

# SVENSK STANDARD

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**Ergonomi för termiskt klimat – Kalla arbetsplatser – Bedömning och hantering av risker (ISO 15743:2008)**

**Ergonomics of the thermal environment – Cold workplaces – Risk assessment and management (ISO 15743:2008)**



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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN ISO 15743**

July 2008

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English Version

**Ergonomics of the thermal environment - Cold workplaces - Risk  
assessment and management (ISO 15743:2008)**

Ergonomie des ambiances thermiques - Lieux de travail  
dans le froid - Évaluation et management des risques (ISO  
15743:2008)

Ergonomie der thermischen Umgebung - Arbeitsplätze in  
der Kälte - Risikobewertung und Management (ISO  
15743:2008)

This European Standard was approved by CEN on 21 June 2008.

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## Foreword

This document (EN ISO 15743:2008) 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of an identical text or by endorsement, at the latest by January 2009, and conflicting national standards shall be withdrawn at the latest by January 2009.

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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### Endorsement notice

The text of ISO 15743:2008 has been approved by CEN as a EN ISO 15743:2008 without any modification.

## Introduction

This International Standard is one of a series of thermal standards (see Clause 2 and the Bibliography) intended to be used in the assessment and management of work in the cold, i.e. in conditions that cause uncomfortable sensations of cool or cold. In light physical work, these conditions can occur at 10 °C or below.

A number of industries, types of commerce and occupations involve substantial cold exposure, outdoors or indoors, where individual workers can also be exposed to windy and/or wet conditions. Working in cold environments can involve several adverse effects on human performance and health: thermal discomfort, increased strain, decreased performance and cold-related diseases and injuries. Cold can also interfere with several other factors in the workplace, modifying or aggravating the risk of common hazards and increasing the risk of cold-associated injuries.

Due to the negative impact of cold on human health and performance, as well as on work productivity, quality and safety, a comprehensive strategy of risk assessment and management practices and methods is needed for work in cold environments.

Even though some of the standards referred to above describe specific methods (instruments and indices) to be used to assess the required insulation of clothing for different cold exposures (see ISO 11079), or physiological and psychological consequences related to different thermal exposures, an instruction of practical application for cold working environments is lacking.

This International Standard was created to specify methods and practices for assessing and managing occupational health and performance risks in cold work. The choice of when these are to be used is at the discretion of those responsible for occupational health and/or safety.



# Ergonomics of the thermal environment — Cold workplaces — Risk assessment and management

## 1 Scope

This International Standard presents a strategy and practical tools for assessing and managing cold risk in the workplace, and includes

- models and methods for cold risk assessment and management,
- a checklist for identifying cold-related problems at work,
- a model, method and questionnaire intended for use by occupational health care professionals in identifying those individuals with symptoms that increase their cold sensitivity and, with the aid of such identification, offering optimal guidance and instructions for individual cold protection,
- guidelines on how to apply thermal standards and other validated scientific methods when assessing cold-related risks, and
- a practical example from cold work.

This International Standard supports good occupational health and safety (OHS). It is applicable to both indoor and outdoor work situations — indoor work includes work done inside vehicles, outdoor work both inland and offshore work — but is not applicable to diving situations or other types of work performed underwater.

## 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 9886:2004, *Ergonomics — Evaluation of thermal strain by physiological measurements*

ISO 12894, *Ergonomics of the thermal environment — Medical supervision of individuals exposed to extreme hot or cold environments*

ISO 13731, *Ergonomics of the thermal environment — Vocabulary and symbols*

ISO/TS 14415, *Ergonomics of the thermal environment — Application of International Standards to people with special requirements*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13731 apply.

## 4 Strategy for assessment and management

### 4.1 Cold risk assessment

Cold risk assessment in the workplace follows the principles of risk assessment presented in ISO 15265 and generally accepted principles of risk assessment presented in, for example, BS 8800. It consists of three stages.

- a) In stage 1 (observation) possible cold-related hazards at work are identified. This includes collecting qualitative information by an observation method (see 5.2 and Annex A). Based on the observed problems, management methods should be implemented in order to eliminate or reduce the source of harm. A further analysis should be conducted if the problem at work is not easily reduced or eliminated, or whenever it is uncertain whether the preventive actions have been sufficient to guarantee worker health and safety.
- b) Stage 2 (analysis) aims at quantifying, analysing and estimating the cold-related effects observed in stage 1 and considered problems (see 5.3 and Annex B). The need for a further analysis in the workplace can also originate from the needs and definitions of occupational healthcare professionals, in assessing specific health-related problems in working situations. It is recommended that occupational health care or safety professionals conduct this analysis. To be able to perform the assessment, these persons should be provided with basic training related to cold, e.g. how to use the methods and estimate the risks. Based on the estimated cold risk, appropriate cold risk management methods should be applied. If it is still uncertain as to whether the management methods are adequate to ensure the worker's health and safety, a further analysis should be conducted (stage 3).
- c) Stage 3 (expertise) aims at quantifying, analysing and estimating cold risks. It will deal with highly complex thermal working circumstances and require sophisticated or special measurements. This level should be conducted by the same persons as those involved in stage 2, with the additional assistance of highly specialized experts. The duration of an individual assessment is one day, or more, if necessary. The assessment is aimed at solving any specific cold-related problem found during stages 1 and/or 2. See 5.2.3.

