- F3 (Serious criticism): Obvious and direct safety hazard for persons, domestic animals or property.
- P (passed the test parameters)

participant	F3	F2	F1	Pass
Germany	16,1%	45,2%	27,4%	11,3%
Hungary	95,7%	0,0%	0,0%	4,3%
Slovakia	48,0%	0,0%	16,0%	36,0%
Slovenia*	8,8%	26,5%	47,1%	14,7%
Netherlands	28,0%	0,0%	24,0%	48,0%

*Slovenia: 1 classified F1/2

18th of November 2009

Annex II

Project plan

**LVD-ADCO cross border market surveillance project:
Lighting chains****Introduction**

Due to the cross-border market surveillance campaigns carried out in the last two years, the market surveillance activity continuously increased in Member States. The results obtained shows that the cross border market surveillance projects are very useful means to visibly illustrate the improvement and the effectiveness of market surveillance in the context of the functioning of the internal market. The efforts taken by the European Commission and the LVD-ADCO members to improve the market surveillance activities throughout the Community have already attended success, therefore new cross-border market surveillance projects should be organized.

The present project is a possibility to contribute to the improvement of market surveillance activity in the Member States and the identification of the dangerous product notified in RAPEX.

The considerations mentioned in the guide of the first LVD ADCO cross border market surveillance project are also taken into account in this project.

1. The LVD tries to assure safe products by setting requirements both to the product itself, as well as to the person responsible for putting the product on to the European market. Effective market surveillance on an EU-wide scale is best accomplished when it takes place at the source, e.g. the manufacturer or importer who puts the product on the EU-market. Stopping sales there has direct effect for the whole European market, because it prevents further sales into other member states. Within the context of this project, the priority attention is therefore given to EU-importers/manufacturers. *(Of course, the primary responsibility of the Market surveillance authorities is the protection of the citizens in their own state from unsafe products and the protection of fair competition in their own country. Most Member States market surveillance authorities may inspect any product placed on their market, though it may have entered the market for free circulation in one of the other Member States. Enforcement measures are generally confined to its own jurisdiction and therefore the European market as a whole does not benefit directly. Sales may well continue in the other Member States.)*
2. Because infrastructures and funding possibilities vary between Member States, the subject of the project needs to be selected in such a way that cost is minimized and that the technical requirements for the tests are within the capabilities of all participants.
3. No attempt will be made to completely establish conformity of the investigated products, i.e. it is not intended to perform all the tests prescribed in the relevant standard. Instead a limited number of tests with direct relevance to the safety of the product will be performed. This approach is chosen for the following reasons:
 - Not all requirements in standards have the same relevance with respect to the safety of the product. It makes sense to address those parameters that have the greatest effect on the safety of a product,
 - For the same effort (and at the same cost) more products can be investigated, so that more manufacturers/importers are involved in the market surveillance project. This potentially provides a more visible presence of market surveillance.

Product category concerned by project

Several considerations have been taken into account in the selection of Christmas lighting change as the subject for this project. Notifications from the Member States clearly demonstrate that lighting chains with severe safety deficiencies have entered the Common Market and experiences from earlier market surveillance activities in several member states confirm that many Christmas lighting chains fail to comply with the Low Voltage Directive. These products not only pose a risk for the health and safety of consumers because of the hazard of electric shock, but they also present the risk of fire and injury,

which can cause very serious damages for the users. As the dangerous lighting chains can be periodically found in all homes, shops and buildings in very large numbers, the probability of injury is high. For these reasons the scope of this project is restricted to lighting chains.

Aims of the project

The purposes of this cross border project are multiple:

- to gain experiences with cross border market surveillance,
- to collect information on the differences and similarities between market surveillance practices in the Member States in the area of the LVD
- to try to embed cooperation with customs in one or more of the participating member states in the context of this project
- to raise understanding of the participants of the role cooperation with customs can play in market surveillance
- to exchange information on product identification with respect to the products notified in RAPEX,
- to close the results of risk assessment,
- identify obstacles that hinder cross border market surveillance,
- to raise the profile of market surveillance in the field of the LVD in the minds of consumer organizations and industry.

Within the context of this specific project on lighting chains, secondary goals primarily centre on law enforcement in the cross border setting. This implies that sampling will not be random, but is aimed at sampling products that are suspected of non compliances.

