

SVENSK STANDARD

SS-EN ISO 26800:2011

Fastställt/Approved: 2011-09-08
Publicerad/Published: 2011-09-28
Utgåva/Edition: 1
Språk/Language: engelska/English
ICS: 01.040.13; 13.180

Ergonomi – Allmänna riktlinjer, principer och begrepp (ISO 26800:2011)

Ergonomics – General approach, principles and concepts (ISO 26800:2011)

This preview is downloaded from www.sis.se. Buy the entire standard via <https://www.sis.se/std-81454>

Standarder får världen att fungera

SIS (Swedish Standards Institute) är en fristående ideell förening med medlemmar från både privat och offentlig sektor. Vi är en del av det europeiska och globala nätverk som utarbetar internationella standarder. Standarder är dokumenterad kunskap utvecklad av framstående aktörer inom industri, näringsliv och samhälle och befrämjar handel över gränser, bidrar till att processer och produkter blir säkrare samt effektiviserar din verksamhet.

Delta och påverka

Som medlem i SIS har du möjlighet att påverka framtida standarder inom ditt område på nationell, europeisk och global nivå. Du får samtidigt tillgång till tidig information om utvecklingen inom din bransch.

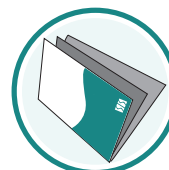
Ta del av det färdiga arbetet

Vi erbjuder våra kunder allt som rör standarder och deras tillämpning. Hos oss kan du köpa alla publikationer du behöver – allt från enskilda standarder, tekniska rapporter och standardpaket till handböcker och onlinetjänster. Genom vår webbtjänst e-nav får du tillgång till ett lättnavigerat bibliotek där alla standarder som är aktuella för ditt företag finns tillgängliga. Standarder och handböcker är källor till kunskap. Vi säljer dem.

Utveckla din kompetens och lyckas bättre i ditt arbete

Hos SIS kan du gå öppna eller företagsinterna utbildningar kring innehåll och tillämpning av standarder. Genom vår närhet till den internationella utvecklingen och ISO får du rätt kunskap i rätt tid, direkt från källan. Med vår kunskap om standarders möjligheter hjälper vi våra kunder att skapa verklig nytta och lönsamhet i sina verksamheter.

Vill du veta mer om SIS eller hur standarder kan effektivisera din verksamhet är du välkommen in på www.sis.se eller ta kontakt med oss på tel 08-555 523 00.



Standards make the world go round

SIS (Swedish Standards Institute) is an independent non-profit organisation with members from both the private and public sectors. We are part of the European and global network that draws up international standards. Standards consist of documented knowledge developed by prominent actors within the industry, business world and society. They promote cross-border trade, they help to make processes and products safer and they streamline your organisation.

Take part and have influence

As a member of SIS you will have the possibility to participate in standardization activities on national, European and global level. The membership in SIS will give you the opportunity to influence future standards and gain access to early stage information about developments within your field.

Get to know the finished work

We offer our customers everything in connection with standards and their application. You can purchase all the publications you need from us - everything from individual standards, technical reports and standard packages through to manuals and online services. Our web service e-nav gives you access to an easy-to-navigate library where all standards that are relevant to your company are available. Standards and manuals are sources of knowledge. We sell them.

Increase understanding and improve perception

With SIS you can undergo either shared or in-house training in the content and application of standards. Thanks to our proximity to international development and ISO you receive the right knowledge at the right time, direct from the source. With our knowledge about the potential of standards, we assist our customers in creating tangible benefit and profitability in their organisations.

If you want to know more about SIS, or how standards can streamline your organisation, please visit www.sis.se or contact us on phone +46 (0)8-555 523 00



Europastandarden EN ISO 26800:2011 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN ISO 26800:2011.

The European Standard EN ISO 26800:2011 has the status of a Swedish Standard. This document contains the official version of EN ISO 26800:2011.

© Copyright/Upphovsrätten till denna produkt tillhör SIS, Swedish Standards Institute, Stockholm, Sverige. Användningen av denna produkt regleras av slutanvändarlicensen som återfinns i denna produkt, se standardens sista sidor.

© Copyright SIS, Swedish Standards Institute, Stockholm, Sweden. All rights reserved. The use of this product is governed by the end-user licence for this product. You will find the licence in the end of this document.

Uppllysningar om sakinnehållet i standarden lämnas av SIS, Swedish Standards Institute, telefon 08-555 520 00. Standarder kan beställas hos SIS Förlag AB som även lämnar allmänna uppllysningar om svensk och utländsk standard.

