CSA GROUP™

CSA M424.1:22
National Standard of Canada

Flameproof non-rail-bound diesel-powered machines for use in gassy underground coal mines

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National Standard of Canada

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Contents

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Preface

This is the third edition of CSA M424.1, *Flameproof non-rail-bound diesel-powered machines for use in gassy underground coal mines*. It supersedes previous editions published in 1988 and 2016.

Changes to this edition include:

a) Ignition hazard assessment has been introduced, with Annex added for guidance purposes.
b) Fire-resistant hydraulic fluid content has been moved to CSA M424.0-22.
c) Integration with CSA-adopted IEC standards has been achieved.
d) Compatibility with MSHA and ISO requirements has been increased.
e) Most generally applicable machine requirements (such as exhaust emissions requirements) have been removed, retaining only those that pertain to machines for gassy underground mines.
f) Requirements for assessment of static electricity risks have been revised.
g) Several types of flame arrester technologies have been allowed for use.
h) Requirements for intake air shutoff only on engine overspeed have been revised.
i) Intra-machine electrical requirements have been revised.
j) To comply with current administrative requirements, various Clauses throughout the Standard have either been updated or renumbered.

CSA group acknowledges that the development of this Standard was made possible, in part, by the financial support of CanmetMINING, Lands and Minerals Sector, Department of Natural Resources Canada.

This Standard was developed by CSA Group with funding support provided by the Canadian Association of Administrators of Labour Law — Occupational Safety and Health (CAALL-OSH), including provincial and territorial governments, as well as the Government of Canada. CSA Group is solely responsible for the content of this Standard, and CSA Group and the funding bodies disclaim any liability in connection with the use of the information contained herein.

This Standard was prepared by the Subcommittee on Diesel-Powered Machines for Use in Underground Mines, under the jurisdiction of the Technical Committee on Underground Mining Mobile Equipment, and the Strategic Steering Committee on Occupational Health and Safety, and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

Notes:

1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*
2) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*
3) *This Standard was developed by consensus, which is defined by* CSA Policy governing standardization — Code of good practice for standardization *as "substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity". It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this Standard.*
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   d) *rationale for the change.*

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Flameproof non-rail-bound diesel-powered machines for use in gassy underground coal mines

1 Scope

1.1 Inclusions

This Standard describes construction and test requirements for new non-rail-bound diesel-powered, self-propelled machines for use in gassy underground coal mines. It is supplementary to or amendatory of CSA M424.0 and CSA M424.2.

Note: *The working environment of gassy mines is characterized by the presence of methane gas and combustible dust.*

1.2 Exclusions

This Standard does not specify requirements for safety, other than those directly related to the risk of ignition which can lead to an explosion.

Braking system performance requirements and proof tests are not included in the scope of this Standard, except from the standpoint of the reduction of fire and explosion hazards.

Notes:

1) *See CSA M424.0 for general vehicle design, safety, and performance requirements.*
2) *See CSA M424.2 for diesel engine design, safety, and emissions requirements.*
3) *See CSA M424.3 for brake construction, stopping performance, and test requirements.*

1.3 Standard atmospheric conditions

The standard atmospheric conditions (relating to the explosion characteristics of the atmosphere) under which it may be assumed that the engine may be operated are:

a) temperature: –20 °C to 60 °C;
b) pressure: 80 kPa (0.8 bar) to 110 kPa (1.1 bar); and
c) air with normal oxygen content, approximately 21% v/v.

1.4 Terminology

In this Standard, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the standard.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.

Notes to tables and figures are considered part of the table or figure and may be written as requirements.