Scope of the project

The scope of the project covers ***lighting chains comprising an assembly of series-connected lamp holders, parallel-connected lamp holders or series/parallel-connected lamp holders and interconnecting insulated conductors.*** As the term of lighting chains covers a lot of products, which are available on the market, the project is restricted to the most dangerous lighting chains used by many people and marketed in high quantities in certain seasons, especially the Christmas period . These products can be classified according to the next:

1. Lighting chains with small lamp holders of the push-in type (the pisello type). The light sources are replaceable. Included are chains with music boxes, flashing circuits, etc.
2. Lighting chains not fitted with lamp holders and the miniature light bulbs (rice lights) connected to the conductors with soldered connections. The light sources are not replaceable. Included are chains with music boxes, flashing circuits, etc.

For each product category the light source shall be incandescent lamp (See the scope of the luminaire standard EN 60598-2-20, clause 20.1).

The following products are excluded from the scope of the project:

1. Lighting chains fitted with E5, E10, E14, E27, B15 and B22 lampholders.
2. Lighting chains fitted with LEDs.
3. Sealed chains (a lighting chain enclosed in a rigid or flexible insulating translucent pipe or tube, sealed at the ends and having no joints).

The relevant harmonized standards to be used are the next:

EN 60598-1:2004, Luminaires. General requirements and tests (marked by A);
EN 60598-2-20:1997, Luminaires. Part 2-20: Lighting chains (marked by B),
EN 60598-2-20:1997/A1:1998,

EN 60598-2-20:1997/A2:2004.

Selection of the product categories mentioned above was justified by the previous experiences from Netherlands, and also the several notifications taken according to the LVD safeguard clauses. According to the LVD safeguard clauses, common deficiencies identified are shortcomings in labelling, construction, plug, cord anchorage, wiring, insulation and protection against electric shock. In the selection of tests and investigations for this project, these common shortcomings are (amongst others) addressed.

Project Organization

Project coordinator

The success of the proposed cross border project requires a central project coordinator who is allowed sufficient time and resources to respond and control the progress of the project. In this project, Hungary will act as the project coordinator and applicant. The project coordinator must be able to answer questions arising during the execution of the project and should be able to respond to all needs for information and coordination from the Member States. He should also be able to provide coordination and support when the progress of the project requires this. Finally he is responsible for the final report, acknowledging the opinions and contributions of the Member State project leaders described in the following section.

Task force LVD Ad-Co cross border projects

The project coordinator is supported by the *Task force LVD Ad-Co cross border projects*, that comments, advise and give practical support in all stages of the project, both on the project proposal and description as well as on all phases in the during the execution of the project. LVD Ad-Co participants can voluntarily participate in the task force.

Communication will be primarily by E-mail, but two or three meetings between the participants (and/or task force) are to be scheduled and will be organized when necessary.

Member State project leaders

The central project coordinator communicates with Member State project leaders, who take responsibility to manage the progress of the project within the proposed time schedule in their State, including the coordination with customs where applicable. Each Member State project leader is also responsible for the timely report of the results of the activities in their State.

Guide

A guide will be made available that provides practical information to the inspectors and laboratory personnel involved in this project and the member states project leaders.

The guide will give information of a more detailed and practical nature than this project description and will provide guidelines on how to perform inspections, judge the administrative requirements, how to perform the laboratory tests and on how to submit the data obtained.

The guide should be seen as augmenting this project description and aims to help in obtaining uniform and comparable results.

Overview of the project

The project is to take place in 2008, where the period around Christmas 2007 should be used for a first market orientation. The actual surveillance action is aimed on the Christmas lighting intended for the Christmas period in 2008.

The project can be divided into the following phases:

1. *Market orientation, preparation for the market surveillance actions*

2. *Establishing cooperation with custom authorities, sampling, administrative requirements and technical investigations*
3. *Market surveillance, sampling, administrative requirements and technical investigations*
4. *Reporting*

Market orientation

Participants will investigate the market for X-mas lighting chains in their Member State with the aim to select suitable enterprises for inspection and sampling. Inspection should first aim to select manufacturers, importers (or retailers) that place lighting chains covered by the scope of this project on the European market.

If the market surveillance system in the Member State of a participant does not allow inspecting at the manufacturers or importers into the EU, inspecting can be done in a way usual for that Member State. When enterprises have been selected for inspection that indeed are first importers into the EU, additional information should be sought where possible.

In particular:

- estimates of the relative importance of its imports (e.g. the number of luminaires put on the EU-market, total sales in Euro, etc),
- their estimated relative market share in the Member State,
- any additional information that may be useful to describe the luminaire market in the member state.

The data collection shall be continuous.