Information about the content of the standard is available from the Swedish Standards Institute (SIS), telephone +46 8 555 520 00. Standards may be ordered from SIS Förlag AB, who can also provide general information about Swedish and foreign standards.

Denna standard är framtagen av kommittén för Ergonomi, SIS/TK 380.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på www.sis.se - där hittar du mer information.

EUROPEAN STANDARD

EN ISO 26800

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 2011

ICS 01.040.13; 13.180

English Version

Ergonomics - General approach, principles and concepts (ISO 26800:2011)

Ergonomie - Approche générale, principes et concepts
(ISO 26800:2011)

Ergonomie - Genereller Ansatz, Prinzipien und Konzepte
(ISO 26800:2011)

This European Standard was approved by CEN on 6 August 2011.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword	iv
Introduction.....	v
1 Scope	1
2 Terms and definitions	1
3 The ergonomics approach.....	3
4 Principles of ergonomics.....	4
4.1 General	4
4.2 Human-centred	5
4.3 Criteria-based evaluation.....	7
5 Concepts in ergonomics.....	7
5.1 General	7
5.2 The system concept	8
5.3 Load-effects concept	9
5.4 Usability.....	10
5.5 Accessibility.....	11
6 The ergonomics-oriented design process	12
6.1 General	12
6.2 Basic requirements for an ergonomics-oriented design process.....	12
7 Conformity.....	13
Annex A (informative) Sustainability	14
Annex B (informative) Textual descriptions of the figures for visually impaired readers	15
Bibliography.....	17

Foreword

This document (EN ISO 26800:2011) 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 February 2012, and conflicting national standards shall be withdrawn at the latest by February 2012.

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.

According to the CEN/CENELEC Internal Regulations, the national standards organizations 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of ISO 26800:2011 has been approved by CEN as a EN ISO 26800:2011 without any modification.

Introduction

Human, technological, economic, environmental and organizational factors all affect the behaviour, activities and well-being of people in work, domestic and leisure contexts. The science of ergonomics has evolved from its origins in the context of work to embrace many other fields of application, such as home and leisure. However, whatever the context, the underlying principles of ergonomics remain the same, although the relative emphasis placed on them will vary. These principles are fundamental to the design process wherever human involvement is expected, in order to ensure the optimum integration of human requirements and characteristics into a design. This International Standard considers systems, users, workers, tasks, activities, equipment and the environment as the basis for optimizing the match between them. These principles and concepts serve to improve safety, performance and usability (effectiveness, efficiency and satisfaction), while safeguarding and enhancing human health and well-being, and improving accessibility (e.g. for elderly persons and persons with disabilities).

Ergonomics covers a wide range of issues, including physical, cognitive, social and organizational. These are ideally addressed within an integrated framework. A substantial number of ergonomics standards have been developed to cover specific issues and different application domains. All depend upon the basic principles and concepts that are fundamental to the ergonomics approach to design. This International Standard has been developed in order to provide an integrated framework, bringing together the basic principles and concepts of ergonomics in one document, and thus providing a high-level view of the way in which ergonomics is applied.

NOTE 1 ISO 6385^[2] remains a high-level International Standard for work systems.

NOTE 2 A complete list of current published ergonomics International Standards can be accessed via http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_tc_browse.htm?commid=53348&published=on&includesc=true.

Ergonomics — General approach, principles and concepts

1 Scope

This International Standard presents the general ergonomics approach and specifies basic ergonomics principles and concepts. These are applicable to the design and evaluation of tasks, jobs, products, tools, equipment, systems, organizations, services, facilities and environments, in order to make them compatible with the characteristics, the needs and values, and the abilities and limitations of people.

The provisions and guidance given by this International Standard are intended to improve the safety, performance, effectiveness, efficiency, reliability, availability and maintainability of the design outcome throughout its life cycle, while safeguarding and enhancing the health, well-being and satisfaction of those involved or affected.

The intended users of this International Standard are designers, ergonomists and project managers, as well as managers, workers, consumers (or their representatives) and procurers. It also serves as a reference standard for standards developers dealing with ergonomics aspects.

This International Standard provides the basis for other, more detailed, context-specific ergonomics International Standards.

2 Terms and definitions

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

2.1

accessibility

extent to which products, systems, services, environments and facilities can be used by people from a population with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use

NOTE 1 Context of use includes direct use or use supported by assistive technologies.

