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STANDARDIZATION MANDATE TO CEN RELATIVE TO THE SAFETY OF CONSUMERS AND CHILDREN

LIGHTERS

INTRODUCTION

This mandate under the framework standardisation mandate in the field of consumer safety deals with lighters.

Lighters are defined as a manually operated flame-producing devices employing a petrochemical derivative as a fuel and normally used for igniting cigarettes, cigars and pipes.

There are two basic types:

- (A) Fluid Lighters - Lighters with an exposed wick and employing liquid hydrocarbons as a fuel. They are usually flint/friction wheel operated.
- (B) Gas Lighter - Lighters which employs liquefied hydrocarbons as a fuel such as n-butane, isobutane and propane whose gauge vapour pressure at 24 C exceeds 104 kPa (15psi). The fuel is stored in a sealed container able to withstand the vapour pressure.

Note There are currently a number of derivatives, particularly but not exclusively of type (B): Refillable, Disposable, Adjustable (to vary the flame height), Non-adjustable, Windproof, Self-extinguishing, Catalytic and Novelty.

The definition of a disposable lighter is in the existing standard a lighter with an integral supply of fuel and that is not intended to be refuelled. (Note: some gas lighters, claiming refillability, are almost indistinguishable from the disposable variety and can be defined as being in the same price bracket).

Disposable Butane lighters were introduced in the early 1960's and have been widely developed and marketed since and are still being vigorously developed.

A Novelty lighter is not defined in the existing standard. In this text it is any lighter which has an enclosure which is shaped, decorated, incorporates devices, or imitates products so that it is likely to be treated as a toy by children.

European lighter annual sales are now in the region of 723 million - the overwhelming proportion of which are of the "disposable" gas fuelled variety.

Each disposable lighter is capable of producing some 600-2000 lights. This amounts to 1275 billion lights per year which is more than 12 times that of match lights.

IDENTIFICATION OF THE RISKS

It can be said that all lighters are potentially hazardous products on three counts:

1. They produce a flame or heat column.
2. They contain flammable liquid or gas which, under some circumstances, can spill or leak.
3. If stored or used in elevated ambient temperatures lighters can leak, rupture, fragment or explode (e.g. when left exposed to the sun in a confined space - inside a car).

It follows that there are two danger areas:

- i. Dangers resulting from the use or misuse of lighters in the ignition of other materials (1 above).
- ii. Dangers inherent to the fuel or construction of the lighter itself unless manufactured to high standards (2 and 3 above).

The existing EN ISO 9994:1996 Standard "Lighters - Safety Specifications" is intended to provide a proper standard of quality, reliability and safety for the consumer coupled with appropriate manufacturing test procedures.

It takes into account a reasonably foreseeable degree of misuse by the user but it does not include the "misuse" attributable to children playing with lighters.

Serious accidents, damaging and costly fires, injuries and deaths related to lighter use across Europe have risen in relation to the number sold. However, it can be argued that statistically such incidents represent only a minute proportion of the very high volume of lighters in the hands of the users. Nevertheless the results of fire can be horrendous to those involved and call for constant vigilance to adherence to standards and to improve them.

In most Member States the number of accidents, fires, non-fatal and fatal injuries are said to be generally static reflecting the mature nature of the market for lighters.

There are special reasons for the significant increase in the market and related incidents, injuries and deaths in the United Kingdom but it is expected that here too a plateau is being reached.

It is also important to note that in the United Kingdom market penetration by very cheap imports from outside the EU is 30%, in Spain the figure is 35-40% but in France it is only 5%. This is said to be due to the strong traditional position in the French retail environment which has resisted the importation of low quality lighters that may not meet the voluntary European Standard.

SUMMARY OF EVIDENCE AND INCIDENTS

The following information is quoted from "European research - accidents caused by children under 5 playing with lighters and matches - February 1997", commissioned by the British Department of Trade and Industry. In producing the report a total of 168 respondents in the EU and Switzerland were interviewed. However, the availability of data throughout Europe is extremely variable and it is thought that the resulting table represents an underestimate of the true level of accidents that occur.

