



# SLOVENSKI STANDARD

## SIST-TP CEN/TR 16792:2015

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### Varnost otroških oblačil - Priporočila za načrtovanje in izdelavo otroških oblačil - Mehanska varnost

Safety of children's clothing - Recommendations for the design and manufacture of children's clothing - Mechanical safety

Sicherheit von Kinderbekleidung - Teil 1: Mechanische Sicherheit

iTeh STANDARD PREVIEW

Sécurité des vêtements d'enfants - Recommandations pour la conception et la fabrication des vêtements d'enfants - Sécurité mécanique

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#### **ICS:**

61.020	Oblačila	Clothes
97.190	Otroška oprema	Equipment for children

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TECHNICAL REPORT  
RAPPORT TECHNIQUE  
TECHNISCHER BERICHT

**CEN/TR 16792**

December 2014

ICS 61.020; 97.190

English Version

**Safety of children's clothing - Recommendations for the design  
and manufacture of children's clothing - Mechanical safety**

Sécurité des vêtements d'enfants - Recommandations pour  
la conception et la fabrication des vêtements d'enfants -  
Sécurité mécanique

Sicherheit von Kinderbekleidung - Teil 1: Mechanische  
Sicherheit

This Technical Report was approved by CEN on 15 December 2014. It has been drawn up by the Technical Committee CEN/TC 248.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This document (CEN/TR 16792:2014) has been prepared by Technical Committee CEN/TC 248, "Textiles and textile products", the secretariat of which is held by BSI.

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## Introduction

The General Product Safety Directive 2001/95/EC [1] require all products placed on the market to be safe, and provide information on how the safety of products should be assessed. According to the General Product Safety Directive [1] product safety may be assessed by reference to the following:

- specific product regulations;
- national regulations;
- European standards which have had their references published in the Official Journal of the European Union;
- other European standards;
- community technical specifications; national standards (i.e. national standards that are not versions of European standards);
- industry codes of good practice; European Technical Report (TR)
- state of the art and technology; and
- the safety which consumers may reasonably expect.

More details on assessment of product safety are given in the EU The General Product Safety Directive 2001/95/EC.

When designing children's clothing, it is essential to take into consideration the behaviour of children, whose need for exploration and challenge drives them to use items in new and different ways. One common factor children share is that they are unaware of cause and effect and are therefore substantially less cautious than adults in relation to hazards.

It should be emphasized that consideration of the recommendations given in this Technical Report from the earliest possible stage, i.e. the design stage, is of prime importance.

Recommendations on risk assessment are given in Clause 5. The recommendations given relate only to mechanical safety. There are many other safety aspects relating to children's clothing that need to be considered when carrying out a full risk assessment, including chemical safety, thermal protection (against heat or cold), avoidance of overheating, flammability,

## 1 Scope

This Technical Report gives recommendations for the design and manufacture of safe children's clothing in relation to mechanical hazards.

This Technical Report also gives recommendations on safety aspects of the packaging and display of children's clothing, including guidance for retailers.

This Technical Report is applicable to clothing including bonnets, hats, gloves, scarves, socks and other clothing accessories intended for all children up to 14 years of age. It is suggested that dressing up clothes meet the recommendations of this Technical Report in addition to the requirements of EN 71.

This Technical Report is intended for use at all stages of the clothing supply chain, including use by designers, specifiers and manufacturers of children's clothing. It is also intended to be used by importers, distributors and retailers to assist them in the selection of clothing that does not present a hazard.

This Technical Report is not applicable to:

- a) child care articles, such as bibs, nappies and soother holders;
- b) footwear, such as boots, shoes and slippers; or
- c) toys and other items sold with the clothing;

as these articles are not within the scope of CEN/TC 248.

