

Provincial Railway Standards

RTS 8000 Grounding and Bonding

Provincially regulated railways where flammable liquids or compressed flammable gases are transferred between rail cars and stationary bulk storage facility or a highway cargo tank must be properly grounded and bonded in accordance with these standards in order to prevent electric sparks.

Such facilities must have in place and follow specific operational rules, in accordance with these standards, for the unloading and loading of flammable liquids or compressed flammable gases and for the securement of cars containing such liquids or gases.

Application:

Applies to “transfer of flammable liquids or compressed flammable gases between a unit of railway rolling stock and a stationary bulk storage facility or a highway cargo tank”.

Transfer of Dangerous Goods

A provincially regulated railway operator may transfer dangerous goods between a unit of rolling stock and a stationary bulk storage facility or a highway cargo tank if the designated track meets the following requirements:

- a) An electrical connection must be established between the section of railway track on which any unit of rolling stock stands and the piping system that is to be used for transfer a permanent electrical connection that consists of at least 2 wires, each of which
 - i) is made of flexible copper or other corrosion resistant material, and
 - ii) has a resistance of not more than 1.33 ohms/km,
- b) Bonds sections of railway track on which any unit of rolling stock stands at each rail joint in the section and cross-bonds the rails of that section in at least two (2) places;
- c) Ground the section of railway track that is bonded as required by clause (b) with at least two (2) ground rods that are
 - i) at least 2.5 metres (8.25 feet) long,
 - ii) at least 15.8 millimetres (5/8 inch) in diameter, and
 - iii) connected to each other and to the section of railway track with 2 wires between each point of connection, each of which having a resistance of not more than 1.33 ohms/km between each place where the section of railway track is grounded;

- d) Grounds all non-current carrying components of the piping system that is to be used for the transfer, including tanks, pumps and stands; and installs insulated rail joints so as to electrically separate the section of railway track on which any unit of rolling stock stands from all other railway track.
- e) Install insulated rail joints so as to electrically separate the section of railway track on which any unit of rolling stock stands from all other railway track.

It is recommended that permanent bonding and grounding must be installed and inspected in accordance with the American Railway Engineering and Maintenance of Way Association, Communications and Signals Manual of Recommended Practice (AREMA).

A resistance earth test must be conducted every 2 years and the test results must be retained on file for a period of 3 years. Test records must be made available for inspection by a railway inspector on reasonable request.

Additional Grounding Measures

Where the grounding required is difficult to implement owing to local conditions, the railway company shall take such additional measures, including the installation of insulated joints in the piping system, the provision of additional ground rods or the provision of additional bonds between the piping system and the units of rolling stock, as may be required to ground the section of railway track.

Tanks with Cathodic Protection

Where the tanks of a piping system have cathodic protection, the tanks shall be grounded in a manner that does not interfere with the cathodic protection.

Insulated Rail Joints

Insulated rail joints that are installed in accordance with *Transfer of Dangerous Goods (e)* must not be bridged by rolling stock or any other means during the transfer operations.

Transfer of Dangerous Goods near Transmission Lines

No transfer of dangerous goods between a unit of rolling stock and a stationary bulk storage that is constructed after the coming into force of this Standard may be made within 150 metres of a power transmission line that has a voltage of 360 kV or more or within 75 metres of a power transmission line that has a voltage of 230 kV to 259 kV.

Rolling Stock must be Grounded

Rolling stock and highway cargo tanks must be grounded

- a) Temporary bond connected between the piping system with a pull off connector attached so as to be in electrical contact with the rolling stock or highway rolling cargo tank, and
- b) Before the dome or bottom loading valves are opened and must remain in place until the transfer is complete and all valves and dome covers have been closed and secured.