

## **ASME P-Numbers for Base Metals in Welding & Brazing Procedure**

To reduce the number of welding and brazing procedure qualifications required base metals have been assigned P-Numbers by the ASME BPVC. Ferrous metals which have specified impact test requirements have been assigned Group Numbers within P-Numbers.

These assignments have been based on comparable base metal characteristics, such as:

- Composition
- Weldability
- Brazeability
- Mechanical Properties

Indiscriminant substitution of materials in a set of P-Numbers or Group Numbers may lead to problems or potentially failures. Engineering assessment is necessary prior to a change in materials.

When a base metal with a UNS number Designation is assigned a P-Number, then a base metal listed in a different ASME material specification with the same UNS number shall be considered that P-Number.

The table below is a guide and is for instructive purposes only. Anyone specifying materials or requirements should refer directly to the ASME Boiler and Pressure Vessel Code to specify materials, P-Numbers, procedures, or other requirements and not rely on the table below. The table below is only a rather incomplete and approximate summary of ASME data.

P-Numbers	Base Metal (Typical or Example)
<b>1</b>	Carbon Manganese Steels (four Group Numbers)
<b>2</b>	Not Used
<b>3</b>	Half Molybdenum or half Chromium, half Molybdenum (three Group Numbers)
<b>4</b>	One and a quarter Chromium, half Molybdenum (two Group Numbers)
<b>5A</b>	Two and a quarter Chromium, one Molybdenum
<b>5B</b>	Five Chromium, half Molybdenum or nine Chromium, one Molybdenum (two Group Numbers)
<b>5C</b>	Chromium, Molybdenum, Vanadium (five Group Numbers)
<b>6</b>	Martensitic Stainless Steels (Grade 410, 415, 429) (six Group Numbers)
<b>7</b>	Ferritic Stainless Steels (Grade 409, 430)
<b>8</b>	Austenitic Stainless Steels <ul style="list-style-type: none"> <li>• Group 1 - Grades 304, 316, 317, 347</li> <li>• Group 2 - Grades 309, 310</li> <li>• Group 3 - High Manganese Grades</li> <li>• Group 4 - High Molybdenum Grades</li> </ul>
<b>9A, B, C</b>	Two to four Nickel Steels
<b>10A, B, C, F</b>	Various low alloy steels
<b>10H</b>	Duplex and Super Duplex Stainless Steel (Grades 31803, 32750)
<b>10I</b>	High Chromium Stainless Steel
<b>10J</b>	High Chromium, Molybdenum Stainless Steel
<b>10K</b>	High Chromium, Molybdenum, Nickel Stainless Steel
<b>11A</b>	Various high strength low alloy steels (six Group Numbers)
<b>11B</b>	Various high strength low alloy steels (ten Group Numbers)
<b>12 to 20</b>	Not Used
<b>21</b>	High Aluminum content (1000 and 3000 series)
<b>22</b>	Aluminum (5000 series - 5052, 5454)
<b>23</b>	Aluminum (6000 series – 6061, 6063)
<b>24</b>	Not Used
<b>25</b>	Aluminum (5000 series - 5083, 5086, 5456)
<b>26 to 30</b>	Not used
<b>31</b>	High Copper content
<b>32</b>	Brass
<b>33</b>	Copper Silicone
<b>34</b>	Copper Nickel
<b>35</b>	Copper Aluminum
<b>36 to 40</b>	Not Used
<b>41</b>	High Nickel content
<b>42</b>	Nickel, Copper - (Monel 500)
<b>43</b>	Nickel, Chromium, Iron - (Inconel)
<b>44</b>	Nickel, Molybdenum – (Hastelloy B2, C22, C276, X)
<b>45</b>	Nickel, Chromium
<b>46</b>	Nickel, Chromium, Silicone
<b>47</b>	Nickel, Chromium, Tungsten
<b>47 to 50</b>	Not Used
<b>51, 52, 53</b>	Titanium Alloys
<b>61, 62</b>	Zirconium Alloys