§ 154.435  

SEMI-MEMBRANE TANKS  

§ 154.435  General.  

(a) The design of a semi-membrane tank, the supporting insulation for the tank, and the supporting hull structure for the tank must be specially approved by the Commandant (CG–522).  

(b) A semi-membrane tank must be designed to meet:  

(1) § 154.425 through § 154.432;  

(2) § 154.437 through § 154.440; or  

(3) § 154.444 through § 154.449.  


§ 154.436  Design vapor pressure.  

The $P_o$ of a semi-membrane tank must not exceed 24.5 kPa gauge (3.55 psig) unless special approval by the Commandant (CG–522) allows a $P_o$ between 24.5 kPa gauge (3.55 psig) and 69 kPa gauge (10 psig).  


§ 154.437  General.  

An independent tank type A must meet § 154.438 through § 154.440.  

§ 154.438  Design vapor pressure.  

(a) If the surface of an independent tank type A are mostly flat surfaces, the $P_o$ must not exceed 69 kPa gauge (10 psig).  

(b) If the surfaces of an independent tank type A are formed by bodies of revolution, the design calculation of the $P_o$ must be specially approved by the Commandant (CG–522).  


§ 154.439  Tank design.  

An independent tank type A must meet the deep tank standard of the American Bureau of Shipping published in “Rules for Building and Classing Steel Vessels”, 1981, and must:  

(a) Withstand the internal pressure determined under § 154.407;  

(b) Withstand loads from tank supports calculated under §§ 154.470 and 154.471; and  

(c) Have a corrosion allowance that meets § 154.412.  

[CGD 74–289, 44 FR 26009, May 3, 1979, as amended by CGD 77–069, 52 FR 31630, Aug. 21, 1987]  

§ 154.440  Allowable stress.  

(a) The allowable stresses for an independent tank type A must:  

(1) For tank web frames, stringers, or girders of carbon manganese steel or aluminum alloys, meet $\sigma_y/2.66$ or $\sigma_c/1.33$, whichever is less; and  

(2) For other materials, be specially approved by the Commandant (CG–522).  

(b) A greater allowable stress than required in paragraph (a)(1) of this section may be specially approved by the Commandant (CG–522) if the equivalent stress ($\sigma_e$) is calculated from the formula in Appendix A of this part.  

(c) Tank plating must meet the American Bureau of Shipping’s deep tank standards, for an internal pressure head that meets § 154.439(a), published in “Rules for Building and Classing Steel Vessels”, 1981.  


§ 154.444  General.  

An independent tank type B must be designed to meet §§ 154.445 through 154.449.  

§ 154.445  Design vapor pressure.  

If the surfaces of an independent tank type B are mostly flat surfaces, the $P_o$ must not exceed 69 kPa gauge (10 psig).  

§ 154.446  Tank design.  

An independent tank type B must meet the calculations under § 154.448.  

§ 154.447  Allowable stress.  

(a) An independent tank type B designed from bodies of revolution must have allowable stresses determined by the following formula:  

3See Appendix B for stress analyses definitions.