

## INVALID UNNAMED MINERALS, UPDATE 2023-01

IMA Subcommittee on Unnamed Minerals: Jeffrey de Fourestier\* (Chairman), Marco E. Ciriotti\*\*, Yang Zhuming\*\*\*

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*Users making reference to this compilation should refer to the primary source (D.G.W. Smith & E.H. Nickel, "A system of codification for unnamed minerals: Report of the Subcommittee for Unnamed Minerals of the IMA Commission on New Minerals, Nomenclature and Classification": Canadian Mineralogist (2007), v. 45, p. 983-1055) and to this website. Additions and changes to the original publication are shown in [blue print](#). Alphabetic symbols in the Reject Category column represent the following: a - the mineral has been subsequently named; b - the data given for the mineral are considered to be inadequate for a match with another unrelated sample to be made with any confidence; c - on the basis of the reported data, the unnamed mineral is not distinct from a previously described, named or unnamed mineral; d - the material examined was probably a mixture; e - the unnamed mineral has been discredited; f - the unnamed substance does not meet IMA-accepted definitions of a mineral.*

Previous list closed 01 January, 2012

<u>IMA Designation</u>	<u>Primary Reference</u>	<u>Secondary Reference</u>	<u>Comments</u>	<u>Reject Category</u>
<b>UM1839--/-SeO:Pb</b>	*Ann. Phys. 46, 265	Eur. J. Mineral. 6, 337	Inadequate data; later named kerstenite	b
<b>UM1889--/-SO:FeH[1]</b>	*Am. J. Sci. 38, 243, 245	Dana (7th) 2, 570	Mineral "A"; this is almost certainly metahohmannite (described in 1838)	c
<b>UM1889--/-SO:FeH[2]</b>	*Am. J. Sci. 38, 243, 245	Dana (7th) 2, 570	Mineral "B"; this is almost certainly amarantite (described in 1888)	c
<b>UM1889--/-SO:FeH[3]</b>	*Am. J. Sci. 38, 243, 245	Dana (7th) 2, 570	Mineral "C"; could be szomolnokite or a mixture of other hydrated Fe-sulphates	d
<b>UM1889--/-SO:FeH[4]</b>	*Am. J. Sci. 38, 243, 245	Dana (7th) 2, 570	Mineral "D"; could be szomolnokite or a mixture of other hydrated Fe-sulphates	d
<b>UM1896--/-TeO:FeH</b>	*Proc. Colorado Sci. Soc. Am. Mineral. 29, 211 5, 66 (1894-1896)		Identical to UM1944--/-TeO:FeH; later described under the name poughite: Am. Mineral. 53 (1968), 1075	c
<b>UM1900--/-CO:CuHU</b>	*Vh. Mineral. Ges. 38, 38	Dana (7th) 2, 237	Analysis of a mixture	d
<b>UM1910--/-O:MgTi</b>	*Z. Krist. 47, 246	Dana(7th) 1, 542	Inadequate data; qualitative chemical test	b
<b>UM1910--/-PO:FeHMn</b>	US Geol. Surv. Bull. 419, Am. Mineral. 34, 513 1		(Fe,Mn) <sub>5</sub> (PO <sub>4</sub> ) <sub>3</sub> (OH) <sub>7</sub> - probably rockbridgeite	c
<b>UM1919--/-S:AsPb</b>	Mineral. Mag. 18, 360	Dana (7th) 1, 456	Later described under the name baumhauerite-2a: Am. Mineral. 75 (1990), 915	a
<b>UM1920--/</b>	Mineral. Mag. 19, 40	Dana (7th) 1, 488	No chemical information	b
<b>UM1921--/-AsO:Pb</b>	*Geol. Fören. Förh. 43, 188	Am. Mineral. 64, 352	Flink #305 and #49; later described under the name paulmooreite	a
<b>UM1924--/-O:BaCuV</b>	*Am. J. Sci. 8, 201	Dana (7th) 2, 818	Probably vésigniéite; see Am. Mineral. 40, 942 (Abst.)	c
<b>UM1930--/-O:CaNbTaTiYU</b>	Am. J. Sci. 19, 17	Dana (7th) 1, 800	Not samarskite but compositionally indistinguishable from euxenite-(Y)	c
<b>UM1931--/-O:CaHNbTaTiU</b>	*Norsk. Geol. Tidsskr. 12, 73	Dana (7th) 1, 804	Probably a mixture of several phases - see Am. Mineral. 62, 403; name "tangenite" used	d
<b>UM1931--/-O:PbU</b>	Am. Mineral. 16, 213	Am. Mineral. 41, 539	Inadequate data; same as UM1956-01-O:HPbU; mineral "C"	b
<b>UM1934--/-PO:CaFMg</b>	*Comm. Serv. Geol.	Mineral. Abst. 6, 440	Analysis no. XIV; white earthy crusts; compared to cryolithiolite	d

<b>UM1934--SO:FeH</b>	Portugal 19, 65 Ann. R. Osserv. Vesuv. Hey (1955), 25.10.3 1934, Ser. 4, 3, 83		(itself probably a mixture) Later described under the name ferroxahydrate: Zap. Vses. Mineral. Ob. 91 (1962), 490	a
<b>UM1936--F:K</b>	*Acad. Sci. Lett. Arti, Att. Modena [5], 1, 33	Dana (7th) 2, 28	Later described under the name carobbiite: Rend. Soc. Ital. Mineral. Petrol. 12 (1956), 212	a
<b>UM1936--SO:NaH</b>	*Acad. Sci. Lett. Arti, Att. Modena [5], 1, 33	Mineral. Abst. 6, 444	NaHSO <sub>4</sub> . Inadequate data	b
<b>UM1937--O:Zr</b>	*Goldsmiths J. 37, 193	Mineral. Abst. 7, 131	Inadequate data; a synthetic product and thus not a mineral; may possibly be equivalent to tazheranite	b,f
<b>UM1938--SO:FeHNa</b>	Am. Mineral. 23, 722		Mineral "42"; inadequate data	b
<b>UM1940--CH</b>	*Mem. Inst. Geol. Univ. Padova 14 (4), 1	Mineral. Abst. 11, 214	Inadequate data	b
<b>UM1940--S:BiPb[1]</b>	Univ. Toronto Studies, Geol. Ser. 44 (1940), 47	Mineral. Abst. 8, 7	Inadequate data but cell dimensions and space group similar to Nordstromite; monoclinic	b,c
<b>UM1940--S:BiPb[2]</b>	Univ. Toronto Studies, Geol. Ser. 44 (1940), 47	Mineral. Abst. 8, 7	Inadequate data; hexagonal	b,c
<b>UM1941--</b>	Amer. Min. 26, 333	Calif. J. Mines & Geology (1976), 189	Crestmore "mineral M"; yellow, isotropic; no chemical data	b
<b>UM1941--BO:AlFeMg</b>	Amer. Min. 26, 333	Calif. J. Mines & Geology (1976), 189	Crestmore "mineral B"; black prismatic; inadequate data	b
<b>UM1941--CO:AlCaCuSi</b>	Amer. Min. 26, 333	Calif. J. Mines & Geology (1976), 189	Crestmore "mineral F"; later described under the name Stringhamite; Calif. J. Mines & Geology 39, 333	a
<b>UM1941--CO:AlCaSi</b>	Amer. Min. 26, 333	Calif. J. Mines & Geology (1976), 189	Crestmore "mineral K"; vitreous, unstable; inadequate data	b
<b>UM1941--SiO:AlCa</b>	Amer. Min. 26, 333	Calif. J. Mines & Geology (1976), 189	Calif. J. Mines & Geology 39, 333 Crestmore "mineral C"; white fibrous; inadequate data	b
<b>UM1941--SiO:AlCaFMg</b>	Amer. Min. 26, 333	Calif. J. Mines & Geology (1976), 189	Calif. J. Mines & Geology 39, 333 Crestmore "mineral P"; colourless; inadequate data	b
<b>UM1941--SiO:AlCaFeHMg</b>	Amer. Min. 26, 333	Calif. J. Mines & Geology (1976), 189	Calif. J. Mines & Geology 39, 333 Crestmore "mineral G"; brownish-black; inadequate data	b
<b>UM1941--SiO:Ca</b>	Amer. Min. 26, 333	Calif. J. Mines & Geology (1976), 189	Calif. J. Mines & Geology 39, 333 Crestmore "mineral Q"; white silky; inadequate data	b
<b>UM1941--SiO:CaFMg</b>	Amer. Min. 26, 333	Calif. J. Mines & Geology 39, 333	Crestmore "mineral O"; yellow, vitreous lustre; inadequate data - probably a humite	
<b>UM1941--SiO:CaH</b>	Amer. Min. 26, 333	Calif. J. Mines & Geology 39, 333	Crestmore "mineral J"; white, silky; inadequate data	
<b>UM1941--SiO:CaHMg</b>	Amer. Min. 26, 333	Calif. J. Mines & Geology 39, 333	Crestmore "mineral D"; white, radiating; inadequate data	
<b>UM1941--SiO:CaTh</b>	Amer. Min. 26, 333	Calif. J. Mines & Geology 39, 333	Crestmore "mineral L"; chalky white; inadequate data	
<b>UM1941--VO:CaCuPb</b>	Amer. Min. 26, 333	Calif. J. Mines & Geology 39, 333	Crestmore "mineral N"; yellow-green film; inadequate data	

<b>UM1942--SiO:AlCaNa</b>	Am. Mineral. 27, 143	Mineral. Abst. 8, 287	Inadequate data; impurity in tridymite of composition NaCaAl <sub>3</sub> Si <sub>15</sub> O <sub>36</sub>	b
<b>UM1944--CH:Fe</b>	*Wiener Chem.-Zeitung 47, 80	Mineral. Abst. 10, 319	Inadequate data	b
<b>UM1944--CH:Ga</b>	*Wiener Chem.-Zeitung 47, 80	Mineral. Abst. 10, 319	Inadequate data	b
<b>UM1944--SiO:HMgNi</b>	*Trans. Geol. Soc. S. Africa 46, 119	Mineral. Abst. 9, 189	Later described under the name willemseite: Nat. Inst. Metall. Rept. 352 (1968), 1	a
<b>UM1944--TeO:FeH</b>	Am. Mineral. 29, 211		Analytical data obtained from HCl-soluble portion only; later described under the name poughite: Am. Mineral. 53 (1968), 1075	b
<b>UM1945--O:MnTa</b>	Mineral. Mag. 27, 157	Dana (7th) 2, 1072	Indistinguishable from wodginite. Read in 1945, published in 1946	c
<b>UM1945--SiO:Fe</b>	*Trans. Geol. Soc. S. Africa 47, 157	Mineral. Abst. 10, 233	Data are inadequate to distinguish the mineral from fayalite or laihunite	b,c
<b>UM1946--S:AgPbSb</b>	*Mineria Boliviana 3, 11	Mineral. Abst. 10, 147	Indistinguishable from owyheeite	c
<b>UM1947--O:ClSb</b>	*Atti Accad. Naz. Lincei, Cl. Sci. Fis. Mat. Nat., Rendiconti, Ser. 8, 3, 365	Mineral. Abst. 10, 445	Later described under the name onoratoite: Mineral. Mag. 36 (1968), 1037	a
<b>UM1949--O:FeU</b>	*US Atomic Energy Comm. RMO-563	Mineral. Mag. 30, 736	Iron uranite; inadequate data	b
<b>UM1949--PO:CaFeMg</b>	Am. Mineral. 34, 513		(Ca,Fe,Mg)Fe <sup>3+</sup> <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> •2H <sub>2</sub> O; same as UM1910-01-PO:CaFeMg	c
<b>UM1949--PO:FeHMn</b>	Am. Mineral. 34, 513		(Fe,Mn) <sub>5</sub> (PO <sub>4</sub> ) <sub>3</sub> (OH) <sub>7</sub> ; same as UM1910--PO:FeHMn; probably rockbridgeite	c
<b>UM1949--PO:FeMn[1]</b>	Am. Mineral. 34, 513	ICDD 15-0442	"Dufrenite-like mineral"; no chemical analysis; perhaps kidwellite; X-ray powder diffraction pattern later reported as mixture	d
<b>UM1949--PO:FeMn[2]</b>	Am. Mineral. 34, 513		Referred to as a "dufrenite-like mineral" but with minimal data; later described more fully as UM1982-08-PO:FeHMn; formerly coded as UM1949-02-PO:FeMn	c
<b>UM1950--PO:AlHY</b>	Trudy Min. Mus. Acad. Sci. USSR (1950) 2, 135	Zap. Vses. Mineral. Ob. 80, 238	Later named "koivinite" but inadequate data; perhaps a Y-dominant florencite	b,a
<b>UM1950--SiO:AlFeHMg</b>	Mineral. Mag. 29, 72		(Mg,Fe <sup>2+</sup> ,Al) <sub>3</sub> (Si,Al) <sub>4</sub> O <sub>10</sub> [OH] <sub>2</sub> •?H <sub>2</sub> O; later given the unapproved name cardenite: Clay Minerals Bull. 2, 120; possibly a mixture	a,d
<b>UM1951--CH:[1]</b>	*Mikrochem. Mikrochim. Acta 36-37, 1048	Mineral. Abst. 11, 518	Inadequate data	b
<b>UM1951--CH:[2]</b>	*Mikrochem. Mikrochim. Acta 36-37, 1048	Mineral. Abst. 11, 518	Red; inadequate data	b
<b>UM1951--CH:[3]</b>	*Mikrochem. Mikrochim. Acta 36-37, 1048	Mineral. Abst. 11, 518	Rod-shaped crystals; inadequate data	b
<b>UM1951--PO:AlFNaSr</b>	*Medd. Dansk Geol. For. 12, 109	Mineral. Abst. 12, 14	Later described under the name bøggildite: Acta Chem. Scand. 8 (1954), 136	a

<b>UM1952--AsO:CuHPb</b>	Bull. Soc. fr. Minéral. Crist. 75, 70		Probably impure bayldonite	d
<b>UM1952--BO:Mg</b>	Acta Cryst. 5, 574	Mineral. Abst. 12, 14	Later described under the name suanite: Mineral. J. 1 (1953), 54	a
<b>UM1952--Se:CuCoNi</b>	Am. Mineral. 37, 542		Later described under the name tyrrellite: Am. Mineral. 37 (1952), 542	a
<b>UM1952--VO:Fe</b>	Am. Mineral. 37, 407		Later described under the name nolanite: Am. Mineral. 42 (1957), 619	a
<b>UM1953--CO:Pb</b>	Tscherm. Mineral. Petrog. Mitt. 3, 298	Mineral. Abst. 12, 329	Hexagonal; a = 5.23Å, c = 29.4Å; associated with hydrocerussite	b
<b>UM1953--S:AgCuFePb</b>	Am. Mineral. 38, 506	Mineral. Abst. 12, 204	Mineral "Q"; later described under the name dadsonite: Mineral. Mag. 37 (1969), 437	a
<b>UM1953--SeO:Pb</b>	Bull. Soc. fr. Minéral. Crist. 76, 422	Eur. J. Mineral. 6, 337	Same as kerstenite (see UM1839--SeO:Pb)	a
<b>UM1954--BO:FeMgSn</b>	Am. Mineral. 39, 522		Later described under the name hulsite: Am. Mineral. 50 (1955), 249	a
<b>UM1954--MoO:MgU</b>	Unavailable	Hey (1963), 27.2.6g	Inadequate data	b
<b>UM1954--O:HV[1]</b>	US Geol. Surv. Bull. 1009B, 54	Am. Mineral. 39, 1037	Later described under the name doloresite: Am. Mineral. 42 (1957), 587	a
<b>UM1954--O:HV[2]</b>	US Geol. Surv. Bull. 1009B, 54	Am. Mineral. 39, 1037	V4O7•H2O(?); inadequate data; perhaps montroseite	b
<b>UM1954--SiO:AlHK</b>	Mineral. Mag. 30, 400		Inadequate data; mixed layer illite-montmorillonite	b
<b>UM1954--SiO:HU</b>	US Geol. Surv. Bull. 1009B, 31	Am. Mineral. 39, 1037	USiO4 (?) later described under the name coffinite: Econ. Geol. 49, (1954) 356; Am. Mineral. 41, (1956), 675	a
<b>UM1954--VO:HNa</b>	US Geol. Surv. Bull. 1009B, 57	Am. Mineral. 39, 1038	Later described under the name barnesite: Am. Mineral. 48 (1963), 1187	a
<b>UM1955--CH:OU</b>	South Dakota Geol. Surv. Rept. Inv. 79, 102	Mineral. Abst. 14, 182	Inadequate data	b
<b>UM1955--O:FeHMn</b>	Am. Mineral. 40, 50		Mineral "G"; inadequate data	b
<b>UM1955--PO:Fe</b>	Am. Mineral. 40, 50		Mineral "C"; inadequate data	b
<b>UM1955--PO:FeMn[1]</b>	Am. Mineral. 40, 50		Mineral "H"; inadequate data	b
<b>UM1955--PO:FeMn[2]</b>	Am. Mineral. 40, 50		Minerals "D", "E" & "F" = mitridatite-robertsite series: Am. Mineral. 59 (1974), 48	b
<b>UM1955--S:BiPbSb</b>	*Trudy Mineral. Muz. Akad. Nauk SSSR 7, 112	Am. Mineral. 41, 814	"bismuth jamesonite"; later described under the name sakharovite: Trudy Mineral. Muz. Akad. Nauk SSSR 10 (1950), 148	a
<b>UM1955--Se:Co</b>	Neues Jb. Mineral. Mh. (1955), 133	Am. Mineral. 41, 164	Later named freboldite: Am. Mineral. 44 (1959), 907 (Abst.)	a
<b>UM1955--SiO:FeHKMnNbTi</b>	*Dokl. Akad. Nauk SSSR	Can. Mineral. 40, 1629	Later described under the name gjerdingenite-Fe: Can. Mineral.	a

	100,1159		40 (2002), 1629	
<b>UM1956-//[1]</b>	Mineral. Mag. 31, 96		Only partial optical data; perhaps related to serpentine group	b
<b>UM1956-//[2]</b>	Mineral. Mag. 31, 96		Only optical data; perhaps related to tuhualite	b,c
<b>UM1956-//-O:BaCaKNaPbU</b>	Am. Mineral. 41, 539		Mineral "A"; X-ray powder diffraction and optical data; later shown to be a mixture: Can. Mineral. 35 (1997), 145	d
<b>UM1956-//-PO:HPb</b>	Trans. Roy. Soc. Edinburgh 63, 85	Mineral. Abst. 14, 283	Probably hydroxyl-dominant analogue of pyromorphite (hydroxylpyromorphite)	c
<b>UM1956-//-SO:Cr</b>	Trans. Roy. Soc. Edinburgh 63, 85	Mineral. Abst. 14, 283	Inadequate data; X-ray powder diffraction pattern similar to lanarkite	b,c
<b>UM1957-//-Cl:HNi</b>	J. Sci. Res. Inst. Tokyo 51, 1	Hey (1963): 8.11.8	Later described under the name nickelbischofite: Can. Mineral. 17 (1979), 107	a
<b>UM1957-//-O:FeV</b>	Am. Mineral. 42, 619		FeV4O9 (?); chemically extracted from a mineral mixture	b
<b>UM1957-//-PO:BiHU</b>	*Soboleva & Pudovkina (1957), 201	Am. Mineral. 43, 383	Inadequate data; called "phosphate-walpurkite" (Strunz, 1970)	b
<b>UM1957-//-S:Mn</b>	C.R. Séances Acad. Sci. (Paris) 245, 1146	Am. Mineral. 43, 795.	Later described under the name rambergite: Am. Mineral. 83 (1998), 1117	a
<b>UM1957-//-SO:CrPb</b>	Trans. Roy. Soc. Edinburgh 65, 114	Am. Mineral. 45, 909.	Probably phoenicochroite	c
<b>UM1957-//-SO:GeHPb</b>	Am. Mineral. 42, 743	Mineral. Abst. 13, 524	Later described under the name fleischerite: Neues Jb. Mineral. Mh (1960), 132	a
<b>UM1958-//-AsO:HU</b>	Jahr. geol. Landes. Baden-Wurtemberg 31, 17	Aufschluss 9, 279	A U-arsenate; mineral "E"; equated with chadwickite on the basis of the X-ray powder pattern: BRGM Index Alphabétique de Nomenclature Minéralogique (1968) p.234	c
<b>UM1958-//-Cl:FeH</b>	*Periodico Mineral. 27, 211	Am. Mineral. 44, 908	Inadequate data; mixture	c,d
<b>UM1958-//-MoO:CaHU</b>	2nd Int. Conf. Peaceful Uses Atom. Energy, Proc. (1958), [2], 286	Am. Mineral. 44, 468	Later named calcurmolite: Am. Mineral. 49 (1964), 1152	a
<b>UM1958-//-O:FeMn</b>	Nature 182, 472		Inadequate data	b
<b>UM1958-//-O:V</b>	Acta Cryst. 11, 56		"Phase B" = "protodoloresite" (?)	b,c
<b>UM1958-//-S:BiPbSe</b>	Calif. Div. Mines Spec. Rept. 51	Mineral. Abst. 14, 188	Inadequate data	b
<b>UM1958-//-S:CuGa</b>	Neues Jb. Mineral. Mh. (1958), 85	Am. Mineral. 43, 1006	Later described under the name gallite: Neues Jb. Mineral. Mh. (1958), 241	a
<b>UM1958-//-SO:HNaU</b>	US Geol. Surv. Bull. 1046H	Aufschluss 28, 177	A zippeite-like mineral; later described under the name sodium zippeite: Can. Min. 14, 429; later renamed natrozippeite	c
<b>UM1958-//-SiO:AlCaFeKNa</b>	*Akad. Nauk SSSR, Kola Filial 1 (1958), 146	Am. Mineral. 44, 909.	(K,Na)4Ca2(Al,Fe)(Si,Al)6(O,OH,F)18•0.6NaCl; designated "mineral no. 3"; later named delhayelite: Vopr. Geol. Mineral.	a

Kol'sk. P-va, #1 (1959), 146; transferred from Valid list

<b>UM1958--SiO:AlFeHMnREE</b>	*Sci. Rept. Tohoku Univ., Eur. J. Mineral. 18, 569 ser.3, 6, 39	Mn <sup>2+</sup> REE AlAlFe <sup>2+</sup> SiO <sub>4</sub> Si <sub>2</sub> O <sub>7</sub> O(OH); same mineral as UM1957-01-SiO:AlFeHMnREE	a
<b>UM1958--SiO:AlFePU</b>	US Geol. Surv. Bull. 1046H, 178	massive yellow mineral with minor Ca; inadequate data	b
<b>UM1958--SiO:AlHMg</b>	J. Mineral. Soc. Japan 3, 468	Appears to be montmorillonite	c
<b>UM1958--SiO:AlU</b>	US Geol. Surv. Bull. 1046H, 178	Fibrous yellow mineral with minor Ba,P,K,Fe,Ca & Mg; inadequate data	b
<b>UM1958--SiO:CCaPFREEY</b>	*Izv. Akad. Nauk Karel. Mineral. Abst. 15, 360 Kol'sk Fil. SSSR 2, 90	Clearly fluorbritholite-(Ce)	c
<b>UM1958--SiO:CaHNaZr</b>	*Akad. Nauk SSSR, Kola Am. Mineral. 44, 909 Filial 1, 146	Mineral "2"; probably eudialyte	c
<b>UM1958--SiO:U</b>	US Geol. Surv. Bull. 1046H, 491	Inadequate data	b
<b>UM1959--As:PtRu</b>	*Geol. Rudn. Mest. Am. Mineral. 46, 464 (1959), 68	Mineral "6"; Inadequate data; later re-examination showed major Rh and identity with hollingworthite (see CIM Sp. Vol. 23, 192)	c
<b>UM1959--As:PtSn</b>	*Geol. Rudn. Mest. Am. Mineral. 46, 464 (1959), 68	Mineral "4"; inadequate data	b
<b>UM1959--AsO:CuZn</b>	Fortsch. Mineral. 37, 87 Am. Mineral. 44, 1323	Mineral "R"; later described under the name chudobaite: Neues Jb. Mineral. Mh. (1960), 1	a
<b>UM1959--BO:Mn</b>	Schweiz. Mineral. Petrog. Mitt. 39, 85	Mineral "X"; inadequate data	b
<b>UM1959--CO:CaCeF</b>	*Trudy IMGRE 2, 181 Bull. Soc. fr. Minéral. Crist. 84, 25	Mineral "X"; inadequate data; possibly Y-bearing synchysite-(Ce) or Y-bearing parisite-(Ce)	b,c
<b>UM1959--CO:HNa</b>	*Zap. Vses. Mineral. Ob. 90, 440 Am. Mineral. 47, 418	Appears to be thermonatrite: Am. Mineral. 49 (1964), 1154 (Abst.)	c
<b>UM1959--E:FeIrNiPt</b>	*Geol. Rudn. Mest. Am. Mineral. 46, 464 (1959), 68	Mineral "3"; inadequate data	b
<b>UM1959--E:IrPtSn</b>	*Geol. Rudn. Mest. Am. Mineral. 46, 464 (1959), 68	Mineral "1"; inadequate data	b
<b>UM1959--E:PbPd</b>	*Geol. Rudn. Mest. Am. Mineral. 46, 464 (1959), 68	Mineral "5"; = zvyagintsevite: Am. Mineral. 52, 299 (Abst.)	a
<b>UM1959--E:PdPtSn</b>	*Geol. Rudn. Mest. Am. Mineral. 46, 464 (1959), 68	Mineral "2"; inadequate data; perhaps related to stannopalladinite	b
<b>UM1959--O:CaHSrU</b>	Bull. Soc. fr. Minéral. Crist. 82, 239 Am. Mineral. 45, 254	Probably agrinierite (Mineral. Mag. 38, 781)	c
<b>UM1959--O:CaTi</b>	*Zap. Vses. Mineral. Ob. 88, 444 Am. Mineral. 45, 479	Later described under the name kassite: Am. Mineral. 52 (1967), 559 (Abst.)	a
<b>UM1959--O:Re</b>	Econ. Geol. 54, 254	Inadequate, qualitative compositional data only; possibly Re <sub>2</sub> O <sub>7</sub>	b
<b>UM1959--S:CoFeNi</b>	Geologi (Helsinki) 1959, 3-4, 32 Am. Mineral. 47, 173	Later described under the name mackinawite: Am. Mineral. 48 (1963), 215 (Abst.)	a

<b>UM1959--S:Fe</b>	Am. Mineral. 44, 974		Probably mackinawite	c
<b>UM1959--S:Pd</b>	*Geol. Rudn. Mest. (1959), 68	Am. Mineral. 46, 464	Mineral "8" ; inadequate data	b
<b>UM1959--SO:CaHNa</b>	Science 129, 1227	Am. Mineral. 44, 1103	Inadequate data; similar to eugsterite	b,c
<b>UM1959--SiO:AlBaCaHS</b>	Schweiz. Mineral. Petrog. Mitt. 39, 333	Am. Mineral. 45, 255	Later described under the name wenkite: Schweiz. Mineral. Petrog. Mitt. 42 (1962), 274	a
<b>UM1959--VO:CaH</b>	Am. Mineral. 44, 322		Later described under the name hendersonite: Am. Mineral. 47, (1962), 1252	a
<b>UM1960--E:SbBi</b>	Neues Jb. Mineral. Abh. 90, 140		Appears Bi-bearing antimony	c
<b>UM1960--F:KMg</b>	*Bull. Acad. Roy. Sci. Outre-Mer 6, 964	Hey (1963) 8.4.1b	No X-ray powder diffraction data but composition is unique; Povarennykh used the name "kamaflagite" for this compound; formula: KMgF <sub>3</sub> ; later named parascandolaite: Phys.Chem. Min. 41(6), 403; moved from Valid list	a
<b>UM1960--O:FeNbTaUY</b>	*J. Chem. Soc. Japan 81, 1049	Mineral. Abst. 15, 212	Probably ishikawaite	c
<b>UM1960--O:HU[1]</b>	Am. Mineral. 45, 1026		"Dehydrated schoepite"; unique X-ray powder data but probably an artifact	f
<b>UM1960--O:HU[2]</b>	CSIRO Minerag. Invest. Tech. Paper 2, 39	ICDD 15-0569	Mineral "B"; X-ray powder data; minor Ca and trace Al, Cu, Fe, Si & Th; identified later under the name heisenbergite: Neues Jh. Mineral. Abh. 189 (2) (2012), 117; transferred from Valid list	a
<b>UM1960--O:Mn</b>	Econ. Geol. 55, 278	Am. Mineral. 47, 246	Later described under the name nsutite: Am. Mineral. 47 (1962), 246	a
<b>UM1960--O:NbTa</b>	21st IGC Rept. (1960) 17, 53	Mineral. Abst. 15, 211	Mineral "B"; inadequate data; possibly tantalite-columbite group	b
<b>UM1960--O:Ta</b>	21st IGC Rept. (1960) 17, 53	Mineral. Abst. 15, 211	Mineral "A"; inadequate data; possibly aeschynite group	b
<b>UM1960--OH:Al</b>	Neues Jb. Mineral. Abh. 95, 1	Am. Mineral. 45, 1317	Inadequate data; possibly nordstrandite or doyleite set differently	b,c
<b>UM1960--OH:Ni</b>	Am. Mineral. 45, 1109		Later described under the name theophrastite: Am. Mineral. 66 (1981), 1020	a
<b>UM1960--PO:</b>	*Estudos, Notas Trabalhos Serv. Fomento Mineiro (Portugal) 14, 257	Mineral. Abst. 15, 541	Mineral "A"; inadequate data; possibly ehrlite	b,c
<b>UM1960--SiO:CaSn</b>	Am. Mineral. 46, 768.		Later described under the name malayaite: Mineral. Mag. 35 (1965), 622	a
<b>UM1960--VO:PbU</b>	CSIRO Minerag. Invest. Tech. Paper 2, 46	ICDD 15-0496	Mineral "E"; X-ray and chemical data correspond to those of curiënite	c
<b>UM1961--As:IrPt</b>	Mineral. Mag. 32, 833	Mineral. Abst. 15, 290	Appears to be Ir-bearing sperrylite	c
<b>UM1961--CO:CaH</b>	*Zap. Vses. Mineral. Ob. 90, 97	Hey (1963) 11.4.10	Inadequate data.	b

