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Paints and varnishes - Coating systems for wind-turbine rotor blades - Part 6: Determination and evaluation of ice adhesion using centrifuge (ISO/TS 19392-6:2023)

Peintures et vernis - Matériaux de revêtement pour pales de turbines éoliennes - Partie 6: Détermination et évaluation de l'adhésion de la glace à l'aide d'une centrifugeuse (ISO/TS 19392-6:2023)

Beschichtungsstoffe - Beschichtungssysteme für Rotorblätter von Windenergieanlagen - Teil 6: Bestimmung und Bewertung der Eisadhäsion mittels Zentrifuge (ISO/TS 19392-6:2023)

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

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Endorsement notice

The text of ISO/TS 19392-6:2023 has been approved by CEN as CEN ISO/TS 19392-6:2024 without any modification.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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.

This document was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*.

A list of all parts in the ISO 19392 series can be found on the ISO website.

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Introduction

Ice accretion on rotor blade surfaces of wind turbines can decrease the efficiency and limit the performance of wind turbines in cold, humid environments. Ice formation can also lead to damage of the rotor blade and can be hazardous, if ice falls off the blade. Icephobic coatings ("icephobics") can be applied to rotor blade surfaces to reduce or prevent the adhesion of ice by removing ice prior to reaching a critical ice mass for the rotor blades. They can also increase the efficiency of thermal ice protection systems.

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Paints and varnishes — Coating systems for wind-turbine rotor blades —

Part 6: Determination and evaluation of ice adhesion using centrifuge

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1 Scope

This document describes a method to measure ice adhesion from artificial ice on test substrates by using a centrifuge. Basic ice types are defined and test parameters for the ice removal are described to achieve reproducibility of test results for ice adhesion measurements for rotor blade coatings. This document does not intend to provide fixed test parameter to account for the diversity of relevant icing scenarios in this field of application.

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 1513, *Paints and varnishes — Examination and preparation of test samples*

ISO 4618, *Paints and varnishes —Vocabulary*

ISO 15528, *Paints, varnishes and raw materials for paints and varnishes — Sampling*

ISO 21920-2, *Geometrical product specifications (GPS) — Surface texture: Profile — Part 2: Terms, definitions and surface texture parameters*

SAE ARP 5905, *Calibration and Acceptance of Icing Wind Tunnels*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4618 and the following apply.

ISO and IEC maintain terminology 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
static ice
ice created at a surface from liquid water with no dynamic effects

3.2
impact ice
ice that forms on surfaces from impacting supercooled water droplets (velocity >40 m/s)

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