

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Magnetic materials –

Part 12: Methods of test for the assessment of the thermal endurance of surface insulation coatings on electrical steel strip and sheet

Matériaux magnétiques –

Partie 12: Méthodes d'essai pour l'évaluation de l'endurance thermique des revêtements isolants superficiels des bandes et tôles en acier électrique



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of surface insulation coatings on electrical steel strip and sheet****FOREWORD**

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IEC 60404-12 has been prepared by IEC technical committee 68: Magnetic alloys and steels. It is an International Standard.

This second edition cancels and replaces the first edition published in 1992. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) the method of test for adhesion has been modified to match to the method of bend test specified in ISO 1519 using a cylindrical mandrel of 32 mm in diameter instead of the 30 mm diameter mandrel specified in the first edition;
- b) the method of test for interlaminar insulation resistance has been modified to match to the method specified in IEC 60404-11 and the modified Franklin test has been removed;
- c) the method of test for compressibility has been modified to match to the method of test for stacking factor specified in IEC 60404-13;

- d) the concept of "resistance grades" has been removed;
- e) the clamping pressure to be used at temperature ratings above 500 °C has been reduced to $(0,01 \pm 0,001) \text{ N/mm}^2$;
- f) the testing for continuous exposure has been made a subject to an agreement between the manufacturer and the purchaser and the procedure has been moved to an informative Annex A.

The text of this International Standard is based on the following documents:

Draft	Report on voting
68/698/CDV	68/720/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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INTRODUCTION

The surface insulation coatings on electrical steel strip and sheet are sometimes exposed to elevated temperatures in service or during processing by the purchaser. Therefore, the thermal endurance of the surface insulation coating is important.

Physicochemical models postulated for the aging processes lead to the almost universal assumption of the Arrhenius equations to describe the rate of aging (see Annex A of this document and IEC 60216-1).

Since the measurement of the properties of surface insulation coatings at elevated temperatures is expensive and time-consuming, the thermal endurance of a coating is usually assessed by evaluating the change of a specified coating property, at an ambient temperature, due to a heat treatment.