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AMENDMENT 1
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Plastics — Methods of exposure to laboratory light sources —

Part 2: Xenon-arc lamps

AMENDMENT 1: Classification of daylight filters

Plastiques — Méthodes d'exposition à des sources lumineuses de laboratoire —

Partie 2: Lampes à arc au xénon

AMENDEMENT 1: Classification des filtres de la lumière du jour

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This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 6, *Ageing, chemical and environmental resistance*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 249, *Plastics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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Plastics — Methods of exposure to laboratory light sources —

Part 2: Xenon-arc lamps

AMENDMENT 1: Classification of daylight filters

4.1.2

Add a new paragraph as follows:

Annex C differentiates between two different types of daylight filters: Type I and Type II. Both types fall under the relative spectral irradiance requirements of xenon-arc lamps with daylight filters given in Table 1.

Annex C

Add the following new Annex C:

Annex C
(informative)

Classification of daylight filters

C.1 Motivation

The relative spectral irradiance requirements for xenon-arc lamps with daylight filters allow a broad range of different optical filter systems with different UV cut-on wavelengths. However, most of the available filters can be grouped in two main spectral specifications, both fulfilling the requirements of Method A. By giving additional information on the type of the used daylight filter, a much better reproducibility and comparability of results can be achieved. If the information on the type of filter is available, it is strongly recommended to add this information in the test report.

When performing Method A, any optical filters may be used that fulfil the requirements in Table 1. This is true even if the filters do not fulfil the Type I or Type II specifications (see Table C.1), or if such information is not available.

NOTE Reproducible results are more likely achieved, if setups (instrument and optical system) with Type I filter systems are compared with other Type I setups, and Type II setups are only compared with other Type II setups.

C.2 Type I and Type II specifications

The spectral irradiance of xenon-arc lamps with daylight filters according to Table 1 is redefined in 20 nm increments and split into two types. In Table C.1, the original values are referred to as general daylight. Type I defines optical filter systems with a higher UV cut-on compared to Type II. Figure C.1 shows examples of Type I and Type II filter systems in the spectral range from 280 nm to 400 nm together with a reference spectrum according to ISO/TR 17801. Type I and Type II optical systems cover the full range of the spectral irradiance requirements in Table 1.

NOTE 1 The UV cut-on wavelength of Type I filters is closer to the cut-on of the natural global solar radiation. If Type II filters are used, faster material degradation is typically observed.

NOTE 2 ISO/TR 17801 contains a recalculated reference spectrum based on CIE No. 85:1989, Table 4. The spectrum is in increments of a half nanometer in the UV region, and in increments of one nanometer for longer wavelengths.

Table C.1 — Relative spectral irradiance of xenon-arc lamps with daylight filters (method A)[a]

Spectral pass-band wavelength λ nm	General[b]		Type I[c]		Type II[d]		CIE No. 85:1989, Table 4[e]
	Min %	Max %	Min %	Max %	Min %	Max %	%
$\lambda < 300$	2,60	8,05	0,00	0,20	0,20	1,05	5,40
$300 \leq \lambda \leq 320$			2,60	6,00	3,50	7,00	
$320 < \lambda \leq 340$	28,2	39,8	10,0	17,0	10,0	17,0	38,2
$340 < \lambda \leq 360$			18,3	23,2	18,3	23,2	
$360 < \lambda \leq 380$	54,2	67,5	25,0	30,5	25,0	30,5	56,4
$380 < \lambda \leq 400$			29,2	37,0	29,2	37,0	

