



Nederlandse norm

NEN-EN 4158

(en)

Aerospace series Paints and varnishes - Test method for measurement of electrical surface resistance of conductive layers

ICS 49.040
januari 2007

Als Nederlandse norm is aanvaard:
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VOORBEELD
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ICS 49.040

English Version

Aerospace series - Paints and varnishes - Test method for
measurement of electrical surface resistance of conductive
layers

Série aérospatiale - Peintures et vernis - Mesure de la
résistance de surface électrique des couches conductrice

Luft- und Raumfahrt - Anstrichstoffe - Messen des
elektrischen Oberflächenwiderstandes von elektrisch
leitfähigen Schichten

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Preview

Foreword

This document (EN 4158:2006) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

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1 Scope

This standard describes a method of measurement of the electrical resistance of electrically conducting surface coatings on non-conductive parts and samples for aerospace applications.

If electrical contact areas are provided, the method is also applicable on electrical conducting layers over coated with non-conducting layers.

2 Principle

The principle of the method involves applying a known voltage U to the conductive layer, measuring the current I , and calculating the resistance R_{measured} according to Ohm's law:

$$R_{\text{measured}} = \frac{U}{I}$$

The resistance of the layer R_L can be calculated under the following assumptions (see Figure 1):

- homogeneous distribution of conducting particles in the layer
- layer thickness < 1 mm
- diameters d of contact areas of electrodes are equal
- distance a between centers of electrodes $> 3,5 \times d$
- dimensions of sample under test $> 5 \times a$
- inner resistance of electrodes, cables, and contact resistance between electrodes and surface of the sample are negligible.

Then

$$R_L = \frac{\pi}{\ln \frac{2a}{d}} \times R_{\text{measured}} \quad (1)$$

3 Apparatus

3.1 Fixed – Electrode – Set up

The assembly of electrodes consists of an electrode support made from an insulate, made up of two electrodes of conductive silicone elastomer as well as the connections to the measuring apparatus (see Figure 1).

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