

PD IEC/PAS 62647-1:2011



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Process management for avionics — Aerospace and defence electronic systems containing lead-free solder

Part 1: Lead-free management

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee GEL/107, Process management for avionics.

A list of organizations represented on this committee can be obtained on request to its secretary.

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**Process management for avionics – Aerospace and defence electronic systems
containing lead-free solder –
Part 1: Lead-free management**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

PROCESS MANAGEMENT FOR AVIONICS – AEROSPACE AND DEFENCE ELECTRONIC SYSTEMS CONTAINING LEAD-FREE SOLDER –

Part 1: Lead-free management

FOREWORD

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A PAS is a technical specification not fulfilling the requirements for a standard, but made available to the public.

IEC-PAS 62647-1 has been processed by IEC technical committee 107: Process management for avionics.

The text of this PAS is based on the following document:

This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document

Draft PAS	Report on voting
107/106/PAS	107/115A/RVD

Following publication of this PAS, which is a pre-standard publication, the technical committee or subcommittee concerned may transform it into an International Standard.

This PAS is based on GEIA-STD-0005-1 and is published as a double logo PAS. GEIA, Government Electronics and Information Technology Association, has been transformed into TechAmerica Association.

This PAS shall remain valid for an initial maximum period of 3 years starting from the publication date. The validity may be extended for a single period up to a maximum of 3 years, at the end of which it shall be published as another type of normative document, or shall be withdrawn.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

This PAS is intended for use by Aerospace and High Performance (AHP) electronics system customers, i.e., aerospace and defence vehicle integrators, operators, and regulatory organizations, and their suppliers, i.e., system original equipment manufacturers (OEMs) and system maintenance facilities as they incorporate Pb-free solder or Pb-free piece part and board finishes.

The Aerospace Industries Association (AIA), the Avionics Maintenance Conference (AMC), and Government Electronics and Information Technology Association (GEIA) formed the Lead-free Electronics in Aerospace Project Working Group (LEAP WG) to generate a series of industry standard documents for the use and handling of Pb-free solder, piece parts and boards in AHP. This PAS – originally published as GEIA-STD-0005-1 – was prepared by the LEAP WG; and was balloted and approved by GEIA G-12 (Solid State Subcommittee) and the GEIA Avionics Process Management Committee. According to agreements between GEIA and IEC, this PAS is extended at international level.

This PAS is intended to work in concert with GEIA-HB-0005-1 ¹, GEIA-HB-0005-2 ², and IEC/PAS 62647-2 (based originally on GEIA-STD-0005-2). Figure 1 shows a schematic representation of their relationships with each other, and with information about lead-free (Pb-free) electronics from sources external to the AHP industries.

This PAS may be referenced in proposals, requests for proposals, work statements, contracts, and other aerospace and high performance industry documents.

The European Union (EU) has enacted two directives; 2002/95/EC Restriction of Hazardous Substances (RoHS) and 2002/96/EC Waste Electrical and Electronic Equipment (WEEE) that restrict or eliminate the use of various substances in a variety of products that are put on the market after July 2006. One of the key materials restricted is lead, which is widely used in electronic solder and electronic piece part terminations. These regulations may appear to affect only products for sale in the EU; however, due to the reduced market share of the AHP industries, many of the lower tier suppliers to those industries will change their products to serve their primary, non-AHP markets. Additionally, several U.S. states have enacted similar “green” laws and many Asian electronics manufacturers have recently announced completely green product lines. Since AHP is one of the few major industrial sectors that still repair Circuit Card Assemblies (CCAs) and the lead-free materials and processes are relatively immature and poorly understood, an aerospace-wide approach to their application is desired.

AHP industries products may be in one of a number of stages of the incorporation of Pb-free electronics, including

- 1) products that have been designed and qualified with traditional tin-lead (SnPb) electronic piece parts, materials, and assembly processes, and that will need to be maintained in the SnPb configuration;
- 2) products that have been designed and qualified with traditional SnPb electronic piece parts, materials and assembly processes, and have incorporated Pb-free electronic piece parts;
- 3) products that have been designed and qualified with SnPb materials, and are incorporating Pb-free materials;
- 4) new products designed with Pb-free materials.

¹ A future IEC/PAS 62647-21, based on GEIA-HB-0005-1, is in preparation.

² A future IEC/PAS 62647-22, based on GEIA-HB-0005-2, is in preparation.