



CSA M424 and M421 standards update

OCTOBER 22, 2024

CSA Group

- Established in 1919
- Independent, not-for-profit Standards Development Organization (SDO)
- A leader in standards research, development, education and advocacy
- More than 1,000 committees focused on standards development
- 3,000 Standards and codes
- Member base of more than 10,000 volunteer experts
- 11 areas of focus for standards development
- Accredited by SCC in Canada and ANSI in USA
- Research

**Enhance the lives of
Canadians through
the advancement of
standards in the
public and private
sectors**

CSA OHS Current Mining Portfolio of Standards

- **CSA M424.0:22**, *Underground mining mobile equipment – General requirements*
- **CSA-M424.1:22**, *Flameproof non-rail-bound diesel-powered machines for use in gassy underground coal mines*
- **CSA-M424.2:22**, *Diesel-powered machines for use in non-gassy underground mines*
- **CSA M424.3:22**, *Braking performance - rubber tired, self propelled underground mining machines*
- **CSA M424.4:22**, *Self-propelled, electrically driven, non-rail-bound mobile machines for use in non-gassy underground mines*
- **CSA M421:23**, *Use of electricity in mines*
- **CSA M422:23**, *Fire-performance and antistatic requirements for conveyor belting*
- **CSA M427-M91 (R2021)**, *Fire-performance and antistatic requirements for ventilation materials*
- **CSA M430-90 (R2021)**, *Roof and rock bolts, and accessories*
- **G4-15 (R2020)**, *Steel wire rope for general purpose and for mine hoisting and mine haulage*

CSA M424 Series Status Updates

- **CSA-M424.0, *Underground Mining Mobile Equipment – General requirements***
 - Adoption with Canadian deviations of ISO 19296:2018
 - 1st Edition was published in March 2022
 - Standard is currently in maintenance mode
- **CSA-M424.1, *Flameproof non-rail-bound diesel-powered machines for use in gassy underground coal mines***
 - 3rd Edition was published in March 2022
 - Standard is currently in maintenance mode
- **CSA-M424.2, *Diesel-powered machines for use in non-gassy underground mines***
 - 3rd Edition was published in March 2022
 - Standard is currently in maintenance mode
- **CSA-M424.3, *Braking Performance - Rubber-Tired, Self-Propelled Underground Mining Machines***
 - 2nd Edition was Published in March 2022
 - 3d Edition is currently under development
 - Publication of 3rd edition is expected Q4 2025
- **CSA-M424.4, *Self-propelled, electrically-driven, non-rail-bound, mobile machines for use in underground non-gassy mines***
 - 1st Edition was Published in March 2022
 - 2nd Edition is currently under development
 - Publication of 2nd edition is expected Q4 2025



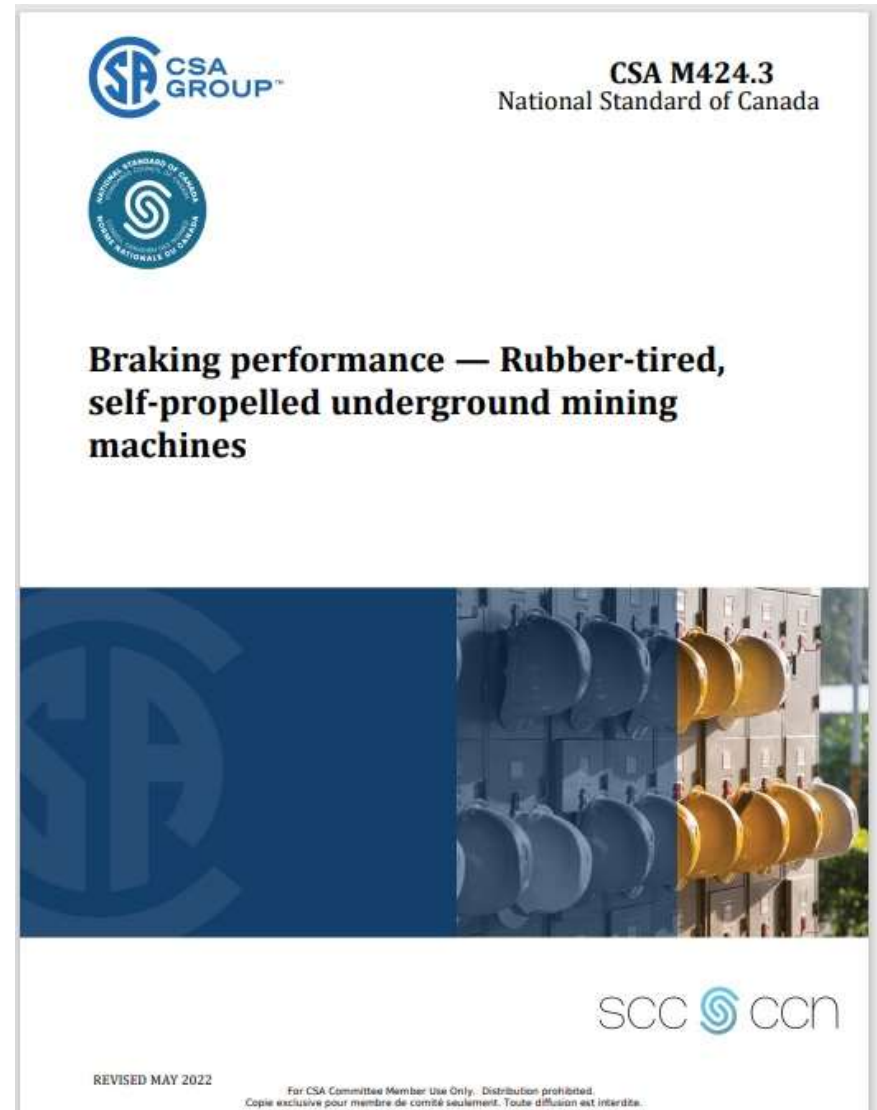
CSA M424 Underground Mining Mobile Equipment

