§ 54.05–17 Test plates shall be prepared for each 165 feet (50 meters) of production butt type welds.

§ 54.05–17 Weld toughness test acceptance criteria.

(a) For Charpy V-notch impact tests the energy absorbed in both the weld metal and heat affected zone impact tests in weld qualification and production shall be:

(1) For weld metal specimens, not less than the transverse values required for the parent material.

(2) For heat affected zone specimens, when the specimens are transversely oriented, not less than the transverse values required for the parent material.

(3) For heat affected zone specimens, when the specimens are longitudinally oriented, not less than 1.5 times the transverse values required for the parent material.

(b) For drop-weight tests both specimens from each required set shall exhibit a no-break performance.


§ 54.05–20 Impact test properties for service of 0 °F and below.

(a) Test energy. The impact energies of each set of transverse Charpy specimens may not be less than the values shown in table 54.05–20(a). Only one specimen in a set may be below the required average and the value of that specimen must be above the minimum impact value permitted on one specimen only. See § 54.05–5(c) for retest requirements.

<table>
<thead>
<tr>
<th>Size of specimen</th>
<th>Minimum impact value required for average of each set of 3 specimens foot-pounds</th>
<th>Minimum impact value permitted on one specimen only of a set foot-pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 x 10 mm ......</td>
<td>20.0</td>
<td>13.5</td>
</tr>
<tr>
<td>10 x 7.5 mm ......</td>
<td>16.5</td>
<td>11.0</td>
</tr>
<tr>
<td>10 x 5 mm .......</td>
<td>13.5</td>
<td>9.0</td>
</tr>
<tr>
<td>10 x 2.5 mm ......</td>
<td>10.0</td>
<td>6.5</td>
</tr>
</tbody>
</table>

1 Straight line interpolation for intermediate values is permitted.

(b) Transversely oriented Charpy V-notch impact specimens of ASTM A 203 nickel steels must exhibit energies not less than the values shown in § 54.05–20 (a). Requirements for 9 percent nickel steels are contained in § 54.25–20. Other nickel alloy steels, when specially approved by the Commandant, must exhibit a no-break performance when tested in accordance with the drop weight procedure. If, for such materials, there are data indicating suitable correlation with drop-weight tests, Charpy V-notch tests may be specially considered by the Commandant in lieu of drop-weight tests. If the drop-weight test cannot be performed because of material thickness limitations (less than one-half inch), or product shape, or is otherwise inapplicable (because of heat treatment, chemistry, etc.) other tests or test criteria will be specified by the Commandant.

(c) Where sufficient data are available to warrant such waiver, the Commandant may waive the requirements for toughness testing austenitic stainless steel materials. Where required, austenitic stainless steels are to be tested using the drop-weight procedure and must exhibit a no-break performance. Where data are available indicating suitable correlation of Charpy V-notch results with drop-weight NDT or no-break performance, Charpy V-notch tests may be specially considered by the Commandant in lieu of dropweight tests. If the dropweight test cannot be performed because of material thickness limitations (less than one-half inch), or product shape, or is otherwise inapplicable (because of heat treatment, chemistry, etc.) other tests and/or test criteria will be specified by the Commandant.


§ 54.05–25 [Reserved]

§ 54.05–30 Allowable stress values at low temperatures.

(a) The Coast Guard will give consideration to the enhanced yield and tensile strength properties of ferrous and nonferrous materials at low temperature for the purpose of establishing allowable stress values for service temperature below 0 °F.
(b) The use of such allowable stress values must be specially approved by the Coast Guard for each application. Further information may be obtained by writing to the Commandant (CG–ENG), Attn: Office of Design and Engineering Systems, U.S. Coast Guard Stop 7509, 2703 Martin Luther King Jr. Avenue SE., Washington, DC 20593.

(c) Submittals must include information and calculations specified by the U.S. Coast Guard, Office of Design and Engineering Standards (CG–ENG) to demonstrate that the allowable stress for the material cannot be exceeded under any possible combination of vessel loads and metal temperature.


§ 54.10–5 Maximum allowable working pressure (reproduces UG–98).

(a) The maximum allowable working pressure for a vessel is the maximum pressure permissible at the top of the vessel in its normal operating position at the designated coincident temperature specified for that pressure. It is the least of the values found for maximum allowable working pressure for any of the essential parts of the vessel by the principles given in paragraph (b) of this section and adjusted for any difference in static head that may exist between the part considered and the top of the vessel. (See appendix 3 of section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1.)

(b) The maximum allowable working pressure for a vessel part is the maximum internal or external pressure, including the static head hereon, as determined by the rules and formulas in section VIII of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 54.01–1) except as noted otherwise in this subpart.


§ 54.10–5 Maximum allowable working pressure (reproduces UG–98).