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Plastics — Evaluation of the adhesion interface performance in plastic-metal assemblies —

Part 6: Accelerated degradation test

Plastiques — Évaluation des performances de l'interface d'adhérence dans les assemblages plastique-métal —

Partie 6: Essai de dégradation accéléré

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

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A list of all parts in the ISO 19095 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

Structures of heterogeneous materials are being manufactured in the automotive and aerospace industry sectors, where higher safety margins are required. The existing test methods are not appropriate because the evaluation of the adhesive interface is difficult, as the polymer material has a relatively low mechanical strength and therefore fractures outside the joints. Therefore, it is necessary to develop a methodology for the evaluation of the adhesive interfaces. A test method to accurately evaluate the adhesion interface performance or standardization of long-term evaluation under harsh environments is also necessary. The method in ISO 19095 is intended to ensure that the integrity of the joint is realized through the interface and that traceability of the value improves the data comparison. This document defines the conditions to evaluate the long-term durability which cannot be evaluated using ISO 19095-4.

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SAFETY STATEMENT — Persons using this document should be familiar with normal laboratory practice, if applicable. This document does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices. It is recognized that some of the materials permitted in this document might have a negative environmental impact. As technological advances lead to more acceptable alternatives for such materials, they will be eliminated to the greatest extent possible. At the end of the test, care should be taken to dispose of all waste in an appropriate manner.

1 Scope

This document specifies the environmental conditions to evaluate the accelerated degradation for the adhesion interface performance in plastic-metal assemblies.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Principle

To evaluate the degradation of plastic-metal assemblies under severe conditions in a shorter period of time, the assemblies are subjected to a higher temperature and a higher humidity conditions such as 120 °C and 0,2 MPa of saturated water vapour pressure without air (oxygen) gas (see Annex B).

This method should be used at temperature at least 20 °C lower than softening temperature in order to avoid deformation (see Annex C).

5 Apparatus

5.1 Oven, capable of heating to 200 °C for test samples or sealed pressure vessels connected to pressure gauge and purge lines settled outside oven, with temperature control system (±1 °C).

To control the temperature uniformly inside the oven, an air circulation heating system should be used.

If conditions of 120 °C and 0,2 MPa of saturated water vapor pressure is used, a sterilizer (see 5.5) can be used instead of oven and sealed pressure vessels.

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