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Corrosion tests in artificial atmospheres — Accelerated corrosion tests involving alternate exposure to corrosion-promoting gases, neutral salt-spray and drying

Essais de corrosion en atmosphères artificielles — Essais de corrosion accélérée par expositions alternées à des gaz oxydants ou au brouillard salin neutre et à un séchage

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Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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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.

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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ISO 21207 was prepared by Technical Committee ISO/TC 156, *Corrosion of metals and alloys*.

Introduction

Corrosion of metallic materials with or without corrosion protection is influenced by many environmental factors, the importance of which may vary with the type of metallic material and with the type of environment. Laboratory tests are designed to simulate the effects of the most important factors that enhance the corrosion of metallic materials.

The accelerated corrosion test methods described in this International Standard, methods A and B, are designed to simulate and enhance the environmental influence of exposure to an outdoor climate where salt-contaminated conditions and corrosion-promoting gases from an industrial or a traffic environment occur which may promote corrosion. Test method A simulates a moderately aggressive traffic environment while test method B simulates a more severe industrial or traffic environment.

Test method A involves exposure of the test objects to the following test cycle:

a) neutral salt spray testing (ISO 9227) for 2 h in a mist of a salt solution containing a mass fraction of 5 % of sodium chloride at 35 °C, followed by drying for 22 h in a standard laboratory climate;

b) exposure for 120 h in a test atmosphere containing a mixture of corrosion-promoting gases, volume fraction of NO_2 equal to $1{,}5 \times 10^{-6}$ and of SO_2 equal to $0{,}5 \times 10^{-6}$, at a relative humidity of 95 % and at a temperature of 25 °C, followed by drying for 24 h in a standard laboratory climate.

Test method B involves exposure of the test object to the following test cycle:

a) neutral salt spray testing (ISO 9227) for 2 h in a mist of a sodium chloride salt solution of mass fraction 5 % at 35 °C, followed by drying for 22 h in a standard laboratory climate;

b) exposure for 48 h in a test atmosphere containing a mixture of corrosion-promoting gases, volume fraction of NO_2 equal to 10×10^{-6} and of SO_2 equal to 5×10^{-6}, at a relative humidity of 95 % and at a temperature of 25 °C;

c) neutral salt spray testing (ISO 9227) for 2 h in a mist of a sodium chloride salt solution of mass fraction 5 % at 35 °C, followed by drying for 22 h in a standard laboratory climate;

d) exposure for 72 h in a test atmosphere containing a mixture of corrosion-promoting gases, volume fraction of NO_2 equal to 10×10^{-6} and of SO_2 equal to 5×10^{-6}, at a relative humidity of 95 % and at a temperature of 25 °C.

The results obtained do not permit far-reaching conclusions on the corrosion resistance of the tested product under the whole range of environmental conditions in which it may be used.