Sampling

Member States are asked to sample at least 25 samples and to sample preferably samples that are suspected to be not in compliance. If it is possible samples should be traced to the original importer/manufacturer who is responsible for placing the product on the European market.

Cooperation with the custom authorities will help this work.

For the specific samples taken the following requirements should be checked:

1. Presence of the CE-marking,
2. Presence of the relevant safety information (marking plate and warnings),
3. Visual inspection according to the expertise of the inspectors.

Administrative requirements

Participants are requested to comprise a list of the luminaires sampled for each importer/manufacturer, including the compliance data listed above for each luminaire.

An Excel datasheet will be made available on CIRCA for entering and submitting these data. The relevant data shall be continuously uploaded to CIRCA.

Technical investigations

In order to obtain comparable test result it is very important that all tests in the programme are carried out and judged exactly as described in the standard as far as possible.

If the use of abbreviated tests, approximate tests or screening procedures is not avoidable, the results should be reported with a clear indication about the deviation from the standard that was employed.

(Examples of such deviations are when a non-conformity is determined while performing the test under less severe conditions than the standard requires. For instance, this would be the case if the electric strength test is performed without the prescribed environmental conditions (humidity cabinet). Another example is if the non-conformity is obvious and can be determined by measurement instead of the use of a probe. The outcome is still valuable and applicable for enforcement purposes, and therefore also in this project. It is desirable, however, that member states report such deviations.)

The appropriate standards for the lighting chains are:

- EN 60598-1:2004, Luminaires. General requirements and tests (marked by A);
- EN 60598-2-20:1997, Luminaires. Part 2-20: Lighting chains (marked by B),
- EN 60598-2-20:1997/A1:1998,

EN 60598-2-20:1997/A2:2004.

Compliance testing and inspection

Each luminaire sampled is subject to all the checks and tests described in the following sections. Note, that for each of the checks and tests of the requirements, the corresponding requirements in the LVD and in EN 60598 are indicated below. However, these indications are meant as an aid to overview the checks and tests that have to be made. When performing the test you should refer to the requirements of the LVD or relevant standard.

1. General conditions

1.1 EC declaration of conformity (ECDoC)

Availability and content of the EC declaration of conformity shall be checked.

According to the LVD the EC declaration of conformity must contain the following elements:

- name and address of the manufacturer or his authorised representative established within the Community,
- a description of the electrical equipment,
- reference to the harmonised standards,
- where appropriate, references to the specifications with which conformity is declared,
- identification of the signatory who has been empowered to enter into commitments on behalf of the manufacturer or his authorised representative established within the Community,
- the last two digits of the year in which the CE marking was affixed.

1.2 Technical documentation (TCD)

Availability and content of the technical documentation shall be checked.

According to the LVD the technical documentation must include:

- a general description of the electrical equipment,
- conceptual design and manufacturing drawings and schemes of components, sub-assemblies, circuits, etc.,
- descriptions and explanations necessary for the understanding of said drawings and schemes and the operation of the electrical equipment,
- a list of the standards applied in full or in part, and descriptions of the solutions adopted to satisfy the safety aspects of LVD where standards have not been applied,
- results of design calculations made, examinations carried out, etc.,
- test reports.

1.3 Certificate(s) issued by the competent organisations

Correspondence of the certificate(s) with the actual luminaire shall be checked.

1.4 CE marking

The presence of CE marking on the product shall be checked.

1.5 Markings in accordance with the relevant luminaire standards

The presence of the following markings shall be checked on the products.

- mark of origin (trade mark or the manufacturer's identification mark or the name of the responsible vendor) (standard B, 20.5.2),
- type reference or the electrical data of the lamps (standard B, 20.5.1),
- rated voltage and wattage of replacement lamps, if applicable (standard B, 20.5.2),
- rated voltage of the complete chain (standard B, 20.5.1),
- maximum rated wattage and number of lamps (standard A, 3.2.8),

- class II symbol, if applicable (standard B, 20.5.2),
- degree of protection against dust and moisture, if applicable (standard B, 20.5.2)
- symbol according to material of the mounting surface (standard A, 3.2.9),
- warning – use only replacement lamps of the same kind provided with this lighting chain, if applicable (standard B, 20.5.2).

With respect to the durability of marking the rubbing test described in sub-clause 3.4 of EN 60598-1 is not to be performed, because the petroleum spirit which is necessary to the test is not available for everybody.

