

CEN-CENELEC GUIDE 14

Child Safety

Guidance for its Inclusion in Standards

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The present guide provides advice and information to assist standards' writers of CEN/CENELEC Technical Committees fulfil their obligations under EU Mandate M/293 — Mandate to the European Standards Bodies for a Guidance document in the field of safety of consumers and children — Child safety. This Guide replaces CEN Guide 12 which was adopted by the CEN Technical Board through Resolution BT C020/2006 and which was approved by CENELEC BT decision D130/C104 for publication as a CEN/CENELEC Guide.



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Foreword

The scope of mandate M/293 covers the protection of children from unintentional physical and/or mental injury associated with products, constructions and services. This includes those not intended for use by children but which are easily and generally accessible to them. The mandate covers foreseeable use and misuse within the normal behaviour of children.

For the purposes of the mandate, children are defined as persons up to the age of 14 years of age. The scope of this Guide is therefore similarly limited, except where standards can more effectively protect those under 14 years of age by considering their safety together with that of persons 14 years of age and over.

Mandate M/293 refers to any product, construction or service in the field of consumer safety that is easily and generally accessible to children or young people up to 14 years of age. Excluded from the mandate are professional areas of work where persons under 14 years of age do not have access or are not likely to have access. Also excluded are areas prohibited to the general public and those prohibited to pedestrians in general, such as traffic areas.

Where products, constructions or services are subject to regulatory requirements, e.g. European legislation or national laws, these requirements take precedence over any conflicting information given in this Guide.

In this Guide, product, construction or service is used to refer to the subject of any European Standard.

Annexes A, B, C, D, E and F are informative.

This Guide supersedes CEN Guide 12:2006.

Introduction

This Guide provides advice and information to assist experts on working groups of European Standards Technical Committees fulfil their obligations under EU Mandate M/293 — Mandate to the European Standards Bodies for a Guidance document in the field of safety of consumers and children — Child safety.

This Guide is an informative document, acting as an aide-memoire to assist standards' writers take children's safety into account when drafting new or revising existing standards. It is intended to stimulate discussions in working groups, guiding users towards safe solutions without potentially constraining examples. It also recognizes the need to consider context and national cultures and practices in determining safe solutions. It is not a specification of absolute safety criteria that can be applied.

In the preparation of this Guide it is noted that the approach and philosophy utilised in the preparation of standards for products, constructions and services will depend on whether specific levels of qualified supervision are required or not.

The Guide does not prescribe solutions but instead presents

- an outline of children's development, explaining how this leads to different approaches to promoting safety from those used to meet the needs of adults;
- a structured approach to risk assessment reflecting children's changing behaviour, physical characteristics, and need to explore and learn;
- examples of what children can do at different stages of development, the resulting hazardous behaviours and characteristics (Annexes B, C and D);
- examples of potentially effective preventive measures for consideration (Tables C.2 and D.2).

This guide should not be used in isolation from the advice contained in other publications as it complements the information that is provided in other publications, especially

- ISO/IEC Guide 51, *Safety aspects — Guidelines for their inclusion in standards*, which presents the over-arching principles of risk assessment
- ISO/IEC Guide 50, *Safety aspects — Guidelines for child safety*, which adopts a hazard-based approach when applying risk assessment, taking into account the characteristics of children
- CEN/TR 13387, *Child-use and care articles — Safety guidelines*, which presents detailed guidance for the safety of children up to 4 years
- CR 14379, *Classification of toys — Guidelines*
- This Guide and ISO/IEC Guide 50 are complementary rather than alternatives. ISO/IEC Guide 50 provides a description of child development and behaviour and a detailed overview of the hazards relevant to children. By reading ISO/IEC Guide 50 one gains a helpful overview of the particular issues that have to be taken into account to provide safety for children. This Guide expands on this and offers mechanisms to enable the user to reach appropriate solutions in a structured way.

Many experts will have extensive experience of the safety issues relevant to the product, construction or service that is the subject of the standard. Others will have experience of child safety issues with a wider range of products, constructions or services. Their combined experience of safety issues will be substantial and will normally identify all major hazards of the product, construction or service. This Guide is not a replacement for that experience. Since the range of products, constructions or services, and the hazards that can arise when children interact with them is so wide, any document that tried to detail all considerations would be too long to be of practical use to standards' writers.

Where products, constructions or services are subject to regulatory requirements, e.g. European legislation or national laws, these requirements take precedence over any conflicting information given in this Guide.

1 Scope

This Guide provides guidance for European Standards' writers on meeting the requirements of European Commission mandate M/293 to address issues of child safety in standards.

In the preparation of this guide it is noted that the approach and philosophy utilised in the preparation of standards for products, constructions and services will depend on whether specific levels of qualified supervision are required or not.

This Guide does not exclude consideration of hazards where the means of protecting adults are equally effective for children. Generally, however, it does not refer to safety requirements that are not particular to children.

The scope of this Guide overlaps with that of guidance in some directives or mandates covering products, constructions or services *intended* for children, e.g. toys, childcare articles. Guidance for specific products, constructions or services intended for children is more appropriate than this general child safety guidance.

This Guide is applicable to existing or potential standards for products, constructions or services that might:

- be potentially harmful to children but not adults; or
- pose greater risks to children than adults; or
- require means of protection for children that are additional or different to those that are effective for adults.

This Guide does not consider children with special needs.

Where products, constructions or services are subject to regulatory requirements, e.g. European legislation or national laws, these requirements take precedence over any conflicting information given in this Guide.

2 Normative references

The following referenced documents are indispensable for the application of this Guide. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 71 (all parts), *Safety of toys*

EN 1176 (all parts), *Playground equipment*

CEN/TR 13387, *Child use and care articles — Safety guidelines*

ISO/IEC Guide 14, *Purchase information on goods and services intended for consumers*

ISO/IEC Guide 37, *Instructions for use of products of consumer interest*

ISO/IEC Guide 50, *Safety aspects — Guidelines for child safety*

ISO/IEC Guide 51, *Safety aspects — Guidelines for their inclusion in standards*

3 Terms and definitions

For the purposes of this Guide, the terms and definitions given in ISO/IEC Guide 50, ISO/IEC Guide 51 and the following apply.

3.1

carer

person who exercises responsibility, however temporarily, for an individual child's safety.