This Technical Report does not include recommendations on any clothing features that might be necessary to cater for children with special needs.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 3084, *Slide fasteners (zips) - Specification*

EN 14682, *Safety of children's clothing - Cords and drawstrings on children's clothing - Specifications*

EN ISO 139, *Textiles - Standard atmospheres for conditioning and testing (ISO 139)*

EN ISO 3758, *Textiles - Care labelling code using symbols (ISO 3758)*

EN ISO 6330, *Textiles - Domestic washing and drying procedures for textile testing (ISO 6330)*

EN ISO 7500-1, *Metallic materials - Verification of static uniaxial testing machines - Part 1: Tension/compression testing machines - Verification and calibration of the force-measuring system (ISO 7500-1)*

EN ISO 10012, *Measurement management systems - Requirements for measurement processes and measuring equipment (ISO 10012)*

ISO 4915, *Textiles - Stitch types - Classification and terminology*

## CEN/TR 16792:2014 (E)

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

- 3.1**  
**baby**  
child from birth up to age 12 months, that is all children of height up to and including 80 cm
- 3.2**  
**infant**  
child from age 12 months to and including 36 months, that is all children over 80 cm and up to and including 98 cm in height
- 3.3**  
**child and young person**  
person aged over 36 months and up to 14 years (that is up to and including 13 years and 11 months), that is all children over 98 cm in height and for girls up to 176 cm and for boys 182 cm in height
- 3.4**  
**babies' clothing**  
garments intended by design manufacture or selling route to be worn by babies
- 3.5**  
**infant's clothing**  
garments intended by design, manufacture or selling route to be worn by infants
- 3.6**  
**children's clothing**  
garments intended by design, manufacture or selling route to be worn by children  
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- 3.7**  
**foreign object**  
object not intended to be a part of a garment, for example, broken needle, stone
- 3.8**  
**ischaemic injury**  
injury to a part of the body resulting from a restriction of blood circulation
- 3.9**  
**attached components**
- 3.9.1**  
**press fastener**  
fastening device consisting of a male component and a female component that are attached to different parts of a garment and which is fastened by aligning the two components and pressing them together
- Note 1 to entry: Press fasteners include poppers and snaps.
- Note 2 to entry: Press fasteners can be attached to a garment mechanically or can be sewn on.
- 3.9.2**  
**tack button**  
fastening device comprising a button with a hollow shank on the back and a separate sharp tack, which is attached to a garment by pushing the sharp end of the tack through the fabric from the reverse side into the shank of the button
- Note 1 to entry: Tack buttons are also known as stud buttons.



Note 2 to entry: Tack buttons are widely used on denim and other casual garments.

### 3.9.3

#### **rivet**

two part assembly, comprising a part (referred to as a burr) which is attached to the outer surface of the garment by a tack which passes through the fabric from the reverse side

Note 1 to entry: Rivets are usually used as reinforcements, particularly on the corners of pockets on denim and other casual garments.

### 3.9.4

#### **eyelet**

item used to reinforce a hole through a garment, comprising a short metal tube with a flange at one end which is fastened to the garment by pushing it through the hole and compressing it against a die

Note 1 to entry: An eyelet may also include a washer on the reverse side.

Note 2 to entry: Eyelets are used to facilitate lacing or the insertion of a drawstring, to drain pockets or to provide ventilation.

### 3.9.5

#### **pom-pom**

ball created either from cut lengths of thread or yarn fastened at the centre, or from a piece of fabric filled with filling material

Note 1 to entry: Pom-poms can be secured directly to a garment or attached by means of a cord.

### 3.9.6

#### **tassel**

bundle of lengths of yarn or other materials fastened at one end and free at the other end

Note 1 to entry: Tassels can be secured directly to a garment or attached by means of a cord.

### 3.9.7

#### **tab**

piece of textile or other material, of flat or looped construction, attached to the outside of a garment either for identification or for decorative purposes

Note 1 to entry: These are distinct from adjusting tabs, which are defined in EN 14682.

### 3.9.8

#### **button**

knob or disc which is attached to a garment as a means of fastening or ornamentation

### 3.9.9

#### **label**

fabric, plastic or similar attached to the garment to provide instructions, information or to identify the garment brand

### 3.10

#### **garment assembly**

section of a garment, made under production conditions, using production equipment and the components that are to be used in production

### 3.11

#### **hazard**

potential source of harm to the wearer of a garment

**CEN/TR 16792:2014 (E)****3.12****risk**

combination of the probability of occurrence of a hazard and the severity of the harm which that hazard could be expected to cause

**3.13****risk assessment**

thorough evaluation of the risks that a garment could present to the wearer as a result of the design, materials, components and construction of the garment

**3.14****sharp object**

object with one or more edges or points which are exposed, or which could become exposed, and which are likely to cause a cutting or piercing injury to the wearer of a garment

**3.15****touch and close fastener**

fastener consisting of two pile fabric tapes that are attached to different parts of a garment which is fastened by pressing the pile sides of the two tapes together and which can be unfastened by peeling apart the two tapes starting at either end

Note 1 to entry: Touch and close includes hook and loop.

