# 09G2S Included in 22 standards (CIS Countries)

## Chemical composition

<table>
<thead>
<tr>
<th>Element</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>&lt; 0.12</td>
</tr>
<tr>
<td>Si</td>
<td>0.5 - 0.8</td>
</tr>
<tr>
<td>Mn</td>
<td>1.3 - 1.7</td>
</tr>
<tr>
<td>P</td>
<td>&lt; 0.035</td>
</tr>
<tr>
<td>Cu</td>
<td>&lt; 0.3</td>
</tr>
<tr>
<td>S</td>
<td>&lt; 0.04</td>
</tr>
<tr>
<td>Cr</td>
<td>&lt; 0.3</td>
</tr>
<tr>
<td>Ni</td>
<td>&lt; 0.3</td>
</tr>
<tr>
<td>As</td>
<td>&lt; 0.08</td>
</tr>
<tr>
<td>N</td>
<td>&lt; 0.008</td>
</tr>
<tr>
<td>Fe</td>
<td>Rest</td>
</tr>
</tbody>
</table>

In case of melting from Kerch ores As < 0.15% is permissible, in this case P < 0.03%; Adding of Al < 0.05% and Ti < 0.03% are permissible; N < 0.012% is permissible if toughness requirements are satisfied.

Mechanical properties and impact elasticity requirements for flat (except KCV) are determined for cross samples.

Tensile strength of plug and junction metal made in accordance with GOST 16523 - 430 MPa.

Elongation of plug and junction metal made in accordance with GOST 17066 - 17%.

## Properties

By GOST 19281

- Impact Value KCU, 20°C: categories 1, 10
- Impact Value KCU after Ageing: categories 2, 10, 11, 12, 13, 14, 15
- Impact Value KCU, -20°C: categories 3, 11
- Impact Value KCU, -40°C: categories 4, 12
- Impact Value KCU, -50°C: categories 5, 13
- Impact Value KCU, -60°C: categories 6, 14
- Impact Value KCU, -70°C: categories 7, 15
- Impact Value KCV, 0°C: category 8
- Impact Value KCV, -20°C: category 9

265 strength class

Long products

- Thickness: 20 - 32 mm:
  - Yield Strength: > 265 MPa
  - Tensile Strength: > 430 MPa
  - Elongation: > 21%
  - Return Bend: d=2a
  - Impact Value KCU after Ageing: > 29 J/sm²
  - Impact Value KCU, -40°C: > 29 J/sm²

- Thickness: 32 - 100 mm:
  - Yield Strength: > 265 MPa
  - Tensile Strength: > 430 MPa
  - Elongation: > 21%
  - Return Bend: d=2a
  - Impact Value KCU, 20°C: > 59 J/sm²
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- Impact Value KCU after Ageing: > 29 J/sm²
- Impact Value KCU, -40°C: > 29 J/sm²

Plates, sheets, strips, coils

Thickness: 20 - 160 mm
- Yield Strength: > 265 MPa
- Tensile Strength: > 450 MPa
- Elongation: > 21 %
- Return Bend: d=2a
- Impact Value KCU, 20°C: > 59 J/sm²
- Impact Value KCU after Ageing: > 29 J/sm²
- Impact Value KCU, -40°C: > 34 J/sm²
- Impact Value KCU, -70°C: > 29 J/sm²

295 strength class

Long products

Thickness: 20 - 32 mm
- Yield Strength: > 295 MPa
- Tensile Strength: > 430 MPa
- Elongation: > 21 %
- Return Bend: d=2a
- Impact Value KCU after Ageing: > 29 J/sm²
- Impact Value KCU, -40°C: > 29 J/sm²

Plates, sheets, strips, coils

Thickness: 20 - 32 mm
- Yield Strength: > 295 MPa
- Tensile Strength: > 430 MPa
- Elongation: > 21 %
- Return Bend: d=2a
- Impact Value KCU, 20°C: > 59 J/sm²
- Impact Value KCU after Ageing: > 29 J/sm²
- Impact Value KCU, -40°C: > 29 J/sm²
- Impact Value KCU, -70°C: > 24 J/sm²

315 strength class

Regulated or controlled rolling, or accelerated cooling.

