Gahnite

Crystal Data: Cubic. Point Group: 4/m32/m. Typically octahedra, rarely as dodecahedra, may be modified by \{100\} or \{011\}, to 12 cm; also as exsolution lamellae in other minerals; granular, massive. Twinning: On \{111\} as both twin and composition plane, common.


Optical Class: Isotropic. \(n = 1.79–1.80\)

Cell Data: Space Group: Fd3m(synthetic). \(a = 8.0872(1)\) \(Z = 8\)

X-ray Powder Pattern: Synthetic.

Chemistry:

<table>
<thead>
<tr>
<th>Element</th>
<th>Formula</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SiO₂</td>
<td>0.03</td>
<td>0.06</td>
<td></td>
<td></td>
<td>MnO</td>
<td>0.65</td>
<td>0.46</td>
</tr>
<tr>
<td>TiO₂</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
<td></td>
<td>ZnO</td>
<td>34.06</td>
<td>19.88</td>
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<tr>
<td>Al₂O₃</td>
<td>57.71</td>
<td>60.80</td>
<td>55.61</td>
<td></td>
<td>MgO</td>
<td>0.61</td>
<td>7.33</td>
</tr>
<tr>
<td>FeO</td>
<td>7.85</td>
<td>12.09</td>
<td></td>
<td></td>
<td>Total</td>
<td>100.91</td>
<td>100.62</td>
</tr>
</tbody>
</table>

(1) Desolation Row pluton, Victoria Range, New Zealand; by electron microprobe, total Fe as FeO; corresponding to \(Zn_{0.75}Fe_{0.19}Mg_{0.03}Mn_{0.02}\)\(Σ=0.99\)(\(Al_{2.01}Si_{0.01}\))\(Σ=2.02\)O₄. (2) Geco mine, Canada; by electron microprobe, average of six points, total Fe as FeO; corresponding to \(Zn_{0.41}Mg_{0.30}Fe_{0.28}Mn_{0.01}\)\(Σ=1.00\)Al₁.₉₉O₃. (3) ZnAl₂O₄.

Polymorphism & Series: Forms two series, with spinel, and with hercynite.

Mineral Group: Spinel group.

Occurrence: An accessory mineral in granites and granite pegmatites; in medium- to high-grade metamorphic rocks and metamorphosed base-metal sulfide deposits; in diasporites, formed by the low-grade metamorphism of bauxites; a detrital mineral in placers.

Association: Rhodonite, franklinite, calcite, andradite, willemite (Franklin, New Jersey, USA); corundum, pyrrhotite, högbomite, nigerite, phlogopite, staurolite, cordierite, pyrite, chalcopyrite (Geco mine, Canada).


Name: For the Swedish chemist and mineralogist, Johan Gottlieb Gahn (1745–1818), who discovered the mineral.


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