



BSI Standards Publication

Thermal spraying — Measurement of the electrical conductivity of thermal sprayed non-iron metal coatings by means of eddy current method

National foreword

This British Standard is the UK implementation of EN 16813:2016.

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

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English Version

**Thermal spraying - Measurement of the electrical
conductivity of thermal sprayed non-iron metal coatings
by means of eddy current method**

Projection thermique - Mesurage de la conductivité
électrique des revêtements métalliques non ferreux
obtenus par projection thermique, à l'aide de la
méthode par courants de Foucault

Thermisches Spritzen - Messung der elektrischen
Leitfähigkeit thermisch gespritzter Nichteisenmetall-
Schichten mittels Wirbelstromverfahren

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European foreword

This document (EN 16813:2016) has been prepared by Technical Committee CEN/TC 240 “Thermal spraying and thermally sprayed coatings”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2017, and conflicting national standards shall be withdrawn at the latest by May 2017.

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Introduction

In many applications, the electrical conductivity is a relevant technical parameter. For testing of imperfections in components or technological material properties the eddy current method can be very well applied. It can be detected or determined, for example:

- defects in welds;
- imperfections or change in the structure of a component, for example, due to aging processes in structures made out of aluminium;
- change in structure caused by temperature effects;
- thickness;
- physical material properties such as the electrical conductivity.

Due to an interaction between high frequency magnetic fields, emitted from a measuring probe, and the eddy currents induced in the object to be measured the electrical conductivity can be determined, e.g. according to ASTM E 1004 or can be used for fast and contact less measurements of a coating thickness according to EN ISO 21968.

Due to the manufacturing process thermal sprayed coatings contain a layer orientated structure. Dependent on the material used, it can also contain oxides and/or inclusions as well as porosity created due to splat boundary effects during spraying.

Besides the structure with its grain boundaries, dislocations, internal stresses and impurities, e.g. oxide skins, the specific gravity of a material plays an important role for the level of the electrical conductivity. In order to produce the highest possible level of electrical conductivity in the coating, the influencing factors for the thermal spraying process should be minimized.