

**Review of Parts 2 of EN 60335  
with respect to the safety of children and older and disabled people**

An ANEC Research & Testing Project 2006

Commissioned by ANEC and led by Ricability

ANEC : The European Consumer Voice in Standardisation  
Ricability : Research and information for consumers with disabilities

**Note:**

The proposed text changes to the Parts 2 of EN 60335 are presented separately and are meant to be submitted to CENELEC TC 61 WG 4.

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## 1 Introduction

This is a report of an ANEC Research & Testing project led by Ricability to produce proposed changes to three Parts 2 of the EN 60335 series of safety standards which cover household electric appliances<sup>1</sup>, and guidance on the safety needs of children and older and disabled people. The review and proposed text changes demonstrate how product standards can better address the safety of these users of household electric appliances.

The proposals relate to the following standards:

EN 60335-2-2:2003	Particular requirements for vacuum cleaners and water-suction cleaning appliances
EN 60335-2-17:2002	Particular requirements for appliances for blankets, pads and similar flexible heating appliances
EN 60335-2-52:2003	Particular requirements for oral hygiene appliances.

The proposed text changes to the standards are presented in this report on CENELEC standard user comment forms for review by relevant working groups and technical committees. It should be noted that the proposed changes cover both safety issues that are common with those raised in reviews of other Parts 2 standards and other safety issues which are specific to these particular standards. To distinguish between the two, the new standard-specific proposals are in *italics*.

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<sup>1</sup> Part 1 covers general requirements: EN 60335-1:2002. Household and similar electrical appliances – Safety – Part 1: General requirements

This report also includes three appendices to assist technical committees. Appendix 1 is a table that lists all the EN 60335 Parts 2 standards and indicates older and disabled people who might have specific safety needs of the products covered. Appendix 2 is a summary of hazards that children can encounter when using the above products. Appendix 3 is a table of the hazards and risks both children and older and disabled people can encounter with the range of consumer products covered by the EN 60335 Parts 2 standards.

## 2 Background

For many years ANEC and other consumer bodies have been concerned about the limited scope of household electric appliances standards. The Scope of the current Part 1 of EN 60335 includes a clause that the standard 'does not in general take into account the use of appliances by children and infirm people without supervision'. In recent years the legality of this clause was questioned by the ANEC Legal Study 2004<sup>2</sup>. Research commissioned by ANEC<sup>3</sup>, the UK Department of Trade and Industry<sup>4</sup>, British Standards Institution<sup>5</sup> and the German standards organisation DIN<sup>6</sup> has shown that children and older and disabled people use household electric appliances for their intended purpose and without supervision. Similarly during recent years, guidance has been developed to assist technical committees to address the needs of children and of older and disabled people<sup>78910</sup>.

ANEC's strategy includes demonstrating to technical committees the feasibility of improving standards in respect to the safety of children and older and disabled people. In response, individual members of ANEC's Domestic Appliances

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2 Exclusion clauses in standards under the EU Low Voltage Directive 73/23/EC (Children and 'infirm people' using electrical appliances). ANEC Legal Study. 2004.

3 ANEC2003/DOMAP/063. Summary of ANEC study regarding the use of appliances by children. June 2004.

4 Child Appealing Products Research Report. UK Department of Trade and Industry. 2003.

5 Exclusion clauses and ageing survey : a report of findings. Prepared for BSI. March 2004.

6 SPARTHA Survey : Seniors' problems and requests to household appliances. Prepared for Verbraucherrat des DIN. 28 February 2004.

7 ISO/IEC GUIDE 50 : Safety aspects – Guidelines for child safety. ISO/IEC. 2002.

8 CEN/CENELEC Guide 6 : Guidelines for standards developers to address the needs of older persons and persons with disabilities. January 2002.

9 CEN TR13387 : 2004. child use and care articles – Safety guidelines.

10 CEN Guide 12 : Child safety – Guidance for its inclusion in standards.

Working Group developed detailed proposals for text changes to the washing machines and toasters safety standards (EN 60335-2-7 and -2-9 respectively). This was followed by a 2005 ANEC Research and Testing project to develop proposals for a further five Parts 2: cooking ranges (EN 60335-2-6), hairdryers (-2-23), microwave ovens (-2-25), shower heaters (-2-35) and lawnmowers (-2-77).

