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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 24176-2009

**Metallic materials -- Fatigue testing -- Statistical planning and
analysis of data**

金属材料 疲劳试验 数据统计方案与分析方法
(English Translation)

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Foreword

This standard is equivalent to international standards ISO 12107:2003 "metal material fatigue test --- statistical and analytical programs Law "(in English).

The standards with international standards ISO 12107:2003 compared to the following editorial changes made.

"," --- With the Chinese instead of English usual decimal notation using decimal notation, "";

--- Re-write the foreword, instead of ISO 12107:2003 Foreword.

The standard proposed by China Iron and Steel Association.

The Standard Appendix A, Appendix B, Appendix C are informative appendices.

This standard is under the jurisdiction of the National Steel Standardization Technical Committee.

This standard was drafted. Iron and Steel Research Institute, Metallurgical Industry Information Standards Institute.

Drafters of this standard. TESTING AND Dong Li.

GB/T 24176-2009/ISO 12107:2003

Introduction

As we all know, even in a very precise test control when the fatigue test results also showed a significant difference. This difference in part to Since in inconsistencies between the sample, including the slight differences in chemical composition, heat treatment, surface condition, and in part from the intrinsic engineering materials Feature --- fatigue failure of a random process.

For more precise quantification of the inherent differences in the evaluation of mechanical design and structural fatigue properties of the material it is necessary. For laboratory Comparison of fatigue properties of materials, including the differences is necessary.

GB/T 24176-2009/ISO 12107:2003 Metal fatigue test Statistics and analysis programs

1.1 Purpose

This standard describes the fatigue test for statistical analysis of data and results. Purpose is in the number of high confidence and a sample test Fatigue properties of a given metal materials.

1.2 Performance Analysis for Fatigue

This standard provides a method of analysis at different stress levels, using the linear relationship at the appropriate coordinate estimate material fatigue life.

In particular should include the following.

- a) given to the fatigue life under stress;
- b) Given the fatigue life under fatigue strength.

This standard, the term "stress" may be replaced by a "strain", the method of the strain of life characteristic analysis function is also effective. Strain control Fatigue strength test system according to strain to consider, in accordance with stress control stress test is usually understood.

1.3 Scope

This standard is limited to a single analysis due to the fatigue failure mechanism and uniform characteristics exhibited by material fatigue data. Within the meaning of this standard test Test result statistical properties are closely related to the material properties under test conditions.

In fact, for a given sample material under different conditions it may show different failure mechanisms. Under normal circumstances, the results of statistical data Total properties

represents a failure mechanism can be analyzed directly. In the case of non-uniform statistical properties, it is necessary for all instances as a single division Cloth model is analyzed.

Failure of either the same stress level from the surface can also occur from within. Corresponding data corresponding to different failure mechanisms of mixed statistics characteristic. These types of results because of the need for a comprehensive analysis of more complex, the standard will not be considered.

2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard.

GB/T 3358 statistical terms (all parts)

3 Terms and Definitions

GB/T 3358 and established the following terms and definitions apply to this standard.

3.1

and statistics related terms 3.1.1 Probability and statistical variation range of a value corresponding to 1-alpha.

3.1.2

The total number of test items, less the estimated parameters for the number of degrees of freedom.

GB/T 24176-2009/ISO 12107:2003