**3.16****wear trial**

trial of a garment involving wear by intended users in order to obtain information on the wear performance and characteristics of the garment

**3.17****magnet**

piece of iron, steel or alloy having the properties of attracting or repelling iron

**3.18****magnetic material**

material capable of being attracted by, or acquiring the properties of a magnet

**3.19****zip/slide fastener**

moving component consisting essentially of a slider body and, normally, a puller, which opens or closes the fastener by separating or engaging the interlocking members

Note 1 to entry: The slider might incorporate a locking device. Alternative slider types are available with a flip-over puller or double pullers, to facilitate operation from both front and back sides.

**3.20****appliqué**

cut out design or shape attached to the face of material for ornamentation, frequently of a different type and/or shade of material

**3.21****filling material**

material which is encased in fabric to form part of the structure of a garment

Note 1 to entry: Filling materials include wadding, foams and feathers.

## 4 Mechanical hazards and associated risks

### 4.1 Ischaemic injuries

Ischaemic injuries can be caused by loose or untrimmed threads on the foot or hand area of garments becoming wrapped around fingers or toes, or by entrapment of fingers or toes in open fabrics (e.g. crochet) or in fabrics with long float stitches. Entrapment of tongue or fingers is possible in large inflexible openings, in components such as buttons, press fasteners, eyelets and zip/slide fasteners. These can cause a tourniquet effect, thus restricting the blood circulation.

This is a particular concern in clothes for babies as the source of distress cannot be communicated by the baby and might go undetected for some time.

In addition, areas of skin or parts of the genitalia can protrude through a mesh fabric used as a lining for swimming trunks. The skin from these parts can become entrapped in the mesh leading to ischaemic injury.

Elasticated cuffs can also cause a reduction in blood flow to the hands or feet if the elastic is too tight or too strong; this is a particular concern in baby clothing.

### 4.2 Entrapment of the penis in a slide fastener (zip)

All boys' trousers that have a slide fastener present a risk of entrapment of the penis in the fastener.

### 4.3 Injuries from sharp objects

Injuries to children can be caused by clothing which contains sharp objects. The severity of the injury can range from a scratch or irritation to a more serious injury such as cutting or piercing.

Injuries can be caused by components with sharp edges, which are sometimes found on buttons, slide fasteners and decorative features, or by sharp edges which are produced through the deterioration of components during the wear and aftercare lifecycle of the garment. For example, components of press fasteners can become detached from the garment leaving sharp prongs exposed, and buttons can break, or covered buttons can come apart, leaving a sharp edge.

Pins, broken needles, staples and other sharp objects used in the manufacture and packaging of clothing can also cause serious injury if they are left in the garment.

### 4.4 Choking and aspiration

Buttons, toggles and many other garment attachments (including rubber and soft plastics items, such as badges) can be a potential hazard, particularly to children under 36 months, if the item becomes detached from the garment. As young children are known to place such items in their mouth, and might also insert them into their nose or ears, any foreign object found in a child's garment can present a risk of either choking or aspiration. Stones left as a residue from a stone-washing process can present the same risks.

Aspiration (where items are inhaled via the mouth or nose) is possible if detached parts are sufficiently small to pass into the trachea or lungs, for example beads, diamanté and sequins. Often these items might not be detected, as their chemical nature means they are unlikely to be identified by X-ray. The consequence is the foreign body can cause toxic shock or lead to an infection, the source of which might not be readily identified. This can result in rapid and unexplained weight loss requiring hospitalization. This is very serious, however it is extremely rare.

### 4.5 Swallowing

In most cases a detached item that has been swallowed will pass into the stomach and should eventually pass through the body with food without causing harm. Notable exceptions are sharp objects, button cell batteries and magnets.

**CEN/TR 16792:2014 (E)****4.6 Magnets**

If more than one magnet, or one magnet and a ferromagnetic object (for example iron or nickel) is ingested, the objects can attract to each other across intestinal walls and cause perforation or blockage, which can be fatal. Other risks include magnetic interference with devices such as pacemakers or infusion pumps.

