MIM-Material Specification and Applications

Composition

Material: Silicon-Iron, silicon alloyed steel, soft magnetic
Standards: 3%SiFe, FeSi3, 1.0844

Typical composition:

<table>
<thead>
<tr>
<th>Element</th>
<th>Content (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>≤ 0.10</td>
</tr>
<tr>
<td>Ni</td>
<td>-</td>
</tr>
<tr>
<td>Mo</td>
<td>≤ 0.50</td>
</tr>
<tr>
<td>Si</td>
<td>2.50 – 3.00</td>
</tr>
<tr>
<td>Fe</td>
<td>Balance</td>
</tr>
<tr>
<td>Other</td>
<td>-</td>
</tr>
</tbody>
</table>

Properties

As sintered

- Density: ≥ 7.60 g/cm³
- Hardness: ≥ 100 HV1
- Yield strength $R_{p0.2}$: ≥ 300 MPa
- Tensile strength $R_m$: ≥ 500 MPa
- Elongation $A$: ≥ 20%
- Surface quality $R_a$: ≤ 1.6 µm
- Max. Induction $B_m$: 1.4 – 1.5 T
- Residual induction $B_r$: 0.8 – 0.95 T
- Coercive force $H_c$: 0.5 – 0.62 Oe
- Max. Permeability $\mu_{max}$: 7200 – 7500 G/Oe
- Specific electric resistivity: 0.4 Ωmm²/m

Application / remarks

3%SiFe has relatively high permeability. Max induction is only slightly less than that of pure iron, while the coercive field is markedly below that of pure iron. This soft magnetic material is uses for poles and relay parts where response time on flux change is important.

The data given are based on our experience to date. However, no liability can be assumed.