<b>UM1961--SO:FeHZn</b>	Am. Mineral. 46, 1517.		Later described under the name zincobotryogen: Am. Mineral. 49 (1964), 1776 (Abst.)	a
<b>UM1961--Sb:BiPd</b>	Mineral. Mag. 32, 833		Appears to be equivalent to sudburyite; formerly coded as UM1961-08-Sb:BiPd	c
<b>UM1961--Sb:BiPt</b>	Mineral. Mag. 32, 833	Mineral. Abst. 15, 290	Appears to be Bi-bearing stumpflite	c
<b>UM1961--Sb:Pt</b>	Mineral. Mag. 32, 833	Mineral. Abst. 15, 290	Later described under the name stumpflite: Bull. Soc. fr. Minéral. Crist. 95 (1972), 610	a
<b>UM1961--SiO:AlH</b>	Neues Jb. Mineral. Mh. (1961), 112	Mineral. Abst. 15, 292	Probably cookeite (with Li having been missed)	c
<b>UM1961--Te:Cu</b>	Am. Mineral. 46, 258		Microchemical tests showed Cu & Te; data inadequate; oxygen could be present	b
<b>UM1961--Te:Pt</b>	*Geol. Rudn. Mest. (1961), 64	Am. Mineral. 47, 809	Later described under the name moncheite: Zap. Vses. Mineral. Ob. 92 (1963), 33	a
<b>UM1961--TeO:Fe</b>	Science 133, 2017.		Inadequate data; similarities to zemannite	b,c
<b>UM1961--TeO:Mn</b>	Science 133, 2017.		Later described under the name denningite: Can. Mineral. 7 (1961), 340 (Abst.)	a
<b>UM1961--TeO:MnZn</b>	Science 133, 2017.		Later described under the name spiroffite: Am. Mineral. 47 (1962), 196 (Abst.)	a
<b>UM1961--TeO:Zn</b>	Science 133, 2017.		Probably keystoneite (X-ray powder diffraction, optical data) Ni misidentified as Zn?	c
<b>UM1962--Bi:Pd</b>	Can. Mineral. 7, 30	CIM Sp. Vol. 23, 177	Mineral "C"; (see Can. Mineral. 7, 95, and CIM Sp. Vol. 23, 189); inadequate data	b
<b>UM1962--PO:NaF</b>	*Akad. Nauk SSSR, Kola Filial (1962), 74	Am. Mineral. 48, 1418	Probably natrophosphate	c
<b>UM1962--S:AgBiCuPb</b>	Can. Mineral. 7, 338		Later described under the name neyite: Can. Mineral. 10 (1969), 90	a
<b>UM1962--S:AsPbSb</b>	Can. Mineral. 7, 339	Am. Mineral. 48, 1485	Later described under the name veenite: Can. Mineral. 9 (1967), 7	a
<b>UM1962--S:BiTe</b>	Proc. Australasian Inst. Min. Metall. #203, 67	Austral. J. Mineral. 10, 7	Bi <sub>10</sub> Te <sub>2</sub> S <sub>5</sub> ; not compositionally distinct from josëite-A & josëite-C	c
<b>UM1962--S:Mg</b>	Geochim. Cosmochim. Acta 26, 251	Am. Mineral. 47, 1219	Later described under the name niningerite: Science 155 (1967), 451	a
<b>UM1962--SO:AlFeZn</b>	Mineral. Sbornik L'vov. Ob. 16, 253		Not distinct from halotrichite	c
<b>UM1962--SO:CuFeH</b>	Can. Mineral. 7, 245	Am. Mineral. 47, 1219	Later described under the name poitevinite: Can. Mineral. 8 (1964), 109	a
<b>UM1962--SiO:CeFeTi</b>	Trudy IMGRE 9, 3	Zap. Vses. Mineral. Ob. 102, 456	X-ray amorphous with only qualitative compositional data	b
<b>UM1962--Se:Cu</b>	Geol. Soc. Am. Mem. 85, 118	ICDD 14-0479	Later described under the name athabascaite: Can. Mineral. 10 (1970), 206	a
<b>UM1963--AsO:MgU</b>	Bull. Soc. fr. Minéral. Crist. 86,17	Mineral. Abst. 16, 457	U,Mg-arsenate with distinctive X-ray powder pattern; later described under the name seelite: Mineral. Record 24 (1993),	a



<b>UM1963--C:FeS</b>	J. Geophys. Res. 68, 2011	Am. Mineral. 44, 1419	463; previously coded as UM1963-01-AsO:MgU Inadequate data	b
<b>UM1963--CO:CaH</b>	*Biol. Bull. 125, 441	Mineral. Abst. 18, 206	Very probably monohydrocalcite	c
<b>UM1963--O:CrFeMnV</b>	Am. Mineral. 48,33		Later described under the name vuorelainenite: Can. Mineral. 20 (1982), 281	a
<b>UM1963--S:AsCoFeNi</b>	*Dokl. Akad. Nauk SSSR 153,1420	Am. Mineral. 49, 818	(Co,Ni,Fe)AsS; probably Ni-bearing glaucodot	c
<b>UM1963--S:CaFeMgMn</b>	J. Geophys. Res. 68, 2011	Am. Mineral. 44, 1419	Inadequate data; could be niningerite	b,c
<b>UM1963--S:CuFe</b>	*Dokl. Akad. Nauk SSSR 152, 408	Am. Mineral. 55, 2135	Originally considered a cubic polymorph of CuFeS <sub>2</sub> ; later named talnakhite: Zap. Vses. Mineral. Ob. 97 (1968), 63	a
<b>UM1963--S:CuFeZn</b>	J. Geophys. Res. 68, 2011		"Mineral K"; (Fe,Cu,Zn)S; inadequate data; likely rudashevskyite: Am. Mineral. 93 (2008), 902	b,a
<b>UM1963--S:CuGe</b>	*Dokl. Akad. Nauk SSSR 149, 675	Mineral. Abst. 18, 283	Inadequate data	b
<b>UM1963--S:FeNi</b>	Am. Mineral. 48, 511	Mineral. Abst. 16, 546	Appears to be mackinawite	c
<b>UM1963--Si:FeNi</b>	J. Geophys. Res. 68, 2011	Am. Mineral. 44, 1419	Inadequate data; similarities to suessite and perryite	b,c
<b>UM1963--SiO:BBeCaHREEY</b>	*Kristallografiya 8, 677	Am. Mineral. 49, 443	Appears to be calcybeborosilite-(Y) (a mineral presently of uncertain status)	c
<b>UM1963--SiO:CaH[1]</b>	Am. Mineral. 48, 924		Inadequate data; similarities to jennite	b,c
<b>UM1963--SiO:CaH[2]</b>	*Ann. Rept. Univ. Leeds Res. Inst. African Geol. (1963), 33	Mineral. Abst. 16, 548	Very probably jennite: see Am. Mineral. 51 (1966), 56	c
<b>UM1963--Te:AgBi</b>	*Trudy IMGRE 18, 70	Am. Mineral. 49, 818	Later described under the name volynskite: Am. Mineral. 51 (1966), 531 (Abst.)	a
<b>UM1964--AsO:CaFeH</b>	*Trudy Mineral. Muz. Akad. Nauk SSSR 15, 176	Am. Mineral. 52, 300	Later described under the name lazarenkoite: Mineral. Zhurn. 3 (1981) (3), 92	a
<b>UM1964--COPO:MnNa</b>	*Kristallografiya 9, 109	Mineral. Abst. 16, 648	Later described under the name sidorenkite: Zap. Vses. Mineral. Ob. 108 (1979), 56	a
<b>UM1964--OH:AlH</b>	*Acad. Yugoslav. Sci. Arts., Bauxite Symposium	ICDD 31-0018	Later reported to be a mixture	d
<b>UM1964--OH:Be</b>	US Dept. Mines Rept. Invest. 6408, 1	Am. Mineral. 49, 1497	Later described under the name behoite: Am. Mineral. 55 (1970), 1	a
<b>UM1964--OH:Ni</b>	Can. Mineral. 8, 116	Am. Mineral. 50, 266	Perhaps jamborite (Am. Mineral. 58 (1973), 835), or may be a solid solution of hydrotalcite group minerals	c
<b>UM1964--PO:CaCeLaNd</b>	*Dokl. Akad. Nauk SSSR 155, 349	Mineral. Abst. 18, 204	Inadequate data; only partial chemical analysis	b
<b>UM1964--PO:FePbSrW</b>	*Bull. Acad. Roy. Sci. Outre-Mer, (1964), 904	Mineral. Abst. 18, 207	Qualitative chemistry; attributed to goyazite-gorceixite group; may be lusungite	b,c

<b>UM1964--S:Co</b>	Neues Jb. Mineral. Mh. (1964), 94	Am. Mineral. 50, 2107	Appears to be cobaltpentlandite	c
<b>UM1964--S:Sn[1]</b>	Neues Jb. Mineral. Mh. (1964), 94	Am. Mineral. 50, 2107	Later described under the name ottemannite: Fortsch. Mineral. 42 (1966), 211	a
<b>UM1964--S:Sn[2]</b>	Neues Jb. Mineral. Mh. (1964), 94	Am. Mineral. 50, 2107	Appears to be berndtite polytype; formula SnS <sub>2</sub>	c
<b>UM1964--Se:Ni[1]</b>	Geologi (Helsinki) 5, 53	Am. Mineral. 50, 519	Later described under the name sederholmite: C.R. Soc. Geol. Finland 36 (1964), 113	a
<b>UM1964--Se:Ni[2]</b>	Geologi (Helsinki) 5, 53	Am. Mineral. 50, 519	Later described under the name sederholmite: C.R. Soc. Geol. Finland 36 (1964), 113	a
<b>UM1964--Se:Ni[3]</b>	Geologi (Helsinki) 5, 53	Am. Mineral. 50, 519	Later described under the name sederholmite: C.R. Soc. Geol. Finland 36 (1964), 113	a
<b>UM1964--Se:Ni[4]</b>	Geologi (Helsinki) 5, 53	Am. Mineral. 50, 519	Later described under the name sederholmite: C.R. Soc. Geol. Finland 36 (1964), 113	a
<b>UM1964--Se:Ni[5]</b>	Geologi (Helsinki) 5, 53	Am. Mineral. 50, 519	Later described under the name sederholmite: C.R. Soc. Geol. Finland 36 (1964), 113	a
<b>UM1964--SeTe:Ni</b>	Geologi (Helsinki) 5, 53	Am. Mineral. 50, 265	Later described under the name kitkaite: Am. Mineral. 50 (1965), 581	a
<b>UM1964--SiO:Fe</b>	Nature, Phys. Sci. 201, 596	ICDD 16-0376	Qualitative chemistry with X-ray powder diffraction data; card later withdrawn by ICDD. Formerly coded as UM1964-05-SiO:Fe	b
<b>UM1965--AsO:FeHPb</b>	Tscherm. Mineral. Petrog. Mitt. 11, 121	Am. Mineral. 52, 1585	Later described under the name segnitite: Am. Mineral. 77 (1992), 656	a
<b>UM1965--CO:CaCeLaSr</b>	Can. Mineral. 8, 398	Am. Mineral. 51, 533	Appears to be calcio-ancylite-(Ce)	c
<b>UM1965--CO:CaFeMgMnY</b>	*Rev. Roum. Géol. Geophys. Géogr. Ser. géol. 9, 59	Mineral. Abst. 19, 128	Ankerite containing some yttrium	c
<b>UM1965--E:AuCU</b>	Trans. Inst. Mining Metall. 74, 933		AuCu; same composition later described under the name tetra-auricupride: Sci. Geol. Sinica 11 (1982), 111	a
<b>UM1965--O:NbU</b>	*Southeastern Geol. 6, 79	Mineral. Abst. 17, 637	Later described under the name liandratite: Am. Mineral. 63 (1978), 941	a
<b>UM1965--PO:AlCaHLiMnNa</b>	*Rept. Rwandaise Ministeri Econ., Bull. Serv. Géol. 2, 11	Am. Mineral. 51, 1819	Later described under the name bertossaite: Can. Mineral. 8 (1966), 668	a
<b>UM1965--S:AsIrPtRh</b>	Am. Mineral. 50, 1068	CIM Sp. Vol. 23, 177	Later described under the name platarsite: Can. Mineral. 15 (1977), 385 & CIM Sp. Vol. 23, 189	a
<b>UM1965--S:Cr</b>	Geochim. Cosmochim. Acta 29, 1131		CrS? Inadequate data	b
<b>UM1965--S:CrFe</b>	Geochim. Cosmochim. Acta 29, 1131		(Fe,Mn,Mg) <sub>x</sub> CryS <sub>z</sub> ; probably daubréelite	b,c
<b>UM1965--S:CuFeGeZn</b>	Bull. Soc. fr. Minéral. Crist. 88, 432	Am. Mineral. 51, 1816	Cu <sub>2</sub> (Zn,Fe)GeS <sub>4</sub> ; the zinc analogue of briartite; later described under the name zincobriartite, Cu <sub>2</sub> ZnGe <sup>4+</sup> S <sub>4</sub> ; IMA 2015-094	a
<b>UM1965--S:IrOsRu</b>	Trans. Inst. Mining	Am. Mineral. 51, 1551	An Os- and Ir-bearing variety of laurite	c

	Metall. 74, 933				
<b>UM1965--Se:CuTe</b>	Can. Mineral. 8, 397	Am. Mineral. 51, 533	Later described under the name bambollaite: Can. Mineral. 11 (1972), 738	a	
<b>UM1965--SiO:CaNaZr</b>	Can. Mineral. 8, 398	Am. Mineral. 51, 533	Later described under the name hilairite: Can. Mineral. 12 (1974), 237. Original report of K was in error	a	
<b>UM1965--SiOPO:AlCaFeH</b>	*Zap. Vses. Mineral. Ob. 94, 465	Mineral. Abst. 17, 697	Amorphous and inadequately characterised; could be a mixture	b,d	
<b>UM1966--AsO:FeHPb</b>	Tschem. Mineral. Petrog. Mitt. 11, 121	52, 1585	Later described under the name segnitite: Am. Mineral. 77 (1992), 656	a	
<b>UM1966--E:AgSb</b>	Can. Mineral. 8, 610	Mineral. Abst. 20, 69-	Not distinguishable from allargentum	c	
<b>UM1966--E:BiPbPd</b>	Can. Mineral. 8, 541	Am. Mineral. 52, 1579	Later described under the name polarite: Zap. Vses. Mineral. Ob. 98 (1969), 708	a	
<b>UM1966--E:BiPdTe</b>	Mineral. Mag. 35, 815	Mineral. Abst. 17, 696	Mineral "C"; compositional data suggest this is a Bi-bearing kotulskite	c	
<b>UM1966--E:PbPd</b>	Can. Mineral. 8, 541		Pd3Pb; later described under the name zvyagintsevite: Geol. Rud. Mest. 8 (1966), 94	a	
<b>UM1966--O:FeHTi</b>	Can. Mineral. 8, 674	Am. Mineral. 52, 1580	Inadequate data; strong similarities to pseudorutile and some to pseudobrookite	b,c	
<b>UM1966--O:Re</b>	Mineral. Mag. 35, 871		Inadequate, qualitative compositional data only; possibly Re2O7	b	
<b>UM1966--S:CuGe</b>	*Dokl. Akad. Nauk Azerb. SSR 22, 29	Mineral. Abst. 19, 225	Only qualitative chemistry	b	
<b>UM1966--S:PbSb</b>	Can. Mineral. 8, 667	Am. Mineral. 52, 1580	Later described under the name tintinaite: Can. Mineral. 9 (1968), 371	a	
<b>UM1966--Se:Pb</b>	*C.R. Acad. Sci. Paris, Ser. D, 263, 465	Mineral. Abst. 20, 69-559	Inadequate data; might be demesmaekerite	b,c	
<b>UM1966--SiO:AlBeFe</b>	Can. Mineral. 8, 662	Can. Mineral. 9, 109	"UK#12"; later equated with cordylite-(Ce), but the compositional data do not agree	a,b	
<b>UM1966--SiO:AlBeMgMn</b>	Can. Mineral. 8, 662	Can. Mineral. 9, 109	"UK#4"; later described under the name steacyite: Can. Mineral. 20 (1982), 59; but the compositional data do not agree	a	
<b>UM1966--SiO:AlBeMgMnNbTi</b>	Can. Mineral. 8, 662	Can. Mineral. 9, 109	"UK#17"; later described under the name perraultite: Can. Mineral. 29 (1991), 355	a	
<b>UM1966--SiO:AlMnYYb</b>	Can. Mineral. 8, 662	Can. Mineral. 9, 109	"UK#6"; later described under the name monteregionite-(Y): Can. Mineral. 16 (1978), 561; but compositional data do not agree	a	
<b>UM1966--SiO:BeMgMnNbTi</b>	Can. Mineral. 8, 662	Can. Mineral. 9, 109	"UK#18"; later described under the name tundrite-(Ce): Am. Mineral. 50 (1965), 2097; but the compositional data do not agree	a	
<b>UM1966--SiO:CaFeMgMnNa</b>	Can. Mineral. 8, 662	Can. Mineral. 9, 109	"UK#5"; later described under the name labuntsovite: Mineral. Record 21 (1990), 363; but the compositional data do not agree	a	
<b>UM1966--SiO:CaKNa</b>	Can. Mineral. 8, 662	Can. Mineral. 9, 109	"UK#15"; later described under the name carletonite: Am. Mineral. 56 (1971), 1855	a	

<b>UM1966--SiO:CaNaZr</b>	Can. Mineral. 8, 662	Can. Mineral. 9, 109	"UK#20"; later described under the name hilairite: Can. Mineral. 12 (1974), 237. Original report of K was in error	a
<b>UM1966--SiO:MgMnNaTi</b>	Can. Mineral. 8, 662	Can. Mineral. 9, 109	"UK#19"; later equated with nenadkevichite: Mineral. Record 21 (1990), 363; but the compositional data do not agree	a
<b>UM1966--SiO:NaZr</b>	Can. Mineral. 8, 662	Can. Mineral. 9, 109	"UK#13"; later described under the name lemoynite: Can. Mineral. 9 (1969), 585	a
<b>UM1966--SiOPO:CaFFeHMnNaPREEY</b>	*Zap. Vses. Mineral. Ob. 95, 339	Mineral. Abst. 18, 125	Later described under the name proshchenkoite-(Y): Mineral. Mag. 72 (2008), 1071; transferred from Valid list	a
<b>UM1966--Te:HgPd</b>	Mineral. Mag. 35, 815	Mineral. Abst. 17, 696	Mineral "A"; inadequate compositional data and little else; might be temagamite or Hgbearing kotulskite	b,c
<b>UM1967--As:NiPd</b>	*Zap. Vses. Mineral. Ob. 96, 432	CIM Sp. Vol. 23, 177	Compositionally indistinguishable from majakite (CIM Sp. Vol. 23, 185)	c
<b>UM1967--BO:CaHNaREE</b>	USGS Prof. Paper 575-C, c.38	Am. Mineral. 53, 1081	REE-borate mineral later described under the name braitschite-(Ce): Am. Mineral. 53 (1968), 1081	a
<b>UM1967--E:PbPd</b>	*Zap. Vses. Mineral. Ob. 96, 432	CIM Sp. Vol. 23, 177	Compositionally indistinguishable from plumbopalladinite but discrepancies in VHN and reflectance values; (CIM Sp. Vol. 23, 184)	c
<b>UM1967--O:CaFeMnTaTi</b>	*C.R. Soc. Géol. Finlande 39, 95	Mineral. Abst. 19, 312	Inadequate data; an alteration product of columbite	b
<b>UM1967--PO:CaCl</b>	Can. Mineral. 9, 286		Ca <sub>5</sub> (PO <sub>4</sub> ) <sub>3</sub> Cl; a monoclinic polymorph of chlorapatite; later named chlorapatite-M: Eur. J. Mineral. 22 (2010), 163	a
<b>UM1967--S:AsCuTe</b>	*Mem. Bur. Rech. Géol. Minières, Paris 54, 1	Mineral. Abst. 21, 70-3397	Appears to be goldfieldite on the basis of X-ray powder diffraction lines and composition	c
<b>UM1967--S:CoFeNiPd</b>	Mineralium Deposita 1, 269	Mineral. Abst. 20, 69-1527	Mineral "b"; inadequate data	b
<b>UM1967--S:CuFe</b>	Econ. Geol. 62, 910		Later described under the name talnakhite: Zap. Vses. Mineral. Ob. 97 (1968), 63	a
<b>UM1967--S:FeMg</b>	Science 155, 451	Can. Mineral. 40, 1687	(Fe,Mg)S; originally included with niningerite but later described under the name keilite: Can. Mineral. 40, 1687	a
<b>UM1967--S:FeNiPdRh</b>	Mineralium Deposita 1, 269	Mineral. Abst. 20, 69-1527	Mineral "a"; inadequate data	b
<b>UM1967--S:PbSb</b>	Can. Mineral. 9, 191	Mineral. Abst. 20, 69-2384	Mineral "QM"; Later described under the name dadsonite: Mineral. Mag. 37 (1969), 437	a
<b>UM1967--S:PdPtRh</b>	Mineralium Deposita 1, 269	Mineral. Abst. 20, 69-1527	Mineral "c"; inadequate data	b
<b>UM1967--SiO:BaFeNaREETi</b>	Am. Mineral. 52, 1762		Later described under the name bario-orthojoaquinite: Am. Mineral. 67 (1982), 809	a
<b>UM1967--SiO:BaKNbTaTi</b>	*C.R. Soc. Géol. Finlande 39, 95	Mineral. Abst. 19, 312	Inadequate data	b

<b>UM1967--SiO:YYb</b>	*Dokl. Earth Sci. 176, 136		Later described under the name keiviite-(Y): Mineral. Zhurn. 7 (6) (1985), 79	a
<b>UM1967--Te:BiPb</b>	Can. Mineral. 9, 305	Am. Mineral. 53, 1421	Later described under the name ruckidgeite: Zap. Vses. Mineral. Ob. 106 (1977), 62; identical with UM1969--Te:BiPb	a
<b>UM1968--As:Ni</b>	Neues Jb. Mineral. Mh. (1968), 420	Am. Mineral. 54, 990	Inadequate data	b
<b>UM1968--As:NiPd</b>	*Genkin (1968), 1	CIM Sp. Vol. 23, 177	Probably Ni-bearing vincentite (CIM Sp. Vol. 23, 189)	c
<b>UM1968--As:PbPd</b>	*Genkin (1968), 1	CIM Sp. Vol. 23, 177	Probably Pb-bearing vincentite (CIM Sp. Vol. 23, 188)	c
<b>UM1968--E:C</b>	Science 161, 363	Am. Mineral. 54, 326	Later described under the name chaoite: Naturwissenschaften 56, 493	a
<b>UM1968--E:PbPdPtSn</b>	*Genkin (1968), 1	CIM Sp. Vol. 23, 177	Mixture of atokite + rustenburgite (CIM Sp. Vol. 23, 182)	d
<b>UM1968--S:AgBiCuPb</b>	Neues Jb. Mineral. Mh. (1968), 236	Am. Mineral. 54, 990	Later described under the name hodrushite: Mineral. Mag. 37 (1970), 641	a
<b>UM1968--Se:BiS</b>	*Izv. Akad. Nauk Kaz. SSR (1968) (5), 42	Zap. Vses. Mineral. Ob. 104, 618	Bi(Se,S); later described under the name nevskite: Zap. Vses. Mineral. Ob. 113 (1984), 351	a
<b>UM1968--TeO:FeHZn</b>	Tscherm. Mineral. Petrog. Mitt. 12, 108	Mineral. Abst. 19, 180	Later described under the name zemannite: Can. Mineral. 10 (1969), 139 (Abst.)	a
<b>UM1969--AsO:BaCu</b>	Aufschluss 20, 85		Inadequate data; pale green Ba,Cu-arsenate (with CO <sub>3</sub> ?). Diffraction pattern said to differ from known Cu-arsenates	b
<b>UM1969--AsO:Bi</b>	*Actas Jornadas Geol. Argentina (4th) 1, 67	Am. Mineral. 56, 1489	Said to contain > Bi and < As than rooseveltite, but X-ray powder pattern essentially same; see also Econ. Geol. 64, 271	b,c
<b>UM1969--ClO:BiCdPb</b>	*Dokl. Akad. Nauk UzbSSR (1969) (10), 41	Zap. Vses. Mineral. Ob. 102, 445	Qualitative spectrographic analysis only; suggests formula (Cd,Pb)BiClO <sub>2</sub>	b
<b>UM1969--IO:ClPb</b>	*Deut. Mineral. Ges. Semml. Berne 1969, 35	Am. Mineral. 55, 1814; 56, 359	Later described under the name seeligerite: Neues Jb. Mineral. Mh. (1971), 210	a
<b>UM1969--OHS:FeMg</b>	Am. Mineral. 54, 437		Later described under the name tochilinite: Zap. Vses. Mineral. Ob. 100 (1971), 477	a
<b>UM1969--S:AgBiCuPb[1]</b>	Can. Mineral. 10, 90	Am. Mineral. 55, 1445	Later described under the name ourayite: Neues Jb. Mineral. Abh. 131 (1971), 56	a
<b>UM1969--S:AgBiCuPb[2]</b>	Can. Mineral. 10, 90	Am. Mineral. 55, 1445	Appears to be wittite (on the basis of X-ray powder diffraction pattern)	c
<b>UM1969--S:AgPbSb</b>	Geol. Soc. Am. Mem. 109, 107	Am. Mineral. 55, 1067	Data inadequate, but probably fizélyite	b,c
<b>UM1969--S:BiPb</b>	Tscherm. Mineral. Petrog. Mitt. 13, 149	Mineral. Abst. 21, 70-2608	Appears to be lillianite (on basis of composition and cell dimensions)	c
<b>UM1969--S:CoSb</b>	Can. Mineral. 10, 128	Am. Mineral. 55, 1444	Later described under the name paracostibite: Can. Mineral. 10 (1970), 232	a
<b>UM1969--Sb:Ni</b>	Can. Mineral. 10, 128	Am. Mineral. 55, 1444	Later described under the name nisbite: Can. Mineral. 10 (1970), 232	a
<b>UM1969--Se:Cu</b>	Can. Mineral. 10, 135	Mineral. Abst. 21, 70-1646	Later described under the name athabascaite: Can. Mineral. 10 (1970), 207	a

