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## Protective helmets – Test methods – Part 7: Flame resistance

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Swedish Standards corresponding to documents referred to in this Standard are listed in "Catalogue of Swedish Standards", issued by SIS. The Catalogue lists, with reference number and year of Swedish approval, International and European Standards approved as Swedish Standards as well as other Swedish Standards.

## Skyddshjälm – Provnings- metoder – Del 7: Flamhärdighet

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**EN 13087-7**

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2000

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ICS 13.220.40; 13.340.20

English version

## Protective helmets - Test methods - Part 7: Flame resistance

Casques de protection - Méthodes d'essai - Partie 7:  
Résistance à la flamme

Schutzhelme - Prüfverfahren - Teil 7:  
Flammenbeständigkeit

This European Standard was approved by CEN on 12 May 2000.

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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
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## Foreword

This European Standard has been prepared by Technical Committee CEN/TC 158 "Head protection", the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by December 2000, and conflicting national standards shall be withdrawn at the latest by December 2000.

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).

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

This European Standard is Part of EN 13087, which supports essential requirements of EC Directive(s). It consists of ten Parts as follows:

- Part 1 : Conditions and conditioning
- Part 2 : Shock absorption
- Part 3 : Resistance to penetration
- Part 4 : Retention system effectiveness
- Part 5 : Retention system strength
- Part 6 : Field of vision
- Part 7 : Flame resistance
- Part 8 : Electrical properties
- Part 9 : Mechanical rigidity
- Part 10 : Resistance to radiant heat

## Introduction

This standard is intended as a supplement to the specific product standards for protective helmets (helmet standards). Test methods may be applicable to complete helmets or parts thereof, and may be referenced in the other helmet standards.

Performance requirements are given in the appropriate helmet standard, as are such prerequisites as the number of samples, preconditioning, preparation of samples for the tests, sequence and duration of testing and assessment of test results. If deviations from the test method given in this standard are necessary, these deviations will be specified in the appropriate helmet standard.

## 1 Scope

This European Standard describes methods of test for protective helmets. The purpose of these tests is to enable assessment of the performance of the helmet as specified in the appropriate helmet standard.

This standard specifies the methods of test for flame resistance.

## 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 test 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 (including amendments).

EN 13087-1 Protective helmets - Test methods - Part 1: Conditions and conditioning

## 3 Terms and definitions

For the purposes of this European Standard, the terms and definitions found in the appropriate helmet standard apply.

## 4 Prerequisites

In order to implement this European Standard, at least the following parameters shall be specified in the appropriate helmet standard:-

- a) performance requirements
- b) number of samples
- c) preparation of samples
- d) sequence of conditioning
- e) sequence of tests
- f) duration of application of the flame
- g) the test point(s)

## 5 Test methods

### 5.1 General

Testing shall be performed in ambient conditions specified in EN 13087-1.

### 5.2 Principle

The external surface of the helmet is exposed to a standard flame and the behaviour of the helmet is noted.

### 5.3 Apparatus

The apparatus shall include:-

- a) a supply of gas
- b) a tap
- c) a burner
- d) a pressure control device
- e) a manometer

The gas used shall be propane having a minimum purity of 95%.

The burner shall be suitable for propane gas with a 10 mm diameter bore, an adjustable air vent and an appropriate size of jet.

### 5.4 Procedure

Identify the test point. Open the tap of the gas supply and adjust the gas pressure to  $(3450 \pm 50)$  Pa.

Adjust the flame by means of the air vent so that the inner blue cone is clearly defined, although turbulent and is  $(45 \pm 5)$  mm long. There shall be no visible yellow colour in the outer envelope of the flame.

Support the burner at an angle of  $(45 \pm 5)^\circ$  to the vertical, so that the flame points upward.

Support the complete helmet, so that, at the point to be tested, the plane tangential to the surface is horizontal (see figure 1).

Maintaining these angles, apply the outer part of the flame to the test point for a period as specified in the appropriate helmet standard.

During this period, note the behaviour of the material(s) within the test area.

At the end of this period, remove the flame and note the behaviour of the material(s) within the test area after a further  $(5 \pm 1)$  s.

If the external surface of the helmet within the test area is made from more than one material, repeat this procedure so that each material is tested.

### 5.5 Report

Report the behaviour of the material(s) within the test area, during the test and after removal of the flame.