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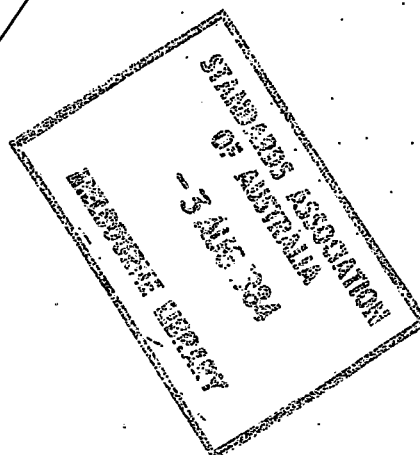
Australian Standard 1020—1984

THE CONTROL OF UNDESIRABLE STATIC ELECTRICITY

AS/NZS 1020:1995
The control of undesirable
static electricity
(In Professional Packages 24A,
40A, 57A) 74pp II

Provides recommendations
relating to safe control of
electrostatic charges generated
incidentally by processes or
activities. Its purpose is to assist
in reducing fire, explosion and
nuisance aspects associated with
static electricity. It outlines
conditions under which the
presence of static causes a hazard
and recommends methods for its
safe dissipation or mitigation.
Appendices provide information
about the hazards caused by static
electricity in the vicinity of
flammable mixtures, on minimum
ignition energies for a range of
chemicals and give examples of
solving problems resulting from
static electricity.

(EL/25) Supersedes AS 1020—1984:
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Australian Chemical Industry Council
Australian Institute of Petroleum Limited
Australian Institute of Physics
Australia Post
CSIRO, National Measurement Laboratory
Department of Defence Support
Department of Housing and Construction
Department of Industrial Affairs and Employment, S.A.
Department of Industrial Relations, N.S.W.
Department of Mineral Resources, N.S.W.
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Suggestions for improvements to Australian standards, addressed to the head office of the Association, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian standard should be made without delay in order that the matter may be investigated and appropriate action taken.

AUSTRALIAN STANDARD

**THE CONTROL OF
UNDESIRABLE STATIC
ELECTRICITY**

AS 1020—1984

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PREFACE

This standard was prepared by the Association's Committee on the Control of Undesirable Static Charges and supersedes AS 1020—1970, Code of Recommended Practice for the Control of Undesirable Static Electricity (known as the SAA Static Electricity Code).

Static is generated by relative movement or separation between two dissimilar surfaces in intimate contact. It is of common occurrence in daily life but often causes danger, discomfort or inconvenience. Under some conditions electrostatic voltages can reach a value in excess of the dielectric strength of air (or other medium) and a spark discharge then occurs. Hazardous conditions exist where such a discharge is liable to occur in areas containing flammable materials. In other instances, static does not present a danger but can cause operational problems during manufacturing or handling processes. Articles sticking to each other or neighbouring objects, and the attraction of dust and foreign material are common examples.

The purpose of this standard is to outline recommendations for the safe control of electrostatic charges generated incidentally by processes or activities. It is emphasized that the standard comprises recommendations and is not intended to become a set of mandatory rules. The standard details the principal methods for safely controlling static generated by solid objects, persons, liquids, dusts and also gases which contain entrained solid or liquid particles (transfer of pure gas does not generate static). Recommendations are included for some specific processes in which the generation of static is a major hazard or inconvenience, but because of the multitude of processes in which static causes operating problems it is not possible that specific recommendations can be included for each case. In particular cases, however, the standard includes a comprehensive introduction on factors involved in the generation of static and the danger it can present in a given environment. Together with the principal control methods these introductions are intended to promote an understanding of the problems and control methods in general and therefore provide a sound basis on which judgement can be applied for solving problems not specifically mentioned.

To further facilitate application of the standard, Appendix D gives examples of how practical problems resulting from static have been solved.

In instances where static charges are liable to accumulate in hazardous locations, it is often necessary that the removal of flammable materials take precedence over, or at least be undertaken in conjunction with, the control of static. Appendix A, therefore, discusses the factors associated with determining the flammable limits of air and vapour mixtures and also outlines recommendations for the removal of flammable mixtures of all types.

For proper application of the control methods, the necessity for measurement of electrostatic parameters is often of fundamental importance. Electric potential and electric field strength detectors and methods for using them are therefore described. Similarly, equipment and methods are described for measuring the actual magnitude of an electric potential and electric field strength. Step-by-step procedures are also detailed for electric potential and electric field strength measurements in hazardous locations. The likelihood of a high-intensity static spark emanating from any object is, among other considerations, dependent on the electrical capacitance of the object, and methods and equipment are therefore described for measuring capacitance. Techniques and instruments for measuring liquid conductivity and the resistance of persons, earthing circuits, materials and products are also included.

Static control methods depend to a large extent on the resistance of the material under consideration. In most cases resistance is measured in terms of 'resistivity', but in the case of liquids it has been found more practicable to measure in terms of 'conductivity'. This standard has therefore adopted the use of volume resistivity (ohm metre) units for all products except liquids which have been measured in terms of conductivity (siemens per metre—see Clauses 1.4.4.5 and 1.4.5.3).

Two new sections have been added to the standard: Section 9, Powdered or Granular Solids, and Section 18, Handling of Electrostatic Sensitive Devices (ESD). Section 18 was added because of the large proportion of public comment requesting that ESD be included. The committee preparing the standard recognizes that Section 18 is incomplete, but because of the long delay that would be introduced in forming another subcommittee to draft an appropriate section, it was decided to mention the problems of ESD in this edition and expand on them when the standard is next revised.

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