<b>UM1969--SiO:AlHNa</b>	*Medd. Grønland Unders. 181, 10	Am. Mineral. 55, 534	Later described under the name tetranatrolite, which latter was abandoned in favour of gonnardite	a
<b>UM1969--SiO:CaFHNbTi</b>	*Semenov (1969), 55	Am. Mineral. 55, 2137	A silicified pyrochlore: Dokl. Earth Sci. 248 (1979), 127	b
<b>UM1969--SiO:CaHKNaNbTi</b>	Can. Mineral. 10, 143	Mineral. Abst. 21, 70-1652	Mont Saint-Hilaire "UK#19-1"; later described under the name gjerdingenite-Na: Can. Mineral. 45, 529	a
<b>UM1969--SiO:HNaNbTi</b>	Can. Mineral. 10, 143	Mineral. Abst. 21, 70-1652	Appears to be nenadkevichite; Mont St. Hilaire "UK#19-2"	c
<b>UM1969--SiO:NaZr</b>	*Dokl. Akad. Nauk SSSR 189, 166	Am. Mineral. 55, 1072	Later described under the name parakeldyshite: Tr. Mineral. Muz. Akad. Nauk SSSR 22 (1975), 120	a
<b>UM1969--Te:BiPb</b>	Can. Mineral. 9, 709	Mineral. Abst. 21, 70-1605	Later described under the name rucklidgeite: Zap. Vses. Mineral. Ob. 106 (1977), 62; same as 1967--Te:BiPb	a
<b>UM1970--As:NiPd</b>	*Geokhimiya (10), 1155	Geochem. Internat. 7, 788	(Pd,Ni,Cu,Rh)3As; not distinguishable from Ni-rich vincentite or Ni-rich guanglinite	c
<b>UM1970--Bi:PbPd[1]</b>	*Geokhimiya (10), 1155	Geochem. Internat. 7, 788	Pd3Pb3Bi; same as UM1967-03-Bi:PbPd	c
<b>UM1970--Bi:PbPd[2]</b>	*Geokhimiya (10), 1155	Geochem. Internat. 7, 788	Pd(Bi,Pb); appears to be polarite	c
<b>UM1970--Bi:Pd</b>	*Geokhimiya (10), 1155	Geochem. Internat. 7, 788	PdBi3; same as UM1968-01-Bi:Pd	c
<b>UM1970--CO:CaTe</b>	Mineral. Record 1, 40		Later described under the name mroseite: Can. Mineral. 13 (1975), 286	a
<b>UM1970--E:CuPdPtSn</b>	*Geokhimiya (10), 1155	Geochem. Internat. 7, 788	Pd2PtSnCu (reported) but close to (Pd,Cu,Pt)3Sn and hence probably taimyrite or a Ptrich cabriite	c
<b>UM1970--E:CuPdSbSn</b>	*Geokhimiya (10), 1155	Geochem. Internat. 7, 788	(Pd,Cu,Pt)4.77(Sn,Sb); identical to UM1967-04-E:CuPdSbSn	c
<b>UM1970--E:CuPdSn</b>	*Geokhimiya (10), 1155	Geochem. Internat. 7, 788	(Pd,Cu)3Sn (CIM Sp. Vol. 23, 187); later described under the name cabriite: Can. Mineral. 21 (1983), 481	a
<b>UM1970--E:PbPd[1]</b>	*Geokhimiya (10), 1155	Geochem. Internat. 7, 788	Pd3Pb; appears to be zvyagintsevite	c
<b>UM1970--E:PbPd[2]</b>	*Geokhimiya (10), 1155	Geochem. Internat. 7, 788	Pd4Pb3; same as UM1967-05-E:PbPd	c
<b>UM1970--E:PbPdPtSn</b>	Geokhimiya (10), 1155	Geochem. Internat. 7, 788	(Pd,Pt)3(Pb,Sn,Cu,Fe,Ni)0.92; probably very Sn-rich zvyagintsevite	c
<b>UM1970--E:PdPtSn</b>	*Geokhimiya (10), 1155	Geochem. Internat. 7, 788	Appears to be rustenburgite (CIM Sp. Vol. 23, 193)	c
<b>UM1970--O:V</b>	*Dokl. Akad. Nauk SSSR 193, 683.	Am. Mineral. 56, 1487	Later described under the name shcherbinaite: Zap. Vses. Mineral. Ob. 101 (1972), 464	a
<b>UM1970--OH:FeGeZn</b>	Neues Jb. Mineral. Abh. 114, 89	Am. Mineral. 56, 1488	Mineral "A"; appears to be Zn-bearing stottite	c
<b>UM1970--OH:FeSn</b>	Neues Jb. Mineral. Abh. 114, 89	Am. Mineral. 56, 1488	Mineral "D"; later described under the name natanite: Zap. Vses. Mineral. Ob. 110 (1981), 492	a

IMA-CNMNC-SUM	Invalid minerals	2023		
<b>UM1970-//-OH:MnSn</b>	Neues Jb. Mineral. Abh. 114, 89	Am. Mineral. 56, 1488	Fe,Mn)(Sn,Ge)(OH)6; mineral "C"; Ge-bearing wickmanite	c
<b>UM1970-//-OH:Sn</b>	Neues Jb. Mineral. Abh. 114, 89	Zap. Vses. Mineral. Ob. 101, 281	Mineral "E"; an incomplete analysis; may be varlamoffite	b,c
<b>UM1970-//-OHS:FeMg</b>	Am. Mineral. 55, 283		Appears to be same as UM1969-//-OHS:FeMg; see also UM1972-//-OHS:FeMg	c
<b>UM1970-//-PO:Fe</b>	Am. Mineral. 55, 135		A basic iron phosphate; later described under the name kidwellite: Mineral. Mag. 42 (1978), 137	a
<b>UM1970-//-S:AgBiPb</b>	Can. Mineral. 10, 173	Am. Mineral. 56, 634	Phase "X"; Later described under the name vikingite: Neues Jb. Mineral. Abh. 131, 56	a
<b>UM1970-//-S:As</b>	Am. Mineral. 55, 1338		Equivalent to synthetic beta-As4S4; a polymorph of realgar; later described under the name bonazziite: Mineral. Mag 79:121; transferred from valid list	a
<b>UM1970-//-S:BiTe</b>	Geol. Geofiz. 11, 123	Am. Mineral. 56, 1839	Mineral "L"; indistinguishable from protojosëite on the basis of reported data	c
<b>UM1970-//-S:CuFe</b>	Am. Mineral. 55, 913	Mineral. Abst. 21, 70-3391	Appears to be nukundamite (see Am. Mineral. 65, 407)	c
<b>UM1970-//-S:CuFeH</b>	Am. Mineral. 55, 2110		2(Fe,Cu)S•1.47[Fe(OH)2]; later described under the name ferrovalleriite: Geol. Ore Dep. 55(8), 637; transferred from Valid list	a
<b>UM1970-//-S:CuFeSn</b>	Mineralium Deposita 5, 29	Am. Mineral. 55, 1811	Described initially under the working name "LU", it is identical to petrukite described later: Can. Mineral. 27 (1989), 673	a,c
<b>UM1970-//-S:IrOsRu</b>	*Geokhimiya (10), 1155	Geochem. Internat. 7, 788	(Ru,Os,Ir)3S4; identical to UM1965-10-S:IrOsRu	c
<b>UM1970-//-Se:Pd</b>	Bull. Soc. fr. Minéral. Crist. 93, 476		PdSe2; later described under the name verbeekite: Mineral. Mag. 66, 173	a
<b>UM1970-//-SiO:AlLi</b>	Carnegie Inst. Wash. Year Book 68, 339	Am. Mineral. 55, 1815	Later described under the name virgilite: Am. Mineral. 63 (1978), 461	a
<b>UM1970-//-SiO:CaFeTiYZr</b>	*Naturwissen. 57, 98	Mineral. Abst. 21, 70-3643	Inadequate data	b
<b>UM1970-//-SiO:FeTiYZr</b>	*Proc. Apollo 11 Lunar Sci. Conf. 1, 221	Mineral. Abst. 22, 71-2115	Inadequate data	b
<b>UM1970-//-Sn:CuSb</b>	*Zap. Vses. Mineral. Ob. 99, 68	Am. Mineral. 56, 358	Cu(Sn,Sb); later described under the name sorosite: Am. Mineral. 83 (1998), 901	a
<b>UM1970-//-Te:BiPd</b>	*Geokhimiya (10), 1155	Geochem. Internat. 7, 788	Pd2Bi2Te3; same as UM1970-27-Te:BiPd	c
<b>UM1970-//-TeO:Fe</b>	Mineral. Record 1, 40		Inadequate data; possibly kinichilite	b
<b>UM1970-//-TeO:U</b>	Mineral. Record 1, 40		Later described under the name schmitterite: Am. Mineral. 56 (1971), 411	a
<b>UM1971-//[1]</b>	Am. Mineral. 56, 395		"UN-3"; yellow or pink powder; no chemical data	b

<b>UM1971-//[2]</b>	Am. Mineral. 56, 395		"UN-4"; ochre-yellow powder; no chemical data	b
<b>UM1971-//[3]</b>	Am. Mineral. 56, 395		"UN-10"; a light yellow stain; no chemical data	b
<b>UM1971-//[4]</b>	Am. Mineral. 56, 395		"UN-11"; later described under the name caysichite: Can. Mineral. 12 (1974), 293	a
<b>UM1971-//[5]</b>	Am. Mineral. 56, 395		"UN-12"; a canary-yellow stain; no chemical data	b
<b>UM1971-//[6]</b>	Am. Mineral. 56, 395		"UN-13"; a yellowish white powder; no chemical data	b
<b>UM1971-//[7]</b>	Am. Mineral. 56, 395		"UN-16"; later described under the name caysichite: Can. Mineral. 12 (1974), 293	a
<b>UM1971-//[8]</b>	Am. Mineral. 56, 395		"UN-17"; Greenish yellow prismatic crystals; no chemical data	b
<b>UM1971-//[9]</b>	Am. Mineral. 56, 395		"UN-18"; reddish brown, waxy; no chemical data	b
<b>UM1971-//-AsO:CuFeS</b>	Mineral. Record 2, 214	Am. Mineral. 57, 1004	Mineral "6b"; inadequate data	b
<b>UM1971-//-AsO:Fe</b>	*Ann. Rept. Univ. Leeds Res. Inst. African Geol. 15, 63	Am. Mineral. 57, 1315	An iron arsenate later described under the name karibibite: Lithos 6 (1973), 265.; transferred from Valid list	a
<b>UM1971-//-E:PbPdPtSn</b>	*Zap. Vses. Mineral. Ob. 100, 171	Am. Mineral. 57, 596	Later described under the name atokite: Can. Mineral. 13 (1975), 146	a
<b>UM1971-//-E:PdPtSn</b>	*Zap. Vses. Mineral. Ob. 100, 171	Am. Mineral. 57, 595	Later described under the name rustenburgite: Can. Mineral. 13 (1975), 146	a
<b>UM1971-//-PO:HMgU</b>	*Bol. Inst. Geosci. Astron. Univ. Sao Paulo, 2, 83	Am. Mineral. 59, 212	Mineral "X"; later described under the name phurcalite: Can. Mineral. 29 (1991), 95	a
<b>UM1971-//-S:AgBiCu</b>	Soc. Mining Geol. Japan Spec. Issue 2, 35	Am. Mineral. 57, 1316	(Ag,Cu,Pb)3Bi7S12; "Phase II"; formerly coded as UM1971-05-S:AgBiCu but not compositionally distinct from benjaminite	c
<b>UM1971-//-S:AgBiCuPb[1]</b>	Soc. Mining Geol. Japan Spec. Issue 2, 35	Am. Mineral. 57, 1316	Phase "VII"; (Ag0.9Cu0.1)PbBi3S6; appears to be gustavite with minor Cu	c
<b>UM1971-//-S:AgBiCuPb[2]</b>	Soc. Mining Geol. Japan Spec. Issue 2, 35	Am. Mineral. 57, 1316	Ag5Cu2PbBi13S24; phase "V"; not compositionally distinct from dantopaitite described later	a
<b>UM1971-//-S:AgPbSb</b>	*Dokl. Akad. Nauk SSSR 199, 1138	Zap. Vses. Mineral. Ob. 102, 441	AgPb2Sb3S7; probably fizelyite	c
<b>UM1971-//-S:BiTe</b>	*Godovikov <i>et al.</i> (1971), 84	Zap. Vses. Mineral. Ob. 102, 443	Indistinguishable from sulphotsumoite (described 1982), on the basis of data reported	c
<b>UM1971-//-S:Hg</b>	*Zap. Vses. Mineral. Ob. 100, 731	Mineral. Abst. 23, 72-2291	Gamma-HgS; later described under the name hypercinnabar: Am. Mineral. 63 (1978), 1143	a
<b>UM1971-//-SiO:AlBaKNaTi</b>	Mineral. Record 2, 191	Mineral. Abst. 23, 72-	Later described under the name jonesite: Mineral. Record 8, 453	a
<b>UM1971-//-SiO:AlCaCeFeTh</b>	Meliksetyan (1971), 117	Zap. Vses. Mineral. Ob. 102, 451	Metamict; semi-quantitative analysis only	b
<b>UM1971-//-SiO:FHREETiY</b>	*Materialy. Mineral. Kol'sk Poluostr. 8, 176	Mineral. Abst. 25, 74-1453	Partial chemical analysis; X-ray powder diffraction data; identical to yftisite	c



<b>UM1971--//SiO:KZr</b>	*Izv. Akad. Nauk SSSR Neorg. Mater. 7, 180	Zap. Vses. Mineral. Ob. 101, 286	Later described under the name khibinskite: Zap. Vses. Mineral. Ob. 103 (1974), 110	a
<b>UM1971--//SO:AlCu</b>	Mineral. Record 2, 214	Am. Mineral. 57, 10041407	Some similarities to cyanotrichite; later described under the name grandviewite: Austral. J. Mineral. 14 (2) (2008), 3	a
<b>UM1971--//TaO:Mg</b>	Am. Mineral. 56, 395		"UN-17"; perhaps $MgTa_2O_5+y$ ; inadequate data	b
<b>UM1971--//Te:AgAu</b>	Trudy Inst. Geol. Nauk AN KazSSR 31, 16	Zap. Vses. Mineral. Ob. 102, 444	Approximate formula: $Ag_{1.1}AuTe_{3.8}$ ; probably sylvanite	c
<b>UM1971--//Te:BiPb</b>	*Geol. Rudn. Mest. 13, 99	Zap. Vses. Mineral. Ob. 102, 444	Varies between $Bi_{2.51}Pb_{0.44}Te_3$ & $Bi_{2.45}Pb_{2.50}Te_{3.42}$ ; compositional latitude does not permit unequivocal identification	b
<b>UM1971--//VO:BiCu</b>	*Ann. Rept. Univ. Leeds Res. Inst. African Geol. 15, 63	Am. Mineral. 57, 1315	Appears to be namibite	c
<b>UM1972--//As:PdTe</b>	Izv. Akad. Nauk SSSR, Ser. Geol. No. 11, 85	CIM Sp. Vol. 23, 177	Later described under the name vincentite: Mineral. Mag. 39 (1974), 525	a
<b>UM1972--//AsO:CaH</b>	Aufschluss 23, 279	Am. Mineral. 58, 561	Later described under the name ferrarisite: Bull. Minéral. 103 (1980), 533	a
<b>UM1972--//AsO:CaHMg</b>	Aufschluss 23, 279	Am. Mineral. 58, 561	Later described under the name camgasite: Aufschluss 40 (1989), 369	a
<b>UM1972--//AsO:U</b>	Aufschluss 9, 279		An amorphous U-arsenate; inadequate data	b
<b>UM1972--//AsSO:Ca</b>	Aufschluss 23, 279	Am. Mineral. 58, 561	Later described under the name machatschkiite: Tscherm. Mineral. Petrog. Mitt. 24 (1977), 125	a
<b>UM1972--//Bi:PbPdTe</b>	*Yushko-Zakharova <i>et al.</i> (1972), 58	Zap. Vses. Mineral. Ob. 103, 613	Indistinguishable from Pb- and Te-bearing sobolevskite	c
<b>UM1972--//Bi:Pd[1]</b>	*Yushko-Zakharova <i>et al.</i> (1972), 58	Zap. Vses. Mineral. Ob. 103, 613	Probably sobolevskite	c
<b>UM1972--//Bi:Pd[2]</b>	*Yushko-Zakharova <i>et al.</i> (1972), 58	Zap. Vses. Mineral. Ob. 103, 613	$Pd_2Bi$ ; indistinguishable from UM1970-03-Bi:Pd	c
<b>UM1972--//CO:HKMg</b>	Schweiz. Mineral. Petrog. Mitt. 52, 93	Am. Mineral. 58, 139	Later described under the name baylissite: Schweiz. Mineral. Petrog. Mitt. 56, (1976) 187	a
<b>UM1972--//COCl:HPb</b>	*Izv. Akad. Nauk Kaz. SSR, Ser. Geol. 6, 82	Am. Mineral. 59, 211	Later described under the name barstowite: Mineral. Mag. 55 (1991), 121	a
<b>UM1972--//E:CuSn</b>	Neues Jb. Mineral. Mh. (1972), 108	Am. Mineral. 58, 347	Same as UM1965-06-E:CuSn	c
<b>UM1972--//E:PdPt</b>	*Horvath <i>et al.</i> (1972)	Zap. Vses. Mineral. Ob. 102, 436	Qualitative analysis only; minor Au, Bi, Sb, Pb & As	b
<b>UM1972--//O:CaFeTiZr</b>	Nature, Phys. Sci. 236, 215	Am. Mineral. 58, 141	Mineral "X"; later described under the name lovingite: Am. Mineral. 63 (1978), 28	a
<b>UM1972--//OH:ClCuZn</b>	Neues Jb. Mineral. Mh. (1972), 335	Mineral. Abst. 24, 73-	Given working name "anarakite" but subsequently shown to be a	c

		1934	Zn-bearing paratacamite (see Embrey & Fuller, 1980)	
<b>UM1972-//-OHS:FeMg</b>	Am. Mineral. 57, 1037		Appears to be tochilinite: Zap. Vses. Mineral. Ob. 100 (1971), 477; see also UM1970-//-OHS:FeMg & UM1969-//-OHS:FeMg	c
<b>UM1972-//-PO:[1]</b>	*Ann. Rept. Univ. Leeds Res. Inst. African Geol. 16, 56	Am. Mineral. 59, 1140	White rosettes; data are inadequate for recognition	b
<b>UM1972-//-PO:[2]</b>	*Ann. Rept. Univ. Leeds Res. Inst. African Geol. 16, 56	Am. Mineral. 59, 1140	Greenish yellow mineral; data are inadequate for recognition	b
<b>UM1972-//-PO:CaFeMnNa</b>	24 <sup>th</sup> IGC, Rept. 14, 183	Mineral. Abst. 24, 73-4070	Metamict; probably ferroalluaudite or arrojadite	b,c
<b>UM1972-//-S:AsPb</b>	Neues Jb. Mineral. Mh. (1972), 433	Am. Mineral. 58, 967	Identical to UM1966-04-S:AsPb	c
<b>UM1972-//-S:BiCuPb</b>	*Borodaev & Mozgova (1972)	Zap. Vses. Mineral. Ob. 102, 441	(Cu)0.4-1.8(Pb)0.4-1.8(Bi)6.2-7.6S <sub>12</sub> ; several minerals lie within these ranges	b
<b>UM1972-//-S:Cu</b>	Nature, Phys. Sci. 238, 123	Am. Mineral. 58, 561	Later described under the name roxbyite: Mineral. Mag. 53 (1989), 323	a
<b>UM1972-//-S:CuFe</b>	*J. Geol. Soc. India 13, 185	Mineral. Abst. 24, 73-1878	Appears to be identical to UM1970-24-S:CuFe.	c
<b>UM1972-//-S:FeMnZn</b>	Meteoritics 7, 429	Am. Mineral. 58, 806	(Fe <sub>0.54</sub> Zn <sub>0.25</sub> Mn <sub>0.16</sub> )S. The Fe-dominant end-member later described as rudashevskyite; formerly coded as UM1972-12-S:FeMnZn	a
<b>UM1972-//-S:Rh</b>	*Sci. Repts. Kagoshima-Kokkaido Univ. 21, 119	Am. Mineral. 67, 1080	Approximate formula RhS; inadequate data; not known synthetically; perhaps the same as UM1976-18-S:RhRu	b
<b>UM1972-//-Sb:Pt</b>	Minerals Sci. Eng. 4, 3	Mineralium Deposita 10, 71	"PtSb"; very low total; probably same as UM1975-17-Sb:PtPd with Pd having been missed	c
<b>UM1972-//-SiO:AlCaFeMgTi</b>	Tscherm. Mineral. Petrog. Mitt. 18, 17	Mineral. Mag. 72, 839	Ca <sub>4</sub> (Fe <sup>2+</sup> 10Ti <sub>2</sub> )O <sub>4</sub> [Si <sub>8</sub> Al <sub>4</sub> O <sub>36</sub> ]; substantial solid solution towards rhönite of which it is the Fe <sup>2+</sup> analogue; later described under the name Kuratite: Mineral. Mag. 80:1067; transferred from valid list	a
<b>UM1972-//-SiO:AlCaFeNa</b>	*Semenov (1972)	Zap. Vses. Mineral. Ob. 102, 456	Inadequate data	b
<b>UM1972-//-SiO:AlHKNa</b>	*Semenov (1972)	Zap. Vses. Mineral. Ob. 102, 456	KNaAl <sub>2</sub> Si <sub>4</sub> O <sub>12</sub> •2H <sub>2</sub> O; appears to be indistinguishable from UM1967-09-SiO:AlHKNa	c
<b>UM1972-//-SiO:FeTi</b>	*Semenov (1972)	Zap. Vses. Mineral. Ob. 102, 456	Inadequate data	b
<b>UM1972-//-SiO:HNaZr</b>	Semenov (1972)	Khomyakov (1995)	Formula given as H <sub>3</sub> NaZrSi <sub>6</sub> O <sub>16</sub> •nH <sub>2</sub> O; said by Khomyakov (1995) to be the same as UKI-1969-(SiO:HNaZr)	c
<b>UM1972-//-Te:AgPd</b>	*Izv. Akad. Nauk SSSR,	CIM Sp. Vol. 23, 177	Later described under the name telargpalite: Zap. Vses. Mineral.	a

	Ser. Geol. #11, 85		Ob. 103 (1974), 595; (CIM Sp. Vol. 23, 184)	
<b>UM1972-/-VO:CuPPb</b>	*Ann. Rept. Univ. Leeds Res. Inst. African Geol. 16, 53	Mineral. Abst. 24, 73- 1946	The mineral is probably mottramite	c
<b>UM1973-/-As:NiPd</b>	*Trudy TsNIGRI 108, 96	Am. Mineral. 61, 179	Later described under the name majakite: Zap. Vses. Mineral. Ob. 105 (1976), 698; (see also UM1967-/- As:NiPd)	a
<b>UM1973-/-As:PbPd</b>	*Trudy TsNIGRI 108, 96	Am. Mineral. 61, 179	Later described under the name borishanskiite: Zap. Vses. Mineral. Ob. 104 (1975), 57	a
<b>UM1973-/-AsS:IrPt</b>	*Geochimica 2, 76	Am. Mineral. 65, 813	(Pt,Ir) <sub>2</sub> As <sub>5</sub> S <sub>3</sub> ; Ir-rich platarsite	a
<b>UM1973-/-Bi:Pd</b>	*Trudy TsNIGRI 108, 96	Am. Mineral. 61, 179	(Pd) <sub>1±x</sub> Bi; later described under the name sobolevskite: Zap. Vses. Mineral. Ob. 104 (1975), 568	a
<b>UM1973-/-CO:BaFREE</b>	*Geochimica 1, 31	Am. Mineral. 60, 738	Later described under the name cebaite-(Ce): Sci. Geol. Sinica 4 (1975), 409	a
<b>UM1973-/-E:AuCu</b>	*Geol. Rudn. Mest. 15, 32	Zap. Vses. Mineral. Ob. 104, 617	Semiquantitative analysis gives Cu <sub>3</sub> Au <sub>2</sub> -CuAu; possibly = cuproauride or tetraauricupride	b,c
<b>UM1973-/-E:AuCuPd</b>	*Geol. Rudn. Mest. 15, 32	Zap. Vses. Mineral. Ob. 104, 617	A Pd-bearing auricupride later given the unnecessary name rozhkovite: Trudy Mineral. Muz. Akad. Nauk SSSR 24, 93	c
<b>UM1973-/-E:CuPdPtSn</b>	*Trudy TsNIGRI 108, 96	Am. Mineral. 61, 179	* Later described under the name taimyrite: Zap. Vses. Mineral. Ob. 111 (1982), 78	a
<b>UM1973-/-E:PtPtSn[1]</b>	*Trudy TsNIGRI 108, 96	Am. Mineral. 61, 179	Pt <sub>7</sub> Pd <sub>4.5</sub> Sn <sub>4</sub> - the mineral is not distinguishable from rustenburgite	c
<b>UM1973-/-E:PtPtSn[2]</b>	*Trudy TsNIGRI 108, 96	Am. Mineral. 61, 179	Disordered form of (Pt,Pd) <sub>3</sub> Sn, a mineral later described under the name rustenburgite	a
<b>UM1973-/-E:PtPtSn[3]</b>	*Trudy TsNIGRI 108, 96	Am. Mineral. 61, 179	Disordered form of (Pd,Pt) <sub>3</sub> Sn, a mineral later described under the name atokite; same as UM1971-/-E:PbPdPtSn	a
<b>UM1973-/-E:PdSn</b>	*Trudy TsNIGRI 108, 96	Am. Mineral. 61, 179	Later described under the name paolovite: Geol. Rudn. Mest. 16 (1974), 98	a
<b>UM1973-/-O:Ti</b>	Geochim. Cosmochim. Acta 37, 761		Main component TiO <sub>2</sub> ; minor Al, Mg, Te, P (or Zr); may be armalcolite	b,c
<b>UM1973-/-S:AgBiPb</b>	*Sci. Rept. Tohoku Univ., Ser.3, 12, 69	Am. Mineral. 59, 1139	Probably same as UM1972-09-S:AgBiPbSb; similarities to vikingite	c
<b>UM1973-/-S:BiPb</b>	*Sci. Rept. Tohoku Univ., Ser.3, 12, 69	Am. Mineral. 59, 1139	Appears to be bursaite	c
<b>UM1973-/-S:CrFeTi</b>	Meteoritics 8, 48	Am. Mineral. 58, 1115	Later described under the name heideite: Am. Mineral. 59 (1974), 463	a
<b>UM1973-/-S:CuFeSnZn</b>	Can. Mineral. 12, 46		Later described under the name petrukite: Can. Mineral. 27 (1989), 673	a
<b>UM1973-/-S:CuMo</b>	*Spraw. Pos. Komis. Nauk PAN Krakowie	Zap. Vses. Mineral. Ob. 104, 618	X-ray powder diffraction pattern similar to that of molybdenite; may be a mixture	d

	16, 248			
<b>UM1973--S:IrOs</b>	*Geochimica 4, 254	Am. Mineral. 65, 812	(Ir,Os)S <sub>2</sub> ; same as "iridisite"	a
<b>UM1973--Sb:NiPdPtSn</b>	*Geochimica 1, 23	Am. Mineral. 60, 739	(Pd,Pt,Ni) <sub>2</sub> (Sb,Sn); perhaps a Sb-analogue of paolovite; likely naldrettite	b,a
<b>UM1973--SiO:</b>	Mineral. Record 4, 205		X-ray powder diffraction pattern, but no compositional data; may be a zeolite	b
<b>UM1973--SiO:CaZr</b>	Can. Mineral. 12, 211	Am. Mineral. 61, 178	Later described under the name gittinsite: Can. Mineral. 18 (1980), 201	a
<b>UM1973--SiO:HSrTi</b>	*Mineral. J. 7, 298	Am. Mineral. 59, 1140	Later described under the name ohmilite: Mineral J. (Japan) 7 (1973), 298	a
<b>UM1973--SiO:KZr</b>	*Trudy Mineral. Muz. Akad. Nauk SSSR 22, 215	Am. Mineral. 59, 1140	Later described under the name khibinskite: Zap. Vses. Mineral. Ob. 103 (1974), 110; same as UM1971--SiO:KZr	a
<b>UM1973--SiO:NaZr</b>	*Trudy Mineral. Muz. Akad. Nauk SSSR 22, 215	Am. Mineral. 59, 1140	Later described under the name parakeldyshite: Can. Mineral. 15 (1977), 102	a
<b>UM1973--SO:FeNi</b>	*Smithsonian Contr. Earth Sci. 10, 1	Nature 306, 354	Inadequate data	b
<b>UM1973--Te:AgPbPd</b>	Internat. Geol. Rev. 15, 1284		(Pd,Ag) <sub>3</sub> (Ag,Pb)(Te,Se); same as UM1972-16-Te:AgPbPd	c
<b>UM1973--Te:BiPdPt</b>	*Geochimica 1, 23		Zap. Vses. Mineral. Ob. (Pd,Pt)(Te,Bi) <sub>2</sub> ; apparently merenskyite 106, 86	c
<b>UM1973--Te:BiPdSb</b>	Can. Mineral. 11, 903		Inadequate data; could be Sb- and Bi-bearing kotulskite	b,c
<b>UM1973--VO:Bi</b>	*Contr. Mineral. Petrol. 41, 325	Mineral. Abst. 25, 74-507	Later described under the name clinobisvanite: Mineral. Mag. 39 (1973), 847	a
<b>UM1974--E:AuCu</b>	Neues Jb. Mineral. Mh. (1974), 1	Eur. J. Mineral. 3, 451	CuAu <sub>2.6</sub> ; not distinct from Cu-bearing gold	c
<b>UM1974--O:TiYZn</b>	Am. Mineral. 59, 172.		Mineral "Y"; later shown to be a Zn,REEY-bearing variety of senaite: Mineral. Mag. 48 (1984), 97	c
<b>UM1974--S:BiCuPb[1]</b>	*Kolkovski & Borodaev (1974), 419	Am. Mineral. 63, 427	Appears to be identical to friedrichite described later (see Can. Mineral. 16, 127)	c
<b>UM1974--S:BiCuPb[2]</b>	*Kolkovski & Borodaev (1974), 419	Am. Mineral. 63, 427	Appears to be identical to the previously described mineral lindströmite	c
<b>UM1974--S:CrFeMn</b>	Am. Mineral. 59, 465		(Mn,Fe)Cr <sub>2</sub> S <sub>4</sub> ; the Mn-analogue of daubrélite; later described under the name joegoldsteinite: Am. Mineral. 101:1217; transferred from valid list	a
<b>UM1974--S:CuFeNi[1]</b>	*Geol. Rudn. Mest. 16 (5), 36	Zap. Vses. Mineral. Ob. 104, 617	Cu <sub>16</sub> (Fe,Ni) <sub>19</sub> S <sub>32</sub> ; later described under the name putoranite: Zap. Vses. Mineral. Ob. 109 (1980), 335	a
<b>UM1974--S:CuFeNi[2]</b>	*Geol. Rudn. Mest. 16 (5), 36	Zap. Vses. Mineral. Ob. 104, 617	Cu <sub>17</sub> (Fe,Ni) <sub>17</sub> S <sub>32</sub> ; later described under the name putoranite: Zap. Vses. Mineral. Ob. 109 (1980), 335	a

IMA-CNMNC-SUM	Invalid minerals	2023		
<b>UM1974--S:IrNiRh</b>	*Acta Geol. Sinica 48, 202	Am. Mineral. 61, 184	(Ir,Rh,Ni)S; same as xingzhongite; transferred from Valid list	a
<b>UM1974--S:IrRh</b>	*Acta Geol. Sinica 48, 202	Am. Mineral. 61, 184	(Ir,Rh)S <sub>2</sub> ; same as "iridisite"	b,a
<b>UM1974--S:NiOs</b>	*Acta Geol. Sinica 48, 202	Am. Mineral. 61, 184	(Os,Ni)S <sub>2</sub> ; likely Ni-rich erlichmanite	b,a
<b>UM1974--Sb:Pd</b>	*Geochimica 3, 169	Am. Mineral. 61, 182	Pd <sub>2</sub> Sb; later described under the name naldrettite: Mineral. Mag. 69 (2005), 89	a
<b>UM1974--Sb:Pd</b>	*Geochimica 1974 (3), 169	Am. Mineral. 61, 182	PdSb; similar to sudburyite but reflected light characteristics differ; later determined to be sudburyite: Geochimica 1979 (1), 72; transferred from Valid list	a
<b>UM1974--SiO:BaFeHNaSrTi</b>	Mineral. J. (Japan) 7, 395		Appears to be same as bario-orthojoaquinite described later (see Am. Mineral. 67, 809)	a,c
<b>UM1974--SiO:BaSrV</b>	*Mineral. J. 7, 421	Am. Mineral. 61, 178	(Ba,Sr)VSi <sub>2</sub> O <sub>7</sub> ; the Ba-analogue of haradaite; later described under the name suzukiite: Mineral. J. 11 (1982), 15	a
<b>UM1974--SiO:U</b>	Am. Mineral. 59, 166		Later described under the name uranosilite: Neues Jb. Mineral. Mh. (1983), 259	a
<b>UM1974--Te:BiNiPdSb</b>	*Geochimica 1974 (3), 169	Am. Mineral. 61, 182	(Pd,Ni)(Te,Sb,Bi); later determined to be sudburyite: Can. Mineral. 12, 275; transferred from Valid list	a
<b>UM1974--Te:BiPd</b>	Econ. Geol. 69, 263	Am. Mineral. 61, 179	Analysis is from a 2-phase intergrowth	d
<b>UM1974--Te:BiPdSb</b>	*Geochimica 1974 (3), 169	Am. Mineral. 61, 182	Pd(Te,Sb,Bi) <sub>2</sub> ; likely merenskyite	b,a
<b>UM1974--Te:NiSb</b>	*Geochimica 3, 169	Am. Mineral. 61, 182	Ni <sub>2</sub> SbTe <sub>2</sub> ; later described under the name vavřínite: Can. Mineral. 45 (2007), 1213; formerly coded as UM1974-22-Te:NiSb	c
<b>UM1974--Te:Pd</b>	*Geochimica 3, 169	Am. Mineral. 61, 182	PdTe; appears to be kotulskite	c
<b>UM1975--As:CuPd</b>	Can. Mineral. 13, 321	Am. Mineral. 62, 1061	Inadequate data	b
<b>UM1975--As:NiPd[1]</b>	Can. Mineral. 13, 321	Am. Mineral. 62, 1261	Later described under the name menshikovite: Mineral. Mag. 64 (2000), 847	a
<b>UM1975--As:NiPd[2]</b>	*Internat. Geol. Rev. 17, 6	Am. Mineral. 61, 179	Approximate formula: (Ni,Pd) <sub>7</sub> As <sub>3</sub> ; a second report of UM1973-01-As:NiPd	c
<b>UM1975--As:RuS</b>	Minerals Sci. Eng. 7, 189		Ru(As,S) <sub>2</sub> ; indaequate data; perhaps the same as anduoite or possibly ruarsite	b,c
<b>UM1975--AsSO:Cu</b>	Aufschluss 26, 369	Am. Mineral. 62, 175	Same as UM1972-03-AsOSO:Cu	c
<b>UM1975--Bi:PdPtSb</b>	Mineralium Deposita 10, 71		(Pt,Pd)(Bi,Sb,As); same as UM1974-02-Bi:AsPdPtSb	c
<b>UM1975--CO:CuZn</b>	Aufschluss 26, 369	Am. Mineral. 62, 175	Later described under the name claraite: Chem. Erde 41 (1982), 97	a
<b>UM1975--E:CuFePdPt</b>	*Dokl. Earth Sci. 224, 97	CIM Sp. Vol. 23, 177	(Cu,Pd,Fe,Pt); 3.2 wt.% Te may be extraneous (CIM Sp. Vol. 23, 186); indistinguishable from skaergaardite described in 2004: Mineral. Mag. 68, 615	c
<b>UM1975--E:HgPd</b>	*Dokl. Earth Sci. 224, 97	CIM Sp. Vol. 23, 177	Hg <sub>3</sub> Pd <sub>2</sub> (?); low analytical total and uncertain stoichiometry (CIM	b

<b>UM1975--E:PbPdPtSn</b>	*Internat. Geol. Rev. 17, Am. Mineral. 61, 179 6		Sp. Vol. 23, 182) Appears to be UM1973-13-E:PbPdPtSn; second report of same mineral	c
<b>UM1975--S:AgPbSb</b>	*Norsk Geol. Tidsskr. 55, Am. Mineral. 61, 1055 185		Indistinguishable from zoubekite on available data	c
<b>UM1975--S:CuFe</b>	*Neues Jb. Mineral. Abh. Mineral. Abst. 27, 76- 125, 107	1500	(Cu,Fe) <sub>2</sub> S <sub>3</sub> ; no data	b
<b>UM1975--S:CulrRh</b>	*Dokl. Akad. Nauk SSSR Am. Mineral. 62, 175 225, 1408		Later described under the name kashinite: Zap. Vses. Mineral. Ob. 105 (1985), 698	a
<b>UM1975--S:IrRh</b>	*Dokl. Akad. Nauk SSSR Am. Mineral. 62, 175 225, 1408		(Rh,Ir) <sub>2</sub> S <sub>3</sub> ; later described under the name bowieite: Can. Mineral. 22 (1984), 543	a
<b>UM1975--S:NiSb</b>	Minerals Sci. Eng. 7, 189		Ni <sub>9</sub> Sb <sub>2</sub> S <sub>8</sub> ; later described under the name tucekite: Mineral. Mag. 42 (1978), 278	a
<b>UM1975--S:Rh</b>	Minerals Sci. Eng. 7, 189		RhS <sub>2</sub> ; indaequate data; perhaps the same as UM1978-14-S:CuFePtRh	b,c
<b>UM1975--Sb:Pd</b>	Can. Mineral. 13, 321	Am. Mineral. 62, 1061	Pd <sub>8</sub> Sb <sub>3</sub> ; indistinguishable from stibiopalladinite or merteite-II on available data	c
<b>UM1975--SiO:AlFeHMgNi</b>	Mineral. Mag. 40, 200	ICDD 29-0862	Probably Fe- and Ni-bearing clinochlore	c
<b>UM1975--WO:Cu</b>	Aufschluss 26, 369	Am. Mineral. 62, 175	Some, but not all, diffraction lines fit well with cuprotungstite	b
<b>UM1976--As:CuFePt</b>	Econ. Geol. 71, 1377	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1976--As:PdSn</b>	Econ. Geol. 71, 249	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1976--AsO:FeHS</b>	Neues Jb. Mineral. Mh. (1976), 426	Zap. Vses. Mineral. Ob. 107, 343	Later described under the name zykaite: Neues Jb. Mineral. Mh. (1978), 134	a
<b>UM1976--Bi:PdSbTe</b>	Econ. Geol. 71, 1451	Am. Mineral. 62, 598	Pd(Bi,Sb,Te); probably sobolevskite with partial ss towards sudburyite and kotulskite; formerly coded as UM1976-08-Bi:PdSbTe	c
<b>UM1976--BO:HMg</b>	*Mitteilungsbl. Landesmuseums "Joanneum", Abt. Mineral. 44, 35	Am. Mineral. 62, 1261	Later described under the name admontite: Tscherm. Mineral. Petrog. Mitt. 26 (1981), 69	a
<b>UM1976--CO:LaNd</b>	Geol. Surv. Canada, Pap. 76-1B, 353	Zap. Vses. Mineral. Ob. 107, 342	Later named lanthanite-(Nd): Geol. Surv. Canada, Pap. 80-1C (1980), 141	a
<b>UM1976--E:CuPdPtSn</b>	*Zap. Vses. Mineral. Ob. 105, 206	Mineral. Abst. 28, 77-890	(Pd <sub>2.09</sub> Pt <sub>0.25</sub> Cu <sub>0.72</sub> )Sn <sub>0.94</sub> ; appears to be same as UM1970-06-E:CuPdPtSn	c
<b>UM1976--E:FePdPtSn</b>	Econ. Geol. 71, 1377	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1976--E:HgPd</b>	Econ. Geol. 71, 1377	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1976--E:PdSbSn</b>	*Trudy TsNIGRI 122, 107	Zap. Vses. Mineral. Ob. 107, 340	Pd <sub>2</sub> (Sn,Sb); probably Sb-bearing paolovite; formerly coded as UM1976-27-Sn:PdSb	c
<b>UM1976--E:PtRhRu</b>	Econ. Geol. 71, 1399	Mineral. Petrol. 60, 185	Dubiously identified on the basis of a list of constituent elements	b
<b>UM1976--NbO:REE</b>	*Geol. Geofiz. (1976) (4), 141	Am. Mineral. 62, 397	REENbO <sub>4</sub> ; appears to be beta-fergusonite-(Nd)	c
<b>UM1976--O:NbU</b>	*Rev. Assoc. Geol.	Am. Mineral. 63, 1284	Distinctive X-ray powder pattern and qualitative composition; not	c

	Argentina 31, 232		distinct from carlosbarbosaite: Mineral. Mag. 76 (2012), 75; transferred from Valid list	
<b>UM1976--S:AgAsCuFe</b>	Geol. Surv. Canada, Pap. 76-1, 311	Zap. Vses. Mineral. Ob. 107, 342	Qualitative compositional data only	b
<b>UM1976--S:AsCoCu</b>	Geol. Surv. Canada, Pap. 76-1, 311	Zap. Vses. Mineral. Ob. 107, 342	Qualitative compositional plus reflectance data	b
<b>UM1976--S:AsCoNi</b>	Geol. Surv. Canada, Pap. 76-1, 311	Zap. Vses. Mineral. Ob. 107, 342	Qualitative compositional plus reflectance data	b
<b>UM1976--S:AsFeNi</b>	Geol. Surv. Canada, Pap. 76-1, 311	Zap. Vses. Mineral. Ob. 107, 342	(Ni,Fe)AsS; intermediate between gersdorffite and arsenopyrite	b
<b>UM1976--S:AsPdSbSn</b>	Econ. Geol. 71, 1377	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1976--S:BiPtSn</b>	Econ. Geol. 71, 1244	Mineral. Petrol. 60, 185	Only qualitative compositional data	b
<b>UM1976--S:Co</b>	Geol. Surv. Canada, Pap. 76-1, 311	Zap. Vses. Mineral. Ob. 107, 342	CoS; quantitative microprobe analysis and reflectivity data; probably jaipurite	c
<b>UM1976--S:CoCuFeNi</b>	Econ. Geol. 71, 1429	Am. Mineral. 62, 596	(Cu,Ni,Fe,Co)3S4; only qualitative compositional data; probably fletcherite	b,c
<b>UM1976--S:CoCuIrNiPtRh</b>	Econ. Geol. 71, 1244	Mineral. Petrol. 60, 185	Only qualitative compositional data	b
<b>UM1976--S:CuInSe</b>	Geol. Surv. Canada, Pap. 76-1, 311	Zap. Vses. Mineral. Ob. 107, 342	Qualitative data only; in myrmekitic intergrowth with bornite	b
<b>UM1976--S:CuNiPtRh</b>	Econ. Geol. 71, 1377	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1976--S:CuPtRh</b>	Econ. Geol. 71, 1244	Mineral. Petrol. 60, 185	Only qualitative compositional data	b
<b>UM1976--S:CuSeSnW</b>	Geol. Surv. Canada, Pap. 76-1, 311	Zap. Vses. Mineral. Ob. 107, 342	Qualitative compositional plus reflectance data	b
<b>UM1976--S:PtSn</b>	Econ. Geol. 71, 1377	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1976--Sb:AsPd</b>	Econ. Geol. 71, 249	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1976--Sb:BiPdTe</b>	Econ. Geol. 71, 1451	Am. Mineral. 62, 598	Probably identical to UM1976-23-Sb:BiPdTe	c
<b>UM1976--Se:AgAu</b>	Geol. Surv. Canada, Pap. 76-1, 311	Zap. Vses. Mineral. Ob. 107, 342	Qualitative compositional data only; perhaps fischesserite	b,c
<b>UM1976--SiO:CaKTi</b>	*Mineral. J. 8, 110	Zap. Vses. Mineral. Ob. 109, 82	Qualitative chemistry; inadequate data	b
<b>UM1976--SiO:H</b>	*Z. Krist. 143, 156	Mineral. Abst. 28, 77-2190	SiO2•nH2O; designated "SiO2-G"; later described under the name mogánite: Neues Jb. Mineral. Abh. 149 (1978), 325	a
<b>UM1976--SiO:HNaZr</b>	*Trudy Mineral. Muz. Akad. Nauk SSSR 25, 90	Khomyakov (1995)	(Na,Ca)2Zr2Si4O12(OH,O)•3H2O; mineral "M34" of Khomyakov (1995); same as UM1975-22-SiO:HNaZr	c
<b>UM1976--SiO:Th</b>	Mineral. Mag. 40, 737		Probably altered thorite	b
<b>UM1976--SO:FeHN</b>	Am. Mineral. 61, 1		NH4Fe(SO4)2•12H2O; later described under the name lonecreekite: Annal. Geol. Surv. S. Africa 17 (1983), 29	a
<b>UM1976--Te:AgBiPb</b>	*Geol. Rudn. Mest. (1976) 111	Am. Mineral. 62, 597	Later described under the name rucklidgeite: Zap. Vses. Mineral. Ob. 106 (1977), 62	a
<b>UM1976--Te:AgPd</b>	Econ. Geol. 71, 1159	Am. Mineral. 62, 596	Later described under the name sopcheite: Zap. Vses. Mineral. Ob. 111 (1982), 114	a
<b>UM1976--Te:BiFePd</b>	Econ. Geol. 71, 1377	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b

<b>UM1976--Te:BiPbS</b>	*Geol. Rudn. Mest. (1976) 111	Am. Mineral. 62, 597	Mineral "D"; later described under the name aleksite: Zap. Vses. Mineral. Ob. 107 (1978), 315	a
<b>UM1976--Te:BiPd</b>	Econ. Geol. 71, 1429	Mineral. Petrol. 60, 185	"Phase D"; of indeterminative stoichiometry	b
<b>UM1976--Te:HgPd</b>	Econ. Geol. 71, 1244	Mineral. Petrol. 60, 185	(Pd,Hg)Te; mineral "M"; apparently the same as mineral "A" - UM1966--Te:HgPd	c
<b>UM1977--E:CuFeNiPtSb</b>	Can. Mineral. 15, 380	CIM Sp. v.30, p.177	"Alloy 1"; probably a Ni- & Cu-bearing variety of tetraferroplatinum	c
<b>UM1977--E:FePt</b>	Can. Mineral. 15, 380	Mineral. Petrol. 60, 185	Grain nos. 9 & 10; probably Fe-bearing platinum	c
<b>UM1977--O:AlCa</b>	*Geol. Surv. Israel Bull. 70, 1	Am. Mineral. 63, 425	Later described under the name grossite: Eur. J. Mineral. 6 (1994), 591	a
<b>UM1977--O:BaKTI</b>	*Austral. J. Chem. 30, 1195	Am. Mineral. 63, 795	Later described under the name jeppeite: Mineral. Mag. 48 (1984), 263	a
<b>UM1977--PO:AIHU[1]</b>	Bull. Soc. belge Géol. 86, 183		A hydrated U,Al-phosphate: mineral "A"; later described under the name phuralumite: Bull. Minéral. 102 (1979), 333	c
<b>UM1977--PO:AIHU[2]</b>	Bull. Soc. belge Géol. 86, 183		A hydrated U,Al-phosphate; mineral "B"; later described under the name upalite: Bull. Minéral. 102 (1979), 333	c
<b>UM1977--PO:AIHU[3]</b>	Bull. Soc. belge Géol. 86, 183		A hydrated U,Al-phosphate; minerals "C" & "D"; later described under the name mundite: Bull. Minéral. 104 (1981), 669	c
<b>UM1977--PO:AIHU[4]</b>	Bull. Soc. belge Géol. 86, 183		A hydrated U,Al-phosphate; mineral "E"; later named ranunculite: Mineral. Mag. 43 (1979), 321	c
<b>UM1977--PO:AIHU[5]</b>	Bull. Soc. belge Géol. 86, 183		A hydrated U,Al-phosphate; mineral "F"; later identified as furongite: Ann. Soc. Géol. Belg. 108 (1985), 365	c
<b>UM1977--PO:AIHU[6]</b>	Bull. Soc. belge Géol. 86, 183		A hydrated U,Al-phosphate; mineral "G"; later described under the name moreauite: Bull. Minéral. 108 (1985), 9	c
<b>UM19--10-PO:CaClKMg</b>	Mineral. Mag. 41, 33		A phosphate with distinctive X-ray powder diffraction pattern; later described under the name phoxite: Am.Mineral.104:973; transferred from valid list	a
<b>UM1977--PO:CrFeMg</b>	Mineral. Mag. 41, 91		Analysis of possibly heterogenous decomposition products, with very low total	b,d
<b>UM1977--SiO:AlCaHKNa</b>	Sci. Repts. Niigata Univ. Ser. E., Geol. No.4, 49	Am. Mineral. 64, 244	A Na-analogue of dachiardite later named sodium dachiardite: Sci. Rep. Niigata Univ. Ser. E Geol. 4 (1977), 49; subsequently renamed dachiardite-Na	a
<b>UM1977--SiO:BaFeMgTi</b>	*Geochem. J. 11, 137	Am. Mineral. 63, 795	Inadequate data; >40% impurities may be included in analysis	b,d
<b>UM1977--SiO:CaHThU</b>	Am. Mineral. 82, 1241		Ca <sub>3.5</sub> (Th,U) <sub>1.5</sub> (SiO <sub>4</sub> ) <sub>3</sub> (OH); no data; perhaps "calciobriholite"	b,c
<b>UM1977--SiO:CaREE</b>	Am. Mineral. 82, 1241		LREE,Ca-silicate; no data; perhaps stillwellite	b
<b>UM1977--SiO:HNaZr</b>	Can. Mineral. 15, 102	Khomyakov (1995)	(Na,Ca) <sub>2</sub> Zr <sub>2</sub> Si <sub>4</sub> O <sub>12</sub> (OH,O)•3H <sub>2</sub> O; mineral "M34" of Khomyakov (1995); same as UM1975-22-SiO:HNaZr	c
<b>UM1977--SO:AIHN</b>	Am. Mineral. 62, 316		Product of a burning coal seam; later described under the name godovikovite: Zap. Vses. Mineral. Ob. 117 (1988), 211	a



<b>UM1977--SO:CaHU</b>	Aufschluss 28, 177		Only qualitative compositional data; X-ray pattern not distinct from rabejacite	c
<b>UM1978--CH:O</b>	*Mineral. Slov. 10, 539	Mineral. Abst. 30, 79-4068	Mineral "X"; an inadequately characterised organic mineral	b
<b>UM1978--CO:BaCa</b>	Geol. Surv. Canada Pap. 78-1C, 49	Am. Mineral. 64, 1332	Later described under the name paralstonite: Geol. Surv. Canada Pap. 79-1C (1978), 99	a
<b>UM1978--CO:CuHSb</b>	Grønlands Geol. Undersøgelse Bull. No.126, 1		probably a mixture	d
<b>UM1978--E:FePdPt</b>	*Genkin (1968)	CIM Sp. Vol. 23, 177	(Pt,Pd)Fe; later described under the name tetraferroplatinum: Can. Mineral. 13 (1975), 117	a
<b>UM1978--E:IrOsPtRu[1]</b>	Can. Mineral. 16, 641	CIM Sp. Vol. 23, 177	(Ru,Os,Ir,Pt); not distinguishable from UM1978-06-E:IrOsPtRu; (CIM Sp. Vol. 23, 190); perhaps simply impure ruthenium	c
<b>UM1978--E:IrOsPtRu[2]</b>	Can. Mineral. 16, 641	CIM Sp. Vol. 23, 177	(Ir,Pt,Os,Ru); (CIM Sp. Vol. 23, 191); not distinguishable from UM1978-07-E:IrOsPtRu; perhaps simply impure iridium	c
<b>UM1978--E:IrOsPtRu[3]</b>	Can. Mineral. 16, 641	Mineral. Petrol. 60, 185	(Os,Ir,Pt,Ru); probably impure osmium	c
<b>UM1978--O:CrFeMgTi</b>	Am. Mineral. 63, 37		Probably loweringite or possibly a Cr- and Fe-bearing pseudobrookite	c
<b>UM1978--OH:CuFeSnZn</b>	*Novye Dannye Mineral. 27, 89	Am. Mineral. 65, 1069	Later described under the name mushistonite: Zap. Vses. Mineral. Ob. 113 (1984), 612	a
<b>UM1978--PO:AIH</b>	Rocks & Minerals 53, 214		Qualitative chemistry; X-ray powder diffraction pattern similar to planerite	c
<b>UM1978--PO:Fe</b>	Mineral. Mag. 42, 137		Mineral "B"; inadequate data but X-ray diffraction pattern similar to kidwellite	b,c
<b>UM1978--S:BiCuPbSe</b>	*Neues Jb. Mineral. Mh. (1978), 9	Am. Mineral. 63, 1283	Mineral "S"; later described under the name soucekite: Neues Jb. Mineral. Mh. (1979), 289	a
<b>UM1978--S:BiCuPbSeTe[1]</b>	*Neues Jb. Mineral. Mh. (1978), 9	Am. Mineral. 63, 1283	(Bi,Pb,Cu) <sub>4</sub> (S,Se,Te) <sub>5</sub> ; no data	b
<b>UM1978--S:BiCuPbSeTe[2]</b>	*Neues Jb. Mineral. Mh. (1978), 9	Am. Mineral. 63, 1283	(Bi,Pb,Cu) <sub>6</sub> (S,Se,Te) <sub>5</sub> ; no data	b
<b>UM1978--S:BiTe[1]</b>	*Przeglad Geol. 26, 337	Am. Mineral. 64, 1332	Bi <sub>2</sub> TeS; apparently identical to ingodite, described in 1981	c,a
<b>UM1978--S:BiTe[2]</b>	*Geol. Razved. (1978) (10), 91	Zap. Vses. Mineral. Ob. 110, 239	Bi <sub>2</sub> TeS; later named ingodite	a
<b>UM1978--S:BiTe[3]</b>	*Geol. Razved. (1978) (10), 91	Zap. Vses. Mineral. Ob. 110, 239	Bi <sub>3</sub> Te <sub>2</sub> S; later named sulphotsumite	a
<b>UM1978--S:CuFePdSnTe</b>	*Dokl. Akad. Nauk SSSR, 243, 1265	Am. Mineral. 66, 1102	Later described under the name oulankaite: Eur. J. Mineral. 8 (1996), 311	a
<b>UM1978--S:CuHg</b>	*Trudy Inst. Geol. Geofiz. Zap. Vses. Mineral. Ob.		Cu <sub>6</sub> HgS <sub>4</sub> ; apparently the same bayankhanite, described in 1984	c

	SO Akad. Nauk SSSR 404, 19	110, 238	(which, however may be a mixture of 2 or more components)	
<b>UM1978-//-S:CuZn</b>	Contr. Mineral. Petrol. 68, 85	Am. Mineral. 64, 241	Qualitative chemistry; inadequate data	b
<b>UM1978-//-S:FeHNa</b>	Earth Planet. Sci. Lett. 40,107	Am. Mineral. 63, 1283	NaFeS <sub>2</sub> (OH) but no other data; Later described under the name erdite: Am. Mineral. 65 (1980), 509	a
<b>UM1978-//-Se:BiCuPbSTe</b>	Neues Jb. Mineral. Mh. (1978), 9		(Pb,Cu)Bi(Se,Te,S) <sub>2</sub> with Te=16-21%; no other data	b
<b>UM1978-//-Se:BiPbSTe[1]</b>	Neues Jb. Mineral. Mh. (1978), 9	Am. Mineral. 63, 1283	(Pb,Bi) <sub>4</sub> (Se,Te,S) <sub>3</sub> ; no other data	b
<b>UM1978-//-Se:BiPbSTe[2]</b>	Neues Jb. Mineral. Mh. (1978), 9	Am. Mineral. 63, 1283	(Pb,Bi) <sub>7</sub> (Se,S,Te) <sub>6</sub> ; no other data	b
<b>UM1978-//-SiO:AlFeHMgZn</b>	Amdel Bull. 23, 25	Am. Mineral. 65, 1070	Later described under the name baileychloro: Am. Mineral. 73 (1988), 135	a
<b>UM1978-//-SiO:CaFeMg</b>	*Litol. Polezn. Iskop. (1978) (3), 3	Zap. Vses. Mineral. Ob. 110, 241	Qualitative chemistry; inadequate data	b
<b>UM1978-//-SiO:CaHMn</b>	Geol. Soc. Am. Abst. with Programs, 10, 465	Am. Mineral. 64, 244	Later described under the name santaclaraito: Am. Mineral. 69 (1984), 200	a
<b>UM1978-//-SiO:PbSZn</b>	*Fortsch. Mineral. 56, 59	Zap. Vses. Mineral. Ob. 111, 708	Pb <sub>4</sub> Zn <sub>2</sub> (SO <sub>4</sub> )(SiO <sub>4</sub> )(Si <sub>2</sub> O <sub>7</sub> ); later described as queitite: Neues Jb. Mineral. Mh. (1979), 203	a
<b>UM1978-//-VO:Bi</b>	*Fortsch. Mineral. 56, 18	Zap. Vses. Mineral. Ob. 111, 707	BiVO <sub>4</sub> ; later named dreyerite: Neues Jb. Mineral. Mh. (1981), 151	a
<b>UM1979-//[1]</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	"UK24"; subsequently shown to be a mixture of götzenite and another phase: Mineral. Record 21 (1990), 363	d
<b>UM1979-//[10]</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	"UK41"; subsequently recognised as penkviksite: Mineral. Record 21 (1990), 363	c
<b>UM1979-//[11]</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	"UK42"; subsequently named petarsite: Can. Mineral. 18 (1980), 497	a
<b>UM1979-//[12]</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	"UK43"; subsequently described under the name franconite: Can. Mineral. 22 (1984), 239	a
<b>UM1979-//[13]</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	"UK44"; subsequently described under the name daqingshanite-(Ce): Geochem. 2 (1983), 180	a
<b>UM1979-//[14]</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	"UK45"; subsequently described under the name doyleite: Can. Mineral. 23 (1985), 21	a
<b>UM1979-//[15]</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	"UK46"; subsequently identified as murmanite; then as epistolite: Mineral. Record 21 (1990), 363	c

IMA-CNMNC-SUM	Invalid minerals	2023		
<b>UM1979-//[16]</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	UK47"; subsequently found to be a chabazite + natrolite mixture: Mineral. Record 21 (1990), 363	d
<b>UM1979-//[2]</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	"UK26"; subsequently shown to be a mixture of parisite and albite: Mineral. Record 21 (1990), 363	d
<b>UM1979-//[3]</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	"UK27"; subsequently recognised as thornasite: Can. Mineral. 25 (1987), 181	c
<b>UM1979-//[4]</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	"UK31"; subsequently recognised as yofortierite: Mineral. Record 21 (1990), 363	c
<b>UM1979-//[5]</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	"UK34"; subsequently recognised as a member of the rhabdophane group: Mineral. Record 21 (1990), 363	c
<b>UM1979-//[6]</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	"UK35"; subsequently recognised as a mixture of chabazite and another phase: Mineral. Record 21 (1990), 363	d
<b>UM1979-//[7]</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	"UK36"; subsequently recognised as miserite: Mineral. Record 21 (1990), 363	c
<b>UM1979-//[8]</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	"UK39"; subsequently recognised as tadzhikite-(Ce), a name at that time not formally approved by the IMA: Mineral. Record 21 (1990), 363	c
<b>UM1979-//[9]</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	"UK40"; subsequently recognised as carbocernaite: Mineral. Record 21 (1990), 363	c
<b>UM1979-//-AsO:Al</b>	Aufschluss 30, 213	Am. Mineral. 65, 210	Later described under the name bulachite: Aufschluss 34 (1983), 445	a
<b>UM1979-//-AsO:AlBaCaCuFe</b>	Aufschluss 30, 213	Am. Mineral. 65, 210	Later described under the name arsenogorceixite: Aufschluss, 44 (1993), 250	a
<b>UM1979-//-AsO:Mn</b>	Mineral. Record 10, 215		Qualitative analysis only; minor Cu and B	b
<b>UM1979-//-AsSO:Cu</b>	Aufschluss 30, 213		Same as UM1972-03-AsOSO:Cu	c
<b>UM1979-//-Bi:AsPdTe</b>	CIM Sp. Vol.30, 175		Pd(Bi,Te,As); probably a Te- and As-bearing sobolevskite	b,c
<b>UM1979-//-BiO:</b>	Aufschluss 30, 213	Am. Mineral. 65, 209	Minor amounts of As, Ca, Cu, Fe & Sb reported; later described under the name sphaerobismoite: Aufschluss 46 (1995), 245	a
<b>UM1979-//-CO:AlCaHY</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	"UK32"; hydrous carbonate of Ca-Y-Al; later named micheelsenite: Neues Jb. Mineral Mh (2001), 337	a
<b>UM1979-//-CO:BaCaHNaUY</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	Recognised as mckelveyite before publication of Mont St. Hilaire unnamed mineral code "UK30": Mineral. Record 10 (1979), 99	c
<b>UM1979-//-CO:BaCaKNaY</b>	Mineral. Record 10, 99	Mineral. Record 21,	Recognised as ewaldite before publication of Mont St. Hilaire	c

		363	unnamed mineral code "UK37": Can. Mineral. 16 (1978), 335	
<b>UM1979--CO:CaHNaSrY</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	Named donnayite before publication of Mont St. Hilaire unnamed mineral code "UK33": Can. Mineral. 16 (1978), 335	c
<b>UM1979--I:Hg</b>	*Dopov. Nat. Akad. Nauk Am. Mineral. 66. 1102 Ukrainy, Ser. B, 9, 701		Known synthetically (Nat. Bur. Stds. Mono. 25, 7) and apparently identical to coccinite (Am. Mineral. 83 (1998), 911)	c
<b>UM1979--PO:HNa[1]</b>	*Dokl. Akad. Nauk SSSR Am. Mineral. 65. 1070 248, 1207		Later described under the name nahpoite: Can. Mineral. 19 (1981), 373	a
<b>UM1979--PO:HNa[2]</b>	*Dokl. Akad. Nauk SSSR Am. Mineral. 65. 1070 248, 1207		Later described under the name dorfmanite: Zap. Vses. Mineral. Ob. 109 (1980), 211	a
<b>UM1979--S:AgBiCuPb</b>	*Medd. Grønland, Greenland Geoscience 2, 1	Am. Mineral. 66, 1280	Mineral "D"; inadequate compositional data only but probably berryite (known from same locality)	b,c
<b>UM1979--S:AgTe</b>	*Medd. Grønland, Greenland Geoscience 2, 1	Am. Mineral. 66, 1280	Mineral "B"; later described under the name cervelleite: Eur. J. Mineral. 1, (1989), 371	a
<b>UM1979--S:AsPbSbTI</b>	*Z. Krist. 150, 85	Nowacki <i>et al.</i> (1982), 689	Tl8Pb4Sb21As19S68; not distinct from chabournéite	c
<b>UM1979--S:CuFe[1]</b>	*Izv. Akad. Nauk SSSR, Ser. Geol. (1979) (6), 152	Zap. Vses. Mineral. Ob. 111, 242	Qualitative chemistry, Cu:Fe = 2:1; inadequate data; may be the same as UM1983-12-S:CuFe	b,c
<b>UM1979--S:CuFe[2]</b>	Am. Mineral. 64, 776		A Cu-Fe sulphide; inadequate data; perhaps same as UM1979--S:CuFe[1]	b,c
<b>UM1979--S:CuFeSnZn</b>	Can. Mineral. 17, 125		Cu <sub>2</sub> (Fe,Zn)SnS <sub>4</sub> ; later named ferrokësterite: Can. Mineral. 27 (1989), 673	a
<b>UM1979--S:FeMnZn</b>	Meteoritics 14, 561		(Fe,Zn,Mn)S; cf UM1972--S:FeMnS; later described under the name rudashevskyite: Am. Mineral. 93 (2008), 902	a
<b>UM1979--Se:Ag</b>	*Zap. Uzb. Otd. VMO 32, 26		Zap. Vses. Mineral. Ob. Qualitative composition only 111, 707	b
<b>UM1979--SiO:AlCaFeHKMgMnNaTi</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	(Na,Ca,K)0.35-0.45(Fe <sup>2+</sup> ,Mg,Al,Mn,Ti)3.10-3.23(Si,Al)4O10•nH <sub>2</sub> O;"UK29"; later identified as nontronite: Rocks & Minerals 70 (1995), 90; formerly coded as UM1979-20SiO:AlCaFeHKMgMnNaTi	c
<b>UM1979--SiO:AlCaHKNaTi</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	Recognised as vinogradovite before publication of Mont St. Hilaire unnamed mineral code "UK28": Mineral. Record 10 (1979), 99	c
<b>UM1979--SiO:CaCeLa</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	"UK22"; subsequently recognised as britholite-(Ce): Mineral. Record 21 (1990), 363	c
<b>UM1979--SiO:CaHK</b>	*Rend. Soc. Ital. Petrol. 35, 847	Am. Mineral. 66, 220	K <sub>2</sub> Ca <sub>4</sub> Si <sub>16</sub> O <sub>36</sub> (OH) <sub>2</sub> •10.5H <sub>2</sub> O; described as a K-analogue of macdonaldite but later recognised as rhodesite	c

<b>UM1979--SiO:CaZr</b>	Geol. Surv. Canada Pap. 79-1A, 391	Am. Mineral. 64, 1332	Later described under the name gittinsite: Can. Mineral. 18 (1980), 201	a
<b>UM1979--SiO:HMn</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	Named yofortierite before publication of Mont St. Hilaire unnamed mineral code "UK25": Can. Mineral. 13 (1975), 68	c
<b>UM1979--SiO:HMnNaV</b>	Rend. Soc. Ital. Mineral. Petrol. 35, 151	Zap. Vses. Mineral. Ob. 111, 243	Na <sub>2</sub> Mn <sub>10</sub> (Si <sub>11</sub> V)O <sub>34</sub> (OH) <sub>4</sub> ; later named saneroite: Neues Jb. Mineral. Abh. 138 (1980), 333	a
<b>UM1979--SiO:HNaZr</b>	Mineral. Record 10, 99	Mineral. Record 21, 363	Named gaidonnayite before publication of Mont St. Hilaire unnamed mineral code "UK23": Can. Mineral. 12 (1974), 316	c
<b>UM1979--SiO:Mn</b>	*Rend. Soc. Ital. Mineral. Petrol. 35, 145	Am. Mineral. 65, 812	Appears to be tiragalloite	c
<b>UM1979--SiO:NaNbPTi</b>	Neues Jb. Mineral. Abh. 137, 42	Zap. Vses. Mineral. Ob. 111, 243	Na <sub>8</sub> (Nb,Ti) <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> (SiO <sub>4</sub> ) <sub>4</sub> ; not distinct from Vuonnemite on the basis of data reported	c
<b>UM1980--AsO:CuMgNaZn</b>	*Fortsch. Mineral. (1980) Beihefte 58, 68	Am. Mineral. 66, 218	Later described under the name johillerite: Tscherms. Mineral. Petrogr. Mitt. 29 (1982), 169	a
<b>UM1980--BO:Mn</b>	J. Mineral. Soc. Japan 14, 86	Zap. Vses. Mineral. Ob. 112, 705	Only qualitative chemical information	b
<b>UM1980--F:AlK</b>	*Penn. Topogr. Geol. Surv. Mineral Resour. Rept. 78, 1	Am. Mineral. 66, 1279	KAIF <sub>4</sub> ; associated with burning anthracite deposits, therefore not now considered a mineral	f
<b>UM1980--O:CIPbW</b>	Mineral. Record 11, 155	Am. Mineral. 66, 220	Later described under the name pinalite: Am. Mineral. 74 (1989), 934	a
<b>UM1980--S:AgIn</b>	*Bull. Geol. Surv. Japan 31, 585	Am. Mineral. 68, 851	Later described under the name laforêtite: Eur. J. Mineral. 11 (1999), 891	a
<b>UM1980--S:BiPbTe</b>	11 <sup>th</sup> IMA Sulfosalt Volume, 127	Am. Mineral. 70, 881	Mineral "M"; identical to UM1970-21-S:BiPbTe	c
<b>UM1980--S:BiTe[1]</b>	11 <sup>th</sup> IMA Sulfosalt Volume, 127	Am. Mineral. 70, 881	Mineral "K"; identical to UM1970-22-S:BiTe	c
<b>UM1980--S:BiTe[2]</b>	11 <sup>th</sup> IMA Sulfosalt Volume, 127	Am. Mineral. 70, 881	Mineral "L"; no analysis given but apparently compositionally indistinguishable from the discredited mineral csiklovaite	e
<b>UM1980--S:BiTe[3]</b>	11 <sup>th</sup> IMA Sulfosalt Volume, 127	Am. Mineral. 70, 881	Mineral "P"; identical to UM1970-23-S:BiTe	c
<b>UM1980--S:BiTe[4]</b>	11 <sup>th</sup> IMA Sulfosalt Volume, 127	Am. Mineral. 70, 881	Mineral "E"; Indistinguishable from sulphotsumoite (described 1982), on the basis of data reported	c
<b>UM1980--S:CrFeKTI</b>	Mineral. Zhurn. 2 (6), 3		(K,Tl) <sub>2</sub> Cu <sub>3</sub> FeS <sub>4</sub> ; probably a thallium-bearing murunskite	c
<b>UM1980--S:CuFeInZn</b>	Bull. Geol. Surv. Japan	Am. Mineral. 68, 851	Later shown to be equivalent to sakuraiite: Can. Mineral. 24	c

IMA-CNMNC-SUM	Invalid minerals	2023		
<b>UM1980--S:CuFeK</b>	31, 585 Mineral. Zhurn. 2 (6), 3		(1986), 405 K <sub>2</sub> Cu <sub>3</sub> FeS <sub>4</sub> ; later described under the name murunskite: Zap. Vses. Mineral. Ob. 110 (1981), 468	a
<b>UM1980--S:FeK</b>	Am. Mineral. 65, 509		Later named bartonite: Am. Mineral. 66 (1981), 369	a
<b>UM1980--S:Ge</b>	*Penn. Topogr. Geol. Surv. Mineral Resour. Rept. 78, 1	Am. Mineral. 66, 1279	GeS <sub>2</sub> ; associated with burning anthracite deposits, therefore not now considered a mineral species	f
<b>UM1980--Se:As</b>	*Penn. Topogr. Geol. Surv. Mineral Resour. Rept. 78, 1	Am. Mineral. 66, 1279	As <sub>2</sub> Se <sub>3</sub> ; associated with burning anthracite deposits, therefore not now considered a mineral species	a
<b>UM1980--SiO:AsHMnV</b>	*Rend. Soc. Ital. Mineral. Petrol. 36, 159	Am. Mineral. 66, 1279	Later described under the name medaite: Am. Mineral. 67 (1982), 85	a
<b>UM1980--SiO:BaV</b>	Mineral. J. 10, 122	Am. Mineral. 66, 638	BaV <sub>4</sub> Si <sub>2</sub> O <sub>7</sub> ; the Ba-analogue of haradaite; no data reported	b
<b>UM1980--SiO:HMnNa</b>	Zap. Vses. Mineral. Ob. 109, 476		Appears to be shafranovskite: Zap. Vses. Mineral. Ob. 111 (1982), 475	c
<b>UM1980--SiO:Pb</b>	Mineral. Record 11, 155	Am. Mineral. 66, 220	Inadequate data	b
<b>UM1980--SO:AIK</b>	*Penn. Topogr. Geol. Surv. Mineral Resour. Rept. 78, 1	Am. Mineral. 66, 1279	KAl(SO <sub>4</sub> ) <sub>2</sub> ; associated with burning anthracite deposits, therefore not considered a mineral species; later found occurring naturally and described under the name steklite: IMA No. 2011-041	f,a
<b>UM1980--SO:AIK</b>	*Penn. Topogr. Geol. Surv. Mineral Resour. Rept. 78, 1	Am. Mineral. 66, 1279	KAl(SO <sub>4</sub> ) <sub>2</sub> ; associated with burning anthracite deposits, therefore not now considered a mineral species	f
<b>UM1980--SO:AINH</b>	*Penn. Topogr. Geol. Surv. Mineral Resour. Rept. 78, 1	Am. Mineral. 66, 1279	Associated with burning anthracite deposits; later named godovikovite: Zap. Vses. Mineral. Ob. 117 (1988), 208	a
<b>UM1980--SO:ClCuHPbSb</b>	Mineral. Record 11, 155	Am. Mineral. 66, 220	Later described under the name mammothite: Am. Mineral. 71 (1986), 230	a
<b>UM1980--SO:CuHMnZn</b>	*Rend. Soc. Ital. Mineral. Petrol. 36, 295	Am. Mineral. 66, 1280	Later described under the name campigliaite: Am. Mineral. 67 (1982), 385	a
<b>UM1980--TeO:CuPb</b>	*Dokl. Akad. Nauk SSSR 253, 1448	Am. Mineral. 66, 436	PbCu(TeO <sub>3</sub> ) <sub>2</sub> ; later described under the name choloalite: Mineral. Mag. 44 (1981), 55	a
<b>UM1980--VO:Cu</b>	Am. Mineral. 65, 1146		Cu <sub>3</sub> V <sub>2</sub> O <sub>8</sub> ; later named mcbirneyite: J. Volcan. Geotherm Res. 33 (1987), 83	a
<b>UM1981--As:Cu</b>	*Akad. Nauk GruzSSR 97, 133	Zap. Vses. Mineral. Ob. 111, 707	Cu <sub>6</sub> As; indistinguishable from algodonite on the basis of composition alone	c
<b>UM1981--As:FePtS</b>	*Izv. Akad. Nauk SSSR, Ser. Geol. 1981, (2), 103	Zap. Vses. Mineral. Ob. 112, 704	(Pt,Fe)(As,S) <sub>2</sub> ; probably Fe-bearing sperrylite	c
<b>UM1981--AsS:IrRu</b>	Calif. Geol. 34 (5), 91	Zap. Vses. Mineral. Ob.	Unknown mineral "#6"; inadequate data	b

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<b>UM1981--/Bi:PdTe</b>	CIM Sp. Vol. 23, 175		Pd(Bi,Te) (CIM Sp. Vol. 23, 184); indistinguishable from a Te-bearing sobolveskite on basis of available data	c
<b>UM1981--/BO:CaClH</b>	*Rentgen. Mineral. Syr'yaAm. Mineral. 68, 850 (1981), 41		Identical to ekaterinite: Am. Mineral 66 (1976), 437	c
<b>UM1981--/CO:CaZn</b>	*Rend. Soc. Ital. Mineral. Am. Mineral. 67, 1078 Petrol. 37, 415		Later described under the name minrecordite: Mineral. Record 13 (1982), 131	a
<b>UM1981--/E:AlCuMg</b>	*Zap. Vses. Mineral. Ob. Am. Mineral. 67, 416 110, 186		Inadequate data; possibly sample contaminants	b,d
<b>UM1981--/E:CuZn[1]</b>	*Zap. Vses. Mineral. Ob. Am. Mineral. 67, 416 110, 186		Alpha-brass; inadequate data; possibly sample contaminants	b,d
<b>UM1981--/E:CuZn[2]</b>	*Zap. Vses. Mineral. Ob. Am. Mineral. 67, 416 110, 186		Beta-brass; inadequate data; possibly sample contaminants	b,d
<b>UM1981--/E:CuZn[3]</b>	*Kexue Tongbao 26, 959 Am. Mineral. 67, 854		Later described under the name danbaite; Kexue Tongbao 22 (1983), 959	a
<b>UM1981--/E:CuZn[4]</b>	*Akad. Nauk GruzSSR Zap. Vses. Mineral. Ob. 97, 133 111, 707		CuZn; not distinguishable from zhanghengite described in 1986, or from alpha or beta brass on the basis of composition alone	c
<b>UM1981--/O:FePbReSrTiY</b>	Neues Jb. Mineral. Mh. (1981), 433	Am. Mineral. 68, 473	(Pb,Sr,Y)2(Ti,Fe,Re,Mn)21O38; later shown to be gramacciolite-(Y): Eur. J. Mineral. 16 (2004), 171	c
<b>UM1981--/S:BiCuPb</b>	*Changchun Dizhi Xueyuan Xuebao no.4, 20	Am. Mineral. 69, 410	PbCuBi7S12; compositionally indistinguishable from UM1974-09-S:BiCuPb	c
<b>UM1981--/S:BiPb</b>	*Flerov <i>et al.</i> (1981), 5	Am. Mineral. 68, 1041	Compositionally not distinct from UM1980-06-S:BiPb; some discrepancies in powder data	c
<b>UM1981--/S:IrOsRu</b>	Calif. Geol. 34 (5), 91	Zap. Vses. Mineral. Ob. 112, 704	Probably the same as UM1965-10-S:IrOsRu	c
<b>UM1981--/S:IrRh[1]</b>	Kexue Tongbao 26, 728	Am. Mineral. 67, 1079	Rh2S3; later described under the name bowieite: Can. Mineral. 22 (1984), 543	a
<b>UM1981--/S:IrRh[2]</b>	Bull. Minéral. 104, 508	Am. Mineral. 67, 1079	(Rh,Ir)2S3; later described under the name bowieite: Can. Mineral. 22 (1984), 543	a
<b>UM1981--/S:IrRhSb</b>	Bull. Minéral. 104, 508	Am. Mineral. 67, 1080	Same as UM1976-16-S:IrRhSb	c
<b>UM1981--/S:Rh[1]</b>	Calif. Geol. 34 (5), 91	Zap. Vses. Mineral. Ob. 112, 704	Inadequate data; perhaps RhS	b,c
<b>UM1981--/S:Rh[2]</b>	Kexue Tongbao 26, 278	Mineral. Petrol. 60, 185	Later named sulrhodite, which was subsequently discredited as equivalent to bowieite	e
<b>UM1981--/S:Rh[3]</b>	Bull. Minéral. 104, 508	Mineral. Petrol. 60, 185	Later named sulrhodite, which was subsequently discredited as equivalent to bowieite	e
<b>UM1981--/Se:BiTe</b>	Can. Mineral. 19, 341	Am. Mineral. 71, 847	Bi2Se2Te; mineral "B"; not distinct from later-named skippenite	c

<b>UM1981--/-Se:Ni</b>	Can. Mineral. 19, 341		on basis of available data; transferred from Valid list Cubic NiSe <sub>2</sub> ; probably penroseite	c
<b>UM1981--/-Si:CrFe</b>	*Dokl. Akad. Nauk SSSR Zap. Vses. Mineral. Ob. 256, 958	112, 704	(Fe,Cr) <sub>2</sub> Si; not distinct on the information available from the mineral later named	a
<b>UM1981--/-Si:Mg</b>	*Zap. Vses. Mineral. Ob. 110, 186	Am. Mineral. 67, 416	Inadequate data; possibly sample contaminants	b,d
<b>UM1981--/-SiO:AlBeCaHMn</b>	*Rend. Soc. Ital. Mineral. Zap. Vses. Mineral. Ob. Petrol. 37, 669	113, 381	(Mn,Ca) <sub>2</sub> Be <sub>2</sub> (Si,Al) <sub>5</sub> O <sub>13</sub> (OH)1.35•2H <sub>2</sub> O; later described under the name chiavennite: Am. Mineral. 68 (1983), 623	a
<b>UM1981--/-SiO:ClHNaZr</b>	*Dokl. Akad. Nauk SSSR Am. Mineral. 257, 608	67, 416	Previously described under the name petarasite: Can. Mineral. 18 (1980), 497	a
<b>UM1981--/-SiO:HKZr</b>	*Dokl. Akad. Nauk SSSR Am. Mineral. 257, 608	67, 416	K <sub>2</sub> ZrSi <sub>3</sub> O <sub>9</sub> •H <sub>2</sub> O; later described under the name umbite: Zap. Vses. Mineral. Ob. 112 (1983), 461	a
<b>UM1981--/-SiO:HU</b>	*Dokl. Bolg. Akad. Nauk, Am. Mineral. 34, 1693	68, 1040	"Group #3"; identical to coffinite	c
<b>UM1981--/-SO:HMg</b>	Earth Planet. Sci. Lett. 53, 363	Mineral. Abst. 33, 82M/0199	Later named caminite: Am. Mineral. 71 (1986), 819	a
<b>UM1981--/-SOCO:CuZn</b>	*Lapis 6, 9	Zap. Vses. Mineral. Ob. 112, 705	Only qualitative chemical information; probably schulenbergite	b,c
<b>UM1982--/-As:CuPtSb</b>	Econ. Geol. 77, 1432	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--/-As:FePdPt</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--/-As:NiPd</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--/-As:Pd[1]</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--/-As:Pd[2]</b>	Econ. Geol. 77, 1348	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--/-As:PdPt</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--/-As:PdPtSb</b>	Econ. Geol. 77, 1432	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--/-AsO:HMnZn</b>	Am. Mineral. 67, 1043		(Mn,Zn) <sub>3</sub> Zn <sub>2</sub> AsO <sub>4</sub> (OH,O) <sub>6</sub> ; same as UM1982-03-AsO:HMnZn; formerly coded as UM1982-04-AsO:HMnZn	c
<b>UM1982--/-AsS:CuFeNiPt</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--/-AsS:CuIrOsPt</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--/-AsS:IrPdPtRhRu</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--/-AsS:IrPtRh</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--/-AsS:PbSb</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--/-AsS:PdSb</b>	Econ. Geol. 77, 1432	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--/-Bi:PtSb</b>	Econ. Geol. 77, 1432	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--/-Cl:Cu</b>	*Zap. Vses. Mineral. Ob. 111, 562	Am. Mineral. 68, 852	CuCl <sub>2</sub> ; later described under the name tolbachite: Dokl. Akad. Nauk SSSR 270 (1983), 415	a
<b>UM1982--/-ClF:Ca</b>	*Izv. Vyssh. Uchebn. Zaved. Geol. Razved. 25, 120	Am. Mineral. 68, 645.	CaFCl; later described under the name rorisite: Zap. Vses. Mineral. Ob. 119 (1990), 73	a



<b>UM1982--E:AuPt</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--E:CuNiPt</b>	Econ. Geol. 77, 1385	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--E:CuPd[1]</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--E:CuPd[2]</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--E:CuPd[3]</b>	Econ. Geol. 77, 1432	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--E:FePt</b>	Econ. Geol. 77, 1348	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--E:HgPd</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--E:IrNi</b>	Econ. Geol. 77, 1328		Probably Ni-bearing iridium	c
<b>UM1982--E:PbPd</b>	Econ. Geol. 77, 1348	Mineral. Petrol. 60, 185	A PbPd alloy; only a list of constituent elements reported	b
<b>UM1982--E:PdPt</b>	Econ. Geol. 77, 1385	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--E:PdTI</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--E:PdTI</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Pd-TI; Only a list of constituent elements reported	b
<b>UM1982--E:PtSn</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--NO:HHg</b>	Mineral. Record 13, 233	Am. Mineral. 68, 473	Compound is believed to be of anthropogenic origin, probably being formed from the decomposition of explosives	f
<b>UM1982--O:AlCa</b>	Earth Planet. Sci. Lett. 61, 13	Am. Mineral. 68, 850	Later described under the name grossite: Eur. J. Mineral. 6 (1994), 591	a
<b>UM1982--O:HU</b>	*Voultsidis <i>et al.</i> (1982), 469	Am. Mineral. 73, 444	Alpha-U3O7; apparently identical to UM1978-10-O:U	c
<b>UM1982--O:MgTi</b>	Mineral. Mag. 45, 135	Am. Mineral. 68, 645	Mg2TiO4; later described under the name qandilite: Mineral. Mag. 49 (1985) 739	a
<b>UM1982--O:Mn</b>	*Izv. Akad. Nauk SSSR Ser. Geol. 1, 56	Am. Mineral. 68, 473	Later described under the name akhtenskite: Izv. Akad. Nauk SSSR Ser. Geol. 9 (1989), 75	a
<b>UM1982--O:MnNbTaW</b>	*Mineral. Zhurn. 4 (1), 65	Am. Mineral. 69, 213	Formula inconsistent with columbite-group; probably a mixture of columbite + wolframite	d
<b>UM1982--OH:CaSn</b>	*Marshukova (1982), 114, 485	Zap. Vses. Mineral. Ob. 114, 485	CaSn(OH)6; appears to be burtite	c
<b>UM1982--OH:CuFeSnZn</b>	*Marshukova (1982), 114, 485	Zap. Vses. Mineral. Ob. 114, 485	Cu0.5(Zn,Fe)0.5Sn(OH)6; appears to be mushistonite	c
<b>UM1982--OH:FeSnZn</b>	*Marshukova (1982), 114, 485	Zap. Vses. Mineral. Ob. 114, 485	(Zn,Fe)Sn(OH)6; appears to be vismirnovite	c
<b>UM1982--S:AgBiPbTe</b>	*Sztroky & Nagy (1982), 118	Zap. Vses. Mineral. Ob. 113, 381	15Bi2S3•5Ag2S•PbS; later described under the name kitaibelite: Foldtani Kozlony Bull. Geol. Soc. 113 (1983), 247	a
<b>UM1982--S:As</b>	*Tufar (1982), 131	Am. Mineral. 69, 213	As2S3; indistinguishable from orpiment on basis of data reported	c
<b>UM1982--S:AsHgTI</b>	Fortsch. Mineral. 60, 68	Am. Mineral. 68, 1040	Later described under the name simonite: Z. Krist. 161 (1982), 159	a
<b>UM1982--S:BiTe</b>	*Sztroky & Nagy (1982), 118	Zap. Vses. Mineral. Ob. 113, 381	Bi3TeS2; later described under the name sztrokayite: Foldtani Kozlony Bull. Geol. Soc. 113 (1983), 247	a
<b>UM1982--S:CuFeIrNiOsPdPt</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--S:CuFeIrNiOsPdRh</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b

<b>UM1982--S:CuHgSn</b>	Neues Jb. Mineral. Abh. 144, 307	Am. Mineral. 68, 851	Later described under the name velikite: Dokl. Akad. Nauk SSSR 300 (1988), 432	a
<b>UM1982--S:CuIrPt[1]</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--S:CuIrPt[2]</b>	Econ. Geol. 77, 1432	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--S:CuIrPtRh[1]</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--S:CuIrPtRh[2]</b>	Econ. Geol. 77, 1348	Am. Mineral. 69, 410	Inadequate data	b
<b>UM1982--S:CuMoRe</b>	Neues Jb. Mineral. Mh. (1982), 6	Am. Mineral. 67, 1078	CuRe <sub>3</sub> MoS <sub>8</sub> or (Re,Mo,Fe,Cu,Os) <sub>2</sub> S <sub>3</sub> ; later named tarkianite: Can. Mineral. 42 (2004), 539	a
<b>UM1982--S:CuNiPbPd</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--S:CuNiPt</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--S:CuPbPt</b>	Econ. Geol. 77, 1348	Am. Mineral. 69, 410	Inadequate data	b
<b>UM1982--S:CuPd</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--S:CuPt</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--S:CuPtRh</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--S:IrNiPbPdPt</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--S:IrOsPdPt</b>	Econ. Geol. 77, 1348	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--S:IrOsRu</b>	*Dokl. Akad. Nauk SSSR 267, 1211	Zap. Vses. Mineral. Ob. 113, 381	Only qualitative chemical information	b
<b>UM1982--S:IrRh</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--S:PdSn</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--S:PtRh</b>	Econ. Geol. 77, 1385	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--S:PtSn</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--SiO:AlCaFeMgTi</b>	Bull. Minéral. 105, 364	Am. Mineral. 68, 1040	Later described under the name dorrite: Am. Mineral. 73 (1988), 1440	a
<b>UM1982--SiO:CoMgNiU</b>	Can. Mineral. 20, 231		A Co-Mg-Ni uranyl silicate (p. 234, col. 1); inadequate data; the mineral was later named oursinite: Bull. Minéral. 106 (1983), 305	b,a
<b>UM1982--SO:CrHNa</b>	Am. Mineral. 67, 132		Partial analysis; later named schöllhornite (Na <sub>0.3</sub> (H <sub>2</sub> O)[CrS <sub>2</sub> ]): Am. Mineral. 70, (1985), 638	a
<b>UM1982--Te:AsPdSb</b>	Econ. Geol. 77, 1432	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--Te:Bi</b>	Int. Geol. Rev. 24, 451	Can. Min. 45, 665	Bi <sub>2</sub> Te; same as UM1980-16-Te:Bi	c
<b>UM1982--Te:BiNiPd</b>	Neues Jb. Mineral. Mh. (1982), 6	Am. Mineral. 67, 1078	Reported as (Ni,Pd) <sub>5</sub> (Te,Bi) <sub>8</sub> but no other data given; appears to be the same as UM1976-29-Te:BiNi	c
<b>UM1982--Te:FePdPtSbSn</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--Te:Pd</b>	Econ. Geol. 77, 1348	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--Te:PdPtSn</b>	Econ. Geol. 77, 1328	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1982--Te:Pt</b>	Econ. Geol. 77, 1348	Mineral. Petrol. 60, 185	Only a list of constituent elements reported	b
<b>UM1983--As:NiRh</b>	*Zap. Vses. Mineral. Ob. 112, 554	Am. Mineral. 69, 1195	RhNiAs; later named zaccariniite: Mineral. Mag. 76 (2012), 154; transferred from Valid list	a
<b>UM1983--As:PdRh</b>	Zap. Vses. Mineral. Ob. 112, 3		(Pd,Rh) <sub>2</sub> As; probably Rh-bearing palladoarsenide	c
<b>UM1983--As:Rh[1]</b>	Zap. Vses. Mineral. Ob. 112, 3	Am. Mineral. 69, 1195	RhAs; later described under the name cherepanovite: Zap. Vses. Mineral. Ob. 114 (1986), 464	a

<b>UM1983--As:Rh[2]</b>	Zap. Vses. Mineral. Ob. 112, 3		Rh <sub>3</sub> As; compositionally indistinguishable from polkanovite described in 1998	a,c
<del><b>UM1983--AsO:FeHMgMnZn</b></del>	Mineral. Mag. 47, 381	Am. Mineral. 69, 814	(Mn,Mg,Fe <sup>3+</sup> Al) <sub>15</sub> (AsO <sub>3</sub> )(AsO <sub>4</sub> ) <sub>2</sub> (OH) <sub>23</sub> ; said to be distinct from arakiite (Mineral. Record 31, 253); transferred to Valid list	
<b>UM1983--Bi:PdPtSb</b>	Zap. Vses. Mineral. Ob. 112, 3		(Pt,Pd)(BiSb); probably the same as UM1974-02-Bi:AsPdPtSb	c
<b>UM1983--CO:HLaNdPb</b>	Schweiz. Mineral. Petrog. Mitt. 63, 1	Zap. Vses. Mineral. Ob. 114, 485	Pb(Nd,La)(CO <sub>3</sub> ) <sub>2</sub> (OH)•H <sub>2</sub> O; later named gysinite-(Nd): Am. Mineral. 70 (1985), 1314	a
<b>UM1983--E:AuFe</b>	Can. Mineral. 21, 137		Incomplete analysis with very low analytical total; identification probably not possible	b
<b>UM1983--E:CuPd</b>	Zap. Vses. Mineral. Ob. 112, 3		PdCu; probably the same as UM1975--E:CuFePdPt	c
<b>UM1983--E:FeNiPt</b>	Zap. Vses. Mineral. Ob. 112, 3		Pt <sub>2</sub> FeNi; probably the same as UM1977-04-E:CuFeNiPtSb	c
<b>UM1983--E:HgPd</b>	Zap. Vses. Mineral. Ob. 112, 3		Only qualitative compositional information	b
<b>UM1983--PO:HU</b>	*Dokl. Akad. Nauk SSSR 273, 1460	Am. Mineral. 69, 1195	Later described under the name vyacheslavite: Zap. Vses. Mineral. Ob. 113 (1984), 360	a
<b>UM1983--S:AsPbSb[1]</b>	Bull. Geol. Soc. Finland 55, 3	Am. Mineral. 69, 1195	Pb <sub>2</sub> Sb <sub>20</sub> As <sub>8</sub> S <sub>19</sub> ; mineral "Y" same as UM1981-09-S:AsPbSb	c
<b>UM1983--S:AsPbSb[2]</b>	Bull. Geol. Soc. Finland 55, 3	Am. Mineral. 69, 1195	PbSb <sub>6</sub> As <sub>2</sub> S <sub>6</sub> ; mineral "Z"; same as UM1981-10-S:AsPbSb	c
<b>UM1983--S:BiCuFePb</b>	*Aufschluss 34, 41	Zap. Vses. Mineral. Ob. 113, 381	(Cu,Fe)Pb <sub>9</sub> Sb <sub>12</sub> S <sub>28</sub> ; later named eclarite: Tscherm. Mineral. Petrog. Mitt. 32 (1983), 103-110	a
<b>UM1983--S:CuFe[1]</b>	*Mineral. Rudn. Mest. (1983), 109	Am. Mineral. 75, 435	"Cu <sub>2</sub> Fe <sub>3</sub> S <sub>3</sub> "; space group F-43m(?) a=5.406Å; inadequate data	b
<b>UM1983--S:CuFe[2]</b>	Am. Mineral. 88, 245		A Cu-Fe sulphide; inadequate data; probably same as UM1979--S:CuFe[1]; close to hypothetical hydroxycubanite (CuFeS <sub>3</sub> (OH) <sub>2</sub> )	b,c
<b>UM1983--S:CuIrPbPt</b>	Zap. Vses. Mineral. Ob. 112, 3		Cu <sub>3</sub> Pb(Ir,Pt) <sub>8</sub> S <sub>16</sub> ; later named inaglyite: Zap. Vses. Mineral. Ob. 113 (1984), 712	a
<b>UM1983--S:CuPbRhPt</b>	Zap. Vses. Mineral. Ob. 112, 3		Cu <sub>3</sub> Pb(Rh,Pt) <sub>8</sub> S <sub>16</sub> ; later named konderite: Zap. Vses. Mineral. Ob. 113 (1984), 703	a
<b>UM1983--S:CuRh</b>	Zap. Vses. Mineral. Ob. 112, 3		CuRh <sub>2</sub> S <sub>4</sub> ; later named cuprorhodsite: Zap. Vses. Mineral. Ob. 114 (1985), 187	a
<b>UM1983--S:FeRh</b>	Zap. Vses. Mineral. Ob. 112, 3		FeRh <sub>2</sub> S <sub>4</sub> ; later named ferrorhodsite: Zap. Vser. Mineral. Ob. 127 (1998), 37	a
<b>UM1983--S:IrPtRh</b>	Mineral. Zhurn. 5 (2), 87	Zap. Vses. Mineral. Ob. 114, 485	(Rh,Ir,Pt) <sub>3</sub> S <sub>4</sub> ; this composition later described under the name kingstonite: Mineral. Mag. 69 (2005), 447	a
<b>UM1983--S:IrRh[1]</b>	Zap. Vses. Mineral. Ob. 112, 3		(Ir,Rh) <sub>2</sub> S <sub>3</sub> ; later named kashinite: Zap. Vses. Mineral. Ob. 114 (1985), 617	a

<b>UM1983--S:IrRh[2]</b>	Zap. Vses. Mineral. Ob. 112, 3	Zap. Vses. Mineral. Ob. 114, 485	(Rh,Ir) <sub>2</sub> S <sub>3</sub> ; probably the same as bowieite	c
<b>UM1983--S:Rh</b>	Zap. Vses. Mineral. Ob. 112, 3		Rh <sub>1.13</sub> S; compositionally indistinguishable from miassite described in 2001	c
<b>UM1983--S:RhSb</b>	Zap. Vses. Mineral. Ob. 112, 3		RhSbS; probably the same as UM1976-16-S:IrRhSb	c
<b>UM1983--SiO:AlFeHMg</b>	Mem. Sci. Geol. (Strasbourg) 73, 123	Am. Mineral. 73, 197	Intergradient vermiculite-kaolinite mineral; inadequate data	b
<b>UM1983--Te:Au</b>	Can. Mineral. 21, 137		Incomplete analysis with very low analytical total; probably montbrayite	b,c
<b>UM1983--Te:Pd</b>	Zap. Vses. Mineral. Ob. 112, 3		PdTe (?); probably kotulskite	c
<b>UM1983--VO:BiH</b>	Mineral. Zhurn. 5 (2), 82	Am. Mineral. 69, 407	Bi <sub>5</sub> V <sub>2</sub> O <sub>11</sub> (OH) <sub>3</sub> (?); inadequate data	b
<b>UM1984--As:AgCoNiPd</b>	Chem. Erde 43, 27	Am. Mineral. 74, 1218	(Pd <sub>2.36</sub> Ni <sub>0.24</sub> Co <sub>0.19</sub> Ag <sub>0.14</sub> ) $\Sigma$ 3As; probably vincentite or guanglinite	c
<b>UM1984--As:AgPd</b>	Chem. Erde 43, 27		(Pd,Ag,Co,Ni,Cu,Au) <sub>x</sub> As <sub>y</sub> ; compositionally very variable with low analytical totals; perhaps hydrides and perhaps mixtures	b,d
<b>UM1984--As:AgSb</b>	*J. Japan. Assoc. Mineral. Petrol. Econ. Geol. 79, 405	Zap. Vses. Mineral. Ob. 115, 616	Only qualitative compositional information reported	b,d
<b>UM1984--As:CoNiPd</b>	Chem. Erde 43, 27	Am. Mineral. 74, 1218	Pd(Co,Ni)As; only formula given; apparently the Co-analogue of majakite and perhaps the same as UM1975-01-As:AgCoNiPdS	
<b>UM1984--As:Pd</b>	Chem. Erde 43, 27	Am. Mineral. 74, 1218	PdAs <sub>2</sub> ; previously reported as UM1975-06-As:Pd	b,c
<b>UM1984--Cl:BrHN</b>	Rend. Soc. Ital. Mineral. Petrol. 39, 705		NH <sub>4</sub> (Cl,Br); appears to be Br-bearing sal-ammoniac	c
<b>UM1984--CO:Ni</b>	*Mintek Rep. M145, 1	Am. Mineral. 72, 228	Inadequate data with only partial analysis	b
<b>UM1984--E:FeOs</b>	Econ. Geol. 79, 491	Am. Mineral. 74, 1217	Os <sub>2</sub> Fe <sub>3</sub> ; previously coded as UM1984-19-E:FeOs, an inadvertent duplication of UM1984-17-E:FeIrOsPtRu; transferred from Valid list	c
<b>UM1984--OH:Zn</b>	Aufschluss 36, 73	Zap. Vses. Mineral. Ob. 115, 616	Later described under the name wulfingite: Neues Jb. Mineral. Mh. (1985), 145	a
<b>UM1984--OS:Cu</b>	Fortsch. Mineral. Beiheft. 1, 231		Inadequate data	b
<b>UM1984--PO:CuFeH</b>	Fortsch. Mineral. Beiheft. 1, 231	Am. Mineral. 70, 880	Later described under the name hentschelite: Am. Mineral. 72 (1987), 404	a
<b>UM1984--PO:CuH</b>	Fortsch. Mineral. Beiheft. 1, 231	Am. Mineral. 70, 880	Later described under the name reichenbachite: Am. Mineral. 72 (1987), 404	a
<b>UM1984--PO:HZN</b>	Aufschluss 36, 73	Zap. Vses. Mineral. Ob.	Zn <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> •4H <sub>2</sub> O; appears to be identical to parahopeite	c

115, 616

<b>UM1984--S:AgBiFePbSb</b>	Can. Mineral. 22, 481		Pb <sub>51</sub> Sb <sub>20</sub> Bi <sub>19</sub> Cu <sub>3</sub> AgFeS <sub>114</sub> ; mineral "S"; later named izoklakeite: Can. Mineral. 24 (1986), 1	a
<b>UM1984--S:AsCuMo</b>	Chem. Erde 43, 27	Am. Mineral. 74, 1218	Cu <sub>3</sub> Mo <sub>2</sub> AsS <sub>5</sub> ; only chemical formula given	b
<b>UM1984--S:Cr</b>	*Geol. Geofiz. (1984) (4), 38	Am. Mineral. 73, 442	CrS; same as UM1965-09-S:Cr; formerly coded as UM1984-28-S:Cr	c
<b>UM1984--S:CulrPt[1]</b>	Econ. Geol. 79, 491	Am. Mineral. 74, 1217	Later described under the name cuproiridsite: Zap. Vses. Mineral. Ob. 114 (1985), 187	a
<b>UM1984--S:CulrPt[2]</b>	*Zap. Vses. Mineral. Ob. 113, 712	Am. Mineral. 71, 231	Later described under the name cuproiridsite: Zap. Vses. Mineral. Ob. 114 (1985), 187	a
<b>UM1984--S:CuMo[1]</b>	Chem. Erde 43, 27	Am. Mineral. 74, 1218	CuMo <sub>2</sub> S <sub>5</sub> ; only chemical formula given; corresponds to the discredited mineral castaingite	e,b
<b>UM1984--S:CuMo[2]</b>	Chem. Erde 43, 27	Am. Mineral. 74, 1218	CuMoS <sub>3</sub> ; only chemical formula given	b
<b>UM1984--S:CuMo[3]</b>	Chem. Erde 43, 27	Am. Mineral. 74, 1218	Cu <sub>8</sub> MoS <sub>9</sub> ; only chemical formula given	b
<b>UM1984--S:CuSbV</b>	*Mineral. Zhurn. 6 (2), 88	Am. Mineral. 70, 439	Later described under the name stibiocolusite: Dokl. Akad. Nauk SSSR 324 (1992), 411	a
<b>UM1984--S:AgH</b>	Fortsch. Mineral. 62, Beiheft. 1, 256	Zap. Vses. Mineral. Ob. 115, 616	Later described under the name imiterite: Bull. Minéral. 108 (1985), 404	a
<b>UM1984--SiO:AlCaHKNa</b>	Soviet Phys. Cryst. 29, 256		Later described under the name gmelinite-K: Zap. Vser. Mineral. Ob. 130 (2001) (3), 65	a
<b>UM1984--SiO:CrHKMg</b>	*Zap. Vses. Mineral. Ob. 113, 68	Am. Mineral. 70, 219	Later described under the name chromceladonite: Zap. Vser. Mineral. Ob. 129 (2000) (1), 38	a
<b>UM1984--Te:AuSb</b>	Geol. Fören. Förh. 106, 245		AuSbTe; later described under the name pampaloite: Mineral. Mag. 83, 393; transferred from valid list	a
<b>UM1984--Te:Bi</b>	*Dokl. Akad. Nauk SSSR 275, 717	Can. Min. 45, 665	Bi <sub>2</sub> Te; same as UM1980-16-Te:Bi	c
<b>UM1985--AsO:CaCuHY</b>	Acta Cryst. C41, 161-163.	Am. Mineral. 70, 1333	Appears to be agardite-(Y); although Ca>Y, Ca<sum(Y+REE), with Y dominant	b,c
<b>UM1985--Bi:PdSb</b>	*Dokl. Akad. Nauk SSSR 284, 438	Zap. Vses. Mineral. Ob. 117, 727	Pd(Bi,Sb); probably the same as UM1961-08-Sb:BiPd	c
<b>UM1985--E:CuSn</b>	*Dokl. Akad. Nauk SSSR 285, 203	Am. Mineral. 72, 227	Probably the same as UM1965-07-E:CuSn	c
<b>UM1985--E:FeI</b>	*Zap. Vses. Mineral. Ob. 114, 544	Am. Mineral. 73, 197	Only inadequate compositional data with low totals	b
<b>UM1985--E:FeIRh</b>	*Zap. Vses. Mineral. Ob. 114, 544	Am. Mineral. 73, 197	Only inadequate compositional data with low totals	b
<b>UM1985--E:FeOs</b>	*Zap. Vses. Mineral. Ob. 114, 544	Am. Mineral. 73, 197	Only inadequate compositional data with low totals	b
<b>UM1985--E:FeRu</b>	*Zap. Vses. Mineral. Ob. 114, 544	Am. Mineral. 73, 197	Only inadequate compositional data with low totals	b

<b>UM1985-/-E:NiIr</b>	*Zap. Vses. Mineral. Ob. Am. Mineral. 73, 197 114, 544	Only inadequate compositional data with low totals	b
<b>UM1985-/-E:NiRu</b>	*Zap. Vses. Mineral. Ob. Am. Mineral. 73, 197 114, 544	Only inadequate compositional data with low totals	b
<b>UM1985-/-I:Hg</b>	Aufschluss 36, 73 Am. Mineral. 71, 1548	Hg <sub>2</sub> I <sub>2</sub> : later described under the name moschelite: Neues Jb. Mineral. Mh. (1989), 343	a
<b>UM1985-/-S:AgBiPb</b>	*Izv. Akad. Nauk SSSR, Zap. Vses. Mineral. Ob. Ser. Geol. 1985 (9), 65 118 (4), 102	Ag-Pb-Bi sulphosalts; no additional information	b
<b>UM1985-/-S:AgBrClHgI</b>	Austral. J. Earth Sci. 32, 311	Later described under the name perroudite: Am. Mineral. 72 (1987), 1251	a
<b>UM1985-/-S:AgCuFe</b>	*Ann. Soc. Geol. Pol. 53, 143 Zap. Vses. Mineral. Ob. 118 (4), 102	Four phases; no additional information	d
<b>UM1985-/-S:AgCuHg</b>	Austral. J. Earth Sci. 32, 311	Later described under the name danielsite: Am. Mineral. 72 (1987), 401	a
<b>UM1985-/-S:AgCuTe</b>	*C. R. Acad. Bulgare Sci. Am. Mineral. 71, 1281 38, 211	Appears to be the same mineral as UM1976-12-S:AgTe	c
<b>UM1985-/-S:AgIn</b>	Bull. Minéral. 108, 245 Am. Mineral. 71, 846	Identical to UM1980-/-S:AgIn; later described under the name laforêtite: Eur. J. Mineral. 11 (1999), 891	a,c
<b>UM1985-/-S:CrCuSbZn</b>	*Zap. Vses. Mineral. Ob. Am. Mineral. 72, 227 114, 622	Appears to be identical to florensovite: Zap. Vses. Mineral. Ob. 118 (1989) (1), 57	a,c
<b>UM1985-/-S:CuPd</b>	*Zap. Vses. Mineral. Ob. Mineral. Petrol. 42, 287 114, 187	Appears to be identical to vasilite: Can. Mineral. 28 (1990), 687	a,c
<b>UM1985-/-Se:Ni</b>	*Naturwissen. 72, 655 Am. Mineral. 73, 442	Inadequate data; possibly same as UM1990-/-Se:Ni	b
<b>UM1985-/-SiO:AlCaFeH</b>	*Contr. Mineral. Petrol. Am. Mineral. 73, 445 91, 283	Fe-analogue of saponite; later described under the name ferrosaponite: Zap. Vses. Mineral. Ob. 132 (2003) (2), 68	a
<b>UM1985-/-SiO:AlFeHMg</b>	*Oil & Gas Geol. 6, 138 Am. Mineral. 73, 445	Referred to as Fe saponite, the mineral is actually Mg-dominant and hence a ferrous variety of saponite	c
<b>UM1985-/-SiO:FREEY</b>	Mineral. Zhurn. 7 (6), 79 Am. Mineral. 75, 436	Later described under the name fluorthalénite-(Y): Dokl. Akad. Nauk 354 (1997), 77	a
<b>UM1985-/-SiO:NaTi</b>	*Dokl. Akad. Nauk SSSR Am. Mineral. 73, 445 284, 1136	Later described under the name paranatisite: Zap. Vses. Mineral. Ob. 121 (1992) (6), 133	a
<b>UM1985-/-SiO:REEY</b>	*Mineral. Zhurn. 7, (6) 79 Am. Mineral. 73, 197	Some discrepancies in X-ray powder pattern but insufficiently distinguished from thalénite-(Y)	b,c
<b>UM1985-/-SO:AICHMg</b>	*Dokl. Akad. Nauk SSSR Am. Mineral. 71, 1548 284, 443	(Mg,Al) <sub>6</sub> (SO <sub>4</sub> ,CO <sub>3</sub> )(OH) <sub>12</sub> •nH <sub>2</sub> O; inadequate data; apparently a mixture of two polytypes; <a href="#">later described under the name Badengzhuite: Eur. J. Mineral. 32, 557; transferred from Valid list</a>	d,b
<b>UM1985-/-Te:PdSb</b>	Can. Mineral. 23, 301	Pd <sub>3</sub> Sb <sub>2</sub> Te <sub>2</sub> ; no data	b
<b>UM1986-/[1]</b>	Rocks & Minerals 61,182	"UK49"; now recognised as a mixture of terskite and "UK38": Mineral. Record 21 (1990), 363	d
<b>UM1986-/[2]</b>	Neues Jb. Mineral. Abh. Am. Mineral. 73, 933 155, 289	No compositional information; $a=5.42\text{Å}$ , $b=7.13\text{Å}$ , $c=13.02\text{Å}$ , $\alpha=94.04^\circ$ , $\beta=96.44^\circ$ , $\gamma=89.32^\circ$ ; intergrown with epistolite	b,d

<b>UM1986--/-As:NiPd[1]</b>	Econ. Geol. 81, 1203	Am. Mineral. 74, 1218	Pd <sub>2</sub> Ni <sub>6</sub> As <sub>3</sub> ; tabulated formula but no analytical data	b
<b>UM1986--/-As:NiPd[2]</b>	Econ. Geol. 81, 1203	Am. Mineral. 74, 1218	(Pd,Ni) <sub>5</sub> As <sub>2</sub> ; tabulated formula but no analytical data	b
<b>UM1986--/-As:Pd</b>	Econ. Geol. 81, 1203	Am. Mineral. 74, 1218	Pd <sub>5</sub> As <sub>2</sub> ; tabulated formula but no analytical data; probably same as UM1975-05-As:Pd	b,c
<b>UM1986--/-As:PdPtSb</b>	Econ. Geol. 81, 1067		Only element association given	b
<b>UM1986--/-As:PdPtSnSb</b>	Econ. Geol. 81, 1067		Only element association given	b
<b>UM1986--/-As:PdSn</b>	Econ. Geol. 81, 1203	Am. Mineral. 74, 1218	Pd <sub>6</sub> Sn <sub>2</sub> As; tabulated formula but no analytical data	b
<b>UM1986--/-As:PdTe</b>	Econ. Geol. 81, 1203	Am. Mineral. 74, 1218	Pd(As <sub>0.6</sub> Te <sub>0.4</sub> ); tabulated formula but no analytical data	b
<b>UM1986--/-AsO:HMnZn</b>	Mineral. Record 17, 126	Am. Mineral. 72, 228	Same mineral as UM1982-04-AsO:HMnZn	c
<b>UM1986--/-AsO:Mn</b>	Am. Mineral. 71, 1034		Said to be Mn-arsenite but only qualitative compositional data	b
<b>UM1986--/-AsS:PdPt</b>	Econ. Geol. 81, 1067		Only element association given	b
<b>UM1986--/-C:W</b>	*Kuangwu Xuebao 6, 349	Am. Mineral. 74, 948	WC; later described under the name Qusongite: Am. Mineral. 94, 387; transferred from Valid list	a
<b>UM1986--/-Cl:Bi</b>	Nature 320, 518		BiCl <sub>2</sub> ; inadequate data	b
<b>UM1986--/-Cl:BiPd</b>	Econ. Geol. 81, 1203	Am. Mineral. 74, 1218	Pd <sub>4</sub> Bi <sub>5</sub> Cl <sub>3</sub> ; photomicrographs but no analytical data; probably same as UM1981-03-Cl:BiPd	b,c
<b>UM1986--/-E:AuPb[1]</b>	*Zap. Vses. Mineral. Ob. 115, 301	Am. Mineral. 73, 197	Possibly AuPb <sub>2</sub> ; inadequate data	b
<b>UM1986--/-E:AuPb[2]</b>	*Zap. Vses. Mineral. Ob. 115, 301	Am. Mineral. 73, 197	Possibly AuPb <sub>3</sub> ; inadequate data	b
<b>UM1986--/-E:CuFeSnZn</b>	Can. Mineral. 24, 329		(Cu,Zn,Fe,Sn): an alloy of copper	b
<b>UM1986--/-E:FeIr</b>	US Geol. Surv. Bull. 1660	Am. Mineral. 73, 442	Mineral "A"; inadequate data	b
<b>UM1986--/-E:FePt</b>	Can. Mineral. 24, 329		Pt <sub>3</sub> Fe; probably isoferroplatinum	b,c
<b>UM1986--/-F:AlHN</b>	Mineral. Mag. 50, 279		X-ray powder diffraction pattern matches that of NH <sub>4</sub> AlF <sub>4</sub> ; a product of burning coal	f
<b>UM1986--/-F:Li</b>	Rocks & Minerals 61,182		Mont St. Hilaire mineral "UK54"; subsequently named griceite: Can. Mineral. 27 (1989), 125	a
<b>UM1986--/-NbO:CaHNaSr</b>	Rocks & Minerals 61,182	Mineral. Record 21, 363	Recognised as hochelagaite before publication of Mont St. Hilaire unnamed mineral code "UK50": Can. Mineral. 24 (1986), 449	c
<b>UM1986--/-O:BaCrFeMgTi</b>	Nature 319, 761		Later named hawthorneite: Am. Mineral. 74 (1989), 668	a
<b>UM1986--/-O:U[1]</b>	Uranium 3, 69	Am. Mineral. 73, 444	Tetragonal alpha-U <sub>3</sub> O <sub>7</sub> ; same as UM1978-10-O:U	c
<b>UM1986--/-O:U[2]</b>	CIM Sp. Vol. 32, 27	Am. Mineral. 73, 444	Possibly a mixture or same as UM1978-10-O:U	d,c
<b>UM1986--/-O:UZn</b>	Mineral. Record 17, 126	Am. Mineral. 72, 228	Inadequate data from sample of doubtful purity	b,d

