AS 3584.2:2021

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Diesel engine systems for underground coal mines

Part 2: Explosion protected

AS 3584.2:2021

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The following are represented on Committee ME-018:

Australasian Institute of Mining & Metallurgy
Australian Chamber of Commerce and Industry
Australian Industry Group
Chamber of Minerals and Energy of Western Australia
Construction and Mining Equipment Industry Group
Department of Mines, Industry Regulation and Safety, WA
Department of Regional NSW
Department of Resources, Qld
Engineers Australia
Minerals Council of Australia
Mining Electrical and Mining Mechanical Engineering Society
WorkSafe New Zealand

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Part 2: Explosion protected

Originated as AS 3584—1988.
Jointly revised and redesignated as AS/NZS 3584.2:2003.
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Revised and redesignated as AS 3584.2:2021.

Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee ME-018, Mining Equipment, to supersede AS/NZS 3584.2:2008.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this document as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this document is to promote the safety of explosion-protected diesel engine systems that are used underground in coal mines.

A list of all parts in this series can be found in the Standards Australia online catalogue.

This document introduces the requirements for an ignition hazard assessment and functional safety assessment to be performed on the diesel engine system.

The major changes in this edition are as follows:

(a) The maximum methane concentration for continuous operation has been increased to 1.25 %.

(b) Section 3 Design and construction now includes all performance requirements.

(c) The test appendices now include all test requirements.

(d) Exhaust gas temperature tests have been revised.

(e) Rated torque speed has been replaced with intermediate speed.

(f) References to product certification schemes have been removed.

(g) Testing for replacement particulate filter elements have been added.

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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Section 1 Scope and general

1.1 Scope

This document sets out the explosion protection requirements for diesel engine systems designed for safe operation in underground coal mines, including use in explosion-risk zones. Conformance with this document implies sufficient protection for continuous operation in atmospheres containing up to 1.25 % methane, including—

(a) the control of surface temperature, to avert ignition of coal dust that could settle on a hot surface or fluid fires; and

(b) containment or elimination of flames and sparks that could ignite flammable gases and dust that may be present.

This document also addresses inadvertent short-term exposure to high methane levels and any consequent uncontrolled combustion.

NOTE Diesel engine systems that meet the requirements of this document (Part 2) are also fire protected.

1.2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

NOTE Documents referenced for informative purposes are listed in the Bibliography.

AS 1019, *Internal combustion engines — Spark emission control devices*

AS 3584.4, *Diesel engine systems for underground coal mines, Part 4: Emissions*

AS 4024.1502, *Safety of machinery, Part 1502: Design of safety related parts of control systems — Validation*

AS 4024.1503, *Safety of machinery, Part 1503: Safety-related parts of control systems — General principles for design*

AS 4024.1601, *Safety of machinery, Part 1601: Design of controls, interlocks and guarding — Guards — General requirements for the design and construction of fixed and moveable guards*

AS 4024.1604, *Safeguarding of machinery, Part 1604: Design of controls, interlocks and guarding — Emergency stop — Principles for design (ISO 13850:2017 (ED.3.0), MOD)*

AS 61508.1, *Functional safety of electrical/electronic/programmable electronic safety-related systems, Part 1: General Requirements*

AS/NZS 3584.3, *Diesel engine systems for underground coal mines, Part 3: Maintenance*

AS/NZS 4024.1204, *Safety of machinery — Electrical equipment of machines, Part 1204: General requirements (IEC 60204-1:2016 (ED. 6.0) MOD)*

AS/NZS 4871.1, *Electrical equipment for mines and quarries, Part 1: General requirements*

AS/NZS 4871.6, *Electrical equipment for mines and quarries, Part 6: Diesel powered machinery and ancillary equipment*