Accidents caused by children under 5 playing with lighters

	Fires	Non-fatal injuries	Fatal injuries
Lower	820	180	12
Best estimate	1220	260	19
Upper	2800	400	41

From the above it can be seen that the best estimate is 1220 fires, 260 injuries and 19 deaths each year in the European Union caused by children under five playing with lighters.

In the United Kingdom the number of accidents has risen dramatically reflecting the threefold increase in lighter sales following the removal of tax on lighters in 1992. This has been coupled with a large influx of imports from outside the European Union.

Consistently respondents considered that fires started by children under 5 occurred in the home and very occasionally in the family vehicle. Typically the child is in the lounge or bedroom in the early morning playing on its own with a brightly coloured lighter which it has found lying around. It lights some scrap of paper, then clothing or bedding or curtains catch fire. In some southern continental countries the accidents tend to happen during the 2-3 hour siesta period.

The following is extracted from "Lighters and fire hazards Report 1995/96" - The Swedish National Board for Consumer Policies (Konsumentverket), 1997:

“Chief Rescue Officers in Sweden responded that lighters were involved in well over 100 fires during the last three years. In at least 5 cases very serious fires were due to small children playing with lighters. In another 9 cases severe damage was caused by lighters the majority of which were the result of children playing with lighters”.

The following sights a few of the cases of injury or death and serious fire which have been brought to public attention in the United Kingdom :

- September 1996 - 6 year old boy critically burned from waist up. Accidentally ignited mothers disposable cigarette lighter - showered with flaming butane. (Doncaster Star).
- April 1996 - Scottish women suffered very severe burns to whole of her front upper body - lighter turned into a "flame thrower". ("Which Magazine", RoSPA).
- August 1996 - Toddler died after playing with disposable lighter in his fathers parked car. Cause of death -inhaling fumes of resultant fire. (Surrey Herald).
- July 1996 - Inquest verdict - 3 year old boy may have caused death of elder brother and two part-time firemen - playing with disposable lighter. (Shropshire Star).
- March 1996 - Blackpool, Foxhall Market - 16 buildings and 9 vehicles severely damaged, 500 persons evacuated. Cause carousel display of 700 disposable lighters. Started by child igniting one lighter whilst on carousel. (Lancashire County Fire Brigade. Video of "reconstructed" test available).
- 1996 - 4 year old child burnt to death in family car - left alone for a few minutes. Probably found disposable lighter hidden in cigarette packet or lighter exploded. Car burnt out. (Consumer Show - Meridien TV - June 1997. Video of programme available).
- May 1997 - Two toddlers died in a house fire started by children playing with a disposable lighter. Killed by fire fumes. (Weekly News, Manchester).

The following table shows some accident data involving lighters, collected in Belgium, France, the Netherlands and Norway :

COUNTRY	PERIOD	NUMBER OF ACCIDENTS	AGE	SEX	SOURCE
Belgium	1990-1995	12	50% younger than 20	83% men	EHLASS Belgium
France	1986-1995	66	42% younger than 15	68% men	EHLASS France
Netherlands	1986-1995	61	57% younger than 20	64% men	PORS Netherlands
Norway	1990-1995	28	32% younger than 12	no info	National Institute of Public Health

Between 1984 and 1994, 28 people have been treated at burns-centres in the Netherlands, following an accident involving lighters. 50% of these people were younger than 10.

(Source : Consumer Safety Institute - The Netherlands)

Between 1990 and 1994, 84 accidents involving lighters were mentioned in local and national newspapers in the Netherlands. More than 60% of these accidents happened to children younger than 10. (Source : Consumer Safety Institute - The Netherlands)

United Kingdom Home Office fire data show that in 1993, 631 fires in dwellings were caused by children playing with lighters. Six people died in those fires - four of them children under 5 - and 286 were injured.

