International

ISO 4582

Plastics — Determination of changes in colour and variations in properties after exposure to glass-filtered solar radiation, natural weathering or laboratory radiation sources

Plastiques — Détermination des changements de coloration et des variations de propriétés après exposition au rayonnement solaire derrière une vitre en verre, au vieillissement naturel ou aux sources de rayonnement de laboratoire

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This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 6, *Ageing, chemical and environmental resistance*.

This fifth edition cancels and replaces the fourth edition (ISO 4582:2017), which has been technically revised.

The main changes are as follows:

— in 4.2.2.1 and 4.2.4.2, references to CIE tristimulus values and corresponding International Standard ISO/CIE 11664-3 and ASTM E1347 have been deleted;

— in Table 1, ISO 4628-4 for cracking and crazing has been added;

— in Table 2, ISO 4765 for chemical changes has been added;

— in 5.4, standard atmosphere 23/50 has been changed to class 2;

— in 6.2.2, reference to ISO 4628-1:2016, Table 3 has been added;

— a new Annex C (Measurements of changes in mechanical properties) has been added.

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A number of different exposure techniques can be used to provide information on the effects of environmental stresses such as simulated solar radiation, heat and water on plastics (see the ISO 877 series and the ISO 4892 series). Each exposure test has its own particular application and relevance. When determining changes in a particular property or attribute of a material subjected to different exposures, the same evaluation methods should be used after all exposures to ensure meaningful results.

Results for plastics subjected to exposure tests are strongly dependent on the type of exposure conditions used, the type of plastic being tested and the property being evaluated. A result obtained for one property might not be the same as that for a different property of the same material, even if the same exposure test is used. This document is not intended to establish a fixed procedure for conducting the exposure test, but is intended to provide a set of specific procedures used to express the results for change in a characteristic property of the material after it has been exposed. It is up to the user to determine which exposure conditions are most relevant to the specific material and the service conditions being used.

Test methods should be selected to determine changes in appearance and properties of the exposed material with its proposed application in mind. The exposure test used should be devised to discriminate among materials based on such changes. This document suggests typical properties that can be used to determine changes in plastics which have been subjected to exposure tests.

NOTE Because of large differences in the spectral distribution of the radiation sources used, there can be large differences in results for the same plastics exposed in the various devices described in the ISO 4892 series. Therefore, comparisons between plastics are intended to be made only based on results from exposures in the same type of device and under the same conditions. For optimum comparisons, plastics are expected to be exposed at the same time in the same device.