Phosphosiderite

$\text{Fe}^{3+}\text{PO}_4\cdot2\text{H}_2\text{O}$

Crystal Data: Monoclinic. Point Group: $2/m$. As crystals, tabular on $\{010\}$, to stout prismatic $\{011\}$, many others, to 2.5 cm. May be radial fibrous, in botryoidal or reniform crusts and masses. Twinning: On $\{101\}$, common, typically as interpenetrations.

Physical Properties: Cleavage: $\{010\}$, good; $\{001\}$, indistinct. Fracture: Uneven. Hardness = 3.5–4 D(meas.) = 2.74–2.76 D(calc.) = 2.72–2.73

Optical Properties: Transparent to translucent. Color: Peach-blossom-red, reddish violet, reddish purple, yellow-orange, may be dark blue, moss-green to nearly colorless; in transmitted light, typically rose-red to colorless. Luster: Vitreous to subresinous. Optical Class: Biaxial (+). Pleochroism: $X = \text{pale rose-red}; Y = \text{carmine-red}; Z = \text{colorless}$. Orientation: $Y = b; X \wedge c = \sim 4^\circ$. Dispersion: $r > v$, very strong. $\alpha = 1.692–1.703$ $\beta = 1.725–1.728$ $\gamma = 1.738–1.739$ $2V(\text{meas.}) = 62^\circ–66^\circ$

Cell Data: Space Group: $P2_1/n$. $a = 5.329–5.330$ $b = 9.798–9.809$ $c = 8.710–8.714$ $\beta = 90.51^\circ–90.60^\circ$ $Z = 4$

X-ray Powder Pattern: The Kreuzberg, Germany. (ICDD 33-666).

Chemistry:

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
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</thead>
<tbody>
<tr>
<td>$\text{P}_2\text{O}_5$</td>
<td>38.85</td>
<td>37.71</td>
<td>37.99</td>
</tr>
<tr>
<td>$\text{Fe}_2\text{O}_3$</td>
<td>44.30</td>
<td>44.38</td>
<td>42.73</td>
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<tr>
<td>$\text{H}_2\text{O}$</td>
<td>17.26</td>
<td>17.31</td>
<td>19.28</td>
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<tr>
<td>Total</td>
<td>100.41</td>
<td>99.40</td>
<td>100.00</td>
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</tbody>
</table>

(1) Kalterborn mine, Germany. (2) The Kreuzberg, Germany; average of two analyses. (3) $\text{FePO}_4\cdot2\text{H}_2\text{O}$.

Polymorphism & Series: Dimorphous with strengite.

Occurrence: Typically an alteration product of triphyllite in zoned complex granite pegmatites; may be a component of soils; replacing bones or shells.

Association: Triphyllite, barbosalite, leucophosphite, laueite, luréaulite, strengite, turquoise.

Distribution: At many localities in small amounts. In Germany, from the Kalterborn mine, near Eiserfeld, North Rhine-Westphalia; on the Kreuzberg, Pleystein; and at Hagendorf and Waidhaus, Bavaria, Germany. From the La Vilate quarry, near Chantelouve, Haute-Vienne, France. At the Manguaralpe pegmatite, near Mesquita, and the Bendada pegmatite, near Guarda, Portugal. From the Leveíñemi mine, near Kiruna, Sweden. In the Bomi Hill Caves, Liberia. At the Ficus and West Driefontein Caves, Transvaal, South Africa. In the Alto Ligonha district, Mozambique. In the USA, from the Palermo #1 and Fletcher mines, near North Groton, Grafton Co., New Hampshire; at Mullica Hill, Gloucester Co., New Jersey; near Bethel Church, Pike Co., Indiana; in the Williams pegmatites, about eight km south of Rockford, Coosa Co., Alabama. Large crystals from the Bull Moose mine, five km southeast of Custer, Custer Co., South Dakota; from the Champion mine, Mono Co., and the Stewart mine, Pala, San Diego Co., California; from near Manhattan, Manhattan district, Nye Co., Nevada. At Rapid Creek, Yukon Territory, Canada. In the Sapucaia, Córrego do Urucum, and Enio pegmatite mines, around Galiléia, Minas Gerais, Brazil. From the El Criollo pegmatite, Cerro Blanco, Tanti district, 45 km west of Córdoba, Córdoba Province, Argentina.

Name: From phosphorus and the Greek for iron in the composition.


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