1.6 Additional information

Language and content of the warnings accompanying the lighting chain shall be checked. According to the luminaire standard the substance of the following information shall be indicated in the instruction attached to the luminaires:

- do not remove or insert lamps while the lighting chain is connected to the supply (standard B, 20.5.1),
- for series-connected lamps, replace failed lamps immediately by lamps of the same rated voltage and wattage to prevent overheating (standard B, 20.5.1),
- do not connect the lighting chain to the supply while it is in the packaging unless the packaging has been adapted for display purposes (standard B, 20.5.1),
- do not replace a fused lamp with a non-fused lamp. The information concerning the identification of fused lamps shall be also given (standard B, 20.5.1),
- ensure all lamp holders are fitted with a lamp (standard B, 20.5.1),
- the ordinary lighting chain is for indoor use only (standard B, 20.5.1),
- warning – this lighting chain must not be used without all gaskets being in place, if the lighting chain is protected against dust and moisture (standard B, 20.5.1),
- do not connect this lighting chain electrically to another chain (standard B, 20.5.1),
- replacement lamps must be of the same type as those delivered originally or of a type specified by the manufacturer, if the lamps are non-standardized lamps (standard B, 20.5.1),
- the lamps are not replaceable, if the lighting chain is provided with non-replaceable lamps (standard B, 20.5.1).

A coding system to name the uploaded files to allow easy referencing will be given in the guide accompanying this document.

To facilitate uniform evaluation of the administrative requirements, the guide will also include a section containing indications for judging conformity with the administrative requirements.

2. Protection against hazards arising from the electrical equipment

2.1 Construction (See EN 60598-1, section 4)

- 4.3 Wireways: wireways shall be smooth and free from sharp edges, burrs, flashes and the like, which might cause abrasion of the insulation of the wiring. Parts, such as metal set screws, shall not protrude into wireways.

Compliance is checked by inspection and, if necessary, by dismantling and reassembling the luminaire.

- 4.10 Double and reinforced insulation

4.10.2 Any assembly gap with a width greater than 0,3 mm in supplementary insulation shall not be coincidental with any such gap in basic insulation, nor shall any such gap in reinforced insulation give straight access to live parts.

Compliance is checked by inspection (see also the guide).

- 4.10.3 For parts of class II luminaires which serve as supplementary insulation or reinforced insulation:
 - either they shall be fixed so that they cannot be removed without being seriously damaged;

- or they shall be unable to be replaced in an incorrect position.

Where sleeving is used as supplementary insulation on internal wiring, and where insulated linings are used in lamp holders as supplementary insulation on external or internal wiring, the sleeving and lining shall be retained in position by positive means.

Compliance is checked by inspection and by manual test.

- 4.25 Mechanical hazard

Luminaires shall have no sharp points or edges that could during installation, normal use or maintenance, create a hazard for the user.

Compliance is checked by inspection.

2.2 External and internal wiring (See EN 60598-1, section 5)

- 5.2.2 Cables (see also EN 60598-2-20, 20.10.1): Internal and external cables of lighting chains other than sealed chains shall not be lighter than the following:

- for ordinary (IP20) lighting chains using series-connected lamp holders

H03VH7-H,

- for Class II ordinary (IP20) lighting chains using parallel-connected lamp holders

H03VV-F or H03VVH2-F,

- for Class III lighting chains using parallel-connected lamp holders and with a maximum rated wattage exceeding 50 W

H03VVH2-F,

- for other (\geq IP21) lighting chains using series-connected lamp holders

H03RN-F,

- for other (\geq IP21) lighting chains using parallel-connected lamp holders

H05RNH2-F or H05RN-F,

- for other (\geq IP21) lighting chains where the length of cables between the supply plug and the nearest lamp holder exceeds 3 m for that part of the cable

H07RN-F.

Compliance is checked by inspection.

Note: The mentioned cable shall have two insulation layers around the conductor. If the outdoor use of the luminaire is allowed, the insulation of the cable shall be rubber.

- 5.2.2 Nominal cross sectional area of the conductors (see also EN 60598-2-20, 20.10.1):

The nominal cross-sectional area of the conductors shall be not less than one of the following values:

- 0.5 mm² for lighting chains with small lamp holders of push-in type,

Compliance is checked by inspection, measurement and by calculation.

note: tolerance of 8% should be acceptable.

- 5.2.6 Cable entries:

Cable entries through rigid materials for external flexible cables and cords shall have smoothly rounded edges of minimum radius 0.5 mm.

Compliance is checked by inspection.

Note: This requirement shall be applied to the lamp holders, control device and switch.

