

GROUNDING AND BONDING OF METAL MAGAZINES

30 CFR 56.6132(b) Metal magazines shall be equipped with electrical bonding connections between all conductive portions so the entire structure is at the same electrical potential. Suitable electrical bonding methods include welding, riveting, or the use of securely tightened bolts where individual metal portions are joined. Conductive portions of nonmetal magazines shall be grounded.

This excerpt from the Mine Safety and Health Administration (MSHA) regulations for explosives storage magazines is difficult to interpret without an understanding of the underlying objectives and past enforcement practices. A review of the MSHA comments that accompanied the notice of proposed rulemaking for this final rule can provide such an insight.

MSHA standards have required magazines to be “electrically bonded and grounded if constructed of metal” since the early 1970’s. The intent of the rule has been to prevent the internal build-up of static electrical energy that could detonate the explosives material stored in a magazine. It should be noted that bonding and grounding is not specified as a part of a lightning protection system.

A Bureau of Mines research contract report, “Evaluation of Surface Storage Facilities for Explosives, Blasting Agents and Other Explosive Material,” June 1, 1983, concluded that metal magazines resting on the earth will likely dissipate static electricity without a grounding rod and do not have to be grounded, but recommended that metal portions of nonmetal magazines be bonded together and grounded to ensure that all metal portions are at the same electrical potential.

Suitable electrical bonding methods include welding, riveting, or the use of securely tightened bolts where individual metal portions are joined. Past enforcement practices have accepted metal magazines of welded or bolted construction that utilize welded heavy-duty metal hinges as being suitably bonded. The hinges, when constructed of heavy conductive metal components, form an electrically conductive path, which assures electrical continuity and the capacity to safely conduct any current likely to be imposed.

Based on the underlying objectives and past MSHA enforcement practices for bonding and grounding of magazines, Type 1 and Type 2 Explosives Storage Magazines constructed by Tread Corporation meet the requirements of this rule.

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