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Standards

Irish Standard  
I.S. EN ISO 20685:2010

# 3-D scanning methodologies for internationally compatible anthropometric databases (ISO 20685:2010)



## I.S. EN ISO 20685:2010

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English Version

3-D scanning methodologies for internationally compatible  
anthropometric databases (ISO 20685:2010)

Méthodologies d'exploration tridimensionnelles pour les  
bases de données anthropométriques compatibles au plan  
international (ISO 20685:2010)

3-D-Scanverfahren für international kompatible  
anthropometrische Datenbanken (ISO 20685:2010)

This European Standard was approved by CEN on 12 June 2010.

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## **Foreword**

This document (EN ISO 20685:2010) has been prepared by Technical Committee ISO/TC 159 "Ergonomics" in collaboration with Technical Committee CEN/TC 122 "Ergonomics" 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of an identical text or by endorsement, at the latest by December 2010, and conflicting national standards shall be withdrawn at the latest by December 2010.

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

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The text of ISO 20685:2010 has been approved by CEN as a EN ISO 20685:2010 without any modification.



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**3-D scanning methodologies for  
internationally compatible  
anthropometric databases**

*Méthodologies d'exploration tridimensionnelles pour les bases de  
données anthropométriques compatibles au plan international*



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## **Foreword**

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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ISO 20685 was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 3, *Anthropometry and biomechanics*.

This second edition cancels and replaces the first edition (ISO 20685:2005), of which it constitutes a minor revision.



## **Introduction**

Anthropometric measures are key to many International Standards. These measures can be gathered using a variety of instruments. An instrument with relatively new application to anthropometry is a three-dimensional (3-D) scanner. 3-D scanners generate a 3-D point cloud of the outside of the human body that can be used for clothing and automotive design, engineering and medical applications. There are currently no standardized methods for using 3-D point clouds in the design process. As a result, many users extract one-dimensional (1-D) data from 3-D point clouds. This International Standard concerns the application of 3-D scanners to the collection of one-dimensional anthropometric data for use in design.

There are a number of different fundamental technologies that underlie commercially available systems. These include stereophotogrammetry, ultrasound and light (laser light, white light and infrared). Further, the software that is available to process data from the scan varies in its methods. Additionally, software to extract dimensions similar to traditional dimensions varies markedly in features and capabilities.

As a result of differences in fundamental technology, hardware and software, extracted measurements from several different systems can be markedly different for the same individual. Since 3-D scanning can be used to gather measurements, such as lengths and circumferences, it was important to develop an International Standard that allows users of such systems to judge whether the 3-D system is adequate for these needs.

The intent of ISO 20685 is to ensure comparability of body measurements as specified by ISO 7250-1 but measured with the aid of 3-D body scanners rather than with traditional anthropometric instruments such as tape measures and callipers. It is further intended that by conformance with this International Standard any data extracted from scans will be suitable for inclusion in international databases such as those described in ISO 15535.



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