AS/NZS 1826:2008

Australian/New Zealand Standard™

Electrical equipment for explosive gas atmospheres—Special protection—Type of protection ‘s’

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL-014, Equipment for Explosive Atmospheres. It was approved on behalf of the Council of Standards Australia on 25 March 2008 and on behalf of the Council of Standards New Zealand on 11 April 2008.
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The following are represented on Committee EL-014:

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Australian/New Zealand Standard™

Electrical equipment for explosive gas atmospheres—Special protection—Type of protection ‘s’

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-014, Equipment for Explosive Atmospheres, to supersede AS/NZS 1826(Int):2006.

The intent of AS/NZS 1826 is to allow the design, assessment and testing of equipment or parts of equipment that cannot be classified within a recognized technique or combination of recognized techniques because of functional or operational limitations. However, it has to be demonstrated that the equipment is safe for use in the area requiring the Equipment Protection Level (EPL) for which it is intended.

The AS/NZS 60079 series of Standards does not have an equivalent part to AS/NZS 1826 although Ex 's' is mentioned as a permitted marking in AS/NZS 60079.0.

AS/NZS 60079.26 provides for equipment to be used in an area requiring EPL Ga equipment but depends on combining techniques already described in other parts of the Standard.

This Standard may also be used to certify equipment which is required to be used in an area requiring a higher EPL than the underlying protection techniques allow. This would require additional control measures to be applied. Designers need to first consider all possibilities for design to established explosion-protection techniques described in the AS/NZS 60079 series or IEC equivalent, or to combinations of techniques as described in AS/NZS 60079.26, before resorting to type of protection Ex 's'.

NOTE: Some equipment in the past that was certified to Ex 's' Standard could now be readily certified, with modification if needed, to one or more of the protection techniques covered in the AS/NZS 60079 series.

This Standard is not to be considered as a last resort in the event that equipment fails compliance to a technique in the AS/NZS 60079 series.

The Ex 's' technique is necessarily based on identification of failure modes and assessment of the risk of failure in the identified modes. In this regard the safety of the equipment has to be equal to or greater than comparable techniques. For example, for an area requiring EPL Ga equipment, the equipment has to have equivalent or greater safety than Ex 'ia', Ex 'ma' or combined techniques described in AS/NZS 60079.26.

The probability of failure, of the identified failure modes, may need to be demonstrated to be of a similar likelihood as the failures that occur in recognized types of protection.

Full safety life cycle conditions may be necessary and form part of the mandatory directions for safe use of the equipment, to ensure ongoing levels of safety during the operational life of the equipment.

By its very nature, testing and assessment to Ex 's' cannot be as prescriptive as for other techniques. It is anticipated that considerable dialogue is required between the manufacturer and the testing station. Additional tests may be devised by the testing station, to ensure the relevant level of safety is achieved.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendix to which they apply. A 'normative' appendix is an integral part of a Standard, whereas an 'informative' appendix is only for information and guidance.

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Electrical equipment for explosive gas atmospheres—Special protection—Type of protection 's'

1 SCOPE

This Standard gives the specific requirements for the construction, assessment and testing and marking of electrical equipment, parts of electrical equipment and Ex components with the type of protection known as special protection 's'.

This Standard only applies for special protection as applied to electrical equipment, parts of electrical equipment and Ex components (hereinafter always referred to as 's' equipment) applicable to Group I, Group II and Group III as defined in AS/NZS 60079.0.

This Standard supplements the general requirements in AS/NZS 60079.0.

It is applicable to equipment intended for equipment protection levels (EPLs) 'Ma', 'Ga', 'Da', 'Mb', 'Gb', 'Db', 'Gc' and 'Dc' as defined in AS/NZS 60079.0. The equipment has to be designed, tested and marked according to the equipment protection level for which it is assigned.

This Standard is not applicable to equipment or any parts of equipment where one or more types of protection as described in AS/NZS 60079 series, or to combinations of types of protection as described in AS/NZS 60079.26, can be applied.

Where the explosion-protection is achieved by using an established type of explosion-protection technique, then verification of the equipment has to be based on the requirements of that part of the AS/NZS 60079 series applicable to such technique. Any variations from these requirements have to be specified and agreed between the manufacturer and independent verifier.

This Standard is also intended to apply to equipment operating in explosive gas atmospheres or explosive dust atmospheres, under conditions other than the atmospheric conditions given in AS/NZS 60079.0. However, additional assessment and testing related specifically to the intended conditions of use will be required. This is particularly important when the types of explosion-protection techniques known as 'flameproof enclosure' (AS/NZS 60079.1) and 'intrinsic safety' (AS/NZS 60079.11) are applied. Such conditions might include hypobaric, hyperbaric and oxygen enriched atmospheres.

NOTES:

1 This Standard is not intended to apply as a last resort in the event that equipment fails compliance to the AS/NZS 60079 series. Ex 's' is only considered where design options are limited for technical, operational or functional reasons

2 This may mean that modification of the design will be necessary to meet the requirements of the established explosion-protection techniques.

3 This Standard may be used where equipment needs to be used at a higher EPL than the underlying protection techniques allow. If this occurs additional control measures and/or additional design and test requirements need to be applied.

4 Parts of equipment that can be designed and tested to standardized explosion-protection techniques should be so designed. Only those parts that achieve safety through alternative controls should be considered for Ex 's'.