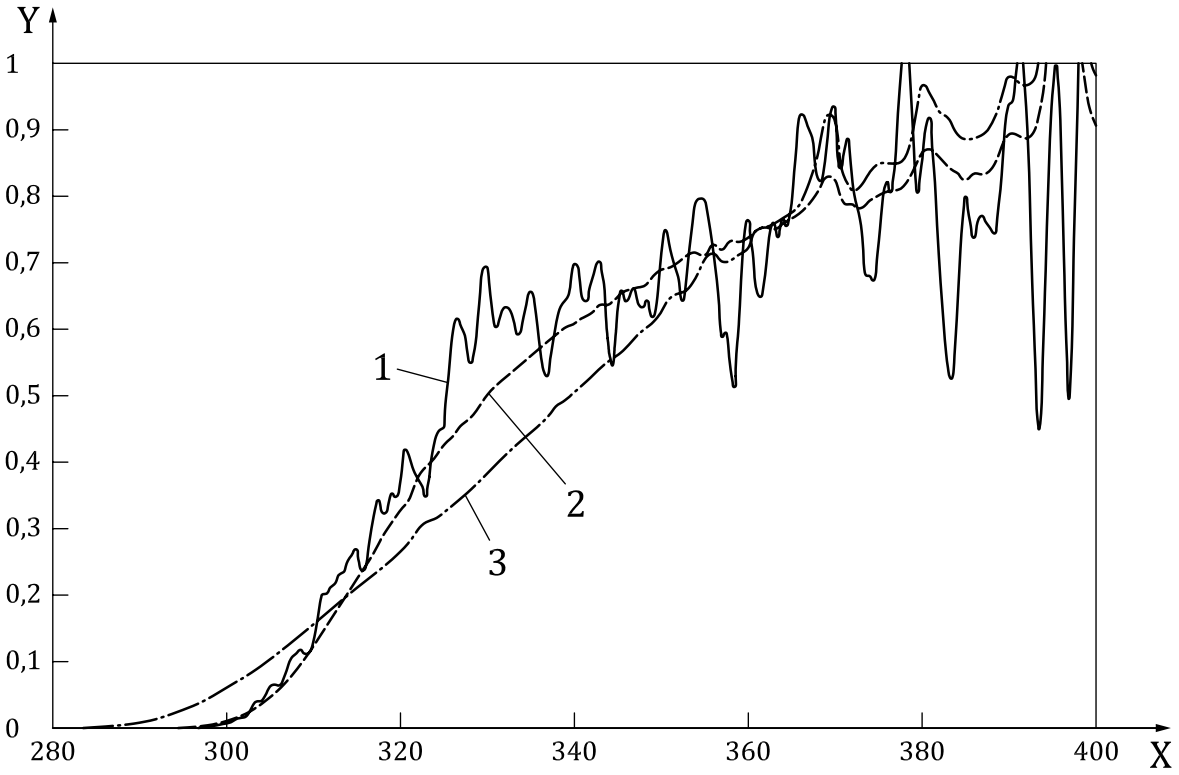
[a] This table gives the irradiance in the given passband, expressed as a percentage of the total irradiance between 290 nm and 400 nm. To determine whether a specific filter or set of filters for a xenon-arc lamp meets the requirements of this Table, the spectral irradiance must be measured from 250 nm to 400 nm. The total irradiance in each wavelength passband is then summed and divided by the total irradiance from 290 nm to 400 nm.

[b] Values of the spectral passband of xenon-arc lamps with daylight filters according to Table 1.

[c] Daylight filter systems as described in ASTM D7869 fall under the definition of Type I Daylight filters.

[d] Daylight filter systems as described in SAE J2527 fall under the definition of Type II Daylight filters.

[e] Details of the solar reference spectrum can be found in Table 1.



Key

X wavelength λ [nm]

Y spectral irradiance [W/(m^2 nm)]

1 ISO/TR 17801 (CIE 85:1989, Table 4)

2 Type I

3 Type II

NOTE The spectral irradiance distribution is normalized to 60 W/m^2 in the passband from 300 nm to 400 nm.

Figure C.1 — Representative spectral irradiance distribution of xenon-arc lamps with Type I and Type II daylight filters and the reference solar spectrum according to ISO/TR 17801

Bibliography

Add the following references:

[6] ISO/TR 17801, *Plastics — Standard table for reference global solar spectral irradiance at sea level - Horizontal, relative air mass 1*

[7] ASTM D7869, *Standard Practice for Xenon Arc Exposure Test with Enhanced Light and Water Exposure for Transportation Coatings*

[8] SAE J2527, *Performance Based Standard for Accelerated Exposure of Automotive Exterior Materials Using a Controlled Irradiance Xenon-Arc Apparatus*

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