Pyroxmangite

\[ \text{Mn}^{2+} \text{SiO}_3 \]

Crystal Data: Triclinic. Point Group: \( \overline{1} \). Crystals typically tabular on \( \{001\} \), to 10 cm; porphyroblastic, granular. Twinning: Lamellar on \( \{010\} \), simple on \( \{001\} \), uncommon.

Physical Properties: Cleavage: Perfect on \( \{110\} \), \( \{1\overline{1}0\} \), \( \{1\overline{0}0\} \) \& \( \{110\} \) = 92°; poor on \( \{010\} \), \( \{001\} \). Hardness = 5.5–6 D(meas.) = 3.61–3.80 D(calc.) = [3.75]

Optical Properties: Semitransparent. Color: Pink, red, commonly covered with brown or black oxidation products; colorless to faint lilac in thin section. Luster: Pearly to vitreous. Optical Class: Biaxial (+). Dispersion: \( r > v \), moderate. \( \alpha = 1.728–1.748 \), \( \beta = 1.730–1.742 \), \( \gamma = 1.746–1.758 \), \( 2V(\text{meas.}) = 37°–46° \).

Cell Data: Space Group: \( \overline{C}\overline{1} \). \( a = 9.690 \), \( b = 10.505 \), \( c = 17.391 \), \( \alpha = 112.17° \), \( \beta = 102.85° \), \( \gamma = 82.93° \), \( Z = 14 \).

X-ray Powder Pattern: Synthetic. 2.967 (100), 2.188 (45), 4.73 (35), 2.680 (35), 1.422 (30), 3.47 (25), 3.04 (25).

Chemistry:

<table>
<thead>
<tr>
<th></th>
<th>( \text{SiO}_2 )</th>
<th>( \text{Al}_2\text{O}_3 )</th>
<th>( \text{Fe}_2\text{O}_3 )</th>
<th>( \text{FeO} )</th>
<th>( \text{MnO} )</th>
<th>( \text{MgO} )</th>
<th>( \text{CaO} )</th>
<th>( \text{Na}_2\text{O} + \text{K}_2\text{O} )</th>
<th>( \text{H}_2\text{O} )</th>
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</thead>
<tbody>
<tr>
<td>(1)</td>
<td>45.74</td>
<td>trace</td>
<td>trace</td>
<td>0.39</td>
<td>52.42</td>
<td>0.68</td>
<td>0.46</td>
<td>0.05</td>
<td>0.32</td>
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<td></td>
<td>Total</td>
<td>100.06</td>
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Polymorphism & Series: Forms a series with pyroxferroite.

Occurrence: In regionally metamorphosed manganese ore deposits and manganiferous rocks, perhaps with lower temperature history than rhodonite-bearing rocks.

Association: Spessartine, tephroite, alleghanite, hausmannite, pyrophanite, alabandite, rhodonite, rhodochrosite.

Distribution: Exceptional material in the Taguchi and other mines, Shidara, Aichi Prefecture; from Iwaizumi, Iwate Prefecture; and at many other places in Japan. Large crystals at Broken Hill, New South Wales, Australia. From Simsiö, Lapua, Finland. In Sweden, at Fillinge. From Glen Beag, Glenelg district, Inverness-shire, Scotland. In the USA, in Colorado, from the American tunnel, Silverton, San Juan Co., the Galena district, Hinsdale Co., and the Idarado mine, Ouray Co.

Name: A combination of PYROXene and MANGanese, in allusion to the mineral’s structure and composition.

Type Material: “Type material” from Iva, South Carolina, USA, has been redefined as pyroxferroite, as Fe > Mn.