This could be either:

- a) *non-qualified carer: a parent, grandparent, older sibling who has been given a limited responsibility over a child, adult acquaintance, a young person who is a baby sitter, or*
- b) *qualified carer: a person trained to exercise responsibility for the safety of children or young people, for example a trained/qualified teacher, childminder, youth leader or sports coach.*

4 Background to childhood development

4.1 How children's safety differs from adults' safety

Childhood is a path rather than a definable state. Although a cross-section of children of a particular age can appear to exhibit consistent characteristics, the individuals are continually developing. Some developments expose children to new hazards while others improve their ability to protect themselves. Therefore, an essential element of child safety is matching the means of protection to the age of children at risk. The aim should be to make the progression along the developmental path safe for a child, as well as addressing safety at each stage of childhood.

Children's abilities, skills, knowledge and judgement develop rapidly throughout childhood. Increasing levels of awareness and responsibility can be expected as children grow older. Older children's height, weight, strength, skill and knowledge overlap the lower ranges for adults. Children develop at different rates but by the time they reach adulthood most have developed a level of knowledge that enables them to judge accurately the degree of caution that is appropriate in familiar or unfamiliar situations. The one common factor all children share is that they are substantially less wise and less cautious than most adults in relation to hazards. This Guide therefore focuses on the psychological development of children as well as on their physical development.

Standards will never be able to completely protect children from the results of their own actions even when they could be expected to know better. Those products, constructions or services intended for children cannot be expected to be made safe for unrestricted access by children at all stages of development.

Both adults and children need protection from hazards. It is not possible to prevent all injuries to children. Except in relation to deaths and serious injuries it is not even realistic to expect to reduce children's risks of accident to the prevailing level for adults. This Guide therefore emphasizes the need to focus on hazards that are a greater risk to children and/or where the potential injury is more serious for children.

4.2 Children's need to explore, experiment and learn from mistakes

An essential part of the process of a child becoming an adult is the need, and desire, to explore limits and to try new experiences. Minor injuries are part of every child's learning process and are a far more normal part of their lives than is the case for adults. This should be borne in mind when considering what levels of safety are reasonably practicable within the limits imposed by functionality and affordability. However, children require greater protection than adults against fatal or permanent injuries because they may not be capable of assessing the risks involved in potentially hazardous situations or may be too young to take responsibility.

Often the greatest risk to children is at a single stage of development or with their initial use of a product, construction or service. To exclude all children from access to or use of a particular product, construction or service can be counter-productive to the development of their abilities and their understanding of safe practice. A better approach is to develop strategies for helping children complete the process of becoming adults safely.

5 Criteria for assessing risks and hazards

5.1 Developmental approach to child safety

In order to make a comprehensive assessment of risks to children and young people a developmentally based approach to hazard analysis is recommended. This involves three steps.

- a) Identifying at which stage(s) of child development, exposure to the product, construction or service is likely to give rise to potential hazards.
- b) Identifying the key physical and behavioural characteristics and abilities of children or young people at these stages that might place them at higher risk of injury (or risk of more severe injury) than adults.
- c) Identifying practical means of injury prevention that are likely to be effective at these stages of child development (see Clause 9).

Annex A provides an overview of Annexes B, C and D, which contain tables of guidance criteria that aim to help to identify any susceptibility of children to injury or any additional risk of injury that might be expected due to their characteristics or behaviour. Developmental stages that can have a significant impact on children's exposure to particular hazards in a product, construction or service, or on their ability to handle the hazards safely, are indicated. The differences between children and adults are also shown. Since these tables focus on hazards likely to be unique to children they do not necessarily show hazards that are identical for both adults and children.

5.2 Adult safety and alternative approaches

This Guide assumes that standards' writers have already addressed issues of general safety and the specific safety of adults. Most standards' writers will have extensive experience of the safety issues relevant to the subject of the standard, or of child and consumer safety issues generally. Their combined experience should normally identify all major hazards of the product, construction or service. There is general safety guidance in ISO/IEC Guide 51 and (on safety aspects of consumer information) in ISO/IEC Guides 14 and 37.

While this Guide's child development approach is comprehensive, it might not be the most appropriate method for all standards projects. ISO/IEC Guide 50 provides an alternative hazard-based approach that might be more convenient for products, constructions and services intended primarily for young children. For some areas of children's lives, comprehensive safety standards are already well developed, particularly for toys (EN 71), playgrounds (EN 1176) and childcare items (CEN/TR 13387). These documents are based on a wealth of experience in child safety and should be considered when dealing with similar hazards for similar age groups.

5.3 Children's ages and abilities

Within one product, construction or service standard, it might be necessary to protect children of different ages against different hazards using very different means. Generally, a hazard will be specific to a narrow age range of children. This range should be established in order to identify the most appropriate means of protection. However, care should be taken that protecting against a hazard for one age group does not introduce new hazards for younger or older children.

Annexes B, C and D show the characteristics of child development and illustrations of the development and behaviour of children. In principle, each of these needs to be considered individually. In practice, this assessment will generally involve no more than identifying:

- the stage of development or age at which a specific risk arises, e.g. when a child is first exposed to it; and
- the stage by which a child may be considered to be at no more risk than adults.

5.4 The roles of carers

Since all products, constructions and services cannot be made safe for unrestricted access by children, carers may be required or expected to provide a specific protective function. Where this is the case, this should be made clear in the hazard assessment. Consideration should be given regarding what information carers may need and how to provide it. **Where appropriate, the requirement for qualified supervision may assist in reducing hazards and improving safety.**

There can be residual risks associated with some products, constructions or services that are impractical to reduce because they are intrinsically linked to function. Voluntary acceptance of or informal consent to this risk by children, young people and/or their carers may be needed but it is only valid if those giving it understand their responsibility and have been correctly informed.

It is recognized that some actions are irresponsible within the limitations of what can be expected at the relevant stage of development. As with adults, standards cannot be expected to protect children and young people entirely from the results of their actions.

5.5 Cultural, generational and gender differences

The differences between cultures, genders and living environments need to be considered by standards' writers.

A further difference is that between generations. Standards' writers will have passed through childhood one or two generations earlier than the children for whom they are writing standards but it should not be assumed that children have acquired all the skills and experience that were normal for children in the past. For example, many children today have no experience of the hazards of open fires.

