PD CEN ISO/TR 17801:2017

BSI Standards Publication

Plastics — Standard table for reference global solar spectral irradiance at sea level — Horizontal, relative air mass 1 (ISO/TR 17801:2014)

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The UK participation in its preparation was entrusted to Technical Committee PRI/21, Testing of plastics.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Plastics - Standard table for reference global solar spectral irradiance at sea level - Horizontal, relative air mass 1 (ISO/TR 17801:2014)

Plastiques - Table de référence pour l'irradiance solaire spectrale totale au niveau de la mer - Horizontale, masse d'air relative 1 (ISO/TR 17801:2014)

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Foreword

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The committee responsible for this document is ISO/TC 61, *Plastics*, Subcommittee SC 6, *Ageing, chemical and environmental resistance*.

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Introduction

The effect of solar radiation on surface of the earth (global radiation) is the most important primary weathering factor. The photons absorbed by the molecules during radiation exposure are often sufficient to split chemical bonds, start photochemical reactions and cause an electron transfer[1]. The spectral irradiance of the solar radiation is variable locally and in time. A reference spectrum is therefore required as a basis for the simulation of the spectral irradiance of solar radiation with artificial radiation sources/radiation systems. Data of the CIE (Commission Internationale de L'Éclairage) Publication (No. 85, 1989) have been used as a basis for years. Table 4 specifies the spectral irradiance of global radiation (direct and diffuse radiation) for a cloudless sky, zenith position of the sun by day and night comparisons at the equator at sea level. But in CIE 85, the data of the global solar irradiance only begins at 305 nm, the step width is very rough and the calculation code got unexplainably lost. Therefore, there have been efforts to revise CIE No. 85 for many years. The new Table 1 gives modelled data (using the SMARTS model version 2.9.2) generated using an air mass zero (AM0) spectrum based on extraterrestrial spectrum of Gueymard[2][3].

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