Guidelines Respecting the Adjunct of Safety Equipment on CTC Specification 112 and 114 Tank Cars

SHORT TITLE
1. These Guidelines may be cited as Specification 112 and 114 Tank Cars Guidelines.

INTERPRETATION
2. In these Guidelines,
   “AAR” means the Association of American Railroads;
   “ASTM” means the American Society for Testing Materials;
   “Company” means a railway company subject to the jurisdiction of the provincial Ministry of Transportation and Infrastructure;
   “DOT” means the Department of Transportation of the United States;
   “double shelf coupler” means a special coupler that incorporates a restraint system designed to resist vertical disengagements and meets the specifications set out in the schedule;
   “Specification 112 and 114 tank cars” means the pressure tank cars whose tanks are subject to Subpart C of Part 79 of the Regulations for the Transportation of Dangerous Commodities by Rail;
   “tank head puncture resistance system” means a protective head shield or a full tank head jacket that meets the specifications set out in the schedule;
   “thermal protection system” means a thermal protection system that meets the specifications and performance standards set out in the schedule for preventing the release of any of the contents of a Specification 112 and 114 car except through the safety relief valve.

APPLICATION
3. Subject to section 5, no company shall accept for transportation,
   (a) after March 31st, 1979, any loaded CTC or DOT Specification 112 and 114 tank car that is not equipped with double shelf couplers;
   (b) after June 30th, 1981, any loaded CTC or DOT Specification 112 and 114 tank car that is not equipped with a tank head puncture resistance system; and
   (c) after June 30th, 1981, any CTC or DOT Specification 112 and 114 tank car that is loaded with a flammable gas such as propane, butane or vinyl chloride and is not equipped with a thermal protection system.
IDENTIFICATION

4. Every CTC or DOT Specification 112 and 114 tank car that meets the requirements of these Guidelines with respect to tank head puncture resistance system and thermal protection shall be identified by stencilling in accordance with section 5 of the schedule.

EXCEPTIONS

5. (1) A company may transport, offer and receive in interchange, while on route to destination, any loaded CTC or DOT Specification 112 and 114 tank car that does not meet a requirement of these Guidelines, if the tank car was billed before the applicable date specified in section 3.

(2) A company may transport any empty CTC or DOT Specification 112 and 114 tank car that is not equipped with required double shelf couplers to the premises of the owner of the tank car or to such other destination as the owner may designate, if the tank car is in transit or offered for transportation before July 1st, 1979; or

(b) not equipped with a required tank head puncture resistance system and thermal protection to the premises of the owner of the tank car or to such other destination as the owner may designate, if the tank car is in transit or offered for transportation before October 1st, 1981.

(3) A company may transport any DOT Specification 112 and 114 tank car that has been manufactured or modified as specified in the Special Requirements for Specifications 112 and 114 Tank Cars, Section 179/05 of Part 179 Title 49 Code of Federal Regulations (of the United States of America).

SPECIFICATIONS FOR SAFETY EQUIPMENT

Coupler Vertical Restraint

1. Every CTC Specification 112 and 114 tank car shall be equipped with double shelf couplers capable of sustaining, when coupled to any other cars, vertical loads of at least 90718.474 kg (200,000 pounds) applied in upward or downward directions in combination with buff loads of 907.185 kg (2,000 pounds), without disengagement or material failure.

Tank Head Puncture Resistance System

2. (1) Every CTC Specification 112 and 114 tank car shall be equipped, at each end, with a tank head puncture resistance system comprising either a protective head shield or a full tank head jacket, enabling it to sustain, without loss of contents, coupler-to-tank head impacts with the area of the head shield as described in subsection (2) at relative car speeds of 28.968 km (18 miles) per hour when

(a) the weight of the impact tank car is at least 119294.793 kg (263,000 pounds);

(b) the impacted tank car is coupled to one or more “backup” cars that have a total weight of at least 217724.338 kg (480,000 pounds) and the hand brakes are applied on the first car; and

(c) the impacted tank car is pressurized to at least 689.746 kPa (100 psi).

