SLOVENSKI STANDARD
SIST EN 17353:2020

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Nadomešča:
SIST EN 1150:1999

Varovalna obleka - Oprema z izboljšano vidljivostjo za razmere s srednjim tveganjem - Preskusne metode in zahteve

Protective clothing - Enhanced visibility equipment for medium risk situations - Test methods and requirements

Schutzkleidung - Erhöhte Sichtbarkeit für mittlere Risikosituationen - Prüfverfahren und Anforderungen

Habillement de protection - Équipement de visualisation améliorée pour des situations à risque modéré - Méthodes d'essai et exigences

Ta slovenski standard je istoveten z: **EN 17353:2020**

ICS:

13.340.10	Varovalna obleka	Protective clothing

SIST EN 17353:2020 **en,fr,de**

EUROPEAN STANDARD
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English Version

Protective clothing - Enhanced visibility equipment for medium risk situations - Test methods and requirements

Habillement de protection - Équipement de visualisation améliorée pour des situations à risque modéré - Méthodes d'essai et exigences

Schutzkleidung - Erhöhte Sichtbarkeit für mittlere Risikosituationen - Prüfverfahren und Anforderungen

This European Standard was approved by CEN on 5 July 2020.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 17353:2020) 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of an identical text or by endorsement, at the latest by February 2021, and conflicting national standards shall be withdrawn at the latest by August 2023.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1150:1999, and EN 13356:2001.

This document has been prepared under a standardization request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Regulation 2016/425.

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

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

1 Scope

This document specifies requirements for enhanced visibility equipment in the form of garments, or devices, which are capable of visually signalling the user's presence.

The enhanced visibility equipment is intended to provide conspicuity of the wearer in medium risk situations under any daylight conditions and/or under illumination by vehicles headlights or searchlights in the dark.

Performance requirements are included for colour and retroreflection as well as for the minimum areas and for the placement of the materials in protective equipment.

This document is not applicable to:

- high visibility equipment in high-risk situations, which is covered in EN ISO 20471 (for further information concerning risk situations, see Annex A);
- visibility equipment specifically intended for the head, hands and feet, e.g. helmets, gloves and shoes;
- equipment integrating active lighting, e.g. LEDs;
- visibility for low-risk situations.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 20105-A02:1994, *Textiles - Tests for colour fastness - Part A02: Grey scale for assessing change in colour (ISO 105-A02:1993)*

EN 20105-A03:1994, *Textiles - Tests for colour fastness - Part A03: Grey scale for assessing staining (ISO 105-A03:1993)*

EN 20105-N01:1995, *Textiles - Tests for colour fastness - Part N01: Colour fastness to bleaching: Hypochlorite (ISO 105-N01:1993)*

EN 60068-2-31:2008, *Environmental testing - Part 2-31: Tests - Test Ec: Rough handling shocks, primarily for equipment-type specimens (IEC 60068 2 31:2008)*

EN ISO 105-B02:2014, *Textiles - Tests for colour fastness - Part B02: Colour fastness to artificial light: Xenon arc fading lamp test (ISO 105-B02:2014)*

EN ISO 105-C06:2010, *Textiles - Tests for colour fastness - Part C06: Colour fastness to domestic and commercial laundering (ISO 105-C06:2010)*

EN ISO 105-D01:2010, *Textiles - Tests for colour fastness - Part D01: Colour fastness to dry cleaning using perchloroethylene solvent (ISO 105-D01:2010)*

EN ISO 105-E04:2013, *Textiles - Tests for colour fastness - Part E04: Colour fastness to perspiration (ISO 105-E04:2013)*

EN ISO 105-X11:1996, *Textiles - Tests for colour fastness - Part X11: Colour fastness to hot pressing (ISO 105-X11:1994)*

EN ISO 105-X12:2016, *Textiles - Tests for colour fastness - Part X12: Colour fastness to rubbing (ISO 105-X12:2016)*

EN ISO 12947-2:2016, *Textiles - Determination of the abrasion resistance of fabrics by the Martindale method - Part 2: Determination of specimen breakdown (ISO 12947-2:2016)*

EN ISO 13688:2013, *Protective clothing - General requirements (ISO 13688:2013)*

EN ISO 20471:2013, *High visibility clothing - Test methods and requirements (ISO 20471:2013, Corrected version 2013-06-01)*

ISO 4675:2017, *Rubber- or plastics-coated fabrics - Low-temperature bend test*

CIE 015:2018, *Colorimetry*

CIE 54.2:2001, *Retroreflection - Definition and measurement*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp/ui

3.1
combined-performance material
material intended to exhibit both fluorescent and retroreflective properties

Note 1 to entry: "Fluorescent material" is defined as "background material" in EN ISO 20471:2013.

