

*Independent Laboratory
Part 6 Workshop*

Electrical Safety Division

*Testing and Evaluation
of Electrical Equipment*

September 9, 2004



Electrical Safety Division

Mission

To provide miners with a safe work environment, by ensuring equipment is safely designed for its intended use and to implement new technologies to address existing and emerging concerns.

Electrical Safety Division

- Electrical Equipment Group
- Intrinsic Safety Group
 - ✓ Electrical Engineers (15)
 - ✓ Electrical Engineering Technicians (7)
 - ✓ Office Automation Assistant

September 9, 2004

Electrical Safety Division



September 9, 2004

Division Responsibilities

- Product Approvals
- Technical Assistance
- Technical Projects
- Accident Investigations
- Litigation Support
- Regulatory Support
- Research Assistance
- Training

September 9, 2004

What does Part 6 Impact?

Approval types

Possible independent lab tests

Approval processing fees / time

Approval numbering

Part 6 Impacts 30CFR

	Description
Part 18	Electric Motor-driven Mine Equipment and Accessories
Part 18	Intrinsic Safety Evaluations and Approvals
Part 19	Electric Cap Lamps
Part 20	Electric Mine Lamps Other Than Standard Cap Lamps
Part 22	Portable Methane Detectors
Part 23	Telephones and Signaling Devices
Part 27	Methane-monitoring Systems

Product Evaluation

- Intrinsically safe circuits shall be incapable of releasing enough electrical or thermal energy to cause an ignition in a methane and air mixture.
- The surface temperature of enclosures and components of intrinsically safe circuits that could be exposed to coal dust shall not cause thermal ignition of a coal dust layer.

Product Evaluation

- All circuits are evaluated under the following conditions:
 - One independent fault
 - Normal operation
 - Two independent faults
- A Safety Factor on Energy is also applied

Product Evaluation

- Apply worst case circuit parameters as a normal connection scenario, such as
 - Opening
 - Shorting
 - Reverse polarity
 - Worst case tolerances
 - Worst case adjustments

Independent Lab Tests

- Methane Detector & Monitor Tests
- Temperature & Thermal Tests
- Protective Component Tests
- Spark Ignition Tests
- Explosion Tests
- Vibration Tests
- Impact Tests
- Drop Tests

September 9, 2004

Processing Fees

- MSHA approval fees could decrease, if...
 - Results of Testing and Evaluation performed by an Independent Laboratory are accepted by MSHA
- MSHA approval fees could increase, if...
 - Insufficient evaluation resulting in repeat or additional testing
 - Incorrect testing, repeat test (s) necessary

Processing Time

- MSHA approval time could decrease, if...
 - Results of Testing and Evaluation performed by an Independent Laboratory are accepted by MSHA
- MSHA approval time could increase, if...
 - Insufficient evaluation resulting in repeat or additional testing
 - Incorrect testing, repeat test (s) necessary

Part 6 Applies to

- New Approval applications
- Extension of Approval applications
- Revised Approval Modification Program (RAMP) applications

September 9, 2004



Approval Numbers

- If an independent laboratory performs one, some, or all of the evaluation or testing, the approval number will still have the MSHA approval number.
- The final rule does not require that manufacturers use the mark of the independent laboratory that tested and evaluated the product or its components. However, nothing in this final rule prohibits a manufacturer from using the mark of an independent laboratory if it chooses to do so, as long as it carries the MSHA mark as well.

How It All Works

Electrical Equipment Product Approval

**MSHA
Evaluation**

**MSHA
Testing**

**Ind. Lab
Testing**

**Ind. Lab
Evaluation**

September 9, 2004



Electrical Safety Division

Take Advantage of Testing Consultations
with the Approval & Certification Center
Engineers and Technicians

Contact the Approval & Certification Center

304-547-0400

September 9, 2004

Questions?

Electrical Safety Division

September 9, 2004