

tank (inner vessel) constructed to withstand a burst pressure of 300 psig and fabricated of ASTM A 240/A 240M, Type 304 or 304L stainless steel; the outer jacket shell (outer vessel) is typically constructed of carbon steel having a tensile strength greater than 70,000 psig. See 49 C.F.R. §§ 179.401-1 and 179.400-8(d), respectively. The inner stainless steel vessel is designed with a minimum plate thickness, after forming, of 3/16 inch, and the outer shell thickness, after forming, may not be less than 7/16 inch. Additionally, the minimum wall thickness, after forming, of the outer jacket heads may not be less than ½ inch and must be made from steel specified in §179.16(c) for tank head puncture resistance. The rail tank car is manufactured with an insulated annular space holding a vacuum between the two pressure vessels. This vacuum area and the insulation on the outer wall of the inner tank significantly reduce the rate of heat transfer from the atmosphere to the liquid inside the tank car, thus minimizing the heating of the cryogenic (i.e., refrigerated) liquid in the tank car while being transported. Other safety features of the tank car include protection systems for the piping between the inner and outer tanks, and multiple pressure relief devices.

Regulations controlling the movement of LNG in the DOT-113C120W packaging would be the same as those that apply to the transportation of other cryogenic liquids, including ethylene. Regulatory requirements governing these operational practices appear in 49 C.F.R Part 174 and 49 C.F.R. § 173.319 which is administered by the FRA. In addition, the AAR has issued Circular OT-55, which sets forth Recommended Railroad Operating Practices for Transportation of Hazardous Materials meeting the AAR's key train definition. Rail hazmat carriers require compliance with the standard through AAR Interchange Rules. The OT-55 operational controls are included in the special permit. The proposed special permit will comply with all applicable provisions in this standard if the special permit is granted.⁵ The incorporation of OT-55 into the proposed special permit allows authorized government entities to enforce the provisions therein. The Circular OT-55Q will be included in this docket PHMSA-2019-0100 at www.regulations.gov.

As the AAR explained in a comment to the September 14, 2017 Federal Register notice of ETS's special permit application, AAR Circular OT-55 (currently designated as version Q) calls for operational controls for trains carrying certain quantities of hazardous materials, such as LNG in train configurations containing 20 or more loaded tank cars, which are sufficient to address the risks associated with moving LNG in DOT-113 tank cars. The operational controls in OT-55Q for the transport of hazardous materials address, among other things:

- “Key Trains” are 20 carloads or intermodal portable tank loads of any combination of hazardous materials.
- “Key Trains,” including LNG-carrying unit trains, are subject to a maximum speed restriction of 50 mph;

⁵ Fronczak, Robert E. Robert E. Fronczak to Record Center Pipeline and Hazardous Materials Safety Administration Department of Transportation, 2017. Letter. *Re: Special Permit Application Number 20534-N*. October 13, 2017.