§ 54.03–5  General.

(a) Requirements for ferritic steels, high alloy steels, and heat treated ferritic steels are contained in §§ 54.25–10, 54.25–15, and 54.25–20 respectively of this subchapter.

(b) Requirements for toughness testing of material product forms and weldments (including weld procedure qualification and production toughness tests) are contained in subpart 54.05.

(c) Materials suitable for a given minimum service temperature may be used in warmer service. Steels differing in chemical composition, mechanical properties, or heat treatments from those specified may be specially approved by the Commandant. Similarly, aluminum alloys and other nonferrous materials not intended to be covered by these sections may be specially considered by the Commandant for service at any low temperature.

§ 54.05–5  Toughness test specimens.

(a) Charpy V-notch impact tests. Where required, Charpy V-notch tests shall be conducted in accordance with ASTM Specification E 23 (incorporated by reference, see § 54.01–1), “Notched Bar Impact Testing of Metallic Materials”, using the Type A specimen shown in Figure 4 of the specification. Special attention is drawn to the fact that the Charpy Keyhole and U-notch specimens are not acceptable substitutes for the Charpy V-notch specimen and shall not be used to qualify materials within the scope of this subpart. Each set of Charpy impact tests shall consist of three specimens. For materials ⅛-inch thick or less, the largest possible Charpy specimens for that thickness shall be cut centered at the material’s mid-thickness. For materials thicker than ⅛-inch, full size Charpy specimens shall be cut centered at a location as near as practicable to a point midway between the material’s surface and half-thickness. Except where otherwise specified, transversely oriented specimens must be used. When longitudinally oriented specimens are used, the required energy values may not be less than 1.5 times the values required for transversely oriented specimens. In all cases the notch shall be cut normal to the material’s surface. Test specimens shall be taken at least one “t” from any heat treated edge (where “t” is the material’s nominal thickness).
§ 54.05–10 Certification of material toughness tests.

(a) Plate material. The manufacturer of plates may certify such material, provided it has been given an appropriate heat-treatment, by reporting the results of tests of one set of Charpy impact specimens or of two drop weight specimens.