- 5.2.10 Cord anchorage:

Luminaire provided with or designed for use with non-detachable flexible cables or cords shall have a cord anchorage such that the conductors are relieved from strain, including twisting, where they are connected to the terminals, and such that their covering is protected from abrasion.

For type Y and Z attachments, cord anchorages shall be adequate.

Compliance is checked by the test of 5.2.10.3.

Note: During the test the cable is subjected 50 times to a pull of 30 N. The torque test is not made. Only two lampholders and the control device shall be checked, if any.

- 5.2.14 and 5.2.18 Plug (see also EN 60598-2-20, 20.10.3):

If a plug is supplied with the luminaire by the manufacturer, the plug shall have the same degree of protection against electric shock and degree of protection against ingress of dust, solid objects and moisture as the luminaire.

Plugs of lighting chains shall meet the requirements of the countries in which they are sold. Only the length and diameter of the pins and the dimension of the engagement surface shall be checked.

Lighting chains for outdoor use shall either be provided with a splash-proof plug or be suitable for permanent connection to fixed wiring by means of a junction box.

The length of the cable between the plug and the first lamp holder shall be not less than 1.5 m.

Compliance checked by inspection and measurement.

2.3 Protection against electric shock (See EN 60598-1, section 8)

- 8.2.1 Protection against electric shock:

Luminaire shall be so constructed that their live parts are not accessible when the luminaire has been installed and wire as in normal use, and when it is opened as necessary for replacing lamps or (replaceable) starters, even if the operation cannot be achieved by hand. Basic insulated parts shall not be used on the outer surface of the luminaire without appropriate protection against accidental contact.

Protection against electric shock shall be maintained for all methods and positions of installation in normal use having regard to the limitations indicated in the manufacturer's installation instructions, and for all adjustments of adjustable luminaires.

Compliance checked by inspection and if necessary by the test with the standard test finger specified in IEC 60529.

Disconnecting device (see also EN 60598-2-20, 20.11.1):

For plugs incorporating means for disconnecting one end of the chain, the degree of protection against electric shock shall be such that it is not possible to touch the contact piece with the standard test finger specified in IEC 60529. In general, the contact piece is a pin fitted in the body of the plug, the pin being shrouded by the body of the plug or otherwise protected.

Metallic decorations (see also EN 60598-2-20, 20.11.2):

Lighting chains shall not electrify tinsel or other metallic decorations with which they are used.

Compliance shall be checked by means of a flat probe, 0.5 mm thick and 8 mm wide, with a rounded tip having a radius of 4 mm. It shall not be possible to touch live parts with this probe, when it is applied in any position with a force not exceeding 0,5 N, the chain being fitted with the lamps with which it is delivered.

Lamp holder contacts (see also EN 60598-2-20, 20.11.3):

Lamp holder contact shall be reliably secured in the lamp holder body by means other than friction to avoid such a displacement of the lampholder contacts that live parts of the chain become accessible. An example of an adequate securing method is by the provision of ears on the contacts of the lamp holder.

Compliance checked by inspection and by the relevant test.

2.4 Electric strength test (See EN 60598-1, section 10)

- The electric strength of luminaire shall be adequate. The test shall be carried out in accordance with requirements described in EN 60598-1, 10.2.2. Only the requirements for double and reinforced insulation shall be applied. No flashover or breakdown shall occur during the test.

2.5 Resistance to fire (See EN 60598-1, section 13)

- 13.3.1: Parts of insulating material retaining current-carrying parts in position shall withstand the following tests:

The parts to be tested are subjected to the needle-flame test of EN 60695-2-2, the test flame being applied to the sample for 10 s at the point where the highest temperatures are likely to occur.

The duration of burning shall not exceed 30 s after removal of the test flame, and any burning drop from the sample shall not ignite the underlying parts r tissue paper specified in 4.187 of ISO 4046-4, spread out horizontally 200 mm ± 5 mm below the sample.

3. Protection against hazards which may be caused by external influences on the electrical equipment

3.1 Resistance to dust, solid objects and moisture

(See EN 60598-1, section 9)

- 9.2: The enclosure of a luminaire shall provide the degree of protection against ingress of dust, solid objects and moisture in accordance with the classification of the luminaire and the IP number marked on the luminaire.
pass the test described in section 10.2.2.
Compliance is checked by the appropriate tests specified in 9.2.0 to 9.2.9 of EN 60598-1, and for other IP ratings by the appropriate tests specified in IEC 60529.
Note: If the outdoor use of the luminaire is allowed, the luminaire shall be protected against ingress of water.