EN 9994:1996 REQUIRED IMPROVEMENTS

A. CHILD RESISTANCE AND CHILD APPEAL (NOVELTY LIGHTERS)

The United States Consumer Product Safety Commission (CPSC) recognise fire as a leading cause of accidental deaths among children younger than five years old. More specifically that disposable and novelty cigarette lighters are involved in many such accidents. The reports quoted above strongly confirm the same across Europe.

In July 1994 the CPSC introduced a Federal Regulation 1210 - Safety Standards for Cigarette Lighters. This is applicable to **all disposable and novelty** lighters. Identical regulations were also later introduced by the Canadian Authorities.

As a result of the child resistance measures (CR) the CPSC expect the prevention of up to 100 deaths annually and very large savings in societal costs. A CPSC follow-up report will be collated and analysed over the next 18-24 months.

The requirements of the Federal Regulation are that such lighters must be resistant to successful operation by children under 5 years of age.

The CR measures must not impair safe use, must be effective throughout the lifetime of the lighter and not be easily overridden or deactivated.

It is required that all disposable and novelty lighters shall be tested for Child Resistance by "Child Panels", the composition of which and the manner of conducting the tests is defined in depth.

Manufacturers and importers of any lighters are subject to the standard and must issue a certificate of compliance.

The European standard does not contain requirements on CR mechanisms. Such now needs to be introduced. It does not necessarily follow that a European Standard covering CR would operate on the basis of Child panels. Other forms of defining the requirements should be considered.

Part of such a definition should require the CR mechanism to reset into a positively inoperable mode after each attempted ignition operation.

An important factor for avoiding accidents with lighters involving children is not to make the design attractive to children. It should be clearly stated in the standard that no lighter defined in it should have an enclosure which is shaped, decorated, incorporates devices or imitates products so that it is likely to be treated as a toy by children.

B. FLAME HEIGHT - ADJUSTABLE LIGHTERS

Since the early days the following has appeared in the EN ISO Standard:

"Maximum flame heights specified in this International Standard will be reconsidered periodically with a view to gradual reduction in line with technological progress".

The permitted flame heights have remained unaltered and are currently as follows:

- | | |
|------------------------------------|------------------|
| i. Non-adjustable - windproof | 120 mm (4.7 ins) |
| ii. Non-adjustable - non-windproof | 50 mm (2 ins) |
| iii. Adjustable | 150 mm (6 ins) |

Consumer interest bodies and Fire Authorities can see little justification for a 150 mm (6 ins.) flame height. However there are reputedly technical problems relating to valve design and consistency in manufacture.

Adjustable lighters are required in part to allow user compensation for changing flame heights arising from varying ambient temperature and pressure conditions during use.

This situation should be addressed with a view to reducing the permissible maximum flame heights significantly.

C. CATALYTIC LIGHTERS

The main feature of these products is an "invisible" flame (heat column) - which has significantly reduced visibility. It is established that the boundaries of the "heat column" are similar to those of a normal lighter flame but methods of routinely checking the height requires consideration. The distribution of heat intensity related to Catalytic action can be different to a conventional flame.

Various basic types are being developed - some are already in the market place. One advantage claimed for such lighters is wind resistance.

Some are truly catalytic in action - that is to say they conform to the technical definition of a catalyst as: "the addition of some substance which changes chemical reaction but which itself undergoes no chemical change thereby". Some are hybrid versions with related degrees of visibility and various heat column/flame profiles.

It is already agreed that such lighters should be incorporated into the EN ISO 9994 Standard, much of which could apply without alteration. However there are important areas to be defined and test procedures to be adopted.

Disposable versions will be introduced. It must be ensured that Disposable varieties of this type of lighter are covered by the "Child Resistance" requirements of the standard. It may be desirable to define "visibility" and to extend "Child Resistance" to all gas lighters where the flame/heat column visibility falls below limits to be defined. The Standard must also make clear that the unacceptability of child appealing lighters also applies.