In 2006 ANEC welcomed the setting up of Working Group 4 of CENELEC Technical Committee 61 with the following terms of reference:

To review the European standard series EN 60335 and amend, where relevant Part 1 and parts 2, with respect to reasonably foreseeable situations where children, older people and people with disabilities come into contact with electrical household appliances.

ANEC is submitting the above sets of proposals to TC61 WG4 according to their programme of work and the output of the current project will similarly be submitted.

### **3 Methodology**

Ricability was commissioned by ANEC to carry out the current project following a restricted tender. The work was led by Ricability's Principal Researcher to provide disability expertise and a team recruited to also provide expertise in child safety and standards development. All project team members had experience as consumer representatives within standardisation. They are: Lindsey Etchell, Chris Evans, Inga Filmer, Terry Gould and Anne Smith.

The three target Parts 2 standards for this project were agreed by ANEC in line with the work programme of CENELEC TC61 WG4.

Project team members worked through meetings and individually using electronic communication. The meetings were used to discuss relevant safety issues and how they might be addressed in the standards. Team members identified, circulated and consulted relevant documents and consulted child safety and age and disability organisations. The first draft proposals were developed outside the meetings by members with most standards drafting experience. By circulation to all team members and discussion at subsequent meetings, the text changes proposed in the comment forms below were agreed.

### **4 Findings**

This project has benefited from other activities and initiatives in the area of making standards more inclusive:

- the same research team addressed the first seven standards as these current three and have gained an overview of both the similarity and differences in changes needed in the different Part 2 standards.

- this project has coincided with the early work of CENELEC TC61 WG4, so has addressed standards known to be scheduled for its attention.
- two members of the research team are also members of TC61 WG4 so we have been able to promote the ANEC proposals, contribute to their development and respond to concerns and questions from other members of the working group when raised.
- where TC61 WG4 have adapted individual clauses in ANEC's proposals, through contributions from industry and other representatives, the research team have been able to reflect these changes in the current sets of proposals.

This section of the report provides further reasoning on wider issues raised by consideration of the target standards.

**4.1 Scope** ANEC's long-term aim is to help make standards more inclusive by removing the general exclusion of children and older and disabled people from their scope. ANEC has been encouraged by the early meetings of CLC TC61 WG4 in identifying and defining the user groups whose safety needs should be addressed in their work. More information on the development of the definitions around disability is given below in 4.3. Here are the definitions concerning children which TC61 WG4 is currently using:

**Very young children:** from 0 to 36 months. They are not expected to use appliances.

**Young children:** older than 36 months and younger than 8 years. They are not expected to use appliances safely unless continuous supervision is given.

**Older children:** aged from 8-14 years. These children can use appliances safely after they have been given appropriate supervision or instruction concerning use of the appliance.

**Children:** includes all the three above definitions.

These definitions were based on ANEC's research findings. However ANEC recognises the need to consider usage of each product group individually. This is demonstrated by our work on EN60335-2-17, which covers electric blankets, pads and similar flexible heating appliances. Research on Sudden Infant Death Syndrome (SIDS) indicates that very young children are safer being kept cool rather than too warm when sleeping. The British Foundation for Sudden Infant Death Syndrome organisation, which has links with other European and international groups dealing with cot death, advise that these products are not suitable for children under the age of 12 months. From this age, the incidence of

cot death declines as a child's body can regulate its core temperature more effectively. Therefore our proposals distinguish between children aged up to one year and children aged one to three – within the definition above for 'very young children'. During the project it has not been possible to identify a suitable sleeping temperature for children under a year in age and further research is needed.

#### **4.2 Children using and playing with electric products**

ANEC research on European children's use of a range of electrical household appliances (footnote 3 above) showed that the majority of parents accept their responsibility to instruct their children on how to use the appliances and supervise this first use. ANEC's proposed changes to Parts 2 of the EN60335 safety standards have acknowledged that in general the standards do not take into account children *playing with* the appliance. Our review of EN60335-2-17 again highlights the need for individual consideration. Very young children – above the age of 1 year – *play on* their beds before or after sleep, sometimes unsupervised, and this usage should be addressed in the target standard. In fact – despite the current exclusion clause in the standard – the research team's view is that the physical stresses likely to be imposed on the blanket are already adequately covered by the standard.