See Figure 1.

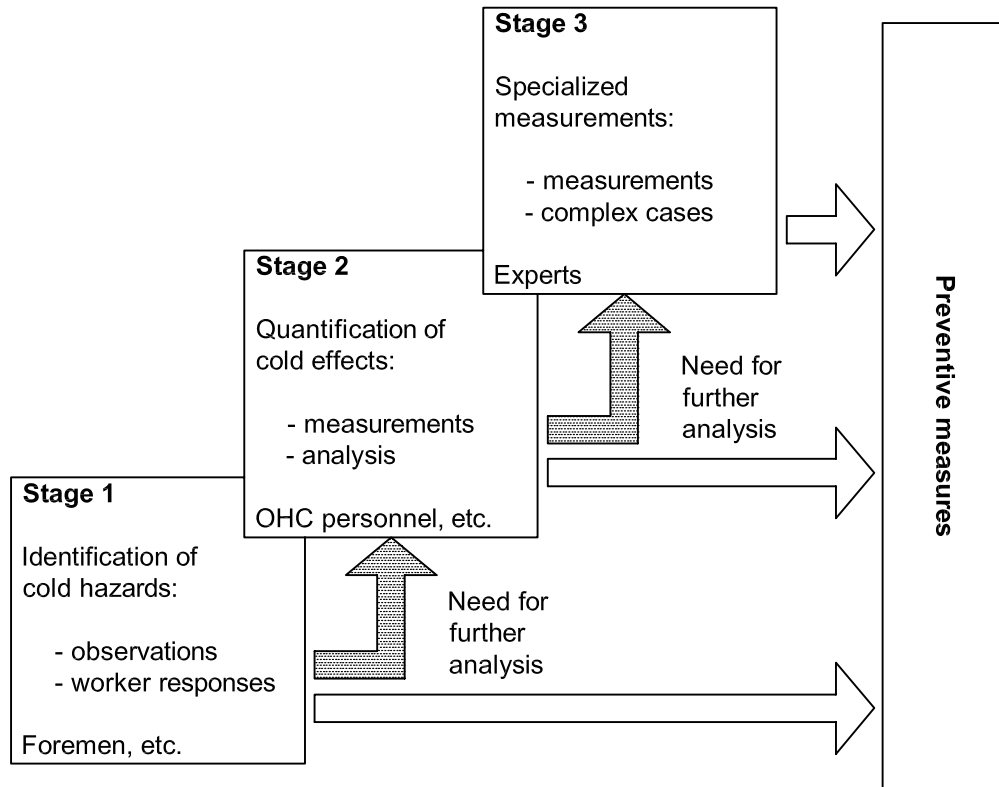


Figure 1 — Model for cold risk assessment in the workplace

## 4.2 Health assessment

Human responses to cold include complaints, decrease in performance, symptoms, attacks of diseases and cold injuries. The responses show a great individual variation and their presence is difficult to predict from the level of duration and intensity of cold exposure. The only way to identify these responses is to collect information from the individuals.

Cold-related health assessment is a three-stage medical screening conducted by occupational health professionals. Each stage involves identification of cold-related health risks both in the workplace as well as assessing the health of individuals.

- a) Stage 1 consists of a health check (see Annex D). The method used is a medically-based questionnaire whose purpose is to identify potential individuals having cold-related diseases or cold-related personal working limitations. The factors to be identified are, for example, cold sensitivity, cold urticaria, respiratory symptoms, cardiovascular symptoms, peripheral circulatory disturbances, symptoms related to white fingers, musculoskeletal symptoms, the effect of cold on performance and the occurrence of local cold injuries. As a result of stage 1 of the assessment, those individuals with no personal need for any further analysis with regards to cold are identified.
- b) Stage 2 is largely taken up by an interview and a clinical investigation of persons suspected of having a cold-related individual health problem. The content of the interview and clinical investigation is dependent on the results of the preliminary questionnaire and is symptom- or disease-specific. If cold-related diseases or working limitation are recognized, an additional risk evaluation (Annex B) in the workplace might be needed.
- c) Stage 3: if there are still some open questions on the individual's health status or other cold consequences, a more detailed analysis in a hospital expert unit or units or a provocation laboratory might be needed. When evaluating health aspects, it is important also to utilize the information obtained from the workplace risk assessment, e.g. the risk check at stage 1 and possibly more quantitative information from stages 2 and 3.

See Figure 2.