

ICS 29.035.01
CCS K 15



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

GB/T 21223.1-2015

Replacing GB/T 21223-2007

**Guide for the statistical analysis of ageing test data -- Part 1:
Methods based on mean values of normally distributed test
results**

老化试验数据统计分析导则 第1部分：建立在正态分布试验结果的平均值基础上的方法

(English Translation)

Issued on: July 3, 2015

Implemented on: February 1, 2016

Issued by: Standardization Administration of China

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Foreword

GB/T 21223 "aging test statistical analysis Guide" includes the following two parts.

--- Part 1. based on mean values of normally distributed test results on the way;

--- Part 2. cut normal statistical analysis of data verification.

This is Part 1 GB/T 21223 of.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This Part replaces GB/T 21223-2007 "aging test data analysis guidelines establish normal test results in a flat the method "based on the average, compared with the GB/T 21223-2007, the main technical changes are as follows.

--- Modify the standard name will be changed to the original sub-standard part of the standard;

- Increasing the "Introduction";
- Remove the "Normative references" (see the 2007 edition of Chapter 2);
- Added "terms" (see Chapter 3);
- Revised Appendix A, and as a Table 1 in this section (see Table 1, 2007 edition of Appendix A);
- Deleted the Chapter 3, "Overview" (see the 2007 edition of Chapter 3);
- Revised Chapter 4, "Statistical Methods" (see Chapter 3, Chapter 4 of the 2007 edition);
- Removed Figures 1, 2 and 3 (see the 2007 version of Figures 1, 2 and 3);
- Added Appendix A, Appendix B (see Appendix A, Appendix B);
- Increase the informative appendix NA, listed in this section with the GB/T 21223-2007 standard reg control (see appendix NA).

This section uses the translation method is equivalent to using IEC 60493-1:2011 "aging test statistical analysis Guide - Part 1. Create positive the method of "mean normal distribution based on the test results. And IEC 60493-1:2011 as compared to, for ease of use criteria, do the following editor Modifications.

- Deleted Chapter 2 normative references, other clauses No. postponed;
- Increase the informative appendix NA.

This part is proposed by the China Electrical Equipment Industrial Association.

This part of the National Electrical insulation materials and insulation systems assessment Standardization Technical Committee (SAC/TC301) centralized.

This section is drafted. Electrical Machinery Industry Beijing Technology and Economy Institute, Suzhou Jufeng Electrical Insulation Systems Co., Ltd., Cooper Electronic Technology (Shanghai) Co., Ltd. Guilin Electric Apparatus Research Institute.

Introduction

Test procedures for aging properties estimation procedure is described in detail; a particular environmental stress (such as temperature, radiation, and partial discharge) under aging General document also covers the test procedure in this section of the book.

In many cases, a particular performance as a function of time for different aging under stress to be measured, and find selected at each arrival aging stress Standard end expiration time. This failure time and aging stress diagram can be used to obtain exposure to similar stress predetermined sample failure Estimates of time, or to obtain a predetermined value will cause the failure stress estimated time.

Physical and chemical laws of aging could always control the introduction of such an assumption, such as stress at a fixed age, is the assessment of Between aging time and energy, or a certain mathematical properties of functions (such as square root or logarithmic) and there is a linear relationship between the aging time. Similarly, in Failure between stress and aging time, or there may be a linear relationship between mathematical function of these variables.

This section describes a suitable method for the linear relationship. Solid columns illustrate the method by thermal aging, which may be simple chemical process is assumed to be degraded obey Arrhenius law, it is simply the number of dead time is a linear function of the inverse of the thermodynamic temperature.

This section provides procedures to calculate under normal inspection data. We shall not test data normality, because the test is available to small Sample set of data is not credible. However, this method of distribution under normality has been the case over the long-term results and not all inspection data use.

Aging test statistical analysis Guide Part 1. the establishment of normal distribution of test results the method based on the average

1 Scope

GB/T 21223 provisions of this part of the statistical methods used to analyze and evaluate the results of aging data.

This section includes based on mean values of normally distributed test results on numerical methods. These methods only in compliance with the test data Specific assumptions mathematics and the laws of physics when effective. This section also provides some statistical tests on the validity of certain assumptions method.

This section applies to the complete data set and censored data set.

This section provides a subset of data processing based on the concept of the program data. References [1] indicates the push for calculation Statistical validity of the export parameter data set of coefficients.

2.1 Terms and Definitions

The following terms and definitions apply to this document.

2.1.1

Ordered data According to a set of data in order, from the appropriate direction, the column data in each equal to or greater than the previous one.

Note: in this section, "Ascending" indicates that the data to the first data is the smallest in this way arrangement.

2.1.2

Order statistics order-statistic each individual value in an ordered set of data called order statistics, with its numerical position in the sequence is represented.

2.1.3

Incomplete data Values \u200b\u200babove and (or) below a specified point is unknown ordered data.

2.1.4

Censored data the number of unknown value is known incomplete data.

Note: If the above start at a predetermined value or below censored, belong to the class I censored; if Censored starts at a predetermined amount above or below the order statistics it belongs to the class II Censored. This section relates only to Class II Censored.

2.1.5

Truncated data the number of unknown value is unknown incomplete data.

Note: This section does not involve the truncated data.

2.1.6

Saw coefficient Sawcoefficient Coefficients to calculate a list of groups of primary statistical functions required by the invention JGSaw.

Note: in this section there are four factors. Saw coefficient was originally defined as the fifth, for estimating the variance of [7].