5.6 Limits to the reduction of risks

Overall risk assessment depends on both the potential frequency and severity of injuries. It is inevitable that children's exploration and experimentation will result in some minor injuries. It is usual for children to fall from a low height, trip over on level surfaces and bump into static objects (or other people). They will probably also be hit by moving objects, e.g. balls or other children. Apart from the immediate pain of such impacts, the injuries received are usually limited to cuts, bruises or grazes. Less frequently, but still inevitably, all children at some time have painful encounters with sharp blades or points and hot objects or liquids. This usually results in no more than a small cut or a minor burn that quickly heals.

Because of this, although the acceptability of risk of injury is a controversial issue, the following circumstances may be judged as not requiring specific protective action:

- a) where young children are exploring their environment, and the most severe potential injuries are limited to bruises, cuts, grazes, sprains or minor burns not requiring professional medical examination or treatment;
- b) where children and young people can be expected to appreciate that an activity is potentially dangerous and can choose not to participate, provided the potential injuries are limited to injuries requiring only initial professional medical treatment;
- c) where children and young people are taking part in **sports** and similar **leisure/educational** activities under the guidance of a **qualified**/trained carer and the maximum potential consequences of injury are limited to temporary disabilities, e.g. simple fractures of limbs.

The greatest emphasis on safety provision should be where the potential consequences could include death, permanent disability or scarring or where there is a high frequency of accidents. Where the elimination of hazards for everyone is impossible, preference should be given to the greater protection of children since they are too young to take the responsibility for accepting such risks themselves.

In some instances, certain child safety requirements in standards could be counter-productive or in conflict with safety and use requirements for other groups. A risk assessment should be carried out to provide a balanced solution.

6 Relating child safety to development stages

6.1 The basic development/age bands

In order to simplify child safety issues wherever possible, it is recommended that consideration should initially be limited to three major development/age bands of children:

- under 3 years old – babies and young children who need almost constant adult attention and supervision, both for personal needs and safety;
- 3–11 years old – whose safety needs are not easily generalized and for whom individual differences in behaviour can be as important as differences in physical development or specific skills;
- 12 years old and over – who are within the normal anthropometric range of adults, and who need direct supervision only in specific situations (usually ones new to them).

Annex A provides further advice on this. The tables in Annexes B, C and D provide detailed reference information on child exposure, characteristics of child development and means of safety protection according to stages of development. The tables do *not* indicate precise age limits to each band. Where standards need to set advisory age limits, it is necessary to take into account the severity of the potential injury and the practicality of enforcement.

6.2 Children aged under 3 years old

Standards for products, constructions or services whose intended users include those under 3 years old should specify strict safety requirements to ensure protection from hazards despite the “abuse” that such children will give. This does not mean that all such products, constructions or services need to be safe for unsupervised use by those under 3 years old.

These requirements should not just apply to products, constructions or services specifically labelled as intended for children under 3 years old. They should also apply to anything that carers might reasonably expect to be suitable for use by some or all children under 3 years old (with appropriate supervision). Where the only exposure likely for children of this age group is contact rather than active use, e.g. space-heating appliances, the safety requirements can be limited to hazards of contact. Some requirements for products, constructions or services will for safety, or other reasons, need to be restricted to a narrower band of children, e.g. under 6 months or 18 months and over. The tables in Annexes B and C provide guidance, with those in Annex C being broken down into narrower stages of development.

Some injuries to this age group may arise from the behaviour of adults or other children.

6.3 Children and young people aged 3–11 years old

Products, constructions or services intended for use by, or intended to appeal to, children of any age under 12 years should be required to give an explicit indication of the minimum development age/stage for safe use and/or exposure. This is to avoid any misconception that they are safe for use by children under a certain age when this is not so. On the other hand, products, constructions or services not aimed at children at all should not routinely be required to indicate unsuitability for those under a certain age unless carers need to take exceptional protective measures.

The safety needs of the 3–11 year age group are not so easily generalized and need to be considered carefully on an individual basis. Generally, this age group can access any household item if they really want to, so physical barriers are of limited use. Moreover, they are not constantly watched by carers or other adults. While it is desirable to design out as many hazards as possible, these children have to protect themselves from residual hazards. Consequently, training by instructions for correct use and associated hazard warnings are likely to be appropriate. Particular consideration should therefore be given to how essential safety information is to be conveyed to this age group. Except where essential, warnings should be avoided. However, when warnings have to be used they should be consistent with children’s lack of experience, poor judgement, and their level of understanding and reading of language.

It should be made clear which warnings and written instructions are to be addressed to children and which are to be addressed to their carers. If verbal instruction and supervision by these adults is necessary to ensure the safety of child users of an item, this should be included in the consumer information requirements.

Within this age group, individual differences in behaviour, e.g. concentration span, can be as important to a child’s ability to undertake an activity safely as differences in physical development or skills. For some standards, it may be appropriate to include requirements to provide further guidance to carers. This guidance should provide information on how to judge when a child is temperamentally ready to accept the required level of responsibility for aspects of their own safety.

6.4 Young people aged 12 years old and over

In many ways 12 and 13 year-olds have more in common with 14–18 year-olds than with children under 12 years old. Developing an adult sense of safety is, however, a longer process.

Standards' writers should assume that most products, constructions or services aimed at consumers should be safe for use by young people aged 12 years or over after appropriate adult instruction and initial supervision.

A limited range of products, constructions or services should be considered not safe for unrestricted use by all 12 year-olds and over. It should be made clear to potential users what specific preparation, training, supervision or skill is necessary and/or what is the nature of the hazard.

In general, restrictions based solely on an age higher than 12 years old should not be adopted as requirements in standards, without consideration of how they are to be enforced.

NOTE National laws and European legislation might impose such restrictions.

7 Using appropriate terminology

7.1 Children

M/293 defines all under-14 year-olds as children, but this definition might not be accepted outside of standards bodies. People can cease to be “children” anywhere between 9 and 21 years old depending on legal tradition and/or use of language.

7.2 Carers

For the purposes of this Guide, “carer” as defined in Clause 3, has a wide meaning. Therefore, the term(s) used in warnings, instructions and information should identify the appropriate carers. For example, where a qualification is not relevant it may be sufficient to refer generally to an “adult”, while in swimming pools it is important to distinguish between the functions of lifeguards and instructors.

7.3 Communicating with the target groups

It is also important that the warnings, instructions and information should be capable of being understood by the relevant carers. Wherever possible, “young person” and “young adult” should not be used in preference to terms likely to appeal more to the individuals addressed, e.g. “students”, “trainees”, “new recruits” or more informal terms.

8 Assessing child safety

8.1 Summarizing issues that need to be addressed under the Child Safety Mandate

By following the guidance given, it should be possible to identify all the specific child safety issues that may need to be addressed. Each issue can then be described in some or all of the following terms:

- the type of exposure;
- the child characteristics that result in a increased risk;
- the particular stage of development during which this the risk may arise;
- the nature and severity of the potential injury;
- the abilities and competencies that protect adults/older children.

A more comprehensive list of questions for considering these issues is given in Annex E.

8.2 Foreseeing exposure

The expected form of exposure of children and young people to a product, construction or service may not extend to all aspects of full adult use. The requirements for safety information should therefore be limited to the degree and aspects of contact that are foreseeable for them.

It may be reasonable to assume that under-14 year-olds will not have any foreseeable exposure to particular products, constructions or services. In this case no reference to child safety need be made in the relevant standards. This is likely where access to use of the product, construction or service is effectively denied. This might be for equipment used only in a workshop or other premises where entry is limited to employees and authorized visitors. However, equipment that might be left unattended should not automatically be considered as exempt unless it can be adequately secured against use or access. Similarly, it should not be assumed that prohibitions on children purchasing products or services will prevent access. Children might gain access through vending machines or mail order, or through items being discarded or left unattended by adults, e.g. cigarette lighters left lying in the home.

The first step in addressing child safety is to evaluate the inherent contact hazards of the product, construction or service. These hazards could be chemical, radiological, electrical, mechanical, thermal, fire, noise, ergonomic or allergic, etc.

The second step is to address the expected or intended use of the product, construction or service by adults (or children if they are the intended users).

Many of the hazards identified in these stages will affect children. Many of the safety requirements for adults specified in a standard will also adequately address the safety of children.

8.3 Analysing reports of accidents involving children and young people

The development or revision of a standard should include an analysis of available reports of injuries and hazardous incidents involving the particular product, construction or service. These are likely to include some reports of injuries to children. These should not be dismissed as accidents arising from misuse or abuse by children. If adults or older children do not have similar accidents with the product, construction or service, then how have they become more competent? What is reasonable to expect of children generally of that age or stage of development? Annexes B, C and D provide detailed guidance on risks specific to children according to the stages of child development.

There are many potentially useful sources of reported incidents, although no one report can be expected to give a complete picture. The European Union Injury Prevention Programme (EU-IPP) – including the former European Home and Leisure Accident Surveillance System (EHLASS) – provides brief descriptions of injuries involving most types of consumer products, constructions and services. Academic literature or research reports that analyze the issues in more detail may have been published. Other potentially valuable sources include fatal accident reports, manufacturers' files of complaints and product returns, or press cuttings.

All relevant sources should be checked to ensure that lessons learned elsewhere are not ignored. The absence of an accident history, a small number of accidents or low severity of accidents should not be taken as an automatic presumption of low risk.

8.4 Foreseeing other potential hazards to children and young people

Analysis of previous accidents should not be expected to identify all potential hazards. Some incidents, e.g. choking, occur only infrequently but could result in permanent injury. Also, adequate accident data will not exist for new (or radically different) types of products, constructions or services.

Standards' writers should attempt to predict other potential hazards by considering which children and young people will be exposed to the product, construction or service, and whether the type of interaction is likely to differ from adult use and contact. Annexes B, C and D are intended to help standards' writers foresee potential hazards through the following analytical steps.

- a) *Identifying the key development stage(s) for exposure.* Where children are not the intended users of a household product, exposure is prevented initially by either parental care or lack of interest on the part of the child. A child might also have only passing contact with the product as a static object. However, at some stage young people will start to use most products, constructions or services. Ideally, this will be through a process of initial instruction by experienced adults, followed by decreasing supervision until the new user is at no more risk than an adult user. However, for some products, constructions or services, it should be expected that children will want to make their own 'explorations' without adequate safety awareness or adult supervision.
- b) *Identifying the key physical and behavioural characteristics.* Once the key development stages for exposure have been identified, the second stage is to look at the characteristics of children that put them at higher risk of injury (or risk of more severe injury) than adults. This could be due to physical differences, but is more likely to be associated with behavioural expectations. Some household products can be accessible throughout childhood, but special concern for child safety is likely to be limited to a short stage of development for each product, e.g. when the child first starts to crawl, first visits shops on their own or first helps their parents to cook a meal. In contrast, for products such as bicycles and facilities such as swimming pools, both of which are used by all ages of children, each stage of development might bring new hazards as well as overcoming earlier ones.

- c) *Identifying the relevant abilities and safety competencies.* These are the means of self-protection that all children will eventually develop so that they will be at no greater risk than adults. The age or stage at which these can be relied upon defines the upper limit of this hazard as a safety issue specific to children or young people.

9 Approaches to protection

9.1 Identifying effective methods of protection

The final step is to identify for each issue an appropriate and effective method of injury prevention or risk reduction (if complete prevention is not practicable). This might involve:

- trying to restrict access by children who are under a certain age and/or have not demonstrated the necessary level of competence; or
- changing design or performance requirements so that the risk or severity of the hazard is reduced for children and not increased for adults.

Specific consideration should be given to:

- what (if any) instruction and supervision by adults is required; and
- how essential safety information is to be conveyed to under-14 year-old users.

Tables C.2 and D.2 summarize the potential effectiveness of different methods of protection at different stages of development.

To protect the youngest children, hazards should be designed out or all access should be prevented. Generally, preventing access can only be effective if carers and supervisors are aware of this advice and the reason for it. Physical restrictions, e.g. locks and barriers, may be a necessary addition to information provision.

For older children, e.g. school-age, the focus should be on helping them to recognize and avoid hazards. As they grow older it is more effective to guide them into safe use of each product, construction or service at an appropriate stage of development through safety instruction and initial supervision. Through being instructed to perform a wide range of normal adult tasks safely they should gain the knowledge to anticipate hazards in new situations and to work out ways of handling them.

