SLOVENSKI STANDARD
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Varovalna obleka - Rokavice in ģļ itniki rok za varovanje pred urezninami gnanih noģev ï Zahteve in preskusne metode

Protective clothing - Gloves and armguards protecting against cuts by powered knives - Requirements and test methods

Schutzkleidung - Handschuhe und Armschützer zum Schutz gegen Schnittverletzungen durch angetriebene Messer - Anforderungen und Prüfverfahren

Vetements de protection - Gants et protege-bras protégeant contre les coupures par des couteaux électriques - Exigences et méthodes d'essai

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Protective clothing - Gloves and armguards protecting against cuts by powered knives - Requirements and test methods

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Foreword

This document (EN 14328:2005) has been prepared by Technical Committee CEN/TC 162 “Protective clothing including hand and arm protection and lifejackets”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2005, and conflicting national standards shall be withdrawn at the latest by October 2005.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 89/686/EEC.

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

This document contains a bibliography.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

Powered knives are used when it is advantageous, to reduce the muscular effort required by the worker, or to increase their rate of working. They are commonly used in clothing factories, in slaughterhouses and in meat cutting plants. Band knives, reciprocating straight knives, rotating circular cutters and other designs are used. Electricity or compressed air normally powers them. The tool driving the blade may be partly supported by the work pieces or by the workbench, or may be held in one hand. The edges of the blades may be quite smooth, coarsely honed, finely serrated or scalloped. They need to be distinguished from cutting blades with saw-tooth edges with teeth above 1 mm in height, which generally are unsafe to use with chain mail gloves, and armguards.

Powered knives enable workers to cut rapidly through very resistant materials. Their hands are always in the vicinity of the blade in order to present the work piece to the blade, and it is not possible to guard the whole cutting edge. Thus there is significant potential for serious hand injuries during cutting operations. Most accidents occur during cutting but they are also recorded during blade changing, blade cleaning, guard adjustment, and moving the tool.

At the present time it is not known that any practical glove material other than metal chain mail provides significant protection against powered knives. Even chain mail is rapidly cut through and injuries will only be avoided by strict adherence to safe working practices. Armguards made from sheet metal or rigid plastic material also provide some protection. Users of chain mail gloves note that the vibration and noise caused by contact of their glove with a powered knife blade often enables them to react in time to prevent an injury.

1 Scope

This document specifies the requirements for the design, cut resistance, ergonomic characteristics, innocuousness, fixings, construction materials, marking and instructions for use, for chain mail gloves and armguards providing protection against powered knives. Appropriate test methods are also specified.

2 Normative references

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

EN 340, *Protective clothing — General requirements.*

EN 420, Protective *gloves — General requirements and test methods.*

EN 1082-1:1996, *Protective clothing — Gloves and arm guards protecting against cuts and stabs by hand knives – Part 1: Chain mail gloves and arm guards.*

EN 1082-2:2000, *Protective clothing — Gloves and arm guards protecting against cuts and stabs by hand knives – Part 2: Gloves and arm guards made of material other than chain mail.*

EN 1811, *Reference test method for release of nickel from products intended to come into direct and prolonged contact with the skin*.

EN 12472*, Method for the simulation of wear and corrosion for the detection of nickel release from coated items.*

EN 14362-1, *Textiles — Methods for the determination of certain aromatic amines derived from azo colorants — Part 1: Detection of the use of certain azo colorants accessible without extraction.*

EN 14362-2, *Textiles — Methods for determination of certain aromatic amines derived from azo colorants — Part 2: Detection of the use of certain azo colorants accessible by extracting the fibres.*

EN 23758, *Textiles — Care labelling code using symbols (ISO 3758:1991).*

EN ISO 4045, *Leather — Determination of pH (ISO 4045:1977).*

EN ISO 13998, *Protective clothing — Aprons, trousers and vests protecting against cuts and stabs by hand knives (ISO 13998:2003).*

ISO 3071, *Textiles — Determination of pH of the aqueous extract.*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1082-1:1996 and EN 1082-2:2000, and the following apply.

