AS/NZS 60079.1.1:2002
IEC 60079-1-1:2002

Australian/New Zealand Standard™

Electrical apparatus for explosive gas atmospheres

Part 1.1: Flameproof enclosures ‘d’—Method of test for ascertainment of maximum experimental safe gap

Standards Australia

STANDARDS NEW ZEALAND
Paerewa Aotearoa

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-014, Electrical Equipment in Hazardous Areas. It was approved on behalf of the Council of Standards Australia on 1 November 2002 and on behalf of the Council of Standards New Zealand on 29 October 2002. It was published on 11 December 2002.

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-014, Electrical Equipment in Hazardous Areas.

The objective of this Standard is to set out a test method intended for the measurement of the maximum experimental safe gaps for gas- or vapour-air mixture under normal conditions of temperature and pressure so as to permit the selection of an appropriate group of flameproof enclosures.

This Standard is identical with, and has been reproduced from IEC 60079-1-1:2002, *Electrical apparatus for explosive gas atmospheres—Part 1-1: Flameproof enclosures "d"—Method of test for ascertainment of maximum experimental safe gap*.

As this Standard is reproduced from an International Standard a full point should be substituted for a comma when referring to a decimal marker.

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1 Scope

This part of IEC 60079 describes a test method intended for the measurement of the maximum experimental safe gaps for gas- or vapour-air mixtures under normal conditions of temperature[1] and pressure so as to permit the selection of an appropriate group of flameproof enclosures.

The method does not take into account the possible effects of obstacles on the safe gaps[2].

2 Definitions

For the purpose of this part of IEC 60079, the following definitions apply.

2.1
maximum experimental safe gap (MESG)
maximum gap between the two parts of the interior chamber which, under the test conditions specified below, prevents ignition of the external gas mixture through a 25 mm long flame path when the internal mixture is ignited, for all concentrations of the tested gas or vapour in air

3 Outline of method

The interior and exterior chambers of the test apparatus are filled with a known mixture of the gas or vapour in air, under normal conditions of temperature[3] and pressure (20 °C, 10^5 N/m^2) and with the circumferential gap between the two chambers accurately adjusted to the desired value. The internal mixture is ignited and the flame propagation, if any, is observed through the windows in the external chamber. The maximum experimental safe gap for the gas or vapour is determined by adjusting the gap in small steps to find the maximum value of gap which prevents ignition of the external mixture, for any concentration of the gas or vapour in air.

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1 An exception if made for substances with vapour pressures which are too low to permit mixtures of the required concentrations to be prepared at normal ambient temperatures. For these substances, a temperature 5 °C above that needed to give the necessary vapour pressure is used.

2 The design of the test apparatus for safe gap determination, other than that used for selecting the appropriate group of enclosure for a particular gas, may need to be different to the one described in this standard. For example, the volume of the enclosure, flange width, gas concentrations and the distance between the flanges and any external wall or obstruction may have to be varied. As the design depends on the particular investigation which is to be undertaken, it is unpracticable to recommend specific design requirements, but for most applications the general principles and precautions indicated in the clauses of this standard will still apply.

3 An exception is made for substances with vapour pressures which are too low to permit mixtures of the required concentrations to be prepared at normal ambient temperatures. For these substances, a temperature 5 °C above that needed to give the necessary vapour pressure is used.