Characteristics

- Crack resistance and X-ray properties are excellent.
- Deposited metal shows excellent strength and toughness at low temperatures.
- Arc is stable, slag is easy to remove and bead appearance is smooth with good shape.

Applications

Welding of 9% Ni steel for cryogenic storage tanks for LNG, Liquified nitrogen, etc.

Typical chemical composition and mechanical properties of all weld metal

<table>
<thead>
<tr>
<th>Welding method</th>
<th>Brand name</th>
<th>Chemical composition %</th>
<th>Mechanical properties</th>
<th>Mechanical properties</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>C  Si  Mn  Ni  Cr  Mo  W  Nb  Fe</td>
<td>0.2%Proof Stress MPa</td>
<td>Tensile strength MPa</td>
</tr>
<tr>
<td>SMAW</td>
<td>YAWATA WELD B (M)</td>
<td>0.09 0.20 3.22 65.1 15.8 3.35 — 1.60 10.2</td>
<td>443</td>
<td>709</td>
</tr>
<tr>
<td></td>
<td>NITTETSU WELD 196</td>
<td>0.04 0.40 0.45 72.5 — 19.0 2.91 — 3.5</td>
<td>449</td>
<td>743</td>
</tr>
<tr>
<td>GTAW</td>
<td>NITTETSU FILLER 196</td>
<td>0.02 0.03 0.03 74.0 — 19.4 2.75 — 1.2</td>
<td>468</td>
<td>746</td>
</tr>
<tr>
<td>SAW</td>
<td>NITTETSU FLUX 10H × NITTETSU FILLER 196</td>
<td>0.04 0.44 0.86 73.1 — 19.4 2.84 — 2.5</td>
<td>415</td>
<td>708</td>
</tr>
</tbody>
</table>
## Applicable welding consumables and their features

<table>
<thead>
<tr>
<th>Welding process</th>
<th>Brand name</th>
<th>Size (mm)</th>
<th>Electrical polarity</th>
<th>Welding position</th>
<th>Application and characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMAW</td>
<td>YAWATA WELD B(M)</td>
<td>3.2×350, 4.0×350, 5.0×350</td>
<td>AC, DC(+)</td>
<td>Flat, vertical, overhead, horizontal</td>
<td>This is welding consumable for exclusive use of the 9% Ni steel. Undiluted weld metal shows excellent strength and toughness at extremely low temperature and meet the specifications of API and NV for the welding of 9% Ni steels. With AC, it permits easy operation free from arc blow.</td>
</tr>
<tr>
<td></td>
<td>NITTETSU WELD 196</td>
<td>3.2×300, 4.0×350, 5.0×350</td>
<td>AC, DC(+)</td>
<td>Flat, vertical, overhead, horizontal</td>
<td>This is welding consumable for exclusive use of the 9% Ni steel. Undiluted weld metal shows extremely high strength, toughness, and, especially, crack resistance. Therefore, it is used for an underlying and repairing in the same type alloy SAW.</td>
</tr>
<tr>
<td>GTAW</td>
<td>NITTETSU FILLER 196</td>
<td>Rod: 1.2, 1.6, 2.4 φ ×1000 ℓ, Spool: 1.2, 1.6 φ</td>
<td>DC(-)</td>
<td>Flat, vertical, overhead, horizontal</td>
<td>This is welding consumable for exclusive use of the 9% Ni steel. Undiluted weld metal shows high strength and excellent toughness at extremely low temperatures, and meets the requirements of API and NV. Crack resistance is also excellent.</td>
</tr>
<tr>
<td>SAW</td>
<td>NITTETSU FLUX 10H × NITTETSU FILLER 196</td>
<td>Wire: Spool: 1.6 φ, Coil: 2.4 φ</td>
<td>DC(+)</td>
<td>Flat, horizontal, fillet</td>
<td>This is welding consumable for exclusive use of the 9% Ni steel. Horizontal butt welding for cryogenic storage tanks for LNG. Undiluted metal shows high strength and excellent toughness at extremely low temperatures.</td>
</tr>
</tbody>
</table>

1. Various data of distinctive features such as welding materials, deposited metal, weld metal, etc. shown in this catalog are meant to explain the representative properties and performance of the products and are not to be taken as a guarantee except those which are specified clearly as "Specification".
2. In regard to the properties of welded structures, please be careful since design of structures, chemical compositions of steel plates, construction method, welding conditions, ability of constructor, etc. all affect the results.
3. Please understand that we are not able to take responsibility for damages caused by the misuse of the technical information written in this catalog.

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**Warning!**

Fumes and gas may be hazardous to your health. Please take appropriate preventive measures such as the implementation of ventilation as well as wearing a protector for breathing. Arc light is harmful to the eyes and skin. Please use appropriate shielding measures. Please do not touch anything where electricity is activated; it may cause death.

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