#### **4.3 Entanglement**

Unattended sleeping children were also considered because of the risk of an electric blanket supply cord or any tie tapes becoming wound around their neck and resulting in strangulation. The proposals for EN 60335-2-17 include a requirement for new warnings in the product instructions to arrange the supply cord safely and to remove excess length of tie tapes. Similarly a young child could become entangled in the supply cord of a vacuum cleaner, particularly when it is not plugged into the mains supply. It is not feasible to prevent this by restricting the length of the supply cord, so we support inclusion of instructions in EN 60335-2-2 – that children should be supervised to ensure they do not play with vacuum cleaners and water-suction cleaning appliances.

#### **4.4 Choking and ingestion**

These are hazards that can arise with any consumer product, if small components are not firmly attached or if detachable parts are not too large to pass into a child's airways or stomach. We have drawn attention to the risk of children choking or ingesting components in each of the sets of proposals we have submitted. This is a particular concern for both children and adults with oral hygiene appliances. Our proposed changes to EN 60335-2-52 therefore include the introduction of a drop test, similar to that proposed for hand held hairdryers, a requirement that detachable brushes do not work loose by a simple action, and a chemical challenge test and tuft retention test, both by reference to EN ISO 20127 Dentistry – Powered toothbrushes – General requirements and test methods.

#### 4.5 Safety needs of older and disabled people

The first meeting of CENELEC TC61 WG4 drew a distinction between vulnerable and very vulnerable people as defined by a General Product Safety Directive 'Guide to corrective action including recalls'<sup>11</sup>, and proposed to consider the safety needs of only vulnerable people, as well as children. The ANEC Design For All and Domestic Appliance working groups were concerned that the needs of very vulnerable people were to be excluded from the review. Through its representative on CENELEC TC 61 WG4, ANEC proposed a more inclusive approach whereby disability groups would be considered individually.

The table which forms Appendix 1 of this report was developed to inform ANEC's approach. The knowledge base of the research team was enhanced by consultation with British disability organisations on how older and disabled people use electrical household appliances. The disability groups in the table are identified with reference to CEN/CENELEC Guide 6<sup>12</sup> as having specific needs in their use of household appliances. Some of the ability groups from Guide 6 are not included in the table (taste/smell, voice and allergies) as not being relevant to electrical safety standards. Usage classification in the table distinguishes between product standards which:

- should address the safety needs of disabled people – indicated with 'B1', which aligns with the TC61 WG4 definition 'shall pose no danger for Vulnerable People'
- should not be recommended for use by disabled people whose needs cannot be accommodated with unadapted mainstream products - indicated with 'B2', which aligns with the TC61 WG4 definition 'should not be recommended for use by Vulnerable People'.

The 'Usage classification' column in the table has some B1/B2 entries. These are used for those standards which cover a range of products with different safety issues.

An example section of the table was submitted to TC61 WG4. Although not adopted, it influenced subsequent discussions in the working group. Here are the definitions concerning older and disabled people which WG4 is currently using:

**Vulnerable people:** Persons having reduced physical, sensory or mental capabilities (eg partially disabled, elderly having some reductions in their physical and mental capabilities) or lack of experience and knowledge (eg older children). These persons can use appliances safely after they have been given appropriate supervision or instruction concerning use of the appliance.

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<sup>11</sup> Available at [http://europa.eu.int/comm/consumers/cons\\_safe/gpsd/notification\\_dang\\_en.pdf](http://europa.eu.int/comm/consumers/cons_safe/gpsd/notification_dang_en.pdf)

<sup>12</sup> CEN/CENELEC Guide 6 Guidelines for standards developers to address the needs of older persons and persons with disabilities

**Very vulnerable people:** Persons having very extensive and complex disabilities. These persons are not expected to use appliances safely unless continuous supervision is given or appliances are adapted accordingly with arrangements beyond those foreseen by this Standard.