9.2 Recommending minimum ages or other characteristics

Where products, constructions or services are unsuitable for use by some or all children and young people and it is anticipated that these children might come into contact with them, minimum ages for suitability should be recommended. This may be achieved through labelling requirements.

It is important to be clear what sort of restriction is intended and who is expected to be responsible for ensuring this. For example, the following instructions each advise different preventive actions:

- Keep away from children under x years old;
- Not safe for use by children under x years old;
- Not safe for unsupervised use by children under x years old.

NOTE In some cases a certain form of words will be prescribed in legislation.

In some circumstances more than one minimum age may need to be recommended, e.g. to indicate the minimum age at which children can purchase a product or service on their own.

Age is not always the most relevant safety criterion. Stage of physical development might be more important for children under 3 years old, and ability to concentrate might be more important for school-age children. In some cases characteristics like body weight or standing height may be better indicators than age.

In some situations, e.g. fixed amusement facilities, a safety requirement based on age is not as easy to enforce as a requirement such as standing height. Children and young people may pretend to be older in order to get round arbitrary age restrictions. For example skateboards, that may need a maximum weight limit.

It may sometimes be necessary to set a higher age limit to protect those most at risk. For example, an age limit of 14 years old might be recommended with the aim of minimizing the number of users who are actually under 12 years old. A standard might cover a range of items, some of which can be safely used by children or competent young people, while others are intrinsically too dangerous for non-adults. In such cases, the standard should clearly and thoroughly distinguish between these as different classes of product or service, e.g. there may need to be limits on the weight, power, mobility or complexity of instructions for items that can be marked as suitable for use by school-age children.

9.3 Recommending minimum competence levels

For some standards, it may be more appropriate to provide carers with guidance on the specific competencies that a child or young person may need to demonstrate before they are ready to use the particular product, construction or service. This may be achieved through requirements for warnings, instructions and training. While this approach is not generally used in standards, it is an essential element of occupational and sport safety guidelines for adults and children. In these, recommendations are given on the appropriate prerequisite competencies, which carers are then expected to assess in each individual child or young person.

Where the child or young person is to receive initial training and/or supervision, a distinction should be made between:

- prerequisite competencies necessary before they can learn safely;
- competencies expected to be developed under instruction, which are necessary before it is safe to reduce the level of supervision.

The degree of competence required by a child or young person to handle a particular object or situation either under instruction or alone will also vary from one standard to another, according to the nature of the hazard.

There are many measures of competence which carers can be recommended to assess in a child or young person. Competence will often need to be specified on more than one attribute. Practically, this may need to be limited to the three or four measures that are most safety-critical to the context. Some examples of measures of competence are:

- basic anthropometric/biomechanic criteria;
- height or reach (to avoid need to climb or over-reach);
- strength to lift or perform operations in a controlled way;
- adequate size and strength of grip to control relevant items, e.g. scissors;
- availability of correct size of personal protective equipment;

- psychological skill/preparedness;
- absence of irrational fear or nervousness;
- ability to remember and to recite the requisite (specified) number of operational steps;
- adequate (specified) attention-span for self-directed or adult-directed activity;
- ability to repeat or persist with a physically or mentally demanding task for an appropriate (specified) time without becoming exhausted;
- likelihood of ignoring instructions or behaving irresponsibly;
- speed of reaction/stopping in the event of an emergency;
- adequate awareness and avoidance of other people and objects;
- ability to describe all the principal sources of hazard and opportunities for mistakes;
- knowledge of essential actions to take if foreseeable hazards arise;
- adequate level of language to comprehend instructions and warnings;
- adequate level of literacy to read instructions and warnings (or identify key signs and words);
- specific co-ordination skills developed by practice;
- degree of hand-eye co-ordination, e.g. catching a ball;
- control over and safety in using the common tools, substances and materials used in the task, e.g. a knife, needle, screwdriver, adhesive, matches, pan of hot water;
- task-specific or hazard-specific prior experience, e.g. ability to ride a bicycle or to swim 100 m;
- personal hygiene adequate to avoid hazardous contamination of self or others.

It should be noted that this is not a comprehensive list of criteria.

Annex A (informative)

Introduction to Annexes B - F

A.1 Approach

Annexes B-D are an attempt to condense the wide and still expanding expert knowledge and opinion on how the development of children and young people can alter the potential hazard posed by a product, construction or service.

Annex B presents characteristics of many aspects of child development from birth to adolescence.

Annexes C and D provide examples illustrating the development and behaviour of children and young people, aged from birth to 3 years (Annex C), and over 3 years (Annex D). Because of the amount of detail relating to children under 3 years, it was not possible to present the information in a single annex.

Annexes C and D act as an aide-memoire, providing starting points to stimulate discussions by working groups of experts on a particular product, construction or service. These annexes are not specifications of absolute safety criteria that can be applied without consideration of the context, especially national cultures, practices, education systems and the ways in which children are brought up.

The tables in Annexes C and D are not a comprehensive checklist of hazards arising during child development nor do they replace any regulatory requirements. Where products, constructions or services are subject to regulatory requirements, e.g. European legislation or national laws, these requirements take precedence over any conflicting information given in this Guide.

A.2 Relating the tables to the hazard identification and prevention steps

Generally, these annexes indicate the age/stage at which a particular ability or behaviour may first be observed. It is much more difficult to predict when a behaviour ceases, partly because this data has not been of interest in child development studies. It may be more relevant to consider when a child is likely to develop the particular competencies that enable them to protect themselves from the particular hazard in an adult-like way. This cannot, however, be assumed to be an automatic consequence of growing older.

The ages used in the columns in of Tables C.1 and C.2 do not form a continuum from birth to 3 years. This is because all children do not develop at the same rate. Some children will perform the activities illustrated in the tables earlier than others and vice versa. The information should therefore only be regarded as illustrative, not definitive.

When using the information in these annexes, one also should take account of the application of the guidance (i.e. the principles of risk assessment) set out in Annex E. Not all minor childhood injuries can be prevented but the aim is to prevent more serious ones. Therefore, when using these tables, the severity of potential injury and the options available for prevention need to be considered in order to achieve this. In particular, the tables cannot distinguish between a rudimentary ability and a fully developed 'adult' level of skill, nor between performing an operation correctly while concentrating and avoiding mistakes under the pressure of distractions.

