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

GB/Z 41275.22-2023

**Process management for avionics - Aerospace and defence
electronic systems containing lead-free solder - Part 22:
Technical guidelines**

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Foreword

This document complies with the provisions of GB/T 1:1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents"

Drafting:

This document is Part 22 of GB/T (Z) 41275 "Aviation Electronics Process Management Aerospace and Defense Electronic Systems Containing Lead-Free Solder"

point: GB/T (Z)41275 has released the following parts:

- Part 2: Reducing the harmful effects of tin;
- Part 3: System performance test methods containing lead-free solder and lead-free pins;
- Part 4: Ball Grid Array Ball Planting;
- Part 21: Transition Guide to Lead-Free Electronics;

---Part 22: Technical Guidelines;

---Part 23: Guidelines for rework/repair of lead-free and mixed electronic products:

This document is modified to adopt IEC /T S62647-22:2013 "Aviation Electronics Process Management of Lead-free Solders for Aerospace and Defense Electronics Systems"

"System Part 22: Technical Guidelines", the document type was adjusted from IEC 's technical specifications to my country's national standardization guiding technical documents:

Compared with IEC /T S62647-22:2013, this document has many structural adjustments:
Comparison of structure number changes in the two files

See Appendix A for the table:

Compared with IEC /T S62647-22:2013, there are many technical differences between this document and the outer margins of the clauses involved:

Indicated with a single vertical line (?): A list of these technical differences and their causes is provided in Appendix B:

The following editorial changes have been made to this document:

--- Correct the definition of the term 3:1:27 "repair";

---Deleted the Fahrenheit temperature in the full text and retained the Celsius temperature;

---Replaced IEC /T S62647-23 with the informative reference GB /Z 41275:23 (see 14:1:1 and 14:3):

Please note that some content in this document may be subject to patents: The publisher of this document assumes no responsibility for identifying patents:

Introduction

GB/T (Z) 41275 stipulates the management requirements and technical requirements for lead-free aerospace, national defense and high-performance electronic systems: It is planned to be

Composed of 7 parts:

---Part 1: Preparation of lead-free control plan: The purpose is to provide for lead-free control of programming of aerospace, defense and high-performance electronic systems:
plan goals and requirements:

---Part 2: Reducing the harmful effects of tin: The purpose is to regulate aerospace, defense and high-performance electronic systems to reduce the harmful effects of tin:

The technical methods adopted for the impact:

---Part 3: System performance test methods containing lead-free solder and lead-free pins:
The purpose is to regulate lead-free solder and lead-free tubing

Performance test methods and test procedures for aerospace, defense, and high-performance electronic systems:

---Part 4: Ball Grid Array Ball Planting: The purpose is to regulate aerospace, defense and high-performance electrical products containing lead-free solder and lead-free leads:

Requirements for subsystem replacement of ball grid array (BGA) component solder balls:

---Part 21: Transition Guide to Lead-Free Electronics: The purpose is to provide for aerospace and defense electronic system project management or system

A guide for engineering management to manage the transition to lead-free electronics:

---Part 22: Technical Guidelines: The purpose is to provide for aerospace, defense and high-performance electronic systems to ensure continued performance, quality,

Technical guidance for reliability, safety, airworthiness, configuration control, affordability, maintainability, and supportability:

---Part 23: Guidelines for rework/repair of lead-free and mixed electronic products: The purpose is to specify aerospace, defense and high performance electronics

Technical guidelines for disassembly and replacement of parts (including components) during system rework/repair:

Avionics Process Management

Aerospace and defense electronic systems containing lead-free solders

Part 22: Technical Guidelines

1 Scope

This document provides technical guidance for the transition to lead-free electronic products, mainly including technical paths, general performance of lead-free solder, system-level

Operating environment, high-performance electronic product testing, solder joint reliability, components, printed circuit boards, printed circuit boards (PCB)/printed circuit boards

(PWB) assembly, module assembly, wire/cable assembly, rework/repair, general product life test, similarity analysis, etc:

This document is applicable to aerospace, defense and high-performance electronics applications and other high-performance and high-reliability industries for reference use:

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text: Among them, dated citations

For documents, only the version corresponding to the date applies to this document; for undated referenced documents, the latest version (including all modification orders) applies in this document:

GB/T 41275:2-2022 Avionics process management Aerospace and defense electronic systems containing lead-free solder Part 2: Reduction

Harmful effects of less tin (IEC /T S62647-2:2012, MOD)

GB/T 41275:3-2022 Avionics process management Aerospace and defense electronic systems containing lead-free solder Part 3: Including

System performance test method for lead-free solders and lead-free pins (IEC TS62647-3:2014, MOD)

IEC /T S62647-1:2012 Avionics process management Aerospace and defense electronic systems containing lead-free solders Part 1: None

taining lead-free solder-Part 1: Preparation for a lead-free control plan)

GEIA-HB-0005-4 Guidelines for Reliability Assessment of Lead-Free Assemblies for Aerospace and High-Performance Electronics Applications (Guidelines for Practices Guideline)

3 Terms, definitions and abbreviations

3:1 Terms and definitions

The following terms and definitions apply to this document:

3:1:1

Alloy composition alloy composition

The total composition of an alloy, defined by weight as a percentage:

Note: For example, 63Sn-37Pb is equivalent to a mixture of 63% (by weight) tin and 37% (by weight) lead: