

**Crystal Data:** Amorphous. *Point Group:* None. Nodular, reniform, botryoidal, stalactitic, colloform, glassy, earthy.

**Physical Properties:** *Fracture:* Earthy to uneven, conchoidal. *Tenacity:* Pulverulent to brittle. Hardness = 3-4 or less.  $D(\text{meas.}) = 2.0\text{-}2.4$   $D(\text{calc.}) = \text{n.d.}$

**Optical Properties:** Semitransparent. *Color:* Yellow, brownish yellow, brown; reddish brown, greenish yellow, pale green, pale yellow; in transmitted light, pale yellow to yellowish brown. *Optical Class:* Isotropic.  $n = 1.60\text{-}1.61$

**Cell Data:** *Space Group:* Amorphous.

**X-ray Powder Pattern:** X-ray amorphous.

Chemistry:	(1)	(2)
SO <sub>3</sub>	15.14	17.21
P <sub>2</sub> O <sub>5</sub>	14.82	16.83
Fe <sub>2</sub> O <sub>3</sub>	39.69	37.80
FeO		0.07
H <sub>2</sub> O <sup>+</sup>		16.76
H <sub>2</sub> O <sup>-</sup>		10.04
H <sub>2</sub> O	30.35	
rem.		0.86
Total	100.00	99.57

(1) Arnsbach, Germany. (2) Haut-le-Wastia, Belgium; H<sub>2</sub>O by the Penfield method.

**Occurrence:** A secondary mineral in gossans and some coal deposits, formed by sulfate-rich solutions acting on earlier phosphates, may be post-mine; in cave deposits, the phosphate derived from guano; widespread in secondary phosphate assemblages in granite pegmatites.

**Association:** Delvauxite, vashegyite, pitticite, melanterite, vivianite, wavellite, leucophosphite, phosphosiderite, ferrostrunzite, beraunite, mitridatite, rockbridgeite, jahnsite, roscherite, "limonite".

**Distribution:** From Arnsbach [TL], near Gräfenthal, and in the Garnsdorf mine and the Feengrotten (Cave), Saalfeld, Thuringia, Germany. At Visé, Védtrin, and Haut-le-Wastia, Belgium. From Hředl, Nučic, Litošice, Vysocany, and Chvaletice, Czech Republic. At Psychagnard, Isère, France. In Slovakia, from Železník (Vashegy). At Leoben, Austria. In the USA, from near Bethel Church, Pike Co., Indiana; at a coal mine in Jackson Township, Coshocton Co., and in Monday Creek Township, Perry Co., Ohio; from the Coon Creek mine, near Shady, Polk Co., Arkansas; in the Tip Top mine, 8.5 km southwest of Custer, Custer Co., South Dakota; from Gringo Gulch, Santa Cruz Co., Arizona. At Rapid Creek, Yukon Territory, Canada. A few additional localities are reported.

**Name:** From the Greek for *a successor*, as it typically is formed from earlier phosphates. Destinezite is visibly crystalline, triclinic  $\text{Fe}_2(\text{PO}_4)(\text{SO}_4)(\text{OH})\cdot 6\text{H}_2\text{O}$ . Diadochite is massive to earthy, poorly ordered, X-ray amorphous material that approximated destinezite in composition.

**Type Material:** Mining Academy, Freiberg, Germany, 20765.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 1011-1013. (2) Van Tassel, R. (1985) Mineraux phosphates secondaires (vashegyite, destinezite [= diadochite], wavellite, crandallite, phosphate de fer) a Haut-le-Wastia, province de Namur (Belgique). Bull. Soc. Belge Géol., 94, 19-27 (in French with English abs.). (3) Peacor, D.R., R.C. Rouse, T.D. Coskren, and E.J. Essene (1999) Destinezite ("diadochite"),  $\text{Fe}_2(\text{PO}_4)(\text{SO}_4)(\text{OH})\cdot 6\text{H}_2\text{O}$ : its crystal structure and role as a soil mineral at Alum Cave Bluff, Tennessee. Clays Clay Minerals, 47, 1-11. (4) (1999) Amer. Mineral., 85, 266 (abs. ref. 3).