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Tips for assistive products for walking – Requirements and test methods – Part 1: Friction of tips (ISO 24415-1:2009)

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EUROPEAN STANDARD

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English Version

Tips for assistive products for walking - Requirements and test methods - Part 1: Friction of tips (ISO 24415-1:2009)

Embouts pour produits d'assistance à la marche - Exigences et méthodes d'essai - Partie 1: Frottement des embouts (ISO 24415-1:2009)

Puffer für technische Gehhilfen - Anforderungen und Prüfungen - Teil 1: Reibung der Puffer (ISO 24415-1:2009)

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Foreword

This document (EN ISO 24415-1:2009) has been prepared by Technical Committee ISO/TC 173 "Technical systems and aids for disabled or handicapped persons" in collaboration with Technical Committee CEN/TC 293 “Assistive products for persons with disability” the secretariat of which is held by SIS.

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of an identical text or by endorsement, at the latest by October 2009, and conflicting national standards shall be withdrawn at the latest by October 2009.

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Endorsement notice

The text of ISO 24415-1:2009 has been approved by CEN as a EN ISO 24415-1:2009 without any modification.

Introduction

A frictional performance of the tips attached to the bottom of assistive products for walking is a key concern ensuring user safety. Friction between the tips and the walking surface is an extraordinarily important factor by which a user can confirm his/her motion.

The tips are used on many different assistive products for walking, including canes, walking sticks, crutches, walking frames, rollators and walking tables and are produced in many different sizes and made of many different materials depending on the assistive products for walking to which they are applied. Tips with a variety of bottom shapes for a particular kind of assistive product for walking are also available on the market.

In the friction test method found in this part of ISO 24415, tips of original shape are used. In real situations, not only pure frictional characteristics but also the shape and pattern of the bottom surface against the walking surface can affect the locomotive performance.

This part of ISO 24415 specifies a test with which the frictional force is measured on tip products themselves in order to ensure that the tips with necessarily frictional characteristics are used and it helps to exclude the tips with unacceptably poor frictional characteristics.

Tips for assistive products for walking — Requirements and test methods —

Part 1:
Friction of tips

1 Scope

This part of ISO 24415 specifies requirements and test methods for the friction between the tips for assistive products for walking and the walking surface. This part of ISO 24415 is not applicable to tips manufactured for special purposes. The requirements and test method are based on a usage of tips for ordinary gait on the dry and flat walking surface.

EXAMPLE 1 Examples of assistive products for walking are walking sticks, elbow crutches, forearm crutches, auxillary crutches, walking frames, rollators and walking tables.

EXAMPLE 2 An example of special purposes is ice and/or snow.

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.

ISO 9999, *Assistive products for persons with disability — Classification and terminology*

3 Terms and definitions

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

3.1
tip
that part of the assistive product for walking, which is in contact with the walking surface

See Figure 1.

3.2
test track
surface against which the tip is to be tested

3.3
test velocity
relative velocity between the tip and the test track

3.4
frictional force
force required to move the test track and the tip relative to each other

3.5
frictional force to be recorded
value of the frictional force determined from the test

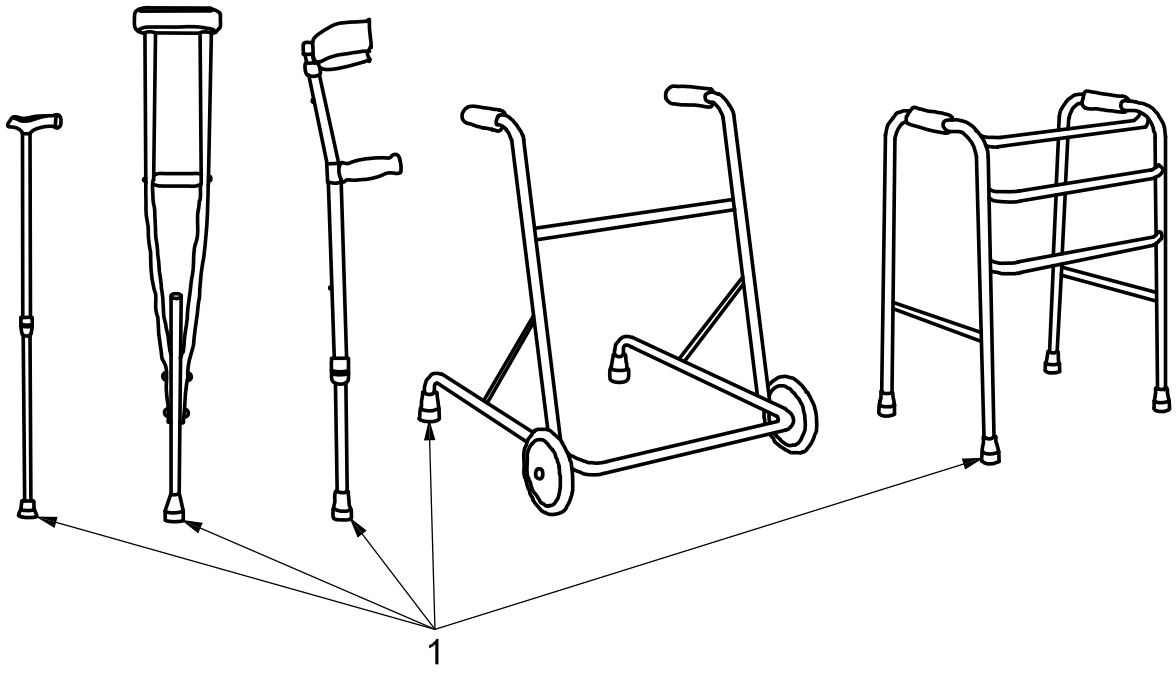
See Annex A.

3.6
axial loading force
force exerted on the tips along the longitudinal axis of the loading shaft

3.7
temperature of test
temperature of the tip, test apparatus and its environment

4 Requirements

The minimum frictional force shall be not less than 25 N when tested in accordance with 6.3.



Key
1 tip

Figure 1 — Tips

5 Test apparatus

5.1 Test device

The test device consists of a test track, a loading force mechanism, a pulling mechanism and a recording system. The tip and track shall move relative to each other linearly while the tip is placed on the test track and an axial load applied. The principle of the test apparatus is shown in Figure 2 and additional information is given in Annex B.

The whole test apparatus shall be rigid. All linkages shall be made with rods but not with wire.

5.2 Test track

The air side of the float glass shall be used for the test track. The test track shall be moved, relative to the tip, by the pulling mechanism.

5.3 Loading force mechanism

The loading force mechanism consists of a loading shaft having an outside dimension equivalent to the leg dimension as specified by the manufacturer and shall be positioned at an angle of (70 ± 2)° to the test track (see Figure 2). The loading mechanism shall exert an axial loading force of (50 ± 1) N to the tip along the loading shaft. The mechanism used shall allow for separation of the tip from the test track, while the test track is reset to its initial position.

5.4 Pulling mechanism

The pulling mechanism shall give a constant test velocity of (500 ± 25) mm/min regardless of the magnitude of the pulling force. The test velocity shall be reached within 0,3 s.

5.5 Frictional force measurement

The frictional force shall be recorded by a waveform-viewing device or a data-recording system. The recording shall be of an accuracy of ± 2 %. The measuring system shall be able to measure at least 200 N.