D. PRESSURE VESSELS AND PLASTIC MATERIALS

The only requirement in the existing standard related to pressure vessels are found in Article 3 (conformity tables) which only states that the vessel has to be manufactured according to "Sound Engineering Practice".

The characteristics and properties of plastic materials are well documented including Impact Resistance and Flammability specifications.

There may be little, if any, reason to suppose that properly selected "Plastic" materials are inappropriate for these volatile explosive gas containers. However, ill chosen plastics type/specification or suspect material quality and inferior processes must be guarded against.

Among the "Incidents" listed above (and common in others not listed) are those where disposable lighters have "exploded" due apparently to increased internal pressure on temperature rise (e.g. inside cars) perhaps compounded by gas leakage or due apparently to structural weakness or a combination of both.

The EN ISO 9994:1996 Standard addresses this aspect insofar that it provides a "Drop Test" (to withstand safely a drop that may occur during the lighters use) and it also covers an "Elevated temperature test" to determine the ability of the fuel reservoir to withstand elevated temperatures without rupture/fragmentation.

These requirements for gas-fuel reservoirs (pressure vessels) should be reassessed with particular reference to rupture and fragmentation.

Considerations should be given to provisions for more exacting tests (e.g. the temperatures for the Elevated Temperature test, the specifications for the Drop test and the need for impact- and flammability tests of the reservoir body).

MANDATE

Given that:

- Some 723 million lighters are sold annually throughout Europe;
- The EN ISO 9994:1996 Standard “Lighters - Safety Specifications” is available as a definition of safety standards against which effective action under the Directive on general product safety can be taken;
- This Standard does not incorporate Child Resistant requirements;
- Many accidents and fires are attributable to lighters often resulting in severe injury or death;
- "Best practice" is a requirement of Standards;
- New types and versions of lighters continue to be developed;
- There is a need significantly to improve the Standard;

pursuant to the mandate the European organisation responsible for Standardisation in this sector (CEN) is requested to accept a mandate to upgrade the current EN 9994:1996 Standard or to prepare a new Standard which would:

- include Child Resistance measures for all disposable lighters;
- include a statement that no lighter of any of the types covered by the Standard may have an enclosure which is shaped, decorated, incorporates devices or imitates products so that they are likely to be treated as toys by children;
- reduce permissible maximum flame heights;
- incorporate so called catalytic lighters in such a manner as to address potential danger from reduced flame/heat column visibility and the possible effects of heat distribution on the construction of such lighters;
- reassess the criteria for lighter gas fuel reservoirs (pressure vessels) with particular reference to rupture and fragmentation.

EXECUTION OF THE MANDATE

1. CEN shall inform the Commission of the arrangements to be adopted for the execution of the work within three months of acceptance of this mandate.
2. CEN shall present a list of target dates for the presentation and adoption of the standard, to the Commission, within six months of acceptance of this mandate. The aim should be to specify a target date for the presentation of the draft standard which should not be later than two years from the acceptance of the mandate. Where, in elaborating the work, it becomes necessary to amend the programme, CEN shall inform the Commission of the changes, with target dates in the case of additions to the programme; the programme as amended will in principle then be covered by this mandate. The Commission will in its turn inform the SOGP, the SOGITS and the Committee on Standards and Technical Regulations.
3. Relevant interested parties, such as representatives of consumers and industry, shall have the possibility to participate in the process. The developments on the international level shall be taken into account.
4. The European Standard (EN) shall be adopted by the target date specified. At this date, it shall be available in German, English and French.
5. The European standard adopted shall be transposed into national standards and differing national standards shall be withdrawn from the catalogues of the national standards organisations in the Member States within six months of their adoption.
6. Acceptance by CEN of this mandate starts the standstill period referred to in Article 7 of Council Directive 83/189/EEC as last amended by Directive 94/10/EC of the Council and Parliament .

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