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M 304 EN

STANDARDISATION MANDATE TO CEN RELATIVE TO FIRE RESISTANCE OF NIGHTWEAR

This mandate is given under the framework standardisation mandate in the field of consumer safety.

A nightwear is a garment that is either supplied as nightwear intended by production or a wear which is similar to and commonly worn as nightwear. In particular, this includes bathrobes, negligees, snuggle wraps, dressing gowns, night dresses and pyjamas.

1 – Introduction.

There exists at the moment no European legislation or requirements-standards on the subject of fire resistance of nightwear.

The Netherlands has requested a specific mandate for fire resistance of nightwear to be elaborated under the framework mandate for consumer safety.

According to a letter from the Dutch authorities the fire properties of certain kinds of textiles are such that, when they are exposed for a very short time to a small heat source such as a candle or a match, they very quickly ignite or there is very rapid flame propagation. Investigation and accident records from The Netherlands show that consumers are particularly at risk if such textiles are included in the making of nightwear.

Fires involving nightwear can lead to serious and sometimes fatal injuries. The burns are painful and may lead to permanent scarring, depending on the degree of burning and the body surface involved. The medical and sometimes psychiatric treatment required may take long time and is in many cases very expensive.

On this base and with the agreement of the committee of the directive 98/34/EEC, the Commission passed on to CEN in February 1998 a mandate concerning a feasibility study on the production of a requirement standard of the fire resistance of nightwear.

The study was completed in June 1999. CEN considers it possible to produce requirement standard on the fire resistance of nightwear, considering the use of materials with a burning behaviour which reduces the burning risks and the use of flame retardant, also taking into account their toxic nature (Feasibility study – Fire

resistance of nightwear – Burning behaviour. Document CEN/TC/248/SC1/WG5 N9r2 of 14 June 1999). However, the study does not deal with the toxicity of gases evolved during combustion and any other side effect.

The Commission then consulted the Member States on the occasion of the meeting of December 1999 of the committee of Directive 98/34/EC on the preparation of a standardisation mandate for the CEN. Member States expressed a favourable opinion. The committee of the Directive 92/59/EC was also consulted in December 1999 and gave a favourable opinion as well.

2 – Identification of risks.

2.1 General

Presently only few statistical researches on nightwear flammability accidents are available both at European and international level. Some countries, as Norway, United Kingdom, Denmark and the Netherlands have published documents on this topic.

The main findings of a British study are here reported (Consumer Safety Research – Clothing flammability accidents study – DTI – March 1997).

2.2 UK clothing flammability accidents

2.2.1 Number of accidents

There are at least 750 clothing flammability accidents in the UK each year, i.e. 13,3 accidents per million population (pmp). Further cases were identified, but could not be fully verified as 'bona fide' cases within the definition of this study. The number of accidents is stable, but varies about the mean level (i.e. 750 accidents \pm 25%).

An estimated 80 (11%) of clothing flammability accidents are fatal (1,4 pmp). 670 (89%) are non-fatal, of which 225 (30%) involve severe burns requiring in-patient admissions (4 pmp) and 445 (59%) are minor accidents (7,9 pmp).

Overall, burns account for 99% of all injuries. Injuries caused by inhalation of fumes/suffocation are minimal for non-fatal accidents (less than 0.3%), but account for 9% of fatal accidents.

2.2.2 Age/sex

Females account for 55% of all clothing flammability accidents and males 45%. Minor accidents occur in all age groups. Above average levels of minor accidents (UK average is 7.9 pmp) generally occur amongst all children under 18, the highest being boys aged 14-17 (24,5 pmp). The frequency of minor accidents steadily decreases as adults get older.

The proportion of accidents that are severe increases significantly for children under 14 (26 % minor 36 % severe) and elderly people over 60 (12 % minor 25 % severe). Fatalities are almost entirely in the over 60 age group (82%), especially the over 70s, and are very low in other age groups.

Above average numbers of severe accidents (cf. the UK average of 4 pmp) is highest amongst girls under 18, ie 0-5 years (12 pmp), 6-13 years (9,4 pmp) 14-17 years (12,2 pmp), and women over 70 (9,7 pmp). Above average fatalities (cf. UK average 1,4 pmp) is highest amongst women over 70 (8,8 pmp) and men over 70 (7,7 pmp). Severe/fatal accident levels are insignificant/low in most other age/sex groups.