[SOURCE: EN ISO 20471:2013, 3.6]

3.2
dark condition
light conditions similar to light outside after sunset and before sunrise

3.3
daylight
light conditions similar to light outside after sunrise and before sunset

3.4
enhanced-visibility equipment
clothing/garment or device, intended to provide conspicuity during daylight and/or dark conditions and/or twilight

3.5
family of devices
group of devices made with identical raw materials (manufacturer, article number, reflected colour, product variation etc.) and identical manufacturing process as the base of model

3.6
flexible device
device that is capable of being bent

3.7
fluorescent material
material that emits electromagnetic radiation at visible wavelengths longer than those absorbed

Note 1 to entry: This term applies to daylight conditions.

Note 2 to entry: "Fluorescent material" is defined as "background material" in EN ISO 20471:2013.

[SOURCE: EN ISO 20471:2013, 3.2]

3.8
non-fluorescent material
material not intended to be highly conspicuous

3.9
optical active area
part of the retroreflective material which has not lost any of the original photometric properties during conversion into a device

Note 1 to entry: This includes, but it is not limited to, loss due to welding lines, holes or printing.

3.10
orientation sensitive material
material having coefficients of retroreflection that differ by more than 15 % when measured at the two rotation angles ß1 = 0° and ß2 = 90°

[SOURCE: EN ISO 20471:2013, 3.7]

3.11
retroreflective element
portion of retroreflective material (stripe, band or any shape meeting the design criteria of this document)

3.12
retroreflective material
material which is a retroreflector, but which is not intended to comply with the requirements of this document for fluorescent material

[SOURCE: EN ISO 20471:2013, 3.4]

3.13
rigid device
device that is not capable of being bent

EXAMPLE injection moulded prismatic materials

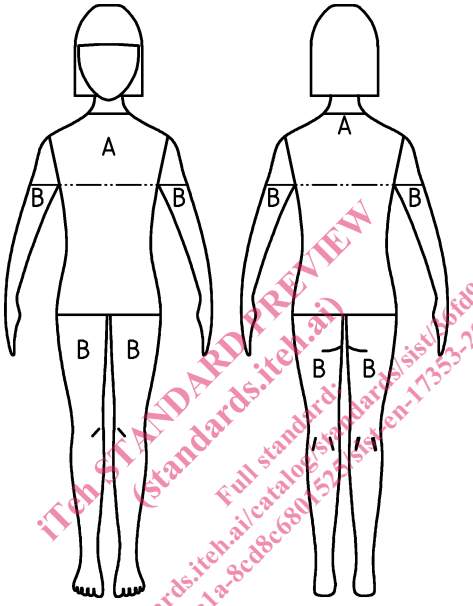
3.14
separate-performance material
material intended to exhibit either fluorescent or retroreflective properties but not both

Note 1 to entry: "Fluorescent material" is defined as "background material" in EN ISO 20471:2013.

[SOURCE: EN ISO 20471:2013, 3.5]

3.15
torso
thorax and abdomen or section of the torso to which the limbs and neck are attached

Note 1 to entry: See Figure 1.



Key
A torso
B limbs
NOTE The area of B above the dotted line is considered as upper arm.

Figure 1 — Torso and limbs

[SOURCE: EN ISO 20471:2013, 3.8 - modified]

3.16
twilight
period in the morning or, in the evening during which the sun is below the horizon, either from daybreak to sunrise or from sunset to nightfall

4 Types and minimum area requirements

4.1 Types

The enhanced visibility equipment is grouped into three types based on the foreseeable conditions of use:

— Type A

Equipment worn by users where the risk of not being seen exists only at daylight conditions. This equipment uses only the fluorescent material as enhanced visibility component.

— Type B

Equipment worn by users where risk of not being seen exists only at dark conditions. This equipment uses only the retroreflective material as enhanced visibility component.

Type B is subdivided in 3 levels, as below. The classification depends on the total area worn or on placement of the device on user's torso and limbs:

— Type B1 includes free hanging retroreflective devices only; these devices are designed for movement recognition.

— Type B2 includes retroreflective devices or retroreflective material either temporarily or permanently placed on limbs only; these products are designed for movement recognition. As a minimum, the retroreflective material shall be positioned on the limbs as a separate removable device or shall be incorporated into clothing design on a permanent basis as a retroreflective element.

— Type B3 includes retroreflective material placed on torso or torso and limbs. These products are designed for form recognition, or form and movement recognition. Type B3 items shall not be a combination of permanently attached reflective material and removable reflective devices.

NOTE 1 Additional retroreflective or combined-performance materials can be incorporated into garments.

— Type AB

Equipment worn by users where risk of not being seen exists during daylight, twilight and dark conditions. This equipment uses the fluorescent as well as the retroreflective and/or combined performance materials as enhanced visibility components.

Table 1 shows the different types.