NOTE 2 Adapted from ISO/TR 22411:2008, definition 3.6.

2.2

ergonomics

human factors

scientific discipline concerned with the understanding of interactions among human and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance

NOTE This definition is consistent with that given by the International Ergonomics Association^[21].

2.3

environment

physical, chemical, biological, organizational, social and cultural factors surrounding one or more persons

2.4
external load
external conditions and demands in a system which influence a person's physical and/or mental internal load

NOTE 1 In ISO 6385:2004, "external load" is called "work stress".

NOTE 2 External load is a neutral term. Its effects can be positive, neutral or negative.

2.5
fatigue
impairing non-pathological manifestation of internal load, completely reversible with rest

NOTE Fatigue can be mental, physical, local and/or general.

2.6
internal load
internal response of a person to being exposed to the external load, depending on his/her individual characteristics (e.g. body size, age, capacities, abilities, skills, etc.)

NOTE 1 In ISO 6385:2004, "internal load" is called "work strain".

NOTE 2 Internal load is a neutral term. Its effects can be positive, neutral or negative.

2.7
system
combination of interacting elements organized to achieve one or more stated purposes

NOTE 1 In ergonomics, the "elements" of a system are often called "components".

NOTE 2 A system can consist of products, equipment, services and people.

NOTE 3 The word "system" can be qualified by adding a context-dependent term (e.g. aircraft system).

NOTE 4 Adapted from ISO/IEC 15288:2008, definition 4.31.

2.8
target population
people for whom the design is intended, specified according to relevant characteristics

NOTE Relevant characteristics include, for example, the skill level, intelligence or physical characteristics — such as anthropometric dimensions — of these people. Gender and age can be related to variations in these characteristics. In addition to these intrinsic characteristics, extrinsic factors (e.g. cultural differences) could also be relevant.

2.9
usability
extent to which a system, product or service can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use

[ISO 9241-210:2009, 2.13]

NOTE This definition is usually applied to systems, products or services, but not to work systems. It could, however, relate to the design and evaluation of work equipment within a work system.

2.10
user
person who interacts with a system, product or service

NOTE 1 Adapted from ISO 9241-110:2008, definition 3.8, and ISO 9241-11:1998, definition 3.7.

NOTE 2 The person who uses a service provided by a work system, such as a customer in a shop or passenger on a train, can be considered a user.

NOTE 3 A user who is using a system is not a component of that system. However, both the user and the system used can be considered as components of a higher-level system.

2.11

worker

person performing one or more activities to achieve a goal within a work system

[ISO 6385:2004, 2.8]

2.12

work system

system comprising one or more workers and work equipment acting together to perform the system function, in the workspace, in the work environment, under the conditions imposed by the work tasks

[ISO 6385:2004, 2.16]

3 The ergonomics approach

Ergonomics (or human factors) has been defined by the International Ergonomics Association (IEA), the federation of ergonomics and human factors societies from around the world, as “the scientific discipline concerned with the understanding of the interactions among human and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance”^[21]. This includes the specific goals of facilitating task performance, safeguarding and enhancing the safety, health and well-being of the worker, or the user/operator of products/equipment, by optimizing tasks, equipment, services, the environment or, generally speaking, all elements of a system and their interactions. Achieving these goals potentially contributes to sustainability and to social responsibility (see Annex A).

NOTE 1 Throughout this International Standard, the use of singular terms to refer to a human in different roles (e.g. worker, operator, user, consumer) in different domains (e.g. the private and work domains) is intended to include multiples of humans as well as higher aggregation levels such as groups, teams or organizations.

Ergonomics addresses the interactions between the humans and other components of a system, such as other humans, machines, products, services, environments and tools, as appropriate. This includes taking into account the following factors:

- purpose of the system, product or service (see 4.2);
- characteristics of the intended target population (see 4.2.2);
- goals to be achieved and tasks to be performed (see 4.2.3);
- existing constraints (e.g. legacy equipment or processes, economic or legal issues);
- factors of the physical, organizational and social environment (see 4.2.4);
- life cycle and any dynamic changes within it (see Clause 6).

In order to achieve optimized system performance, all these factors shall be taken into account. Figure 1 provides an example of factors to be taken into account in an ergonomics approach. It shows the activity of a person as central to the functionality of the system. Additional factors might be identified for a particular context.

NOTE 2 A textual description of Figure 1 is given in B.2.

NOTE 3 The analysis of variations in activities in the context of use helps in the understanding of potential effects on health and safety and, on the other hand, quantitative and qualitative results.