One reason for the increased proportion of severe of accidents amongst children is that children are prone to panic rather than attempting to put the flames out. Instead they scream for help, and continue to burn until an adult (who is usually not too far away) comes to extinguish the fire.

Reasons for the increased proportion of severe/fatal accidents amongst older people (over 60) are thought to be that older people a) are less aware that they have caught alight; b) often lack the motive capabilities to extinguish flames; c) are often alone, so continue burning, because nobody is at hand to put out the fire for them; d) suffer the after effects to a far greater extent than younger people.

The other main reason for higher levels of severe/fatal accidents in the high risk female groups is that potentially loose fitting/flowing garments (notably dresses and night-dresses) were involved in 75% to 100% of the accidents in these groups.

2.2.3 Causes of accidents

The three most frequent causes of clothing flammability accidents are cookers - mainly gas hobs (240 accidents each year), fires - gas, coal and electric (159) and matches (79). Outside/garden fires (45), smoking (38), lighters (29) and candles (14) are the other main causes of accidents.

The most frequent causes of severe injury accidents are fires (37%), followed by cookers (19 %), matches (18 %) and lighters (7%). The most frequent causes of fatal accidents are fires, especially electric fires (28%), followed by cookers - mostly gas cookers (26%) and smoking (22%).

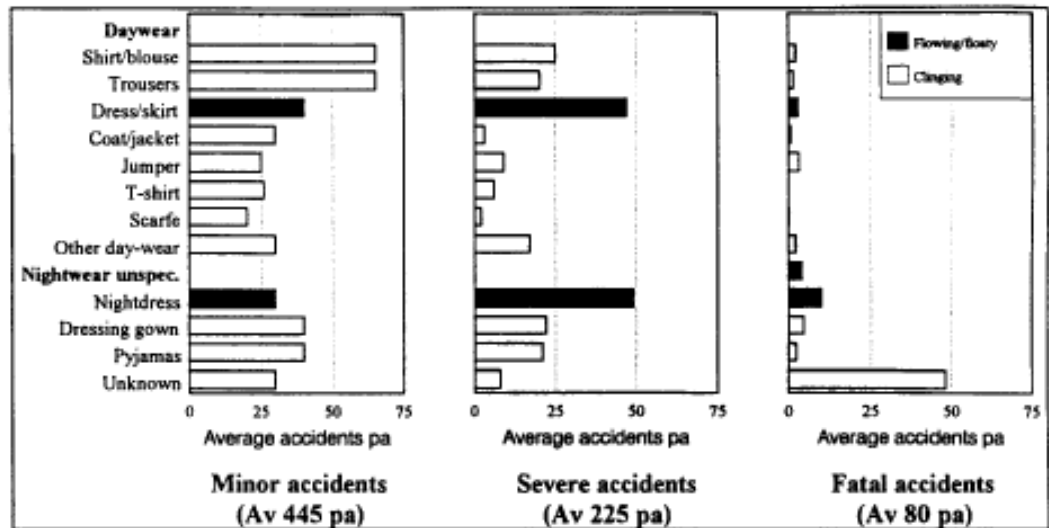
Naked flames (sources include gas cookers, gas/coal fires, outside fires, candles, matches and lighters) are present in a high proportion (approximately 75% of known causes) of all clothing flammability accidents.

2.2.4 Type of clothes and material

Daywear accounts for 60% of clothing flammability accidents, and nightwear 28%. Shirts/blouses (93 accidents), trousers (85) and dresses (82) are the three daywear garments most frequently involved. Coats/jackets (38), jumpers/cardigans (38), T-shirts (35) and scarves (25) are also significant. Nightdresses (79) and dressing gowns (74), followed by pyjamas (60) are the three nightwear garments most frequently involved.

Loose fitting/flowing garments (especially dresses/skirts and nightdresses) are more frequently mentioned in severe/fatal clothing flammability accidents (see Figure 1).

Figure 1: Statistics by type of clothes



Where the material was mentioned, natural fibres account for about 42% of the accidents, synthetic fibres 42% and natural/synthetic mixed fibres 16%. The most common materials specifically mentioned were cotton (29%), nylon (26%), cotton-polyester mix (13%), wool (6%) and 'jeans material' (4%).

2.2.5 Conclusion

- i) The highest risk groups, i.e. where there are most severe/fatal accidents per million population are - women over 70, girls under 18, and men over 70.
- ii) In addition boys aged 14-17 are especially prone to minor accidents, usually due to playing with matches, lighters and outside fires.
- iii) Clothing at highest risk is loose fitting, flowing garments (especially dresses, dressing gowns and nightdresses) which are mainly worn by women. No specific type of fibre was identified in this study as being consistently higher risk.

3 – Current legislation and standards.

3.1 - European and national legislation.

The use of some flame retardants in textile products has been prohibited through Directive 76/769/EEC as amended by Directives 79/663/EEC and 83/264/EEC.

In the UK nightwear for children under 13 must meet specified flammability performance and labelling requirements. The United Kingdom Nightwear (Safety) Regulations 1985, issued under the Consumer Safety Act 1978, apply to nightwear and garments commonly worn as nightwear. Nightwear (except pyjamas and cotton terry towelling bath robes) for children between 3 months and 13 years of age must conform to certain flammability performance requirements while other nightwear must carry labels that indicate whether they conform to these requirements or not.

Norway has enacted a regulation in 1984 prohibiting highly flammable textiles for children's clothing.

The Netherlands have enacted a regulation in 1997 concerning fire resistance of nightwear.

Legislation regarding children's night clothes was also found to be in force in the USA, Australia and New Zealand.

3.2 - Notifications pursuant to Directive 92/59

Sweden made one notification on flammable clothes in 1996. However the product was not a nightwear but a sweater.

3.3 - European and National standards

It has been regarded difficult to develop flammability standards for textiles. CEN has only developed test method standards on flammability (EN 6940, EN 6941, EN 1103. Requirement standards have not yet been developed.

There is an ISO-standard (ISO 6941) on measurement of flame spread properties of textile fabrics and another (ISO 6940) on determination of ease of ignition. A Dutch and a French standard have been derived from them.

There are British standards on specification for flammability performance of fabrics and fabric assemblies used in sleepwear and dressing gowns and methods of test for flammability of textile fabrics when subjected to small igniting flame.

Two German standards deal with determination of burning behaviour of textiles.

The Swedish and Norwegian regulations make reference to an American ASTM-standard on a test-method for flammability of clothes textiles other than children's sleepwear or protective clothing.

Normative references

EN 1103:1995, Textiles - Burning behaviour - Fabrics for apparel - Detailed procedure to determine the burning behaviour of fabrics for apparel.

EN ISO 6940:1995, Textile fabrics - Burning behaviour - Determination of ease of ignition of vertically oriented specimens. (ISO 6940:1984, including Amendment 1:1993)

EN ISO 6941:1995, Textile fabrics - Burning behaviour - Measurement of flame spread properties of vertically oriented specimens. (ISO 6941:1984, including Amendment 1:1992)

ISO 10047:1993, Textile – Determination of surface burning time of fabrics

I.S. 148:1988, Flammability and labelling requirements of fabrics and fabric assemblies used in children's nightwear. (NSAI National Standards Authority of Ireland)

BS 5722:1984, Flammability performance of fabrics and fabrics assemblies used in sleepwear and dressing gowns. (BSI British Standards Institution)

DIN 54366:1986, Testing of textiles; determination of burning behaviour; vertical method.

DIN 54333:1981, Testing of textiles; determination of burning behaviour; horizontal method.

NEN 1722:1986, Burning behaviour of textile vertically oriented fabrics. Determination of the ease of ignition and flame spread properties.

NF G07181:1985, Textile fabrics, burning behaviour, determination of ease of vertically oriented specimens.

AS 2755:1985, Textile fabrics – Determination of burning behaviour. (SAA Standards Association of Australia)

AS 2755.3:1988, Textile fabrics – Determination of burning behaviour – Determination of surface burning time. (SAA Standards Association of Australia)

AS 1249:1990 + Amdt 1/1992, Children's nightclothes having reduced fire hazard. (SAA Standards Association of Australia)

ASTM D-1230:1994, Test method for flammability of Apparel Textiles

NT FIRE 029:1997, Textile fabrics: Ignition and flame spread (Nordtest method, Denmark/Finland/Island/Norway/Sweden)

ISO/DIS 13943:1998, Fire safety - Vocabulary.

ISO/TR 9240:1992, Design of apparel for reduced fire hazard.

3.4 - Standardisation work in progress

The CEN/TC 248/SC 1 “Burning behaviour of textiles, textile products and textile containing products” under the CEN/TC 248 “Textiles” will soon have completed its work on standards for burning behaviour of textiles in general. No specific standard on flammability of nightwear has been developed.

