

Abstract

This method for evaluating toughness reliability of a tank includes a step for acquiring a required fracture toughness value on the basis of a change over time in a stress intensity factor and a design life of the tank, a step for acquiring a material transition temperature from a Charpy transition curve that is based on a Charpy impact test of the tank, a step for acquiring a fracture toughness value on the basis of a fracture toughness test of the tank material, a step for acquiring a design tolerance condition on the basis of a relationship between a fracture toughness value at each test temperature and a temperature index which is the inverse of a difference between each test temperature and a transition temperature, a step for acquiring a required temperature index on the basis of the design tolerance condition and the required fracture toughness value, a step for acquiring a tolerance Charpy transition curve having a requirement transition temperature that is based on the required temperature index, and a step for evaluating the toughness reliability of the tank material on the basis of the tolerance Charpy transition curve.

(Fig. 2)