Revision
2024 / 2025



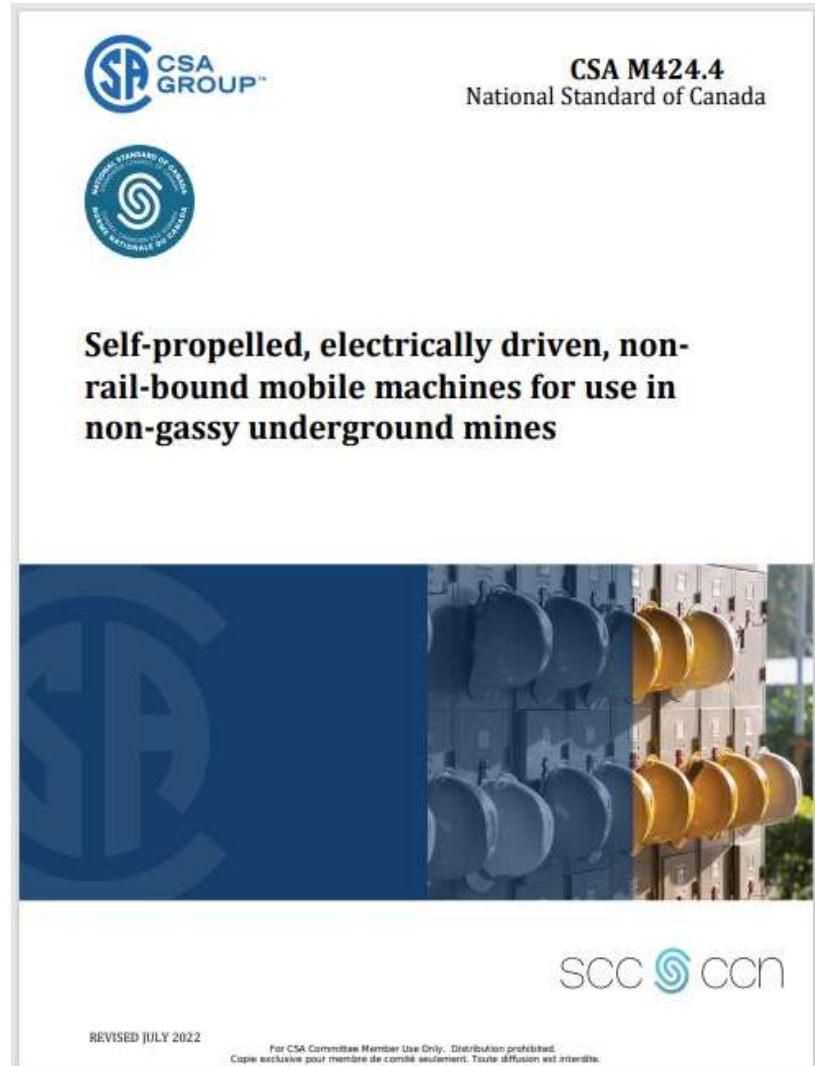
CSA M424.3 - Overview of Proposed Changes

- Potential modifications or additions to braking test procedures based on study conducted by Canmet on the level ground testing
- Potential alignment with other existing machine braking standard
- Inclusion of remote controlled and autonomous mobile machinery
- Requirements for maximum deceleration or jerk to improve operation safety



