International Standard 558

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Conditioning and testing — Standard atmospheres — Definitions

Conditionnement et essais — Atmosphères normales — Définitions

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Descriptors : atmospheres, controlled atmospheres, test atmospheres, testing conditions, test specimen conditioning, vocabulary, definitions.

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 558 was developed by Technical Committee ISO/TC 125, *Enclosures and conditions for testing*.

It was submitted directly to the ISO Council, in accordance with clause 5.10.1 of part 1 of the Directives for the technical work of ISO. It cancels and replaces ISO Recommendation R 558-1967, which had been approved by the member bodies of the following countries :

Australia	Hungary	Portugal
Belgium	India	Romania
Brazil	Indonesia	Sweden
Chile	Iran	Switzerland
Czechoslovakia	Italy	United Kingdom
Egypt, Arab Rep. of	Japan	USA
France	Mexico	USSR
Germany, F. R.	Netherlands	Yugoslavia
Greece	Norway	

No member body had expressed disapproval of the document

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Conditioning and testing — Standard atmospheres — Definitions

0 Introduction

The determined value of the characteristics of many materials, components or equipment is often dependent on the external influences to which the sample or test piece is exposed. In particular, the influence of temperature, relative humidity and pressure is important. In case there is a need to obtain results which are significant and, above all, reproducible, i.e. suitable for comparing the characteristics of the material, the component or the equipment considered, it becomes necessary to re-establish identical ambient conditions and, hence, to control these parameters.

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If it is desired either to classify different materials, components or equipment, by quality, or to compare the results of tests carried out on them in different laboratories, it is essential :

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a) to bring the samples or test pieces into contact with a standard **conditioning atmosphere**, i.e. an environment having agreed characteristics (as exactly reproducible as possible) of temperature, relative humidity and pressure, for a specified period of time or, if specified, until the samples or test pieces have reached equilibrium with the conditioning atmosphere;

b) to carry out specified tests in a standard **test atmosphere**, i.e. an environment having agreed characteristics (as exactly reproducible as possible) of temperature, relative humidity and pressure, which may or may not be identical with those of the conditioning atmosphere.

Many tests are performed under conditions which do not differ greatly from ordinary ambient values of one or more of the parameters temperature, relative humidity or pressure. The standardization of these conditions is dealt with in ISO 554.

1 Scope and field of application

This International Standard defines three types of standard atmosphere.

NOTE — Standard atmospheres are often required in order to investigate the effect of extreme climatic conditions on test specimens. Such atmospheres often differ greatly from ordinary ambient conditions.

2 Definitions

2.1 atmosphere : Ambient conditions defined by one or more of the parameters :

— temperature;

— relative humidity;

— pressure.

2.2 conditioning atmosphere : The atmosphere in which a sample or test piece is kept before being subjected to test. It is characterized by specified values for one or more of the parameters temperature, relative humidity and pressure, which are kept within the prescribed tolerances for a given period of time.

NOTES

1 The term "conditioning" refers to the operation as a whole designed to bring a sample or test piece, before testing, into a specified condition in relation to temperature and humidity, by keeping it for a given period of time in the conditioning atmosphere.

2 The conditioning can be done either in the laboratory or in a special enclosure termed "the conditioning chamber" or in the test chamber.

3 The chosen values and period of time depend on the nature of the sample or test piece to be tested.

2.3 test atmosphere : The atmosphere to which a sample or test piece is exposed throughout the test. It is characterized by specified values for one or more of the parameters temperature, relative humidity and pressure, which are kept within the prescribed tolerances.

NOTE — The test may be carried out either in the laboratory or in a special chamber termed "the test chamber", or in the conditioning chamber, the choice depending on the nature of the test piece and on the test itself. For example, close control of the test atmosphere may not be necessary if the change of properties of the test piece is insignificant in the test period.

2.4 reference atmosphere : The agreed atmosphere to which test results determined in other atmospheres may be corrected if suitable correlation factors are available from established data.

NOTES

1 A standard reference atmosphere or reference atmosphere is an atmosphere for which the temperature, humidity and/or pressure characteristics being measured follow a known law.

2 In practice, test results are often only corrected to a reference temperature because data for temperature correlation factors are more generally available than those for relative humidity and atmospheric pressure.

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