BSI Standards Publication

Adhesives — Absorption of water into an adhesive layer using an open-faced specimen and determination of shear strength by secondary bonding

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National foreword

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

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Foreword

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This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 11, *Products*.

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.

Introduction

Adhesives absorb moisture from the environment over a long period of time. The absorbed water often decreases the strength of the adhesive. Therefore, it is important to evaluate the effect of absorbed water properly to ensure the durability of adhesive bonding joints. Such an evaluation is generally time-consuming because the penetration of water into the adhesive layer is a slow process. Additionally, the moisture in the adhesive layer can alter the chemical and physical properties of the adhesive layer and interface over time.

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Adhesives — Absorption of water into an adhesive layer using an open-faced specimen and determination of shear strength by secondary bonding

1 Scope

This document specifies a method for the rapid permeation of water to an adhesive layer using a specimen with one side open, the secondary bonding of the specimens with the adhesive layer that is still moistened, and a shear strength test of the secondary bonded specimen, for the selection of water-resistant adhesives and the determination of suitable surface treatments. It does not assess the water resistance of the actual joint itself, as the distribution of water in the adhesive layer is different. This test procedure does not provide design information.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 175, *Plastics — Methods of test for the determination of the effects of immersion in liquid chemicals*

ISO 291, *Plastics — Standard atmospheres for conditioning and testing*

ISO 472, *Plastics — Vocabulary*

ISO 4587, *Adhesives — Determination of tensile lap-shear strength of rigid-to-rigid bonded assemblies*

ISO 10365, *Adhesives — Designation of main failure patterns*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 472 and the following apply.

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/

3.1
open-faced specimen
specimen with an adhesive layer on an adherend, such that one side of the adhesive layer is not in contact with the adherend and is open

3.2
primary adhesive
adhesive used to prepare an open-faced specimen

3.3
secondary adhesive
adhesive for adhering open-faced specimens together