HASTELLOY B-2 is a nickel based alloy particularly suited for handling reducing acids at high concentrations and temperatures. The alloy resists formation of grain boundary carbides in the weld HAZ, making it suitable for most chemical process conditions in the as-welded condition.

Because this alloy contains no significant chromium addition it should NOT be used in oxidizing media or in presence of oxidizing salts, such as ferric or cupric salts. The latter may form when iron or copper is present in a system containing hydrochloric acid. Likewise HASTELLOY B-2 does not withstand wet chlorine gas or hypochlorite bleaches.

HASTELLOY B-2 should not be exposed to temperatures in the 1000 - 1600°F range because of severe loss of ductility. In a vacuum HASTELLOY B-2 may be used from 1600°F to substantially higher temperatures.

### Specifications

**UNS:** N10665  
**W. Nr./EN:** 2.4617  
**ASTM:** B 333, B 335, B 619, B 622, B 626, B 366  
**ASME:** SB-333, SB-335, SB-619, SB-622, SB-626, SB-366  
**NACE:** MR0175

### Chemical Composition, %

<table>
<thead>
<tr>
<th></th>
<th>Ni</th>
<th>Cr</th>
<th>Mo</th>
<th>Mn</th>
<th>Si</th>
<th>C</th>
<th>S</th>
<th>P</th>
<th>Co</th>
<th>Fe</th>
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</thead>
<tbody>
<tr>
<td>MIN</td>
<td>–</td>
<td>–</td>
<td>26.0</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>MAX</td>
<td>balance</td>
<td>1.0</td>
<td>30.0</td>
<td>1.0</td>
<td>0.1</td>
<td>0.02</td>
<td>0.03</td>
<td>0.04</td>
<td>1.0</td>
<td>2.0</td>
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</tbody>
</table>

### Features

- Resists hydrochloric acid at all concentrations and temperatures
- Withstands wet HCl gas, sulfuric, acetic and phosphoric acids
- Excellent resistance to pitting and to stress corrosion cracking

### Applications

- Acetic acid production, initial phase in presence of iodide catalyst
- Methylmethacrylate production with 98% H₂SO₄
- Production of herbicides, insecticides, ethylene glycol and ethyl benzene
- Butane isomerization to produce high octane gasoline
- Resists corrosion from antimony chloride

### Physical Properties

- **Density:** 0.333 lb/in³  
- **Electrical Resistivity:** 824 Ohm-circ mil/ft
- **Coefficient** of Thermal Expansion, in/in°F x 10⁻⁶
  - 32°F: 6.0  
  - 212°F: 6.0  
  - 392°F: 6.2  
  - 572°F: 6.4  
  - 752°F: 6.5
- **Thermal Conductivity** Btu • ft/ft² • hr • °F
  - 6.4  
  - 7.1  
  - 7.7  
  - 8.4  
  - 9.2  
  - 10.0

* 70°F to indicated temperature.

### Mechanical Properties

<table>
<thead>
<tr>
<th></th>
<th>Typical</th>
<th>Minimum Specified</th>
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</thead>
<tbody>
<tr>
<td><strong>Ultimate Tensile Strength, ksi</strong></td>
<td>130</td>
<td>110</td>
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<tr>
<td><strong>0.2% Yield Strength, ksi</strong></td>
<td>59</td>
<td>51</td>
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<tr>
<td><strong>Elongation, %</strong></td>
<td>60</td>
<td>40</td>
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<tr>
<td><strong>Hardness MAX, HRB</strong></td>
<td>94-98</td>
<td>100 max</td>
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