



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

**GB/T 34987-2017**

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**Weibull analysis  
(English Translation)**

**Issued on: November 1, 2017**

**Implemented on: May 1, 2018**

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**Issued by: General Administration of Quality Supervision, Inspection and  
Quarantine of the People's Republic of China, Standardization  
Administration of the People's Republic of China**

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## Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the translation method identical to the IEC 61649:2008 Weibull Analysis.

The Chinese documents that have a consistent correspondence with the normatively cited international documents in this standard are as follows.

---GB/T 4889-2008 Statistical processing and interpretation of data and estimation and verification of the mean and variance of normal distribution (ISO 2854.

1976, MOD)

---GB/T 21711-2008 Basic electromechanical relays Part 2. Reliability (IEC 61810-2; 2008, IDT) Compared with IEC 61649:2008, this standard makes the following editorial changes.

---IEC 61649:2008 The interpretation of formula (9) is incorrect. The correction is. "ti is the failure time, F (ti) is the median rank." this standard was proposed by the Ministry of Industry and Information Technology of the People's Republic of China.

This standard is under the jurisdiction of the National Technical Committee for Reliability and Maintainability of Electrical and Electronic Products (SAC/TC24).

## Introduction

The Weibull distribution is used to establish the data model with increasing failure rate, decreasing or keeping constant. It is suitable for a variety of data, including loss Effective time, failure cycle, failure mileage, mechanical stress and other continuous random variables. Using the methods provided by this standard, even for censored numbers it is also possible to model the life distribution.

The appendix section gives a method for using Weibull analysis with spreadsheets to specify how to analyze different failure modes independently.

To identify the weak links, how to use the three-parameter Weibull distribution to obtain the information of the sample position parameters.

Weibull Analysis

## 1 Scope

This standard provides methods for analyzing Weibull data using continuous variables (failure time, failure range, or mechanical stress, etc.).

This standard applies to valid failure data (such as failure time, mileage, or machine) obtained under random conditions or under test conditions.

Mechanical stress, etc.) Its purpose is to estimate the overall reliability level.

This standard applies to independent and distributed data. Independent and identical distribution needs testing or assumption (see GB/T 5080.1).

This standard adopts numerical method and graph estimation method for data point drawing, goodness-of-fit test, estimating two-parameter or three-parameter Weibull distribution and drawing.

Confidence limit; this standard gives the use of Weibull probability diagram to explain the sample's risk function, failure mode, poor overall sample and first time failure Information such as time or shortest duration.

## 2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article Pieces. For undated references, the latest version (including all amendments) applies to this document.

GB/T 2900.13-2008 Electrotechnical terminology credibility and quality of service [IEC 60050(191)..1990, IDT] GB/T 3358.1-2009 Statistical vocabulary and symbols - Part 1. General statistical terms and terms used in probability (ISO 3534-1:2006, IDT) GB/T 5080.1-2012 test conditions and statistical inspection principles (IEC 60300-3-5:2001, IDT) ISO 2854:1976 Statistical processing and interpretation of estimates and tests for the mean and variance of normal distributions  
(Statisticalinter-pretationofdata-Techniquesestimationsandtestsrelatingtomeansandvariances) IEC 61810-2 Basic electromechanical relays Part 2. Reliability (Electromechanical elementary relays-Part 2.

Reliability)