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ESA Electrical Safety Mining Services Group **Tech Brief**

Use of MINE POWER FEEDER Cables intended as permanent wiring methods in Ontario Mines

What's the Issue?

MPF cable offers some significant benefits over traditional wiring methods in underground mines as a permanent wiring method. Some of its benefits are:

- Higher ampacities per circular mil of copper than permitted for Teck cable;
- Lower weight for equivalent ampacity – a health and safety issue in the underground environment.
- Ground conductor monitoring – ensures a reliable path to ground;
- Shielding – provides additional Ground Fault protection relative to traditional non-shielded steel armoured Teck cable.
- Elimination of steel/aluminum armoured (Teck90) cable – aluminum is not a suitable armour material in some mines and steel armour equates to cost and delivery premiums.

OESC Rule 4-038 already recognizes the use and application of PPC for permanent installations short of its use for fixed wiring of structures. MPF, a definite-purpose PPC, falls into this application and is further supported by OESC 2-034 – Use of Approved Equipment: “approved electrical equipment of a kind or type and rating approved for the specific purpose for which it is to be employed.”

BACKGROUND:

In February 2004, the Canadian Standards Association published the first edition of Standard CAN/CSA C22.2 No. 96.1-04, Mine Power Feeder Cables.

This Standard has been adopted under the Canadian Electrical Code Part 2 series of electrical wiring products standards as a companion to CAN/CSA C22.2 No. 96-03, Portable Power Cables.

As stated in the Scope of C22.2 No. 96.1-04, MPF covers “cables normally used for power distribution in stationary or semi-stationary applications that are covered by CAN/CSA-M421 and the Canadian Electrical Code, Part I” for cables with voltage levels of 5, 8, 15, and 25 kV rated at 100% and 133% insulation levels.

Mine Power Feeder Cable (MPF)

What is it?

MPF is a specific type of portable power cable (PPC) intended for use as permanent or semi-permanent installations under CAN/CSA M421, Use of Electricity in Mines and the Canadian Electrical Code, Part 1.

Constructed under the requirements of the Standard, MPF incorporates the proven ruggedness of PPC with the added benefits of higher ampacity ratings and ease of installation.

MPF is not intended to replace specialty cables such as “riser Teck” for shaft cables, but finds it’s niche in the lateral feeder runs from the level or

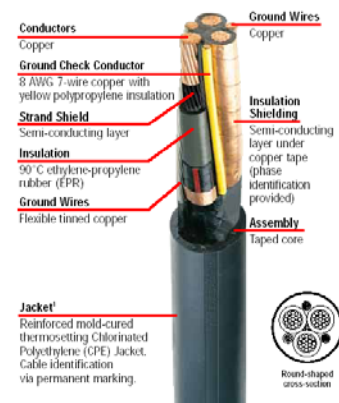
station distribution to the mine power centres and may be installed in boreholes. It is also rated for aerial installation, in ducts or direct-buried.

MPF is available in various constructions meeting the requirements of the Standard: Shielded or non-shielded, with ground conductor monitoring or not, with CPE or PVC jacket, to name a few.

Conditions of Use

Both the Ontario Ministry of Labour and the Electrical Safety Authority have agreed to the use of MPF cable as a permanent wiring method in mines, based on the following minimum requirements:

- The cable must be shielded, and
- Ground fault protection be provided as prescribed by M421-93 clause 3.5.5, and
- Incorporate ground conductor monitoring as prescribed by M421-93 clause 3.5.6, and
- Cable support as prescribed by OESC 12-510.



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