CSA M424.4 - Overview of Proposed Changes

- Revision of scope to include BEVs and Hybrid Machines.
- Addition of requirements for battery handling, transporting and storage practices
- Revision of the standard content to move hydrogen requirements to new proposed M424.5 for hydrogen fuel powered machines
- Details on proposed changes will be provided by M424.4 TSC



CSA M424.5 - Proposed New Standard

- New standard M424.5 addressing hydrogen fuel powered machines recently allocated to the M424 family
- Dedicated hydrogen standard for underground mining machines
- Transfer of existing hydrogen content from M424.4 to streamline M424.4.
- Development of new content for hydrogen handling and risk assessment.
- Hydrogen applications including fuel cells / hydrogen internal combustion



CSA M421

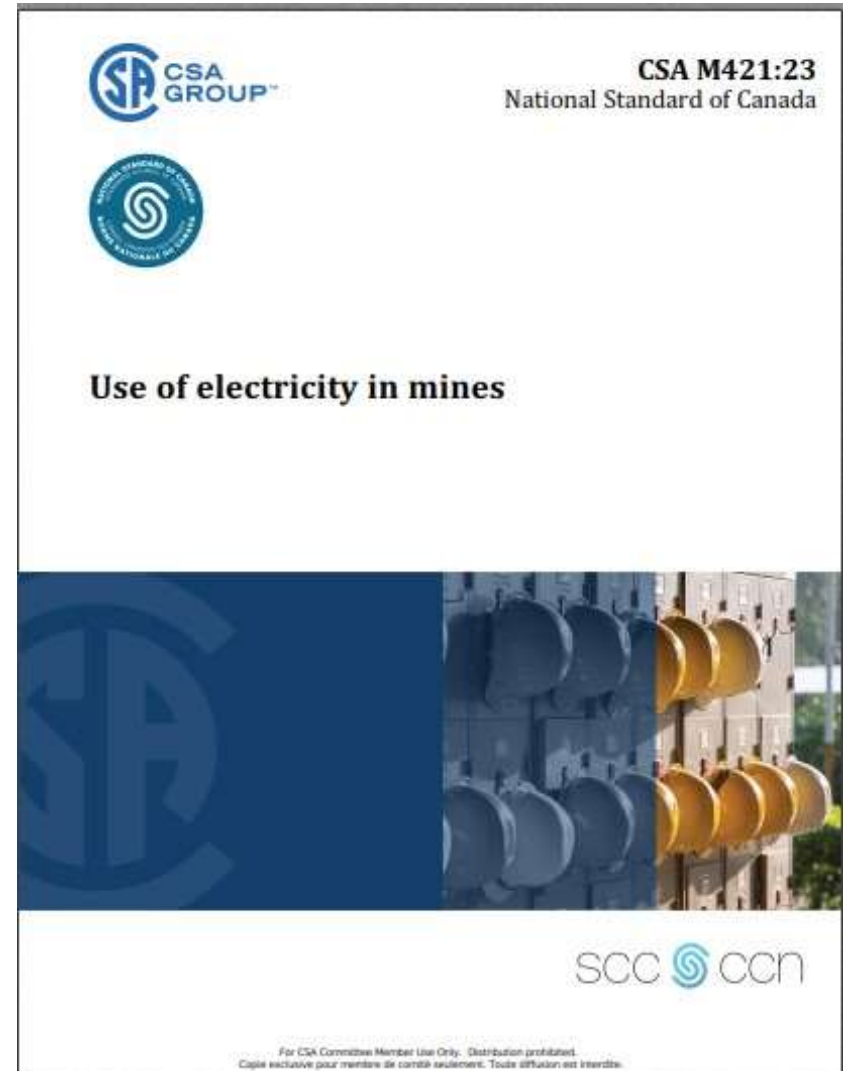
Use of Electricity in Mines

Revision
2024 / 2025



CSA M421 - Overview of Proposed Changes

- M421 scope establishes requirements for electrical work and electrical equipment operating, or intended to operate, at a mine.
- Establish dedicated section for electrical and controls requirements for mining hoists
- Address the requirements for BEV charger stations - harmonize the requirements of surface mining with underground mining equipment
- Clarification of portable generator and the grounding requirement including the alignment with the CE Code Part I
- General alignment with 2024 edition of CE Code Part I





Thank you.

Ana Andronescu, P.Eng, PMP
Project Manager, Worker and Public Safety

178 Rexdale Boulevard
Toronto ON, M9W 1R3, Canada

+1 416 747 4112
ana.andronescu@csagroup.org