A.3 Sources of knowledge and expert opinion from which the annexes are derived

Four principal types of information source have been used to provide background information for the tables:

- general publications on child development and child injury epidemiology by respected individual experts or organizations;
- existing standards and safety guidance by international or national bodies, including government bodies and professional associations;
- other advice, design or safety guidelines on specific topics by respected individual experts or organizations;
- research reports, academic conference papers and articles in scientific journals.

A bibliography of these sources and other material is given in Annex F.

Annex B (informative)

Characteristics of child development

Characteristics according to ages	Infancy Up to 3 – 4 years of age	Early childhood From 3-4 to 7-8 years	Later childhood From 8-9 to 11-12 years	Adolescence From 13 years upwards
Physical skills		Lack fine motor control. Learn to balance on unstable things.	Able to carry out complex tasks.	Manual skills approaching those of adults.
Growth	Very rapid height and reach increase. Rapid increase in weight.	Growth slows down compared with infancy. Weight gain slows more than height.	Increase in height is mainly due to elongation of the lower limbs.	Unbalanced growth spurt. Height increase is more rapid than weight gain. Increase in height is mainly due to growth of the limbs. Hands and feet and the mid and lower parts of the face grow.
Form and structure	Head relatively large. Large trunk. Limbs are still relatively short. Marked fatty envelope, which tends to diminish gradually after the third year. Body becomes longer and thinner.	Trunk cylindrical in shape, the abdomen bulges out over the thorax; the pelvis is still small. Limbs still relatively short and muscles not developed. Fatty envelope diminishes. Body becomes longer and thinner.	Experience growth spurts, mainly in the limbs.	Age of “physical disgrace”, “lanky-legs stage”. May have perception of “imperfections” of their bodily shape. Growth sometimes temporarily not symmetrical; may cause deportment and posture problems. Close to adult height.

Characteristics according to ages	Infancy Up to 3 – 4 years of age	Early childhood From 3-4 to 7-8 years	Later childhood From 8-9 to 11-12 years	Adolescence From 13 years upwards
<p>Functional aspects</p>	<p>Abdominal breathing, rapid breathlessness. Explore taste and texture by placing any object in the mouth.</p>	<p>Thorax flattened from the front towards the rear which limits the work of the heart and lungs. Functional development of the cardiopulmonary system still weak and sensitive to over-exertion. Joints and ligaments supple and relaxed; the muscle structure not well developed and postural stability not yet acquired.</p>	<p>Marked increase in the volume of the heart and pulmonary system within the rib cage, which remains cramped, possibly leading to some functional discomfort. Adaptation to effort is rapid. Feel tired suddenly. Postural stability and balance improve, especially after the 10th year. Stability and balance during movement not well developed, which can cause tiredness.</p>	<p>Puberty accompanied by major changes, especially to the cardio-pulmonary system. Thorax widens progressively and heart moves to its adult position on top of the diaphragm. Hormonal and other body changes can cause appetite disorders, insomnia and irregularity of mood.</p>

Characteristics according to ages	Infancy Up to 3 – 4 years of age	Early childhood From 3-4 to 7-8 years	Later childhood From 8-9 to 11-12 years	Adolescence From 13 years upwards
<p>Psychomotor development</p>	<p>Period of change from an overall uncoordinated motor activity to specific functional actions.</p> <p>At 3 months, may be able to control the head; at 6 to 10 months, may be able to sit upright; at 6 to 8 months, may be able to crawl; at 10 months, may be able to stand when supported; at 12-15 months, may be able to walk.</p> <p>After 12 months, able to articulate syllables and use the dominant hand.</p> <p>Sensory acuity develops.</p> <p>Manual dexterity and mobility allow the child to explore its surroundings progressively.</p> <p>Smiling, laughing, gesticulating, babbling and language appear.</p>	<p>Initially use “trial and error” to determine how to cope with a situation and then move to more adaptive behaviour.</p> <p>Later, movements become more controlled.</p> <p>Spontaneous movement becomes more coordinated.</p> <p>Need to be active. Appear to be “always on the move”.</p> <p>Acquire skills by imitating adults.</p>	<p>Overall motor skills acquired.</p> <p>Coordination improves.</p> <p>Movements become accurate.</p> <p>Posture and balance improve.</p> <p>Good hand and foot coordination and dexterity.</p> <p>Control of the shoulder and pelvic girdles and of the spine not yet fully developed.</p> <p>Use many gestures.</p> <p>Rapid acquisition of numerous automatic actions and control of all forms of movement.</p> <p>Attention can be maintained.</p> <p>Able to sit still for fairly long periods.</p> <p>Around 11-12 years, show more grace when gesturing and moving, and enjoy being able to move properly.</p>	<p>Puberty is a period where children are relatively less active.</p> <p>Pre-pubescent growth spurt modifies body shape.</p> <p>Show emotions, but less able to control them. Temporary period when emotions predominate.</p> <p>Motor skills become less controlled; period of restlessness and agitation, boisterous and impulsive behaviour, inactivity, listlessness or general weakness.</p> <p>Movement may become clumsy and awkward.</p> <p>Small signs of lack of coordination.</p> <p>Later, manual skills approach those of adults.</p>

Characteristics according to ages	Infancy Up to 3 – 4 years of age	Early childhood From 3-4 to 7-8 years	Later childhood From 8-9 to 11-12 years	Adolescence From 13 years upwards
<p>Psychological characteristics</p>	<p>Emotions tend to predominate</p> <p>Only respond to what can easily be perceived.</p> <p>Desire to be recognized by others.</p> <p>Use taste and touch to recognise objects.</p> <p>Need security, protection and affection.</p>	<p>Occasional outbursts of psychomotor instability and of restlessness: excitement, mischievousness; loss of attention due to distractions from all the external stimulations.</p> <p>Have “black-and-white” rules.</p> <p>Cannot analyse situations in an organised or logical way.</p> <p>Period of high activity.</p> <p>May confuse real and imaginary fears.</p>	<p>Confused thinking is diminishing and is being replaced by a more analytical and logical approach.</p> <p>Growing child begins to have more interests.</p> <p>Shows an interest in school and extracurricular activities.</p> <p>Feel a need to be treated fairly</p> <p>Show initiative and want relative independence.</p> <p>Learn about the rules of the game, the idea of taking turns, and how the rules relate to them and others.</p> <p>Can handle abstract concepts and hypothetical situations.</p>	<p>Spend a great deal of time worrying.</p> <p>Can be obsessed by their appearance.</p> <p>Tend to react to the current situation and can alternate between exhibitionism and modesty, aggressiveness and inhibition, enthusiasm and depression.</p> <p>Are egocentric and have a “here-and-now” perspective.</p> <p>Behaviour and reactions during games/play activities tend to be more verbal than physical.</p> <p>Use logic to solve problems.</p> <p>Develop critical attitudes.</p> <p>Hostile to conformism and traditional values and may reject those of the family.</p> <p>May be uncooperative and refuse to comply with requests.</p> <p>Day-dream.</p> <p>Try to assert themselves and excel in sport.</p> <p>Tend to over-estimate their own capabilities and under-estimate own vulnerability.</p>

