

Masinate ohutus. Heliliste ja visuaalsete ohu- ja teabesignaalide süsteem

Safety of machinery - System of auditory and visual
danger and information signals

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 981:1999 sisaldab Euroopa standardi EN 981:1996 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 23.11.1999 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 981:1999 consists of the English text of the European standard EN 981:1996.</p> <p>This document is endorsed on 23.11.1999 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala: Visuaalsete ja heliliste ohusignaalide valesõistmisega seonduvate ohtude vähendamiseks on esitatud ohu- ja teabesignaalide süsteem, milles on arvestatud eri tähtsusastmeid. See standard kehtib kõigi ohu- ja teabesignaalide kohta, mis peavad olema vastavalt standardi EN 292-2:1991 jaotise 5.3 määratlusele, teistele nõuetele või tööolukorrale selgesti tajutavad ja eristatavad, samuti kõigi tähtsusastmete kohta - alates edasilükkamatust olukorrast kuni häire lõpusignaalini "ALL CLEAR" ("Ohu lõpp"). Juhul kui visuaalsed signaalid täiendavad helisignaale, on kindlaks määratud mõlema signaali tunnused.</p>	<p>Scope:</p>
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ICS 13.110

Võtmesõnad: ergonoomia, helisignaalid, konstruktsioon, kontrolltuli, kvaliteet, ohtudest signaliseerimine, ohutusvärv, seadmeohutus, tehnilised andmed, visuaalsed signaalid, õnnetuste vältimine

ICS 13.110; 13.320

Descriptors: Signals, acoustic signals, visual signals, safety.

English version

Safety of machinery

**System of auditory and visual danger and
information signals**

Sécurité des machines – Système de
signaux auditifs et visuels de danger et
d'information

Sicherheit von Maschinen – System
akustischer und optischer Gefahren-
signale und Informationssignale

This European Standard was approved by CEN on 1996-10-21.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

This European Standard has been prepared by 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 June 1997, and conflicting national standards shall be withdrawn at the latest by June 1997.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

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

On the international level the International Standard ISO 11429 "Ergonomics - System of auditory and visual danger and information signals" has been prepared by WG 3 "Danger signals and speech communication in noisy environments" of ISO/TC 159/SC 5 "Ergonomics of the physical environment". The technical content of both the European Standard prEN 981 and the International Standard ISO 11429 is identical, with the exception of the emergency evacuation signal which is not dealt with in this European standard, however the limits of applicability of the standards to other technical fields are different.

Due to the different limits of applicability still existing on the European and international level direct transformation of the International Standard into a European Standard is not possible. The reason is that EN 981 has been prepared in order to fulfil the essential safety and health requirements of annex I of the Council Directive 89/392/EEC of 14 June 1989 on the approximation of the laws of the Member States relating to machinery: Essential health and safety requirements relating to the design and construction of machinery (see annex A of EN 292-2 : 1991/A1 : 1995) and that therefore the limits of applicability of the European Standard is restricted to this Directive.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

To reduce risks associated with misinterpretation of visual and auditory danger signals, a system of danger and information signals is specified taking into account the different degrees of urgency.

This European Standard is applicable to all danger and information signals which have to be clearly perceived and differentiated as specified in 5.3 of EN 292-2 : 1991, by other requirements or by the work situation, and to all degrees of urgency - from extreme urgency to an ALL CLEAR situation. Where visual signals are to be complementary to sound signals, the signal character is specified for both.

This European Standard does not apply to certain fields covered by specific standards or other conventions in force (international or national); in particular, fire alarms, medical alarms, alarms used in the field of public transport, navigation signals and signals for special fields of activity (for example, military). When new signals are being planned, however, this European Standard should be considered in order to avoid inconsistency.

For auditory signals, the system of signal character is a guideline for a signal language based on message categories which are classified according to urgency. Certain character are specified for purposes which require safe and rapid recognition. Certain categories allow possibilities for variants, e.g., control and warning signals at workplaces where the signalling is intended for personnel with specific training.

For visual signals, the established meanings of the safety colours are not affected by this European Standard. For different needs, complementary meanings have been assigned to the signals by timed patterns, and in a very few cases by alternating colours.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 292-2 : 1991/A1 : 1995	Safety of machinery – Basic concepts, general principles for design – Part 2: Technical principles and specifications
EN 457 : 1992	Safety of machinery – Auditory danger signals – General requirements, design and testing (ISO 7731 : 1986 modified)
EN 842 : 1996	Safety of machinery – Visual danger signals – General requirements, design and testing
EN 60073	Coding of indicating devices and actuators by colours and supplementary means (IEC 73 : 1991)
ISO 8995	Principles of visual ergonomics – The lighting of indoor work systems
ISO 9921-1	Ergonomic assessment of speech communication – Part 1: Speech interference level and communication distances for persons with normal hearing capacity in direct communication (SIL method)

3 Definitions

For the purposes of this standard the following definitions apply:

- 3.1 alternating sound [light]:** Shifts between two or three acoustical [optical] spectra, with equal duration of the segments, at least 0,15 s each.
- 3.2 bursts of sound:** Normally recurrent group of sound pulses with short but distinct interruptions, the pulse period, including interruption, being between 0,25 s and 0,125 s.
- 3.3 character of a signal:** Combination of one or more auditory or visual components differentiating one signal from another.
- 3.4 flash:** Light of duration less than 0,5 s.
- 3.5 quick-pulse:** Sound of duration less than 0,5 s.
- 3.6 segment:** One of a number of parts in a sound or light signal during which the signal character is constant.
- 3.7 spectrum of sound [light]:** Intensity or sound pressure level of sound [light] represented as function of frequency or wavelength.
- 3.8 sweeping (sound):** Continuously or discretely varying frequency.

4 Ergonomic principles for the design and application of auditory and visual signals

4.1 General

4.1.1 Auditory and visual signals shall be rapidly recognizable under all environmental conditions anticipated for their use. The recognition of a signal depends on many physical and psychophysical characteristics.

To ensure that signal effectiveness is not compromised by lack of reliability of signals, false alarm should be minimized or eliminated.

Signals shall be effective under all conditions of use, including conditions of environmental disturbance of the recognition process and in situations involving the highest degree of importance and urgency for action. Signal intensity shall be in accordance with EN 457 and EN 842 .