3.1
powered knife
hand held or fixed machine using a power source to drive a rotating, reciprocating or vibrating knife blade

3.2
knife blade
sharp edged cutting tool with a either a smooth edge, or a serrated edge with points less than 1 mm high, or with a scalloped edge with points less than 3 mm high

3.3
saw blade
cutting tool with a serrated or toothed edge with points more than 1 mm high, or with a scalloped edge with points more than 3 mm high

3.4
serrated edge
grinding pattern of a knife edge in which sharp points are separated by valleys, and in which the height of the points is greater than the distance between them

3.5
scalloped edge
grinding pattern of a knife edge in which rounded or blunt points are separated by round bottomed valleys, and in which the height of the points is less than half the distance between the them

3.6
toothed edge
grinding pattern of a knife edge in which sharp points are separated by sharp valleys, and in which the height of the points is less than the distance between them

4 Requirements

4.1 Innocuousness

4.1.1 General innocuousness requirements

Gloves and armguards protecting against cuts by powered knives shall meet a general requirement that they are safe to use and fit for their purpose. They shall be designed and manufactured to provide protection when used according to the manufacturer's instructions, without endangering the user or others. There shall not be hard or sharp edges, seams, buckles or other items on their surfaces that could harm the user or others during normal use. Examination shall be made according to 5.4.

All materials of the gloves and armguards protecting against cuts by powered knives shall not adversely affect the health of the user. They shall be made of materials that have been shown to be chemical suitable. The materials shall not in the foreseeable conditions of normal use release or degrade to release substances generally known to be toxic, carcinogenic, mutagenic, allergenic or otherwise harmful. The manufacturer's claim that the product is innocuous shall be checked according to 5.2.

NOTE Information on the classification and identification of harmful substances can be found e.g. in the Council Directives 67/548/EEC [1] (classification, packaging, labelling of dangerous substances) and 76/769/EEC [2] (restriction on use of dangerous substances) and amendments.

Any of the following documents that are available should be examined:

a) The manufacturer's technical file,

b) Materials specifications from the material producers, and certificates of conformity,

c) Safety data sheets relating to the materials,

d) Certificates or reports relating to the suitability of the materials for use with food, in medical devices, or other relevant applications.

e) Certificates or reports relating to toxicological, allergenic, carcinogenic or mutagenic investigations on the materials,

f) Other documents submitted by the manufacturer

The examination should determine whether the claim that the materials are suitable for use in the protective clothing or protective equipment is justified. Particular attention shall be paid to the presence of plasticisers, unreacted components, heavy metals or, impurities, and the chemical identity of pigments and dyes.

4.1.2 Specific innocuousness requirements

In the absence of satisfactory documentary evidence, testing shall be conducted to ensure materials in gloves and armguards protecting against cuts by powered knives meet the following requirements and any relevant additional requirements in EN 340:

a) The chromium VI content of leather in clothing and gloves shall comply with the requirement in EN 420.

b) All metallic materials which could come permanently into contact with the skin such as chain mail, sheet metal, studs, fittings and buckles, shall be free of nickel or shall have an emission of nickel of less than 0,5 µg/cm² per week. The test methods shall be according to EN 12472 and EN 1811.

c) The pH value of any leather or fabric components shall be greater than 3,5 and less than 9,5. The test method for leather shall be according to EN ISO 4045 and for other materials according to ISO 3071.

d) Substances such as azo-dyes which release carcinogenic amines as listed in EN 14362-1, shall not be detectable by the methods in Parts 1 and 2 of that standard.

4.2 Dimensions of the protective surface areas of gloves and armguards

4.2.1 General

The requirements for gloves and armguards protecting against cuts by powered knives shall be the same as those for chain mail gloves and chain mail or rigid arm guards given in EN 1082-1, except as listed below. Sizes and coverage shall be assessed according to 6.8 and Annex A of EN 1082-2:2000.

4.2.2 Gloves

The coverage provided by gloves shall be continuous and without an open slit on the ulnar side of the palm. The possible slit shall be closed e.g. by overlapping the chain mail. If coverage is provided by overlapping chain mail no gap in protection shall occur when testing according to 4.3.4 is carried out.

4.2.3 Short cuff gloves

Short cuff gloves shall be designed to provide continuous protection from the finger tips to a distance at least 75 mm proximal to the wrist. The cuff shall retain this coverage when tested according to Annex A of EN 1082-2:2000.

4.2.4 Long cuff gloves

Long cuff gloves shall be designed to provide continuous protection from the finger tips to a distance less than 75 mm distant to the upper arm surface when the elbow is flexed at 90°, see Annex B of EN 1082-1:1996. The cuff shall retain this coverage when tested according to Annex A of EN 1082-2:2000.

4.2.5 Glove sizes

Gloves shall be marked with their size to the nearest half size and with their length, based on the hand size they are designed to fit, according to table B.1 in Annex B of EN 1082-1:1996, or shall be marked with an appropriate user's hand length and palm circumference in millimetres. Size markings shall be verified according to Annex A of EN 1082-2:2000.

4.2.6 Flexible protective sleeves

Flexible protective sleeves shall provide continuous coverage from the wrist as defined in 3.1.2 of EN 1082-1:1996, to above the elbow.