<b>UM1986--OH:Al</b>	Rocks & Minerals 61,182	Mineral. Record 21, 363	Mont St. Hilaire mineral "UK51"; not distinguishable from nordstrandite or gibbsite on available data	c
<b>UM1986--P:Ti</b>	Science: 234 189	Am. Mineral. 73, 197	Badengzhuite; transferred from Valid list	a
<b>UM1986--PO:Fe</b>	J. Geol. Soc. Japan 92, 243	Zap. Vses. Mineral. Ob. 117, 727	Only qualitative compositional information	b
<b>UM1986--PO:HMg</b>	Neues Jb. Mineral. Mh. 1986, 343	Am. Mineral. 73, 444	Later described under the name phosphoellenbergerite: Mineral. Petrol. 62 (1998), 89	a
<b>UM1986--PO:Mn</b>	Can. Mineral. 24, 599		Only qualitative compositional information	b
<b>UM1986--S:AgAu</b>	*Zap. Uzb. Otd. VMO 39, 5	Zap. Vses. Mineral. Ob. 117, 727	Ag <sub>3</sub> AuS <sub>2</sub> ; probably uytenbogaardtite	c
<b>UM1986--S:AgBiCuPb[1]</b>	Geol. Geofiz. 27 (10), 53	Zap. Vses. Mineral. Ob. 117, 727	Ag <sub>1.25</sub> Cu <sub>1.62</sub> Pb <sub>1.25</sub> Bi <sub>10</sub> S <sub>17.1</sub> ; probably makovickyite	c
<b>UM1986--S:AgBiCuPb[2]</b>	Geol. Geofiz. 27 (10), 53	Zap. Vses. Mineral. Ob. 117, 727	Ag <sub>2.46</sub> Cu <sub>1.4</sub> Pb <sub>0.6</sub> Bi <sub>10</sub> S <sub>17.3</sub> ; appears to be same as UM1971-05-S:AgBiCu	c
<b>UM1986--S:AgBiPb[1]</b>	Geol. Geofiz. 27 (10), 53	Zap. Vses. Mineral. Ob. 117, 727	AgPb <sub>1.3</sub> Bi <sub>4</sub> S <sub>7.84</sub> ; appears to be same as UM1971--S:AgBiCuPb	c
<b>UM1986--S:AgBiPb[2]</b>	*Mem. Fac. Lib. Arts Educ. Pt.2 (Yammanaski U.) 37, 74	Am. Mineral. 74, 950	Within the compositional ranges reported for lillianite	c
<b>UM1986--S:AgPt</b>	Econ. Geol. 81, 1067		Only element association given	b
<b>UM1986--S:AsCuGeV</b>	Vest. Mosk. Univ. Geol. Ser. 4, 41 (3), 59		Later named germanocolusite: Vest. Mosk. Univ. Geol. Ser. 4, 47 (1992) (6), 50	a
<b>UM1986--S:AsFeIrPtRh</b>	US Geol. Surv. Bull. 1660	Am. Mineral. 73, 442	Mineral "B"; inadequate data	b
<b>UM1986--S:AsHgSb</b>	*Dokl. Akad. Nauk SSSR 290, 1208	Am. Mineral. 74, 949	Hg <sub>12</sub> (As,Sb) <sub>8</sub> S <sub>12</sub> ; As:Sb very close to 1:1; not sufficiently distinct from tvalchrelidzeite to warrant an entry as an unnamed mineral	c
<b>UM1986--S:AsNiPdRh</b>	US Geol. Surv. Bull. 1660	Am. Mineral. 73, 442	Mineral "C"; inadequate data	b
<b>UM1986--S:AuBiPb</b>	Neues Jb. Mineral. Mh. 1986, 416	Am. Mineral. 75, 434	Au(Bi,Pb) <sub>5</sub> S <sub>4</sub> ; later named jonassonite: Can. Mineral. 44 (2006), 1127	a
<b>UM1986--S:AuBiPbTe</b>	*Vest. Ústred. Ústavu Geol. 61, 217	Zap. Vses. Mineral. Ob. 119 (5), 71	Pb-Au-Bi sulphotellurides; no additional information	b
<b>UM1986--S:BiCuFePbTe</b>	*Geol. Geofiz. (1986)	Zap. Vses. Mineral. Ob.	Only qualitative compositional data.	b



	(10), 60	117, 727		
<b>UM1986--S:BiPb</b>	*Novye Dannye Mineral. 33, 86	Am. Mineral. 75, 435	Indistinguishable from galenobismutite	c
<b>UM1986--S:BiTe</b>	*Novye Dannye Mineral. 33, 86	Am. Mineral. 75, 435	Inadequate data; perhaps josëite-A or protojosëite	b,c
<b>UM1986--S:Cu</b>	Rocks & Minerals 61,182	Mineral. Record 21, 363	Cu <sub>2</sub> -xS (x=0.12-0.37); Mineral "UK55"; indistinguishable from digenite, anilite, roxbyite or djurleite on available data	c
<b>UM1986--S:CuFeSn</b>	*Geol. Rudn. Mest. 1986 (2) 67	Am. Mineral. 73, 443	Mineral "II"; indistinguishable from vincienite	c
<b>UM1986--S:CuIrNiRhRu</b>	Legendre & Augé (1986), 361	Am. Mineral. 74, 1216	(Ir,Cu,Ni,Rh,Ru) <sub>2</sub> S <sub>3</sub> ; indistinguishable from UM1975-15-S:CuIrRh	c
<b>UM1986--S:FeGaZn</b>	Meteoritics 21, 23		(Fe,Zn,Ga)S; later described under the name rudashevskyite: Am. Mineral. 93 (2008), 902	a
<b>UM1986--S:FeIrPbRh</b>	US Geol. Surv. Bull. 1660	Am. Mineral. 73, 442	Mineral "D"; inadequate data	b
<b>UM1986--S:FeIrRu</b>	Econ. Geol. 81, 1067	Mineral. Petrol. 60, 185	Only element association given	b
<b>UM1986--S:FeZn</b>	Meteoritics 21, 417		(Fe,Zn)S; later described under the name rudashevskyite: Am. Mineral. 93 (2008), 902	a
<b>UM1986--S:IrOsPt</b>	Econ. Geol. 81, 1067		Only element association given	b
<b>UM1986--S:PdPtSb</b>	Econ. Geol. 81, 1067	Mineral. Petrol. 60, 185	Only element association given (perhaps genkinite)	b,c
<b>UM1986--S:PdSb</b>	Econ. Geol. 81, 1067	Mineral. Petrol. 60, 185	Only element association given	b
<b>UM1986--S:PtRh</b>	Econ. Geol. 81, 1067		Only element association given	b
<b>UM1986--Sb:AsPd</b>	Econ. Geol. 81, 1203	Am. Mineral. 74, 1218	Pd <sub>5</sub> (Sb,As) <sub>2</sub> ; tabulated but no analytical data; close to stillwaterite	b,c
<b>UM1986--Sb:PdSn</b>	Econ. Geol. 81, 1203	Am. Mineral. 74, 1218	Pd <sub>2</sub> (Sb,Sn); photomicrographs but no analytical data	b
<b>UM1986--Se:BiS</b>	*Kovalenker (1986), 111	Am. Mineral. 74, 949	Not compositionally distinct from laitakarite	c
<b>UM1986--Si:Fe[1]</b>	Science 234, 189	Am. Mineral. 73, 197	Fe <sub>3</sub> Si <sub>7</sub> ; inadequate data; close to ferdisilicite	b,c
<b>UM1986--Si:Fe[2]</b>	Acta Mineral. Sinica 6, 63		Fe <sub>2</sub> Si <sub>5</sub> ; same as luobusaite described later: Acta Geol. Sinica 80 (2006), 656. Formerly coded as UM1986-58-SiFe	a
<b>UM1986--SiO:AlCa</b>	Am. Mineral. 71, 1372		K-poor, Ca-rich mineral with the nepheline-structure; may be yoshiokaite	b,c
<b>UM1986--SiO:AlCaFeHKMnNaTi</b>	Rocks & Minerals 61, 182	Mineral. Record 21, 363	(Na,K) <sub>2</sub> (Mn,Fe,Ca,Ti,Al) <sub>3</sub> (Si,Al) <sub>8</sub> O <sub>20</sub> •8H <sub>2</sub> O; Mont St. Hilaire "UK38"; later equated with zakharovite by original authors: Rocks & Minerals 70 (1995), 90. Formerly coded as UM1986-SiO:AlCaFeHKMnNaTi	a
<b>UM1986--SiO:AlHNaTi</b>	Neues Jb. Mineral. Mh. 1986, 67	Am. Mineral. 73, 445	Clearly identical to vinogradovite	c
<b>UM1986--SiO:CaClFHkNa</b>	Rocks & Minerals 61,182	Mineral. Record 21, 363	Mont St. Hilaire mineral "UK57"; indistinguishable from fedorite on available data	b,c

<b>UM1986--SiO:HMn</b>	14 <sup>th</sup> IMA, Proc., 117		Inadequate data and X-ray amorphous	b
<b>UM1986--Sn:PdPtSb</b>	Econ. Geol. 81, 1203	Am. Mineral. 74, 1218	(Pd,Pt) <sub>5</sub> (Sn,Sb) <sub>2</sub> ; tabulated but no analytical data	b
<b>UM1986--Sn:PdSb</b>	Econ. Geol. 81, 1203	Am. Mineral. 74, 1218	Pd <sub>2</sub> (Sn,Sb); Apparently the same as UM1976-27-Sn:PdSb	c
<b>UM1987--POSiO:CaFMgMnNaNbTiZr[1]</b>	*Dokl. Akad. Nauk SSSR 294, 357	Am. Mineral. 75, 245	Mineral "X5"; later described under the name polyphite: Zap. Vses. Mineral. Ob. 121 (1992) (1), 105	a
<b>UM1987--POSiO:CaFMgMnNaNbTiZr[2]</b>	*Mineral. Zhurn. 9 (3), 28	Am. Mineral. 75, 245	Na <sub>14</sub> CaMgTi <sub>4</sub> [Si <sub>2</sub> O <sub>7</sub> ] <sub>2</sub> [PO <sub>4</sub> ] <sub>4</sub> O <sub>4</sub> F <sub>2</sub> ; Mineral "T"; later described under the name quadruphite: Zap. Vses. Mineral. Ob. 121 (1992) (1), 105	a
<b>UM1987--As:NiRh</b>	*Dokl. Akad. Nauk SSSR 295, 190	Zap. Vses. Mineral Ob. 118 (4), 102	RhNiAs; no data other than formula; apparently the same as UM1983--As:NiRh	b,c
<b>UM1987--As:PdRh</b>	*Dokl. Akad. Nauk SSSR 295, 190	Zap. Vses. Mineral Ob. 118 (4), 102	RhPdAs; no data other than formula; could be related to palladodymite	b,c
<b>UM1987--As:Rh</b>	*Dokl. Akad. Nauk SSSR 295, 190	Zap. Vses. Mineral Ob. 118 (4), 102	Rh <sub>2</sub> As; no data other than formula; probably rhodarsenide	b,c
<b>UM1987--Bi:Pd</b>	*Novye Dannye Mineral. 34, 108	Zap. Vses. Mineral Ob. 118 (4), 102	PdBi <sub>2</sub> ; no data other than formula; probably froodite	b,c
<b>UM1987--Bi:PdTe</b>	Mineral. Petrol. 36, 169		Pd(Bi,Te); not distinguishable from Te-bearing sobolevskite	c
<b>UM1987--C:Ti</b>	*Mineral. Zhurn. 9 (4), 71	Zap. Vses. Mineral Ob. 118 (4), 102	TiC; probably khamrabaevite	c
<b>UM1987--CO:AlCaCrH</b>	Izv. Akad. Nauk SSSR, Ser. Geol. 5, 127	Am. Mineral. 74, 951	Possibly a Cr-bearing alumohydrocalcite, but data are inadequate	b,c
<b>UM1987--E:AuHg</b>	Ann. Acad. Bras. Ciénc. 58, 457	Am. Mineral. 74, 504	Au <sub>3</sub> Hg; probably anthropogenic and may be related to weishanite	f,c
<b>UM1987--E:CuFeNiPt</b>	*Dokl. Akad. Nauk SSSR 295, 190	Zap. Vses. Mineral Ob. 118 (4), 102	Pt(Cu,Ni,Fe) <sub>3</sub> ; no data other than formula	b
<b>UM1987--E:CuPbSn</b>	*Novye Dannye Mineral. 34, 108	Zap. Vses. Mineral Ob. 118 (4), 102	Pb <sub>2</sub> SnCu; no data other than formula	b
<b>UM1987--O:AlMgTi</b>	*Contr. Mineral. Petrol. 96, 35	Am. Mineral. 75, 1434	Phase "A"; compositionally indistinguishable from UM1978-08-O:AlCaCrFeMgTi	c
<b>UM1987--O:AlTi</b>	*Contr. Mineral. Petrol. 96, 35	Am. Mineral. 75, 1434	Phase "B"; Perhaps AlTi <sup>3+</sup> Ti <sup>4+</sup> 2O <sub>7</sub> but data inadequate	b
<b>UM1987--O:BaCrFeMgTi</b>	Am. Mineral. 72, 633		Later described under the name hawthorneite: Am. Mineral. 74 (1989), 668	a
<b>UM1987--O:HMnNa</b>	Mineral. Mag. 51, 463		NaMn <sub>14</sub> O <sub>27</sub> •27H <sub>2</sub> O; "Marine 10Å manganate"; probably buserite	c
<b>UM1987--OH:AlCMg</b>	Clays Clay Minerals 35, 401		Mg <sub>4</sub> Al <sub>2</sub> (OH) <sub>12</sub> (CO <sub>3</sub> ,SO <sub>4</sub> )•3H <sub>2</sub> O; probably same as UM1985-38-SO:AlCHMg	c

<b>UM1987-//-OH:AICMgS[1]</b>	Clays Clay Minerals 35, 401		16.5Å phase given unapproved name CO <sub>3</sub> -SO <sub>4</sub> -hydrotalcite: Dokl. Akad. Nauk SSSR 284 (1985), 443	c
<b>UM1987-//-OH:AICMgS[2]</b>	Clays Clay Minerals 35, 401		18.5Å phase given unapproved name CO <sub>3</sub> -SO <sub>4</sub> -hydrotalcite-3R: Dokl. Akad. Nauk SSSR 284 (1985), 443	c
<b>UM1987-//-OH:AIMgS[1]</b>	Clays Clay Minerals 35, 401		8.8Å phase given unapproved name SO <sub>4</sub> -hydrotalcite: Dokl. Akad. Nauk SSSR 284 (1985), 443	c
<b>UM1987-//-OH:AIMgS[2]</b>	Clays Clay Minerals 35, 401		11Å phase given unapproved name SO <sub>4</sub> -hydrotalcite-1H: Dokl. Akad. Nauk SSSR (1985), 443	c
<b>UM1987-//-PO:BiH</b>	*Hallesches Jahrb. Geowiss, 12, 123	ICDD 42-1325	Bi <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> O(OH); later described under the name petitjeanite: Neues Jb. Mineral. Mh. (1993), 487	a
<b>UM1987-//-PO:FeHKMgMnTi</b>	*Rev. Asoc. Argentina Mineral. Petrol. Sedimentol. 18, 27	Am. Mineral. 75, 245	No data other than possible formula: KTi(Mn,Fe,Mg)Fe <sub>2</sub> (PO <sub>4</sub> ) <sub>4</sub> (OH) <sub>3</sub> •nH <sub>2</sub> O	b
<b>UM1987-//-S:AgBiPb</b>	*Dokl. Akad. Nauk SSSR 292, 1235	Am. Mineral. 73, 444	Indistinguishable from UM1985-10-S:AgBiPb	c
<b>UM1987-//-S:AgBiPbSb</b>	Zap. Vses. Mineral. Ob. 116, 614	Zap. Vses. Mineral Ob. 118 (4), 102	AgPb(Sb,Bi) <sub>3</sub> S <sub>6</sub> ; no data other than formula	b
<b>UM1987-//-S:AgCu</b>	*Mineral. Zhurn. 9 (6), 5	Am. Mineral. 75, 435	Cu <sub>2</sub> AgS; no data other than formula	b
<b>UM1987-//-S:AgFe[1]</b>	Proc. Yorks. Geol. Soc. 46, 133	Am. Mineral. 73, 1497	AgFeS <sub>2</sub> ; indistinguishable from lenaite: Zap. Vses. Mineral. Ob. 124 (1995) (5), 85	a,c
<b>UM1987-//-S:AgFe[2]</b>	*Mineral. Zhurn. 9 (6), 5	Am. Mineral. 75, 435	Mineral "X"; AgFeS <sub>2</sub> ; apparently the same mineral as UM1987-//-S:AgFe[1]	c
<b>UM1987-//-S:AgHg</b>	*Mineral. Zhurn. 9 (6), 5	Am. Mineral. 75, 435	Ag <sub>2</sub> HgS <sub>2</sub> ; indistinguishable from imiterite	c
<b>UM1987-//-S:AsPbTi</b>	Schweiz. Mineral. Petrog. Mitt. 75, 277		Pb <sub>3</sub> (As,Sb) <sub>5</sub> S <sub>11</sub> ; apparently the same as baumhauerite-2a	c
<b>UM1987-//-S:BiCuPbSb[1]</b>	*Izv. Akad. Nauk SSSR, Ser. Geol. (1), 86	Zap. Vses. Mineral Ob. 118 (4), 102	Cu <sub>2</sub> Pb <sub>6</sub> (Sb,Bi) <sub>16</sub> S <sub>31</sub> ; no data other than formula; appears to be compositionally very similar to UM1987-11-S:BiCuPbSb	b,c
<b>UM1987-//-S:BiCuPbSb[2]</b>	*Izv. Akad. Nauk SSSR, Ser. Geol. (1), 86	Zap. Vses. Mineral Ob. 118 (4), 102	Cu <sub>2</sub> Pb <sub>6</sub> (Sb,Bi) <sub>15</sub> S <sub>28</sub> ; no data other than formula; appears to be compositionally very similar to UM1987-11-S:BiCuPbSb	b,c
<b>UM1987-//-S:CuFeSn</b>	*Geol. Rudn. Mest. 1987 (2), 67	Zap. Vses. Mineral. Ob. 118 (4), 102	PdBi <sub>2</sub> ; seven phases; no additional information	b
<b>UM1987-//-S:FeMnZn</b>	Meteoritics 22, 370		(Fe,Zn,Mn)S; cf UM1972-//-S:FeMnS; later described under the name rudashevskyite: Am. Mineral. 93 (2008), 902	a
<b>UM1987-//-S:FeNiRu</b>	*Dokl. Akad. Nauk SSSR 295, 190	Zap. Vses. Mineral Ob. 118 (4), 102	(Ni,Fe,Ru) <sub>9-x</sub> S <sub>8</sub> ; probably ruthenium-bearing pentlandite or godlevskite	c
<b>UM1987-//-S:Ir</b>	*Dokl. Akad. Nauk SSSR 295, 190	Zap. Vses. Mineral Ob. 118 (4), 102	Ir <sub>2</sub> S <sub>3</sub> ; no data other than formula; probably kashinite	b,c
<b>UM1987-//-S:IrSb</b>	Mineralium Deposita 22, 178	Am. Mineral. 74, 1216	IrSbS - only qualitative data; similar to tolovkite & UM1976-17-S:IrRhSb	b,c
<b>UM1987-//-S:RhSb</b>	Mineralium Deposita 22, 178	Am. Mineral. 74, 1216	RhSbS - only qualitative data; similar to UM1976-16-S:IrRhSb	b,c
<b>UM1987-//-SO:ClHZn</b>	J. Geophys. Res. B, 92,		Zn <sub>12</sub> (SO <sub>4</sub> ) <sub>3</sub> Cl <sub>3</sub> (OH) <sub>15</sub> •5H <sub>2</sub> O; later described under the name	a

	11373		gordaite: Neues Jb. Mineral. Mh. (1997):155; transferred from valid list	
<b>UM1987-//-Sb:NiRh</b>	Mineralium Deposita 22, 178	Am. Mineral. 74, 1216	Only qualitative data - metal ratios not known	b
<b>UM1987-//-SiO:AlCaCeCrHLaMg</b>	Can. Mineral. 25, 413	Can. Mineral. 40, 1411	CaLaMg(Al,Cr) <sub>2</sub> (Si <sub>2</sub> O <sub>7</sub> )(SiO <sub>4</sub> )O(OH); equivalent to chromium-bearing dissakisite-(La) in the IMA-approved nomenclature for epidote group	a
<b>UM1987-//-SiO:AlCrHK</b>	J. Petrol 28, 867	Mineral. Mag. 51, 593	Later described under the name chromphyllite: Zap. Vser. Mineral. Ob. 126 (1997) (2), 110	a
<b>UM1988-//-AsO:ClPbSi</b>	Am. Mineral. 73, 643	Mineral. Mag. 76, 883	~Pb <sub>34</sub> [(As,Si)O <sub>4</sub> ] <sub>3</sub> Cl <sub>10</sub> :3H <sub>2</sub> O; probably the same as hereroite described later: Mineral. Mag. 76 (2012), 883	a
<b>UM1988-//-AsO:FeHMgMnZn</b>	Geol. Fören. Förh. 110, 181	Am. Mineral. 74, 1402	Compositionally indistinguishable from UKI1983-(AsO:FeHMgMnZn)	c
<b>UM1988-//-AsO:HMn</b>	Z. Krist. 185, 611		Mn <sub>5</sub> (AsO <sub>4</sub> ) <sub>2</sub> (AsO <sub>3</sub> OH) <sub>2</sub> ·10H <sub>2</sub> O; later described under the name geigerite: Am. Mineral. 74 (1989), 676	a
<b>UM1988-//-BO:MgMnSb</b>	Neues Jb. Mineral. Mh. 1988, 231	Am. Mineral. 74, 1402	(Mg <sub>7</sub> Mn <sup>2+</sup> )(Mn <sup>3+</sup> 3Sb <sup>3+</sup> )(BO <sub>5</sub> ) <sub>4</sub> ; not distinct from pinakiolite	c
<b>UM1988-//-Cl:Ca</b>	*Akad. Nauk SSSR, Ural. Otdel (1988), 5	Am. Mineral. 78, 1112	CaCl <sub>2</sub> ; product of a burning coal dump; equivalent to hydrophilite	f
<b>UM1988-//-Cl:FeHO</b>	*Akad. Nauk SSSR, Ural. Otdel (1988), 5	Am. Mineral. 78, 1112	FeCl <sub>3</sub> ·2.5H <sub>2</sub> O (?); product of a burning coal dump	f
<b>UM1988-//-E:AgAuHg[1]</b>	*Godishnik. Vissh. Minno-Geol. Inst. Sofia 34, 227	Am. Mineral. 75, 1212	(Au,Ag) <sub>2</sub> Hg; considered to result from contamination during amalgamation procedures associated with mining	f
<b>UM1988-//-E:AgAuHg[2]</b>	*Godishnik. Vissh. Minno-Geol. Inst. Sofia 34, 227	Am. Mineral. 75, 1212	AgAuHg; considered to result from contamination during amalgamation procedures associated with mining	f
<b>UM1988-//-E:AgAuHg[3]</b>	*Godishnik. Vissh. Minno-Geol. Inst. Sofia 34, 227	Am. Mineral. 75, 1212	(Au,Ag)Hg; considered to result from contamination during amalgamation procedures associated with mining	f
<b>UM1988-//-E:AgAuHg[4]</b>	*Godishnik. Vissh. Minno-Geol. Inst. Sofia 34, 227	Am. Mineral. 75, 1212	(Au,Ag) <sub>3</sub> Hg; considered to result from contamination during amalgamation procedures associated with mining	f
<b>UM1988-//-E:AgAuHg[5]</b>	*Godishnik. Vissh. Minno-Geol. Inst. Sofia 34, 227	Am. Mineral. 75, 1212	(Au,Ag) <sub>3</sub> Hg <sub>2</sub> ; considered to result from contamination during amalgamation procedures associated with mining	f
<b>UM1988-//-E:AuNi</b>	*Dokl. Akad. Nauk SSSR 303, 1209	Am. Mineral. 75, 1934	Inadequately defined Au-Ni alloys	b
<b>UM1988-//-E:AuPb</b>	*Dokl. Akad. Nauk SSSR 303, 1209	Am. Mineral. 75, 1934	Later described under the name anyuiite: Mineral. Zhurn. 11 (4) (1989), 88	a
<b>UM1988-//-E:FeIrOsRu</b>	Mineral. Zhurn. 10 (1), 119 (5), 70	Zap. Vses. Mineral. Ob.	(Os,Ir,Fe,Ru); evidently Fe-bearing iridosmine	c

<b>UM1988--F:Al</b>	Am. Mineral. 73, 855		AlF <sub>3</sub> ; Identified in mixtures but not characterised.	b
<b>UM1988--F:AlHO</b>	Am. Mineral. 73, 861		AlF <sub>3</sub> ·3H <sub>2</sub> O; later described under the name rosenbergite: Eur. J. Mineral. 5 (1993), 1167	a
<b>UM1988--O:Pb</b>	*Akad. Nauk SSSR, Ural. Am. Mineral. 78, 1112 Otdel (1988), 5		PbO <sub>2</sub> ; a cubic polymorph of plattnerite; product of a burning coal dump	f
<b>UM1988--S:AgAsCu</b>	*Mineral. Zhurn. 10, 25	Am. Mineral. 75, 711	AgCu <sub>8</sub> As <sub>4</sub> S <sub>13</sub> ; typographical error makes reported analysis unreliable	b
<b>UM1988--S:AgAu</b>	*Dokl. Akad. Nauk SSSR Zap. Vses. Mineral. Ob. 303, 944		AgAuS; probably petrovskaita	c
<b>UM1988--S:AgBiCuPbSe</b>	*Sofiisk. Univ. Geol.- Geogr. Fak. Geol., Sophia, 26	Zap. Vses. Mineral. Ob. 119 (5), 71	(Ag,Cu) <sub>10</sub> Pb <sub>2</sub> Bi <sub>8</sub> (S,Se) <sub>19</sub> ; only chemical formula given; very similar to UM1985-10-S:AgBiPb	b,c
<b>UM1988--S:AsTi</b>	*Naturwissen. 75, 37	Am. Mineral. 74, 1401	Ti <sub>3</sub> As <sub>4</sub> S <sub>4</sub> ; later described under the name fangite: Am. Mineral. 78 (1993), 1096	a
<b>UM1988--S:AuBi[1]</b>	Dokl. Earth Sci. 299, 185	Can. Mineral. 44, 1127	AuBi <sub>5</sub> S <sub>4</sub> ; same as UM1986--S:AuBi; later named jonassonite: Can. Mineral. 44 (2006), 1127	a
<b>UM1988--S:AuBi[2]</b>	Izv. Akad. Nauk Kaz. SSR, Ser. Geol., 2, 13	Can. Mineral. 44, 1127	AuBi <sub>5</sub> S <sub>4</sub> ; same as UM1986--S:AuBi; later named jonassonite: Can. Mineral. 44 (2006), 1127	a
<b>UM1988--S:Bi</b>	*Zap. Vses. Mineral. Ob. 117, 691	Am. Mineral. 75, 935	Bi <sub>3</sub> S <sub>5</sub> ; analyses and other properties not distinct from bismuthinite	c
<b>UM1988--S:CuIrRh</b>	Can. Mineral. 26, 177	Mineral. Petrol. 60, 185	(Ir,Cu,Rh) <sub>2</sub> S <sub>3</sub> ; not distinct from UM1975-15-S:CuIrRh	c
<b>UM1988--S:FeZn</b>	Can. Mineral. 26, 567		(Fe,Zn)S; later described under the name rudashevskyite: Am. Mineral. 93 (2008), 902	a
<b>UM1988--S:PbSb</b>	Can. Mineral. 26, 655		Not compositionally distinct from boulangerite	c
<b>UM1988--SiO:AlCaFeHMgMnTeZn</b>	*Mineral. Zhurn. 10 (5), 11	Am. Mineral. 76, 1440	Phase III; inadequate data; probably a smectite contaminated by submicroscopic tellurates	b,d
<b>UM1988--SiO:AlCaFeHMgPbTeZn</b>	*Mineral. Zhurn. 10 (5), 11	Am. Mineral. 76, 1440	Phase II; inadequate data; probably a smectite contaminated by submicroscopic lead tellurates	b,d
<b>UM1988--SiO:AlCaFeHMgZn</b>	*Mineral. Zhurn. 10 (5), 11	Am. Mineral. 76, 1440	Phase I; inadequate data; probably a smectite intermediate between saponite and sauconite	b
<b>UM1988--SiO:AsFeHMgMn</b>	Am. Mineral. 73, 1182		(Mn,Mg,Fe) <sub>273</sub> As <sub>42</sub> Si <sub>42</sub> O <sub>342</sub> (OH) <sub>252</sub> ; falls within the possible compositional range for mcgovernite	c
<b>UM1988--SiO:BaMn</b>	Neues Jb. Mineral. Mh. (1988), 377		Qualitative analysis; later described under the name cerchiaraita: Neues Jb. Mineral. Mh. (2000), 373	a
<b>UM1988--SiO:CaFNaZr</b>	*Vest. Mosk. Univ. Geol. Ser. (1), 87	Zap. Vses. Mineral. Ob. 119 (5), 71	Na <sub>2</sub> CaZr(Si <sub>2</sub> O <sub>7</sub> )F <sub>2</sub> ; later described under the name burpalite: Eur. J. Mineral. 2 (1990), 177	a
<b>UM1988--SiO:HMgPb</b>	Medd. Stockh. Univ. Geol. Inst. 273 (4), 1	Zap. Ross. Mineral. Ob. 136 (6), 18	Pb <sub>3</sub> Mg <sub>2</sub> Si <sub>2</sub> O <sub>8</sub> (OH) <sub>2</sub> ·3.5H <sub>2</sub> O; "18Å molybdophyllite"; later described under the name britvinite: Zap. Ross. Mineral. Ob. 136 (6) (2007), 18	a
<b>UM1988--SO:AlHN[1]</b>	Neues Jb. Mineral. Mh.	Zap. Vses. Mineral. Ob.	NH <sub>4</sub> Al(SO <sub>4</sub> ) <sub>2</sub> ; later named godovikovite: Zap. Vses. Mineral. Ob.	a