(2) The protective head shield shall

(a) be at least 12.7 mm (1/2 inch) thick and made from steel produced in accordance with Specifications A242, A572-GR50, A515-70 and A516-GR70 published by the ASTM or Specification TC-128B published by the AAR or any equivalent material approved by the Railway Transport Committee of the Canadian Transport Commission;
(b) be in the shape and size of the lower half of the head of the tank car or in the shape of a trapezoid with the following dimensions:
   (i) a minimum width at the top of the centre sill of 1371.6 mm (four feet six inches), measured in a straight line between the extreme edges,
   (ii) a minimum width at the top of the shield of 2743.2 mm (nine feet), measured in a straight line between the extreme edges and for cars with diameters less than 2743.2 mm (nine feet), the width of the shield must not extend beyond the outermost portion of the head and be not less than 76.2 mm (three inches) from the outermost point of the head,
   (iii) the top corners of the shield rounded to a minimum radius of 228.6 mm (nine inches),
   (iv) the bottom corners of the shield rounded to a minimum radius of 76.2 mm (three inches),
   (v) all inside edges of the shield chamfered to a minimum of 3.175 mm (1/8 inch), and
   (vi) a minimum height of 1371.6 mm (four feet six inches);
(c) be located so that the bottom of the shield touches the top of the centre sill;
(d) be shaped to the contour of the tank shell head, utilizing a minimum of three vertical bend lines;
(e) meet the impact test requirements of paragraph 24.5 in the “Specifications for Tank Car” Standard, effective October 1, 1972 published by the AAR, and, on testing, the protective head shield and its supporting structure
   (i) shall not sustain visible permanent damage or deformation such as fractures, cracks, bends and dents, and
   (ii) shall have adequate strength to remain attached and functionally unimpaired during the normal operations; and
(f) meet all of the workmanship requirements of the "Specifications for Design, Fabrication and Construction of Freight Cars" dated September 1, 1964 and published by the AAR.

(3) The full tank head jacket shall be at least 12.7 mm (1/2 inch) thick and made from steel produced in accordance with Specifications A242, A 572-GR50, A 515-70 and A 516-GR70 published by the ASTM or Specification TC-128B published by the AAR or any equivalent material approved by the Railway Transport Committee of the Canadian Transport Commission.

**Thermal Protection System**

3. (1) Every CTC Specification 112 and 114 tank car loaded with flammable gas shall be equipped with a thermal protection system that prevents the release of any of the car's contents, except release through the safety relief valve, when subjected to
   (a) a pool fire for 100 minutes; and
   (b) a torch fire for 30 minutes.

(2) The thermal protection system shall consist of
   (a) a steel jacketed insulation, using a minimum of an 11-gauge steel jacket, except for the tank heads, that complies with the requirements of subsection 2(3); or
   (b) a non-jacketed insulation system, applied in conjunction with the protective head shield described in subsection 2(2).
Safety Relief Valve

4. (1) Every CTC Specification 112 and 114 tank car shall be equipped with safety relief valves that meet the requirements of Appendix A of the 1977 Edition of the “Specification for Tank Cars” published by the AAR.

(2) The relieving or discharge capacity of a tank shall be calculated in accordance with section A8.02 of Appendix A referred to in subsection (1), for compressed gases in non-insulated tanks.

Stencilling

5. Every CTC or DOT Specification 112 and 114 tank car that meets the requirements of these Guidelines with respect to a tank head puncture resistance system and a thermal protection, shall be stencilled as follows:

(a) when equipped with a thermal protection system enclosed in a steel jacket, the letter “J” shall be substituted for the letter “A” in the specification marking;

(b) when equipped with a non-jacketed thermal protection system, the letter “T” shall be substituted for the letter “A” in the specification marking; and

(c) when equipped with a tank head puncture resistance system with no thermal insulation and the tank car may be used in anhydrous ammonia service, the letter “S” shall be substituted for the letter “A” in the specification marking.