Characteristics according to ages	Infancy Up to 3 – 4 years of age	Early childhood From 3-4 to 7-8 years	Later childhood From 8-9 to 11-12 years	Adolescence From 13 years upwards
Psychological developments	<p>Imaginative at play. Want to help or copy adults. Have an increasing understanding of action and consequence.</p>	<p>Begin to develop logical structures and make generalizations from experience. Begin to have a concept of time.</p>	<p>Can tell and estimate time.</p>	<p>Have an awareness of risk and uncertainty but it is incomplete.</p>
Social development	<p>Aware of their immediate family circle. Very dependent on their mother. Parents have a particularly important role. Start to adapt to the presence of non-family members. Socialize with other children. Can tolerate non-child-friendly environments.</p>	<p>Challenge parental authority and show a degree of indifference with regards to fitting into the adult world. Start to mix with children of the same age. Focus on their own age group. Later belong to own-gender peer groups. Play imitative or imaginative games. Alternate between solitary play and group activities. No major differences between the behaviour of girls and boys. TV programmes have a major influence.</p>	<p>Balance between intra- and extra-family interests. While respecting family values, attracted by the wider world. Mix with others at play. Claim a degree of independence. Still require adults to set the rules and objectives, but want more freedom when carrying out activities. Become more competitive. Boys and girls begin to segregate. May experiment with hazardous products and substances. Develop individual interests and want to excel.</p>	<p>Social ideals take over from personal uncertainties. Transition period that requires “teachers” to adapt their techniques to meet the needs of young people. No longer conform to rules and regulations and tend to react in a contrary way. Need to prove themselves and look for older role models, such as pop or sports stars. Follow fashion. Interested in “youth culture” – products and places that are bright, vibrant, noisy and spontaneous.</p>

Characteristics according to ages	Infancy Up to 3 – 4 years of age	Early childhood From 3-4 to 7-8 years	Later childhood From 8-9 to 11-12 years	Adolescence From 13 years upwards
Child-specific physical susceptibility to injury	<p>Particularly sensitive to the effects of sun on skin and eyes.</p> <p>More sensitive to loud or high frequency sound than adults.</p> <p>Can drown very quickly and unnoticed (up to 5 years).</p>			<p>May fail to recognize exhaustion/tiredness/dehydration.</p>
Particularly risky non-adult behaviours	<p>May go into "trap" situations.</p> <p>May "run-and-hide" when incidents happen.</p> <p>Try to climb anything.</p> <p>Use teeth to bite, grip and puncture.</p> <p>Put objects into their mouths to explore or identify them.</p> <p>Try to eat objects that look like food.</p>	<p>Try to enter unauthorized areas.</p> <p>Able to climb most things.</p> <p>Usually able to judge the strength of structures/materials.</p>	<p>May be subject to peer pressure in groups.</p> <p>May adopt a "trial and error" approach without appreciating the hazards.</p>	<p>Want a thrill from challenges.</p> <p>Uses a "trial and error" approach to new tasks.</p> <p>Resist taking adult advice.</p> <p>May feel personally invulnerable.</p>

Characteristics according to ages	Infancy Up to 3 – 4 years of age	Early childhood From 3-4 to 7-8 years	Later childhood From 8-9 to 11-12 years	Adolescence From 13 years upwards
Internal safety strategies	Stay close to carer.	<p>Leave dangerous things alone as they grow older.</p> <p>May understand the consequences of their own behaviour.</p> <p>Can prevent some accidents.</p> <p>Expect carers to keep them safe.</p> <p>Start to learn safety strategy.</p>	<p>Follow rules/codes.</p> <p>Ask/check if unsure.</p> <p>Can usually apply safety strategy but not reliably.</p> <p>May adopt “trial and error” approach without appreciating hazards.</p>	Can judge the speed of approaching vehicles.

Annex C (informative)

Examples illustrating the development and behaviour of young children up to approximately 3 years

As will be observed, the ages used in the columns in of Tables C.1 and C.2 do not form a continuum from birth to 3 years. This is because all children do not develop at the same rate. Some children will perform the activities illustrated in the tables earlier than others and vice versa. The information should therefore only be regarded as illustrative, not definitive.

The information in Tables C.1 and C.2 provides a starting point to stimulate discussions and is not a specification of absolute safety criteria that can be applied without consideration of the context. The tables are not to be relied on as comprehensive checklists of hazards arising during child development nor do they replace any regulatory requirements.

Table C.1 — Examples of activities (which the carers either allow or cannot always prevent)

Activity	Stage of development									
	Premature to sitting		Crawling to climbing			Toddling to pedalling				
	birth-1 month	2-4 months	5-7 months	8-9 months	10-13 months	15-17 months	18-20 months	24-27 months	30-33 months	
Feeding/drinking				Hold cup to drink	Hold spoon		Drink from open cup			Use fork
Personal hygiene				Sit in bath without being held		Take clothes off		Put on an item of clothing		
Activities in the home			Open and shut objects	Empty cupboards and drawers	Operate handles, switches, dials	Pull at latches and buckles	Fascinated with household objects	Open room doors	Want to help with adult tasks	Push/pull large objects across floor

Table C.2 — Examples of the effectiveness of prevention strategies

Preventive measure	Stage of development								
	Premature to sitting		Crawling to climbing			Toddling to pedalling			
	birth-1 month	2-4 months	5-7 months	8-9 months	10-13 months	15-17 months	18-20 months	24-27 months	30-33 months
Access restriction									
Manual skills relating to limiting access	Access restricted by an absence of manual dexterity.								
	Cannot operate simple and double action buckles.								
	Double-action locking and locks needing tools, including keys, effective.								
	Child-resistant closures (CRCs) effective (up to 36 months).								
Barriers	Children of different stages of development can be restricted by barriers and their climbability. The height of the barrier should reflect the hazard to which access needs to be restricted.								