**4.7 Strangulation and entrapment**

Garments manufactured with cords, drawstrings or loops present a potential risk of strangulation and, entrapment. Studies of accident data indicate two distinct trends, see EN 14682:2014 Annex A .

**4.8 Slipping, tripping and falling**

Accident statistics show that the majority of tripping and falling accidents are caused by poorly fitting garments. It is unclear whether this is due to inappropriate garment selection by the parent or carer or to the garment itself being incorrectly sized. Examples of the latter could be a skirt or a trouser leg being too long in relation to the waist and hip measurements. A belt or cord which is too long might also put the wearer at risk of tripping. Some slipping accidents can be attributed to children of walking age wearing socks or footed garments without wearing additional footwear.

**4.9 Restriction of vision and hearing**

Hoods and certain types of headwear can restrict a child's vision or hearing, or both. Garments with hoods, and certain types of headwear, have the potential to increase the risk of the child being involved in an accident. Particular concern has been raised regarding an increased risk of playground and of road traffic accidents.

**4.10 Suffocation**

Accident statistics suggest that suffocation accidents involving children's clothing are rare. However, there remains a risk of suffocation in babies under 12 months if a garment has a hood constructed from materials which are impermeable to air.

**5 Risk assessment**

The General Product Safety Directive [1] specifies that all consumer products have to be safe or reasonably safe in normal and foreseeable use.

Risk assessments should be carried out so as to cover every stage of the garment production process, from the design stage, through manufacturing to retailing. This should include an exchange of information between all those concerned with the design, manufacturing, buying and retailing of the garments to ensure that garments put on sale to the public are safe.

The main stages that need to be carried out in a risk assessment are as follows:

- a) identification of the hazards;
- b) identification of the risks associated with each of the hazards;
- c) removal of the hazards wherever possible;
- d) for those hazards that cannot be removed, taking action to reduce the risks associated with them to an acceptable level.

NOTE To assist in the assessment of risks associated with particular hazards, some recorded accident statistics are given in Annex A.

If a particular aspect of a garment design is found to present a risk, consideration should be given to removing the feature and/or obtaining the same effect using a safer technique.

Measures to remove hazards and reduce risks at the manufacturing stage should include the following:

- 1) adapting to technical progress and using safer technology;
- 2) developing a coherent overall prevention policy which covers technology, organization of work, and control of factors relating to the working environment, e.g. introducing a broken needle policy in a factory, and control of hand sewing procedures and the use of pins and staples;
- 3) implementing manufacturing management procedures to avoid or minimize risk including giving appropriate instructions to employees, for example on correct broken needle procedures.

Risk assessments should be done on all garments, covering the complete range of sizes.

The following factors should be taken into account:

- the age of the intended wearer;
- the expected characteristics of a child that age, and the situation in which they are likely to be wearing the garment, including the following:
  - weight and height of the child;
  - body measurements relevant to specific potential hazards, e.g. wrist size in the case of a garment with elasticated cuffs;
  - the age-related abilities of the child;
  - the normal behaviour of the child;
  - the situation(s) in which the garment is intended to be worn;
  - the normal levels of supervision of the child while they are wearing the garment. For example, not only is a sleeping baby very unlikely to be supervised, but it might also continue to be unsupervised when it wakes.

When carrying out a risk assessment, it should be borne in mind that young children up to around age 7 years cannot be expected to appreciate risks and that their behaviour can be unpredictable.

Risk assessments should be documented. The documentation should be dated and identified so that it is traceable, and should include a record of the name and position of the individual(s) who carried out the assessment. Risk assessments should be reviewed at least annually for long-running styles and further action taken to reduce risks if necessary.

Wear trials should never be carried out as part of a risk assessment to determine if a garment is safe. If a previously unidentified safety issue, or perceived safety issue, becomes apparent during a wear trial then the wear trial should be stopped immediately and the risk assessment should be reviewed.

## 6 Garment design, materials and construction

### 6.1 General

*Assessed capability.* Users of this Technical Report are advised to consider the desirability of sourcing materials and components from suppliers who operate quality systems that have been assessed and