



National Standards Authority of Ireland

IRISH STANDARD

I.S. EN 12224:2000

ICS 59.080.70

**GEOTEXTILES AND GEOTEXTILE-RELATED  
PRODUCTS - DETERMINATION OF THE  
RESISTANCE TO WEATHERING**

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English version

## Geotextiles and geotextile-related products - Determination of the resistance to weathering

Géotextiles et produits apparentés - Détermination de la résistance au vieillissement dû aux conditions climatiques

Geotextilien und geotextilverwandte Produkte - Bestimmung der Witterungsbeständigkeit

This European Standard was approved by CEN on 15 July 2000.

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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.

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## **Foreword**

This European Standard has been prepared by Technical Committee CEN/TC 189 "Geotextiles and geotextiles-related products", the secretariat of which is held by IBN.

This European Standard supersedes ENV 12224:1996.

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of an identical text or by endorsement, at the latest by March 2001, and conflicting national standards shall be withdrawn at the latest by March 2001.

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, Switzerland and the United Kingdom.

## Introduction

The effect of weathering on the properties of geotextiles and geotextile-related products is of technical importance for many of their applications. Since natural weathering requires testing at long durations, there is a need to obtain information more rapidly and reproducibly by accelerated procedures. For this purpose weathering devices with specific artificial light sources are used.

NOTE: For further informations see CR ISO 13434.

## 1. Scope

This European Standard describes a method for determining the resistance of geotextiles and geotextile-related products to weathering conditions more intense than those of natural weathering.

This is an index test to differentiate between products with little or no resistance to weathering and those which do have this 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 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 (including amendments).

EN 12226 :2000	Geotextiles and geotextile-related products - General tests for evaluation following durability testing
ISO 4892-1	Plastics - Methods of exposure to laboratory light sources - Part 1: General guidance
ISO 4892-3	Plastics - Methods of exposure to laboratory light sources - Part 3: Fluorescent UV lamps.

## 3 Principle

Specimens of the material to be tested are exposed to a light source for a defined radiant exposure or exposure time and at recommended temperature and moisture conditions. After this exposure the change in performance of these specimens is determined.

## 4 Apparatus

### 4.1 Laboratory light sources

The light sources used shall be fluorescent UV lamps in accordance with ISO 4892-3. To improve the correlation with outdoor exposure the spectrum of the light source shall be as near as possible to that of solar global radiation, particularly in the ultraviolet region, because polymers are generally very sensitive to changes in this spectral region.

NOTE: Fluorescent tubes can be selected to have a spectral output corresponding to that of the actinic ultraviolet region in solar global radiation.

The spectral irradiance of the fluorescent lamps in the UV-region shall be as given in table 1.

Table 1 - Fluorescent UV lamps - spectral irradiance

Wavelength band ( $\lambda$ ) (in nm)	Irradiance in the band (in $W/m^2$ ) <sup>a)</sup>	
	Type I (340 nm)	Combination of different types of lamps
290 to 320	3,1	3,3
320 to 360	25,1	22,0
360 to 400	11,0	18,0
<sup>a)</sup> Tolerances on all irradiances are $\pm 10\%$ .		

As the characteristics of lamps and filters change in use due to ageing, they shall be replaced at appropriate intervals as recommended by the manufacturer of the lamp.

### 4.2 Temperature monitoring system

As the temperature of the specimen influences the result of the exposure test, the ambient temperature shall be controlled. To this purpose a black standard thermometer in accordance with ISO 4892-1 shall be used, mounted instead of a specimen holder with the blackened metal side facing the lamp.

NOTE 1: Fluorescent tubes produce little infrared radiation and there is generally no heat problem. As degradation processes generally run faster with increasing temperature, the surface temperature of specimens however remains an essential test parameter.

NOTE 2: The temperature is controlled by a black panel thermometer or black standard thermometer, since it is not practical to monitor the individual specimen temperatures. The black standard temperature may be controlled by adjustment of the cooling air circulation. Readings should only be taken after sufficient time for the temperature to become steady.

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