Annex D

(informative)

Examples illustrating the development and behaviour of children/young people aged approximately 3 years and over

The information in Tables D.1 and D.2 provides a starting point to stimulate discussions and is not a specification of absolute safety criteria that can be applied without consideration of the context. The tables are not to be relied on as comprehensive checklists of hazards arising during child development nor do they replace any regulatory requirements.

Table D.1 — Examples of activities (which the carers either allow after instruction or cannot always prevent)

	Early childhood 3-4 years to 7-8 years	Later childhood 8-9 to 11-12 years	Adolescence 13-14 years upwards
Adult supervision			
In the home	Get up unaccompanied during the night. Play with minimum supervision in the home and garden.	Adult supervision starts to diminish.	
Unaccompanied travel	Walk or cycle within sight of home / earshot of carer. Out alone/with friends within running distance of home. Not always in sight of carer in shop/park/public areas	Visit local park/streets/woods with friends. Make short familiar journeys on bus/train public transport.	Make longer bus/train journeys on public transport.
Public buildings and areas/crowds			
Domestic tasks			
Personal hygiene	Dress selves.	Wash selves.	Run bath or shower.
Food preparation/cooking	Pour drinks.		Make hot drinks and snacks. Undertake basic cooking.
Space heating and lighting		Change light bulb.	Light gas fire. Light oil/gas lamps (e.g. camping). Add solid fuel to fire.
Household electrical appliances generally		Control TV and VCR.	
Laundry/cleaning			Undertake some domestic tasks (e.g. laundry, cleaning).

	Early childhood 3-4 years to 7-8 years	Later childhood 8-9 to 11-12 years	Adolescence 13-14 years upwards
Gardening	Carry out basic gardening tasks.		Use some power tools.
Household maintenance and repairs (DIY) / vehicle maintenance.		Undertake simple painting tasks.	Carry out cycle maintenance.
Leisure activities			
Active play	Climb on equipment.		
Crafts	Use paint/pens. Glue items.	Carry out crafts with various materials.	
Supervision of younger children	Know some things not safe for younger children.	Know risks of a younger child copying them.	

Table D.2 — Examples of the effectiveness of prevention strategies

	Early childhood 3-4 years to 7-8 years	Later childhood 8-9 to 11-12 years	Adolescence 13-14 years upwards
Access restriction			
Manual skills relating to limiting access	Children may defeat some designs of child-resistant closures (CRC). Can undo double-action buckle. Lock with separate key or combination mostly effective.	CRC ineffective. Can gain access by operating simple tool. Key/combination lock likely to be ineffective.	
Barriers	Children of different stages of development can be restricted by barriers and their climbability. The height of the barrier should reflect the hazard to which access needs to be restricted.		
Use of personal protection equipment (PPE)			
PPE	Likely to resist/remove if uncomfortable.	Think of PPE as kit for activity, e.g. separate helmets for cycling and some team sports.	Resistance to unfashionable PPE (e.g. goggles, rubber gloves).
Provision of information			
Information to carers	Child not able to read information on their own.	Child unable to read and/or understand information.	Child able to read and understand information.
Verbal keyword	Understand danger words, e.g. "hot", "sharp".	Understand some abstract concepts, e.g. "dangerous", "careful", but can only act appropriately in familiar situations.	Recognize most hazard words, but may not know what precautions this implies.

	Early childhood 3-4 years to 7-8 years		Later childhood 8-9 to 11-12 years		Adolescence 13-14 years upwards	
Verbal warning, demonstrating or discussing potentially hazardous events	Appreciate objects/people that hurt if touched, but not things that might break or fail	Demonstration of a potential accident (or explanation of a “near miss”) may convince, but not if it contradicts experience. Cannot be relied on to remember on future occasions.	Potential accidents may be understood just from verbal descriptions.		Difficult to accept chance as a factor (i.e. if there was no accident first time there never will be). Reluctant to accept own potential to make errors.	
Familiar pictograms and keywords	Some pictograms may be familiar but not as a hazard (e.g. skull and crossbones associated with pirates)	May have some effect. Very simple key words and pictograms recognized by some children.	Familiar pictogram in context understood. Prominent simple key words recognized, but may convey less than to adults. Some words not automatically associated with hazards (e.g. ‘Keep out’)			
Warning signs generally	Child cannot understand warning signs.	Child may understand some warning signs.	May build intuitive associations (e.g. red/yellow triangle or ! for warnings) but may not act reliably.		Recognize and understand many familiar signs.	
Instructions	Child not able to read information on their own.	Child unable to read and/or understand information.	Children may read first lines only.		May read more carefully than adults but have less understanding of potential hazards.	
Pre-purchase information (e.g. on packaging or at point of sale)	Children not able to read information on their own.	Child unable to read and/or understand information.	Only read if looking for particular feature. Child may not act upon it.		May read more carefully than adults. May be read for some types of product/services.	

NOTE Not all activities start at the bottom of the age range for a particular column. For example in some cells, an activity is shown positioned to the right of the cell. Also, the table illustrates when children start to undertake certain activities.

Annex E **(informative)**

Application of guidance

The following is a list of questions that may need to be considered when applying this Guide

NOTE It is important that the questions are considered in the order given.

1. Will children and young people use, have access to, or contact with the product, construction or service ? If NO, then no further action is necessary. If YES, at what stages of child development will the access or contact occur?
2. What will be the type of use/exposure/contact?
3. What characteristics/behaviour of children or young people result in greater risk or injury potential than for adults?
4. What feature of the product, construction or service may give rise to hazards? Further information on hazards is given in ISO/IEC Guide 50 and CEN/TR 13387.
5. What is the frequency, nature and severity of the potential injury?
6. What methods of prevention should be considered for each hazard identified? When reducing risks the order of priority should be as follows (ISO/IEC Guide 51):
 - Inherently safe design
 - Protective design (safeguarding)
 - Information for safety
 - Additional protective devices
 - Training
 - Personal protective equipment
 - Organization

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