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PÕLVEMATTIDELE (TÜÜP 3)

Personal protective equipment - Knee protectors for
work in the kneeling position - Part 5: Requirements
for knee mats (type 3)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 14404-5:2024 sisaldab Euroopa standardi EN 14404-5:2024 ingliskeelset teksti. Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas. Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 22.05.2024. Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	This Estonian standard EVS-EN 14404-5:2024 consists of the English text of the European standard EN 14404-5:2024. This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation. Date of Availability of the European standard is 22.05.2024. The standard is available from the Estonian Centre for Standardisation and Accreditation.
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English Version

Personal protective equipment - Knee protectors for work
in the kneeling position - Part 5: Requirements for knee
mats (type 3)

Équipements de protection individuelle - Protecteurs
de genoux pour le travail à genoux - Partie 5 :
Exigences relatives aux tapis pour genoux (type 3)

Persönliche Schutzausrüstung - Knieschutz für
Arbeiten in kniender Haltung - Teil 5: Anforderungen
an Kniematten (Typ 3)

This European Standard was approved by CEN on 20 June 2022.

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European foreword

This document (EN 14404-5:2024) has been prepared by Technical Committee CEN/TC 162 “Protective clothing including hand and arm protection and life jackets”, 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of an identical text or by endorsement, at the latest by November 2024 and conflicting national standards shall be withdrawn at the latest by November 2024.

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.

EN 14404 “*Personal protective equipment — Knee protectors for work in the kneeling position*” is split into 6 parts:

- *Part 1: Test methods;*
- *Part 2: Requirements for wearable knee protectors (type 1);*
- *Part 3: Requirements for the individual combination of knee pads and garments (type 2);*
- *Part 4: Requirements for the combination of interoperable knee pads and garments (type 2);*
- *Part 5: Requirements for knee mats (type 3);*
- *Part 6: Requirements for kneeling systems (type 4).*

With the splitting of the standard, the following changes were made:

- definition of the protection zone;
- new combination of interoperable knee pads with interoperable garments (EN 14404-4);
- a bend test for interoperable knee pad was introduced;
- normative references were updated, further normative references are included;
- the cleaning of garments was taken into account;
- an uneven test surface and test was introduced;
- no more “UNISIZE” size; adjustment of size designation;
- additional markings were added.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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Introduction

Kneeling is a frequently occurring working position, but one which is problematic from an occupational health viewpoint. Without knee protectors, workers can suffer immediate injuries from hard surfaces and small stones and similar objects lying on the surfaces. However, no knee protector can ensure that workers will not suffer medical complications if they are required to kneel for long periods.

It is important that knee protectors do not compromise venous drainage in the leg while kneeling or standing up. Therefore, it is important that it is easy for workers to change position and to stand up to re-establish a normal blood circulation at frequent intervals while wearing knee protectors.

Work in a kneeling position involves the risk of chronic diseases such as prepatellar bursitis and cartilage injuries caused by continuous pressure on the knees. Knee protection is therefore recommended for all work in the kneeling position. The protection should distribute forces evenly and prevent small hard objects on the ground causing injuries. Many workers have pre-existing damage to their knees, particularly to their cartilages from sports injuries and from previous work. These injuries will be made worse by further kneeling. Wearing knee protectors cannot correct existing damage, but should slow down further damaging effects.

Work in a kneeling position can expose the skin of the shins, knees and thighs to toxic and corrosive materials normally kept off the body while walking and standing by waterproof or water-resistant footwear. Knee protectors and trousers for use with such wet materials and particularly wet cement, should take this into account and provide adequate protection.

For working in a kneeling position, four types of knee protectors exist:

- wearable knee protectors (type 1),
- knee pads in combination with garments (type 2),
- knee mats (type 3), and
- kneeling systems (type 4).

1 Scope

This document specifies requirements for knee protectors (knee mats (type 3)) and performance levels for use when working in a kneeling position in order to reduce injuries to the knees caused by continuous pressure and penetration. Requirements for the marking of knee mats and the information to be supplied by the manufacturer are given. Where protection against additional hazards is claimed, performance requirements from other standards are applicable.

This document does not apply to knee protectors that are medical devices or are intended for sports and motorcycles.

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 14404-1:2024, *Personal protective equipment - Knee protectors for work in the kneeling position - Part 1: Test methods*

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

3 Terms and definitions

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

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

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

3.1

knee mat (type 3)

device not attached to the body, but put into place as the user moves around

3.2

zone of protection

area of the knee protector that is intended to provide the user with protection of patellar and infrapatellar areas against continuous pressure and penetration

4 Performance levels of knee protectors

The performance level of knee protectors is only specified by the penetration resistance and the force distribution.

4 performance levels are specified. The tests for the performance levels are described in 4.4 and 4.5 of EN 14404-1:2024.

- **Level 0:** knee protectors providing no protection against penetration and with a force distribution less than 30 N when tested on flat even surface
- **Level 1:** knee protectors providing protection against penetration at a force of at least 100 N and with a force distribution less than 30 N when tested on flat even surface
- **Level 1U:** knee protectors providing protection against penetration at a force of at least 100 N and a force distribution less than 30 N when tested on uneven surface