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Aerospace — Wire, aluminium alloy and copper-clad aluminium conductors — General performance requirements

Aéronautique et espace — Conducteurs en alliage d'aluminium chemisé cuivre pour câbles électriques — Exigences générales de performance



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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The committee responsible for this document is ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 1, *Aerospace electrical requirements*.

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Introduction

This International Standard is the general performance requirements of the wires with aluminium and copper-clad aluminium conductors for aerospace.

The need for International Standardization in the Aerospace industry cannot be overemphasized. Multinational projects abound in the construction industry and all major airlines use equipment produced in different continents. The mixture of specifications and standards combine to increase the chances of maintenance errors, no more so than in the interconnection system. Power plant manufacturers in France may use conductors and terminations manufactured in Europe mating at the firewall with terminations and conductors manufactured in North America. This can result in different contacts, crimp tools and settings, and insulating stripping tools being required to work on mating connectors. The same would apply to many types of equipment.

The requirement for close or “clipped” tolerance, lightweight conductors can provide the opportunity to address many of these problems by overcoming the long-standing issue of AWG versus metric sizes.

This International Standard introduces a list of aluminium-based lightweight conductors for aerospace cables. This list supplements the existing list of standard metric conductors which has not received worldwide acceptance. The list is derived from EN 3719, prEN 4651 and MIL-W-7072(MS25191).

The constructions presented are those which are considered to be standards within the emerging rules governing aircraft cables, e.g. seven strands minimum, copper-clad aluminium for size 22 and smaller. However, it does take advantage of the lightest weight for each size. The resultant standard is therefore a mixture of conductors with metric and imperial origins which gives the greatest advantage to constructors and users for the future.

This International Standard:

- obeys existing rules regarding conductors for aircraft;
- gives the lightest weight for each size/rating currently used;
- standardizes the conductor cross-sectional area throughout the world aerospace industry;
- enables the standardization of terminations and the crimp tools used to produce the joints;
- reduces the number of insulation stripping tools required to service aircraft;
- enables the world industry to concentrate its efforts on improving interconnection technology knowing that a world market exists;
- enables regulatory authorities (CAA, FAA, JAA, etc.) to make rules regarding the interconnection system which applies internationally.

All these will, by reducing complexity, reduce servicing errors and contribute to aircraft safety.