In the review of the General Product Safety Directive there is a proposal to replace the definition of 'very vulnerable people' with the definition elaborated by WG4.

It should be noted that the definition of 'very vulnerable people' now in use is taken directly from CEN/CENELEC Guide 6: this was at the suggestion of the ANEC representative at WG4.

#### **4.6 Mains cord abrasion**

In reviewing EN 60335-2-2 on vacuum cleaners and water-suction cleaning appliances, consumers with sight impairment and those with slow response time were considered more likely to run the appliance over its supply cord. The research team therefore identified a mains cord abrasion test, which has been developed and used by Intertek Research & Performance Testing, a British consumer test house. Their test forms the basis of a new subclause proposed for the standard. Its introduction would help protect disabled users and all other users of electrical household cleaners.

#### **4.7 Tripping hazard**

Older people in general and visually impaired people in particular are more likely to trip and fall over obstacles in their path. The healing process is slower in older age so resulting injuries can have serious implications. Different protection against this hazard is necessary for electric blankets and vacuum cleaners.

Our proposals include changes to the instructions clauses of EN 60335-2-17 on blankets and similar flexible heating appliances. They require advice to arrange excess supply cord in a safe way and to keep any freestanding controllers off the floor where they might be trodden and slipped on. In addition cord length ranges are proposed to minimise trip hazards, based on the requirements of the Australian standard AUS1364.

Since the supply cord for a vacuum or similar cleaner is extended and moved about during use and may present a trip hazard, our proposal for EN 60335-2-2 is for a brightly coloured cord that is likely to contrast well against any flooring material and so be seen by most people: we suggest orange.

#### **4.8 Stability**

The stability of vacuum cleaners and water-suction cleaning appliances is important so that they do not topple over and injure someone. Upright cleaners should withstand an older or disabled user leaning on them for support. In



addition moving parts should not be exposed by the cleaner overturning and switching itself on. An enhanced stability test is proposed and should be carried out in the most onerous conditions. This test undoubtedly can be developed and improved by vacuum cleaner experts in the standards technical committees and working groups.

#### **4.9 Temperature setting**

As reported above (at 4.1), electric blankets, pads and similar flexible heating appliances are not suitable for children under one year of age. EN 60335-2-17 currently specifies that it should be possible to operate 'blankets and mattresses' without the risk of heatstroke. Since other young children also use duvets, we propose that these be included in the clause. A maximum temperature is proposed for blankets, pads, duvets etc suitable for use in cots and small beds. There are also concerns about people with limited sensitivity to heat. A proposal is included for the construction of appliances to automatically default to a setting suitable for continuous operation after 60 minutes at a higher setting.

Oral hygiene appliances are used by young and older people, who are more likely to have sensitive gums. Therefore we propose that instructions recommend a maximum temperature for water used in oral irrigators.

#### **4.10 Hazards and risks summaries**

During the project the following were developed as working documents:

- a summary of hazards that children could encounter when using the products of the three target standards – electric blankets, electric toothbrushes and vacuum cleaners
- a table of the hazards and risks both children and older and disabled people can be subject to when using any of the electrical household products covered by EN60335 standards.

They form Appendices 2 and 3 of this report. Both can be used as a checklist when reviewing standards to better address the needs of children and older and disabled people.

## **5 Conclusion**

The aim of this project was twofold:

- to review and propose improvements to specific Parts 2 of EN60335 to make the standards better address the safety of children and older and disabled people;

- to provide a safety needs table of all the EN60335 Parts 2 standards which cover electric household products, to identify those that could have safety implications for older and disabled people.

The resulting detailed proposals on the electric blankets, electric toothbrush and vacuum cleaner standards form section 6 of this report. Because of the progress being made by CENELEC TC61 WG4, the electric toothbrush and vacuum cleaner proposals have already been agreed by ANEC working groups and submitted to WG4 for their consideration.

This body of work on standards proposals, through ANEC's Research and Testing projects, is to date forming the basis of the output from CLC TC61 WG4. Individually the sets of proposals demonstrate the feasibility of addressing the safety needs of children and older and disabled people in standards. They also demonstrate that there is no necessity and no justification for excluding the needs of these consumers from electric household appliance standards.