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JIS

JAPANESE INDUSTRIAL STANDARD

Method of cyclic oxidation testing at elevated temperatures for metallic materials

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Method of cyclic oxidation testing at elevated temperatures for metallic materials

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1. Scope

This Japanese Industrial Standard specifies the method of cyclic oxidation testing at elevated temperatures for metallic materials.

Remarks. The standards cited in this Standard are given in the following :

JIS	B 7502	Micrometer callipers
JIS	B 7507	Vernier, dial and digital callipers
JIS	C 1602	Thermocouples
JIS	R 6251	Abrasive cloths
JIS	R 6252	Abrasive papers
JIS	R 6254	Endless abrasive belts
JIS	Z 8401	Rules for rounding off of numerical values

2. Definitions

The definitions of principal terms used in this Standard are as given in the following :

(1) scale Oxide film and oxidized products formed on the surface of test piece by oxidation.

(2) adherent scale Scale adhering to the test piece even when a surface of the test piece is rubbed with a nylon brush after the oxidation test.

(3) total depth of attack The depth from the surface of a test piece before testing to the good metallic phase after testing.

(4) spalled scale Scale flaked off from the test piece after the oxidation test.

(5) affected layer Zone which is subjected to change by oxidation.

(6) low temperature area Zone of low temperature side of oxidation testing cycle in which heating and cooling are repeated.

(7) high temperature area Zone of high temperature side of oxidation testing cycle in which heating and cooling are repeated.

(8) temperature rising time Time necessary to reach the holding temperature in the high tempera-ture area when a test piece is moved from the low temperature area to that of high temperature.

3. Test apparatus

3.1 Construction of apparatus Whole of the apparatus shall be composed of a temperature regulating device for heating the test piece uniformly at a constant temperature, a heating and cooling device equipped with the testing portion providing with heating and cooling zones that are separating the test piece from outside air, and a humidifying regulator, blower, air flow meter and hygrometer by which the air is supplied continuously and kept at a constant humidity. The basic construction

for the heating and cooling device of up end cylindrical type is as shown in Fig.1, while that of down end cylindrical type is as shown in Fig.2.

Fig. 1. Basic construction diagram for heating and cooling devices of up end cylindrical type

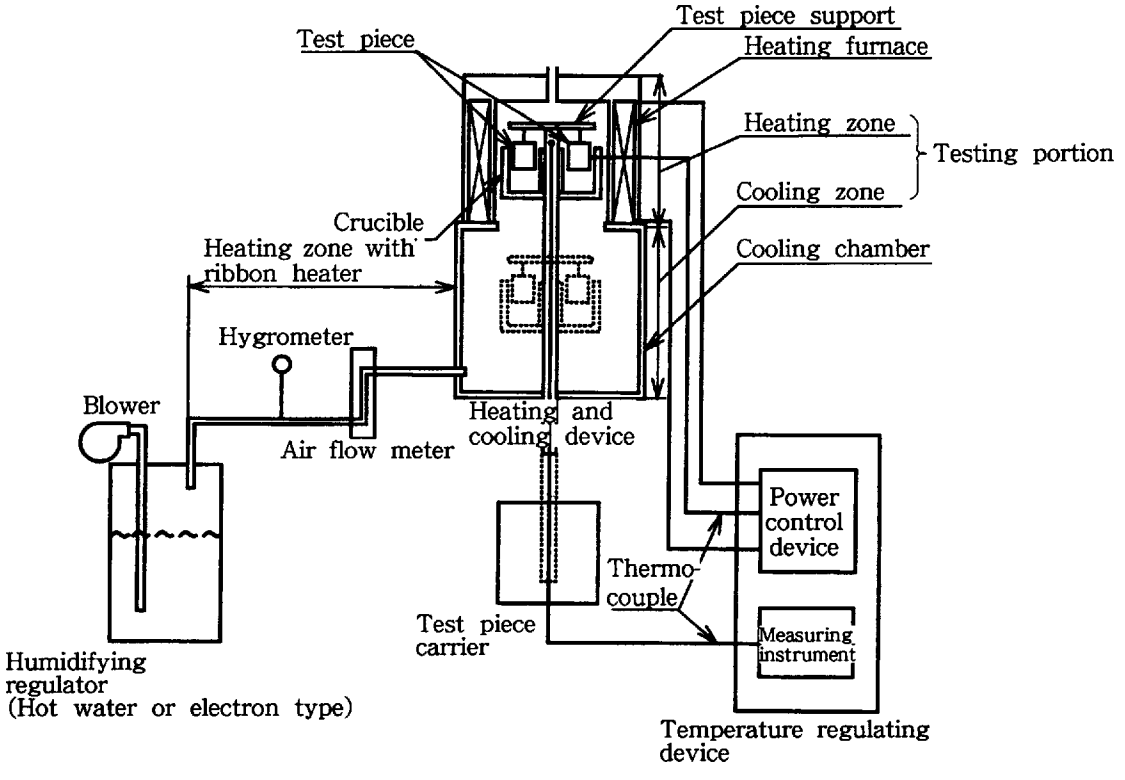

Fig. 2. Basic construction diagram for heating and cooling devices of down end cylindrical type