Plates, sheets, strips, coils

Thickness: 20 - 60 mm
- Yield Strength: > 315 MPa
- Tensile Strength: > 450 MPa
- Elongation: > 21 %
- Return Bend: d=2a
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Impact Value KCU, 20°C: > 59 J/sm²
Impact Value KCU after Ageing: > 29 J/sm²
Impact Value KCU, -40°C: > 29 J/sm²
Impact Value KCU, -70°C: > 24 J/sm²

325 strength class
Long products
Thickness: < 5 mm;
Yield Strength: > 325 MPa
Tensile Strength: > 450 MPa
Elongation: > 21 %
Return Bend: d=2a
Impact Value KCU, 20°C: > 64 J/sm²
Impact Value KCU after Ageing: > 29 J/sm²
Impact Value KCU, -40°C: > 39 J/sm²
Impact Value KCU, -70°C: > 34 J/sm²
Impact Value KCV, 0°C: > 34 J/sm²
Impact Value KCV, -20°C: > 34 J/sm²

Thickness: 5 - 10 mm;
Yield Strength: > 325 MPa
Tensile Strength: > 450 MPa
Elongation: > 21 %
Return Bend: d=2a
Impact Value KCU, 20°C: > 64 J/sm²
Impact Value KCU after Ageing: > 29 J/sm²
Impact Value KCU, -40°C: > 39 J/sm²
Impact Value KCU, -70°C: > 34 J/sm²
Impact Value KCV, 0°C: > 34 J/sm²
Impact Value KCV, -20°C: > 34 J/sm²

Thickness: 10 - 20 mm;
Yield Strength: > 325 MPa
Tensile Strength: > 450 MPa
Elongation: > 21 %
Return Bend: d=2a
Impact Value KCU, 20°C: > 59 J/sm²
Impact Value KCU after Ageing: > 29 J/sm²
Impact Value KCU, -40°C: > 39 J/sm²
Impact Value KCU, -70°C: > 29 J/sm²
Impact Value KCV, 0°C: > 34 J/sm²
Impact Value KCV, -20°C: > 34 J/sm²
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Plates, sheets, strips, coils
Thickness: 10 - 20 mm:
Yield Strength: > 325 MPa
Tensile Strength: > 470 MPa
Elongation: > 21%
Return Bend: d=2a
Impact Value KCU, 20 °C: > 59 J/sm²
Impact Value KCU after Ageing: > 29 J/sm²
Impact Value KCU, -40 °C: > 34 J/sm²
Impact Value KCU, -70 °C: > 29 J/sm²

345 strength class
Long products
Thickness: < 5 mm:
Yield Strength: > 345 MPa
Tensile Strength: > 480 MPa
Elongation: > 21%
Return Bend: d=2a
Impact Value KCU, 20 °C: > 64 J/sm²
Impact Value KCU after Ageing: > 29 J/sm²
Impact Value KCU, -40 °C: > 39 J/sm²
Impact Value KCU, -70 °C: > 34 J/sm²
Impact Value KCV, 0 °C: > 40 J/sm²
Impact Value KCV, -20 °C: > 40 J/sm²

Thickness: 5 - 10 mm:
Yield Strength: > 345 MPa
Tensile Strength: > 480 MPa
Elongation: > 21%
Return Bend: d=2a
Impact Value KCU, 20 °C: > 64 J/sm²
Impact Value KCU after Ageing: > 29 J/sm²
Impact Value KCU, -40 °C: > 39 J/sm²
Impact Value KCU, -70 °C: > 34 J/sm²
Impact Value KCV, 0 °C: > 40 J/sm²
Impact Value KCV, -20 °C: > 40 J/sm²

Plates, sheets, strips, coils
Thickness: < 5 mm:
Yield Strength: > 345 MPa
Tensile Strength: > 490 MPa
Elongation: > 21%
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Return Bend: d=2a
Impact Value KCU, 20°C: > 64 J/sm²
Impact Value KCU after Ageing: > 29 J/sm²
Impact Value KCU, -40°C: > 39 J/sm²
Impact Value KCU, -70°C: > 29 J/sm²

Thickness: 5 - 10 mm ;
Yield Strength: > 345 MPa
Tensile Strength: > 490 MPa
Elongation: > 21 %
Return Bend: d=2a
Impact Value KCU, 20°C: > 64 J/sm²
Impact Value KCU after Ageing: > 29 J/sm²
Impact Value KCU, -40°C: > 39 J/sm²
Impact Value KCU, -70°C: > 29 J/sm²

375 strength class

Regulated or controlled rolling, or accelerated cooling.

Plates, sheets, strips, coils
Thickness: 10 - 32 mm ;
Yield Strength: > 375 MPa
Tensile Strength: > 510 MPa
Elongation: > 20 %
Return Bend: d=2a
Impact Value KCU after Ageing: > 29 J/sm²
Impact Value KCU, -40°C: > 39 J/sm²
Impact Value KCU, -70°C: > 29 J/sm²