
Each cargo hose must pass a hydrostatic pressure test at ambient temperature of at least one and a half times its specified maximum working pressure but not more than two-fifths its bursting pressure.

**Materials**

$154.605$ Toughness test.

(a) Each toughness test under §§154.610 through 154.625 must meet Subpart 54.05 of this chapter.

(b) If subsize test specimens are used for the Charpy V-notch toughness test, the Charpy V-notch energy must meet Table 54.05–20 (a) of this chapter.

$154.610$ Design temperature not colder than $0$ °C (32 °F).

Materials for cargo tanks for a design temperature not colder than $0$ °C (32 °F) must meet the following:

(a) The tank materials must meet §§54.25–1 and 54.25–3 of this chapter.

(b) Plates, forgings, rolled and forged bars and shapes must be carbon manganese steel or other material allowed under §§154.615, 154.620, and 154.625.

(c) Plates must be normalized or quenched and tempered and where the thickness exceeds $20$ mm (0.787 in.), made with fine grain practice, austenitic grain size of five or finer. A control rolling procedure may be substituted for normalizing if specially approved by the Commandant (CG–522).

For integral and independent type C tanks, the American Bureau of Shipping’s grade D not exceeding $20$ mm (0.787 in.) in thickness, and Grade E hull structural steel are allowed if the steel meets §54.05–10 of this chapter.

(d) The tensile properties under paragraph (a) of this section must be determined for:

(1) Each plate as rolled; and

(2) Each five short ton batch of forgings, forged or rolled fittings, and forged or rolled bars and shapes.

(f) The specified yield strength must not exceed $637$ MPa (92.43 Ksi) and when it exceeds $490$ MPa (71.10 Ksi), the hardness of the weld and the heat affected zone must be specially approved by the Commandant (CG–522).

(g) The Charpy V-notch impact energy must be determined for:

(1) Each plate as rolled; and

(2) Each five short ton batch of forgings, forged or rolled fittings, and forged or rolled bars and shapes.

(h) The orientation and required impact energy of a $10$ mm × $10$ mm (0.394 in. × 0.394 in.) Charpy V-notch specimen must be:

(1) For plates: transverse specimen and $27.4$ J (20 ft-lbs); and

(2) For forgings, forged and rolled fittings and rolled and forged bars: longitudinal specimen and $41.1$ J (30 ft-lbs).

(i) The test temperature of the Charpy V-notch specimens is as follows:

<table>
<thead>
<tr>
<th>Material Thickness</th>
<th>Test Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>$t \leq 20$ mm (0.788 in.)</td>
<td>$0$ °C (32 °F)</td>
</tr>
<tr>
<td>$20 &lt; t \leq 30$ mm (1.182 in.)</td>
<td>$-20$ °C (4 °F)</td>
</tr>
<tr>
<td>$30 &lt; t \leq 40$ mm (1.576 in.)</td>
<td>$-40$ °C (40 °F)</td>
</tr>
</tbody>
</table>


$154.615$ Design temperature below $0$ °C (32 °F) and down to $-55$ °C (−67 °F).

Plates, forgings, forged or rolled or forged bars and shapes for cargo tanks and secondary barriers for a design temperature below $0$ °C (32 °F) and down to $-55$ °C (−67 °F) must meet §54.25–10 of this chapter.

$154.620$ Design temperature below $-55$ °C (−67 °F) and down to $-165$ °C (−265 °F).

Plates, forgings and forged or rolled fittings, and rolled, forged or extruded bars and shapes for cargo tanks, secondary barriers, and process pressure vessels for a design temperature below $-55$ °C (−67 °F) and down to $-165$ °C (−265 °F) must:

(a) Meet §54.25–10(b)(2), §54.25–15, or §54.25–20 of this chapter; or