Australian Standard®

Printed board assemblies

Part 3: Cleanliness requirements and guidance

This Australian Standard was prepared by Committee TE/6, Printed Circuits. It was approved on behalf of the Council of Standards Australia on 26 October 1989 and published on 18 June 1990.

The following interests are represented on Committee TE/6:

Australian Electrical and Electronic Manufacturers Association
Australian Tin Information Centre
Civil Aviation Authority
Confederation of Australian Industry
Department of Defence
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Institution of Radio and Electronics Engineers Australia
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PREFACE

This Standard was prepared by the Standards Australia Committee on Printed Circuits as part of a series on printed board assemblies for use in the telecommunications and electronics industries.

This Standard was developed by the Committee from similar material published by ANSI/IPC in a number of documents derived from publications by the US Avionics Materials Research Centre and information from industry on appropriate cleaning processes to provide guidance on cleaning, from printed board assemblies (PBAs), likely residues arising from the manufacturing processes, the solder flux used in preparing the PBA for the mass soldering process and the solder process itself. Guidance is given on the level of cleanliness to be demonstrated and the means of achieving that cleanliness by relatively simple methods. Appendices describing various test methods intended to determine the levels achieved by the cleaning operations are included.

CONTENTS

STANDARDS AUSTRALIA

Australian Standard
Printed board assemblies

Part 3: Cleanliness requirements and guidance

1 SCOPE. This Standard specifies cleanliness requirements and provides guidance for the demonstration of the cleanliness specified for finished printed boards and printed board assemblies (PBAs) during manufacture or assembly.

2 REFERENCED DOCUMENTS. The following documents are referred to in this Standard:

AS
1099 Basic environmental testing procedures for electrotechnology
1099.2Ca Part 2: Tests Ca: Damp heat, steady state
2508 Safe storage and handling information cards for hazardous materials
2508.8.001 Part 8.001: Acetic anhydride
2508.8.010 Part 8.010: Sulphuric acid
2546 Printed boards
2546.1 Part 1: General requirements and test methods

BS
1595 Isopropyl alcohol
3978 Water for laboratory use

3 CLASSIFICATION. In this Standard three classes are specified based on the PBAs end use. They are as follows:

(a) *Class 1*—includes non-critical consumer products and industrial control devices (also called commercial).

(b) *Class 2*—includes telecommunication equipment and certain non-critical military applications (also called professional).

(c) *Class 3*—includes critical military equipment and life support applications (also called high reliability).

4 REQUIREMENTS. The board or PBA shall comply with those requirements detailed below:

4.1 Class 1.

(a) The leakage resistance shall be as determined by Appendix A.

(b) The ionic contamination level shall be not less than 0.5×10^6 Ωcm as determined by Appendix B.

(c) The amount of flux residues shall be 200 $\mu g/cm^2$ maximum as determined by Appendix C.

(d) The surface of the PBA shall be non-tacky. Where the surface is wiped with cotton wool 30 min after soldering, the cotton wool shall not stick to any flux residue on the surface.

4.2 Class 2.

(a) The leakage resistance shall be determined by the test of Appendix A.

(b) The ionic contamination level shall be not less than 1.0×10^6 Ωcm as determined by Appendix B.

(c) The amount of flux residues shall be not more than 100 $\mu g/cm^2$ as determined by Appendix C.

(d) The PBAs surface shall be non-tacky.

4.3 Class 3.

(a) The leakage resistance shall be determined by the test of Appendix A.

(b) The ionic contamination level shall be not less than 2.0×10^6 Ωcm as determined by Appendix B.

(c) The amount of flux residues shall be not more than 40 $\mu g/cm^2$ as determined by Appendix C.

(d) The PBAs surface shall be non-tacky.

4.4 Special requirements for conformal coating. Where a PBA is to be conformally coated the following requirements shall apply:

(a) The ionic contamination level shall be not less than 2.0×10^6 Ωcm (see Appendix B).

(b) The amount of flux residues shall be not more than 40 $\mu g/cm^2$ (see Appendix B).