3.2 External and internal wiring (See EN 60598-1, section 5)

Note: If the outdoor use of the luminaire is allowed, the insulation of the cable shall be rubber.

Note: The project comprise the technical reports of the checks and tests performed on each luminaire and a compilation of the test results for all of the luminaires tested by each state. In addition each Member State is asked to classify the severity of the shortcoming found, to give the results of risk assessment and to report the legal measures taken.

Reporting

The participating Member States are responsible for reporting the results of their activities in phases 1 – 3. The final date before which the results have to be submitted is the 31st March of 2009.

Note: Sample data shall be submitted to the CIRCA site after sampling in order to avoiding multiple laboratory tests on the same lighting chain. Participants are requested to submit the data on the samples they have taken on the earliest convenient moment.

Datasheets to facilitate a uniform way of reporting will be developed and made available.

The final report will include:

an overview of the importers/manufacturers of luminaires where inspections have taken place, where possible the brands they are marketing and any additional information on the market that is available from this research;

- A list per member state of the luminaires that have been sampled and the results of the investigation of the conformity with the administrative requirements for these luminaires;
- An overview of the results of the technical investigations for all lighting chains, indicating where shortcomings occurred; classification of the seriousness of the shortcomings found;
- An overview of the measures taken in the member states against luminaires with shortcomings;
- A summary of the comments of the Member States with respect to the difficulties encountered and their suggestions for improvement of future cross border market surveillance activities;
- Conclusions & Recommendations.

Confidentiality

Within the scope of this project two forms of information can be distinguished that may be of a confidential nature:

- 1) the data concerning the luminaires, their manufacturers, importers or retailers and their shortcomings have to be treated confidential in the legal systems of several Member States. Therefore such data will not be published fully in the report of the project, but they will be made anonymous for publication.
Data giving the details of the luminaires and the companies inspected should be downloaded

to the closed section of CIRCA made available for that purpose, however, so that participants can see which luminaires have (already) been tested in other Member States.

- 2) Data concerning the contributions of the participants and the evaluations of their contributions will also be given anonymously in the final report, as is usual for the participants in round robin tests. Each participant will of course be informed about the identity of his own contribution.

Timetable

- 1st November 2007: Start of Phase 1: Market orientation;
-
- 1st March 2008: End of phase 1 and start of phase 2:
Establishing cooperation with customs, start of sampling, results of technical checks and tests, administrative information have been reported, information on legal measures taken against non compliant products have been reported by the participants;
- 31st March 2009: End of phase 3: administrative information have been reported, information on legal measures taken against non compliant products have been reported by the participants; Finalizing project report.

ANNEX I in LVD**PRINCIPAL ELEMENTS OF THE SAFETY OBJECTIVES FOR ELECTRICAL EQUIPMENT
DESIGNED FOR USE WITHIN CERTAIN VOLTAGE LIMITS****1. General conditions**

- a) The essential characteristics, the recognition and observance of which will ensure that electrical equipment will be used safely and in applications for which it was made, shall be marked on the equipment, or, if this is not possible, on an accompanying notice.
- b) The manufacturers or brand name or trade mark should be clearly printed on the electrical equipment or, where that is not possible, on the packaging.
- c) The electrical equipment, together with its component parts should be made in such a way as to ensure that it can be safely and properly assembled and connected.
- d) The electrical equipment should be so designed and manufactured as to ensure that protection against the hazards set out in points 2 and 3 of this Annex is assured providing that the equipment is used in applications for which it was made and is adequately maintained.

2. Protection against hazards arising from the electrical equipment

Measures of a technical nature should be prescribed in accordance with point 1, in order to ensure:

- a) that persons and domestic animals are adequately protected against danger of physical injury or other harm which might be caused by electrical contact direct or indirect;
- b) that temperatures, arcs or radiation which would cause a danger, are not produced;
- c) that persons, domestic animals and property are adequately protected against non-electrical dangers caused by the electrical equipment which are revealed by experience;
- d) that the insulation must be suitable for foreseeable conditions.

3. Protection against hazards which may be caused by external influences on the electrical equipment

Technical measures are to be laid down in accordance with point 1, in order to ensure:

- a) that the electrical equipment meets the expected mechanical requirements in such a way that persons, domestic animals and property are not endangered;
- b) that the electrical equipment shall be resistant to non-mechanical influences in expected environmental conditions, in such a way that persons, domestic animals and property are not endangered;
- c) that the electrical equipment shall not endanger persons, domestic animals and property in foreseeable conditions of overload.