4 – Safety requirements.

The standard must provide for the requirements of the General Product Safety Directive (92/59/CE) to be met. According to article 2b, safe product shall mean any product which, under normal or reasonably foreseeable conditions of use, including duration, does not present any risk or only the minimum risk compatible with the product's use, considered as acceptable and consistent with a high level of protection for the safety and health of persons.

Fire resistance of nightwear must be as higher as possible, taking into account the parameters described in paragraph 4.1.

Nightwear intended for children and disabled people shall provide a higher fire safety level because children and disabled people cannot handle fire situations properly.

Nightwear shall be manufactured so that it does not present health risks arising from the chemical properties of the fabrics of which they are made or from the substances and preparations used in treating and coating the nightwear. Risks of acute or chronic poisoning, corrosive, irritant or allergenic effects, or other serious adverse effects including inter alia carcinogenic, mutagenic, genotoxic or developmental effects arising from ingestion, skin contact and inhalation must be avoided.

Fumes released during combustion of nightwear should not be dangerous for health taking into account the time of exposure to the fumes and their toxicity.

4.1 – Fire resistance.

The standard must address the fire resistance of nightwear.

The feasibility study identifies a set of parameters, which determine the fire resistance and shall therefore be taken into account by the standard. It identifies especially the rate of flame spread and flame surface flashes as the two main parameters to be considered. Test methods capable to measure these two main parameters must be determined.

Besides, the influence on burning behaviour of other aspects such as care maintenance (nightwear aged by cleansing and drying) and design (for instance loose clothing will ignite more easily than tight fitting clothing) of nightwear is also emphasised and must be addressed in the standard. The influence of the melting of fibres of different nature shall be also addressed.

Finally, a classification scheme of fabrics and blended fabrics regarding fire resistance shall be determined.

4.2 – Toxicology and flame retardants.

In order to slow down fast spread of fire in certain textile products and clothes, such as nightwear, use of flame retardants can be envisaged. But, given the possible toxic nature of these substances, concerning both human health and the environment, the Commission is carrying several works on to assess the risks of certain flame retardants under regulation 93/793.

In case of addition of flame retardant, the standard must provide for clear guidance on the possible use of flame retardants substances and preparations according to the following principles:

- Flame retardants substances and preparations should not have been prohibited by Community legislation.
- The only flame retardants substances and preparations that can be used are those for which the Scientific Committee for Toxicity, Eco-Toxicity and Environment (SCTEE) of the European Commission has carried out the evaluations showing that they do not pose any unacceptable risks.
- They should not have been assessed according to the provisions of Regulation 93/793/EEC as posing unacceptable risks in their foreseen use as textile flame retardants. They should not have been classified as dangerous to human health according to the provisions of Directive 67/548/EEC and Directive 88/379/EEC.
- In addition, they should not be dangerous to the environment and they should not adversely affect other essential product characteristics such as comfort and durability or make the textile difficult to maintain (washing, drying).

5 – Mandate.

For the reasons set out above, CEN is requested to accept a mandate to produce standards for requirements for flammability aspects of nightwear taking into account the risk-situations described above and prospects to require the use of:

- (1) materials with a burning behaviour which reduces the burning risks;
- (2) possible flame retardants, taking into account their toxicological considerations.
- (3) other means to reduce the risk for burns.

Technical documents from international sources addressing the subject should be taken into account when relevant (for instance Australian and New Zealand standard – “children’s nightwear and limited daywear having reduced fire hazard” – AS/NZS 1249:1999).

6 – Execution of the mandate.

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.

CEN shall present target dates for the presentation and adoption of the draft standards to the Commission within six months of the acceptance of this mandate. CEN shall present the draft standards listed therein by the target dates specified.

The European Standards (EN) shall be adopted by the target dates specified. At these dates, the three linguistic versions (German, English and French) shall be available, as well as the correct titles in the other European Union languages.

CEN shall notify the Commission of the addition or removal of standards projects, with their target dates in the case of additions, which it approves for addition to its work programme that may be necessary.

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.

The European standards accepted 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.

Acceptance by CEN of this mandate starts the standstill period referred to in Article 7 of the Council Directive 98/34/EEC of 22 June 1998 (Of N° L 204/37 of 21 July 1998)