	(1988), 476	120 (4), 112	117 (1988), 208	
<b>UM1988--SO:AIHN[2]</b>	Neues Jb. Mineral. Mh. (1988), 476	Zap. Vses. Mineral. Ob. 120 (4), 112	NH <sub>4</sub> Al <sub>3</sub> (SO <sub>4</sub> ) <sub>2</sub> (OH) <sub>6</sub> ; later named ammonioalunite: Am. Mineral. 73 (1988), 145	a
<b>UM1988--SO:HMgN[1]</b>	Neues Jb. Mineral. Mh. (1988), 476	Zap. Vses. Mineral. Ob. 120 (4), 112	(NH <sub>4</sub> ) <sub>2</sub> Mg(SO <sub>4</sub> ) <sub>2</sub> •4H <sub>2</sub> O; (NH <sub>4</sub> )-analogue of leonite; product of a burning coal dump	f
<b>UM1988--SO:HMgN[2]</b>	*Akad. Nauk SSSR, Ural. Otdel (1988), 5	Am. Mineral. 78, 1112	(NH <sub>4</sub> ) <sub>2</sub> Mg(SO <sub>4</sub> ) <sub>2</sub> •4H <sub>2</sub> O; (NH <sub>4</sub> )-analogue of leonite; product of a burning coal dump; same as UM1988--SO:HMgN[1]	f,c
<b>UM1988--SO:HMgN[3]</b>	Neues Jb. Mineral. Mh. (1988), 476	Zap. Vses. Mineral. Ob. 120 (4), 112	(NH <sub>4</sub> ) <sub>2</sub> Mg <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> ; later named efremovite: Zap. Vses. Mineral. Ob. 118 (1989) (4), 84	a
<b>UM1989--E:FeSi</b>	*Bol. Geol. Miner. 100 (3), 158	Zap. Vses. Mineral. Ob. 120 (4), 111	Si <sub>5</sub> 1.7Fe <sub>46.9</sub> Al <sub>1.2</sub> ; probably fersilicite	c
<b>UM1989--O:Bi</b>	Meteoritics 24, 43	Am. Mineral. 75, 1213	Bi <sub>2</sub> O <sub>3</sub> ; inadequate data from sub-micron grains; perhaps bismite	b,c
<b>UM1989--O:FeRu</b>	*Acta Mineral. Sinica 9, 257	Zap. Vses. Mineral. Ob. 120 (4), 112	(Ru,Fe) <sub>2</sub> O <sub>3</sub> ; inadequate data	b
<b>UM1989--O:HMn</b>	ICDD 42-1316		MnO <sub>2</sub> •nH <sub>2</sub> O; apparently a hydrated form of ramsdellite	b
<b>UM1989--O:Sn[1]</b>	Meteoritics 24, 43	Am. Mineral. 75, 1213	Sn <sub>2</sub> O <sub>3</sub> ; inadequate data from sub-micron grains	b
<b>UM1989--O:Sn[2]</b>	Meteoritics 24, 43	Am. Mineral. 75, 1213	Sn <sub>3</sub> O <sub>4</sub> ; inadequate data from sub-micron grains	b
<b>UM1989--O:Ti</b>	Meteoritics 24, 43	Am. Mineral. 75, 1213	Ti <sub>2</sub> O <sub>3</sub> ; inadequate data from sub-micron grains	b
<b>UM1989--OH:Be</b>	*Dokl. Akad. Nauk SSSR 305, 95	Am. Mineral. 75, 1213	Later described under the name clinobeboite: Mineral. Zhurn. 11 (1989) (5), 88	a
<b>UM1989--OH:ClFe</b>	Can. Mineral. 27, 311		Described later under the name hibbingite: Am. Mineral. 79 (1994), 555	a
<b>UM1989--PO:BiH [1]</b>	*Acta Mineral. Sinica 9 (1), 15	Am. Mineral. 76, 1436	Bi <sub>2</sub> (PO <sub>4</sub> )(OH) <sub>3</sub> ?; inadequate data	b
<b>UM1989--PO:BiH [2]</b>	*Geochem. 8, 385	Zap. Vses. Mineral. Ob. 120 (4), 112	Appears to be identical UM1989--PO:BiH[1]	c
<b>UM1989--S:AgCuPbSb</b>	BRGM Doc. 167, 35		(Ag,Cu) <sub>2</sub> Pb <sub>8</sub> Sb <sub>10</sub> S <sub>24</sub> ; not compositionally distinguishable from owyheeite	c
<b>UM1989--S:AgIn</b>	Mining Geol. 39, 355	Am. Mineral. 80, 406	Identical to UM1980--S:AgIn; later described under the name laforêtite: Eur. J. Mineral. 11 (1999), 891	a,c
<b>UM1989--S:AgPbSb</b>	BRGM Doc. 167, 32		AgPb <sub>2</sub> Sb <sub>3</sub> S <sub>7</sub> ; the same as UM1971--S:AgPbSb	c
<b>UM1989--S:AgSbTe</b>	Neues Jb. Mineral. Abh. 160, 299	Am. Mineral. 76, 670	Ag <sub>9</sub> SbTe <sub>2</sub> S <sub>4</sub> ; very likely benleonardite	c
<b>UM1989--S:AsPb</b>	*C.R. Acad. Sci. Paris, Ser. II, 308, 927	Am. Mineral. 75, 435	Mineral "A"; Pb <sub>5</sub> As <sub>8</sub> S <sub>17</sub> ; later named baumhauerite-2a: Am. Mineral. 75 (1990), 915	a
<b>UM1989--S:AsPbSbTI</b>	*Geol. Surv. Canada Econ. Geol. Rept. 38	Am. Mineral. 75, 935	Inadequate data; strong compositional similarities to chabournéite	b,c
<b>UM1989--S:AuBi[1]</b>	*Izv. Akad. Nauk Kaz. SSR Ser. Geol., (1989),	Am. Mineral. 75, 434	AuBi <sub>5</sub> S <sub>4</sub> ; same mineral as UM1986-38-S:AuBi	c

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<b>UM1989--S: AuBi[2]</b>	Neues Jb. Mineral. Mh. (1989), 8	Am. Mineral. 75, 434		AuBi <sub>5</sub> S <sub>4</sub> ; same mineral as UM1986-38-S: AuBi	c
<b>UM1989--S: BiPb</b>	*Dizhi Kexue, Yichang Dizhi Kuang. Yanj. Sokan, 161	ICDD 42-1403		Pb <sub>2</sub> Bi <sub>3</sub> S <sub>6</sub> ; compositionally very similar to cannizzarite but with different d-values; later determined to be lillianite: Bull. Yichang Inst. Geol. Mineral Res. 14, 161; transferred from Valid list	a
<b>UM1989--S: CuFeInZn</b>	*Mining Geol. 39, 355-372	Am. Mineral. 80, 407		(Zn,Fe) <sub>2</sub> CuInS <sub>4</sub> ; probably not distinct from sakuraiite	c
<b>UM1989--S: CuFeMoRe</b>	Mineral. Mag. 53, 635	Am. Mineral. 75, 1212		(Re,Mo,Cu,Fe) <sub>2</sub> S <sub>3</sub> ; compositionally indistinguishable from tarkianite & UM1982--S: CuMoRe	c
<b>UM1989--S: MnSb</b>	*Geol. Surv. Canada Econ. Geol. Rept. 38	Am. Mineral. 75, 935		Later described under the name clerite: Zap. Vser. Mineral. Ob. 125 (1996 (3), 95	a
<b>UM1989--Sb: Pd</b>	Mineral. Petrol. 40, 289	Am. Mineral. 76, 1438		Pd <sub>2</sub> Sb; appears to be same mineral as UM1974-15-Sb: Pd	c
<b>UM1989--Si: Fe</b>	*Dokl. Akad. Nauk SSSR 305, 704	Am. Mineral. 76, 301		FeSi <sub>2.3</sub> ; apparently the same as UM1986--Si: Fe	c
<b>UM1989--SiO: AlBaMgTi</b>	Am. Mineral. 74, 439			BaMg <sub>2</sub> TiSi <sub>2</sub> Al <sub>2</sub> O <sub>12</sub> ; not distinct from Ti-bearing kinoshitalite	c
<b>UM1989--SiO: AlCaCeHLaV</b>	Can. Mineral 27, 565	Can. Mineral 40, 1411		Ca(La,Ce)V <sup>3+</sup> Al <sub>2</sub> (Si <sub>2</sub> O <sub>7</sub> )(Si <sub>4</sub> O)(OH); later recognised as an unnamed end-member of the allanite subgroup; clearly related to mukhinite and dissakisite-(La) ; later described under the name vanadoallanite-(La): Mineral. Mag. 77, 2739; transferred from valid list	a
<b>UM1989--SiO: AlCaKMgMnNaSr</b>	Bull. Geol. Surv. S. Africa 93, 1			(K,Na,Sr)(Na,Ca) <sub>1.3</sub> (Mg,Na,Mn) <sub>2</sub> (Mg,Fe,Al) <sub>3</sub> (Si,Al) <sub>12</sub> O <sub>30</sub> ; unit cell dimensions are similar to those of roedderite	c
<b>UM1989--SiO: CaH</b>	*J. Japan. Assoc. Mineral. Petrol. Econ. Geol. 84, 374	Am. Mineral. 77, 451		Ca <sub>5</sub> Si <sub>6</sub> O <sub>18</sub> •4H <sub>2</sub> O; later described under the name clinotobermorite: Mineral. Mag. 56 (1992), 353	a
<b>UM1989--SiO: HKNaTi</b>	*Dokl. Akad. Nauk SSSR 307, 114	Am. Mineral. 76, 302		Later described under the name sitinakite: Zap. Vser. Mineral. Ob. 121 (1) (1992), 94	a
<b>UM1989--SO: BiH[1]</b>	*Acta Mineral. Sinica 9 (1), 15	Am. Mineral. 76, 1436		Bi <sub>2</sub> SO <sub>4</sub> (OH) <sub>4</sub> ; later described under the name cannonite: Mineral. Mag. 56 (1992), 605	a
<b>UM1989--SO: BiH[2]</b>	*Geochem. 8, 385	Zap. Vses. Mineral. Ob. 120 (4), 112		Appears to be identical UM1989--SO: BiH[1]	c
<b>UM1989--SO: HMg</b>	*Vest. Mosk. Univ. Geol. Ser. 44 (5), 73	Am. Mineral. 76, 2025		Mg <sub>3</sub> (SO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> ; apparently caminite	c
<b>UM1989--Te: AsSb</b>	*Geol. Surv. Canada Econ. Geol. Rept. 38	Am. Mineral. 75, 935		Inadequate data; probably the same as UM1973-24-Te: AgSb	b,c
<b>UM1989--Te: Pd</b>	*Dokl. Akad. Nauk USSR 306, 430	Am. Mineral. 76, 1438		Pd <sub>8</sub> Te <sub>3</sub> ; not distinguishable from UM1981-31-Te: Pd	c

<b>UM1990--As:FeIrNiPt</b>	Econ. Geol. 85, 765		Inadequate data	b
<b>UM1990--As:FeIrNiPtRh</b>	Econ. Geol. 85, 765		Inadequate data	b
<b>UM1990--As:FeNiSb</b>	Can. Mineral. 28, 503	Am. Mineral. 76, 1436	Ni7As3; not distinct from UM1973-01-As:NiPd	c
<b>UM1990--As:FeOsReRhYTe</b>	Econ. Geol. 85, 921	Mineral. Petrol. 60, 185	No analytical data or formula	b
<b>UM1990--As:NiPd</b>	Can. Mineral. 28, 489		Pd1.6As1.5Ni; probably menshikovite	c
<b>UM1990--As:NiRh[1]</b>	Mineral. Petrol. 42, 265	Am. Mineral. 76, 1438	RhNiAs; same as UM1983--As:NiRh	a,c
<b>UM1990--As:NiRh[2]</b>	Can. Mineral. 28, 579	Am. Mineral. 76, 1437	RhNiAs; same as UM1983--As:NiRh	a,c
<b>UM1990--As:Os</b>	Econ. Geol. 85, 921		OsAs5; inadequate data	b
<b>UM1990--As:OsRu</b>	Econ. Geol. 85, 921		OsRuAs; inadequate data	b
<b>UM1990--As:RuTe</b>	Econ. Geol. 85, 921		RuTeAs; inadequate data	b
<b>UM1990--AsO:CuFeHPbZn[1]</b>	Austral. Mineral. 5, 125		"UK3a" - Pb(Fe0.7Zn0.6Cu0.5Al0.1)(AsO4)2•2H2O; inadequate data; perhaps a Cu-bearing mawbyite	b,c
<b>UM1990--AsO:CuFeHPbZn[2]</b>	Austral. Mineral. 5, 125		"UK3c" - Pb(Fe1.0Zn0.6Cu0.2)(AsO4)2•2H2O; inadequate data; also perhaps related to mawbyite	b,c
<b>UM1990--AsO:CuFeHPPbSZn</b>	Austral. Mineral. 5, 125		"UK5" - approximate formula Pb3(Fe,Cu)8(AsO4,SO4,PO4)4•20H2O?; inadequate data	b
<b>UM1990--AsO:CuPb</b>	Austral. Mineral. 5, 125		"UK6" - inadequate data	b
<b>UM1990--AsO:FeHPbZn</b>	Austral. Mineral. 5, 125		"UK3b" - Pb(Fe1.3Zn0.8Cu0.1)(AsO4)2•2H2O; inadequate data; perhaps intermediate between mawbyite and helmutwinklerite	b
<b>UM1990--AsS:Ir</b>	Econ. Geol. 85, 765		IrAsS; probably irarsite	c
<b>UM1990--AsS:OsRh</b>	Econ. Geol. 85, 921		OsRhAsS; inadequate data	b
<b>UM1990--Bi:Pd[1]</b>	*Dokl. Akad. Nauk SSSR Dokl. Earth Sci. 312, 315, 700	217	Pd2Bi5; inadequately characterised end of compositional range to Pd5Bi4	b
<b>UM1990--Bi:Pd[2]</b>	*Dokl. Akad. Nauk SSSR Dokl. Earth Sci. 312, 315, 700	217	Pd5Bi4; inadequately characterised end of compositional range to Pd2Bi5	b
<b>UM1990--Bi:PdSbTe</b>	Can. Mineral. 28, 409	Mineral. Petrol. 60, 185	Pd(Bi,Sb,Te); indistinguishable from UM1976-08-Bi:PdSbTe	c
<b>UM1990--BO:AIREE</b>	*Rend. Fisiche Accad. Lincei, Ser. 9, 1 159	Am. Mineral. 77, 672	(Ce,La)Al2B3O9; later described under the name peprossiite-(Ce): Eur. J. Mineral. 5 (1993), 53	a
<b>UM1990--C:Si</b>	Am. Mineral. 75, 1110		β-SiC; the cubic polymorph of moissanite; same as UM1990-09-C:Si	c
<b>UM1990--CH:Na</b>	*Khomyakov (1990)	Khomyakov (1995)	Na2[C2O4]; mineral "M76"; later described under the name natroxalate: Zap. Ross. Mineral. Ob. 125(1) (1996, 126	a
<b>UM1990--CO:AlCaHY</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mont St. Hilaire mineral "UK32"; same as UM1979--CO:AlCaHY; later named micheelsenite: Neues Jb. Mineral Mh (2001), 337	c
<b>UM1990--</b>	*Khomyakov (1990)	Khomyakov (1995)	(Na,Ca,Y,Ce,La)Sr(CO3)2•H2O; mineral "M5"; same as UM1992-	c



<b>CO:BaCaHNaREESrY</b>			05-CO:CaCeLaNaSr	
<b>UM1990-/-</b>	*Khomyakov (1990)	Khomyakov (1995)	(Na,Ca) <sub>3</sub> (Sr,Ba,REE) <sub>3</sub> [CO <sub>3</sub> ] <sub>5</sub> ; mineral "M3" not clearly distinct from burbankite	c
<b>CO:BaCaNaREESr[1]</b>				
<b>UM1990-/-</b>	*Khomyakov (1990)	Khomyakov (1995)	(Na,Ca) <sub>3</sub> (Sr,Ba,REE) <sub>3</sub> [CO <sub>3</sub> ] <sub>5</sub> ; mineral "M4"; very low analytical total; perhaps related to burbankite but data are inadequate for future recognition elsewhere	b
<b>CO:BaCaNaREESr[2]</b>				
<b>UM1990-/-CO:BaCeF</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mont St. Hilaire mineral "UK65"; same as the later-described mineral kukharenkoite(Ce): Can. Mineral. 34 (1996), 107	a
<b>UM1990-/-CO:CaHNaSrY</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mont St. Hilaire mineral "UK37A"; same as UM1986-09-CO:CaHNaSrY	c
<b>UM1990-/-CO:HNaREESrY</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	"UK33A"; Sr <sub>2</sub> Na <sub>2</sub> (Ce,La)Y(CO <sub>3</sub> ) <sub>6</sub> •3H <sub>2</sub> O; later described under the name alicewilsonite(YCe): Eur. J. Mineral. 32, 647; transferred from valid list	a
<b>UM1990-/-CO:Na[1]</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mont St. Hilaire mineral "UK73"; one of three Na-Carbonates; no X-ray powder data given but said to be distinctive	b
<b>UM1990-/-CO:Na[2]</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mont St. Hilaire mineral "UK73"; a second of three Na-Carbonates; no X-ray powder data given but said to be distinctive	b
<b>UM1990-/-CO:Pb</b>	Mineral. Mag. 54, 647	Am. Mineral. 77, 211	PbCO <sub>3</sub> •PbO; considered a product of mine fires but later described from another paragenesis as shannonite: Mineral. Mag. 59 (1995), 305	a
<b>UM1990-/-CO:PbREE</b>	Austral. Mineral. 5, 125		"UK12" - inadequate data	b
<b>UM1990-/-COF:CaHMnNa</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mont St. Hilaire mineral "UK62"; later described under the name rouvilleite: Can. Mineral. 29 (1991), 107	a
<b>UM1990-/-COOH:AlFeMgMn</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mont St. Hilaire mineral "UK58"; probably solid solutions or one or more of caresite-3T, quintinite-3T and chamaraitite-3T	b,c
<b>UM1990-/-COOHSO:AlCuFeNi</b>	Mineral. Mag. 54, 649	Am. Mineral. 77, 211	Insufficient data; perhaps related to mountkeithite	b,c
<b>UM1990-/-E:AlFeMnSi</b>	Dokl. Akad. Nauk UzbSSR (1990) (3), 47	Am. Mineral. 79, 187	(Al,Fe,Si,Mn); X-ray data to show that these intermetallic compounds are distinct from native aluminium, are lacking	b
<b>UM1990-/-E:AuPd</b>	Can. Mineral. 28, 687		Au <sub>3</sub> Pd; inadequate data	b
<b>UM1990-/-E:CuFePt</b>	Econ. Geol. 85, 765		Inadequate data; perhaps tulameenite.	b,c
<b>UM1990-/-E:CuPd</b>	Can. Mineral. 28, 537	Mineral. Petrol. 60, 185	Only qualitative compositional information	b
<b>UM1990-/-E:FeNiOsPdPt</b>	Econ. Geol. 85, 765		Inadequate data	b
<b>UM1990-/-E:FeNiOsRu</b>	Econ. Geol. 85, 765		Inadequate data	b
<b>UM1990-/-E:FeNiPt[1]</b>	Econ. Geol. 85, 765		Inadequate data	b
<b>UM1990-/-E:FeNiPt[2]</b>	Econ. Geol. 85, 765		Pt <sub>2</sub> FeNi; probably ferronickelplatinum	c
<b>UM1990-/-E:FeNiPtRh</b>	Econ. Geol. 85, 765		Inadequate data	b

<b>UM1990--E:FePt[1]</b>	Am. Mineral. 75, 881	Mineral. Petrol. 60, 185	Pt <sub>3</sub> Fe; not distinct from isoferroplatinum or perhaps Fe-bearing platinum	c
<b>UM1990--E:FePt[2]</b>	Econ. Geol. 85, 765		Inadequate data; perhaps tetraferroplatinum	b,c
<b>UM1990--F:AlCaHMgNa</b>	Mineral. Mag. 54, 599	Am. Mineral. 77, 211	(Na,Ca) <sub>2</sub> (Mg,Al) <sub>2</sub> F <sub>6</sub> (OH,O,F); a Ca-bearing ralstonite-like mineral; later described under the name flournatrocoulsellite: Austral. J. Mineral. 15, 21; transferred from valid list	a
<b>UM1990--NbO:CaH</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mont St. Hilaire mineral "UK56"; same as UM1986-21-NbO:CaH	c
<b>UM1990--PO:AlCaFeHMgMnNa</b>	Geol. Fören. Förh. 112, 9	Am. Mineral. 75, 1435	Same as UM1985-09-PO:CaFeHMn	c
<b>UM1990--PO:BaNaSr</b>	*Khomyakov (1990)	Khomyakov (1995)	Ba(Na,Sr) <sub>2</sub> Na[PO <sub>4</sub> ] <sub>2</sub> ; mineral "M58"; well within compositional range for olgite	c
<b>UM1990--PO:Ca</b>	Austral. Mineral. 5, 125		"UK10" - inadequate data; similarities to brushite	b,c
<b>UM1990--PO:CePb</b>	Austral. Mineral. 5, 125		"UK11" - inadequate data; perhaps related to rhabdophane group	b,c
<b>UM1990--PO:Cu</b>	Austral. Mineral. 5, 125		"UK9" - inadequate data	b
<b>UM1990--PO:FeHPb</b>	Austral. Mineral. 5, 125		"UK2" - inadequate data; later described under the name kintoreite: Mineral. Mag. 59 (1995), 143	a,b
<b>UM1990--PO:FeHZn</b>	Austral. Mineral. 5, 125		"UK1b" inadequate data perhaps Zn-bearing whitmoreite	b,c
<b>UM1990--PO:LaNa</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mont St. Hilaire mineral "UK63"; later described under the name nalipoite: Can. Mineral. 29 (1991), 565	a
<b>UM1990--POSiO:CaCeFSr[1]</b>	*Khomyakov (1990)	Khomyakov (1995)	(Ce,Ca,Sr) <sub>5</sub> (SiO <sub>4</sub> ,PO <sub>4</sub> ) <sub>3</sub> F; mineral "M59"; a high-Sr britholite-(Ce)	c
<b>UM1990--POSiO:CaCeFSr[2]</b>	*Khomyakov (1990)	Khomyakov (1995)	(Ce,Sr,Ca) <sub>5</sub> (PO <sub>4</sub> ,SiO <sub>4</sub> ) <sub>3</sub> F; mineral "M60"; Sr-rich fluorapatite admixed with britholite	d
<b>UM1990--S:AgBiCu</b>	Neues Jb. Mineral. Mh. (1990), 193	Am. Mineral. 76, 302	Later described under the name makovickyite: Neues Jb. Mineral. Abh. 168 (1990), 1329	a
<b>UM1990--S:AgBiCuPb</b>	Neues Jb. Mineral. Mh. (1990), 193	Am. Mineral. 76, 669	Later described under the name mummeite: Neues Jb. Mineral. Mh. (1992), 555	a
<b>UM1990--S:AgBiPbTe</b>	*Geol. Rudn. Mest. (1990) (3), 65	Am. Mineral. 76, 1436	AuPb <sub>2</sub> BiTe <sub>2</sub> S <sub>3</sub> ; later described under the name buckhornite: Can. Mineral. 30 (1992), 1039	a
<b>UM1990--S:AuBi[1]</b>	*Geol. Bavarica 95, 133	Can. Mineral. 44, 1127	AuBi <sub>5</sub> S <sub>4</sub> ; same as UM1986--S:AuBi; later named jonassonite: Can. Mineral. 44 (2006), 1127	a
<b>UM1990--S:AuBi[2]</b>	*Zpravodaj MEGA 14 (3), 146	Can. Mineral. 44, 1127	AuBi <sub>5</sub> S <sub>4</sub> ; same as UM1986--S:AuBi; later named jonassonite: Can. Mineral. 44 (2006), 1127	a
<b>UM1990--S:Cu</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mont St. Hilaire mineral "UK55"; not compositionally distinct from roxbyite or anilite	c
<b>UM1990--S:CuFeIrNiPdPtRh</b>	Can. Mineral. 28, 579	Am. Mineral. 76, 1437	(Ni,Fe,Ir,Cu,Rh,Pt)S; appears to be same mineral as UM1990-38-S:CuFeIrNiPtRh	c
<b>UM1990--S:CulrPtRh</b>	Can. Mineral. 28, 579	Am. Mineral. 76, 1437	Cu(Pt,Rh,Ir) <sub>2</sub> S <sub>4</sub> ; same as UM1981-17-S:CulrPtRh	c

<b>UM1990--S:FeIrOs</b>	Econ. Geol. 85, 765		Inadequate data	b
<b>UM1990--S:FeNa</b>	*Khomyakov (1990)	Khomyakov (1995)	Na <sub>3</sub> Fe <sub>7</sub> S <sub>5</sub> ; mineral "M61" very low analytical total (74%); perhaps a sulphate	b
<b>UM1990--S:IrPtRh[1]</b>	*Dokl. Akad. Nauk SSSR Dokl. Earth Sci. 312, 312, 1433	Dokl. Earth Sci. 312, 217	(Rh,Ir,Pt) <sub>3</sub> S <sub>4</sub> ; probably not distinct from UM1983--S:IrPtRh & kingstonite	c
<b>UM1990--S:IrPtRh[2]</b>	Econ. Geol. 85, 765		Inadequate data	b
<b>UM1990--S:IrRhSb</b>	Mineral. Petrol. 42, 249	Am. Mineral. 76, 1439	Appears to be rhodian tolovkite	c
<b>UM1990--S:IrRu</b>	Econ. Geol. 85, 765		Inadequate data	b
<b>UM1990--S:Re</b>	Econ. Geol. 85, 921		ReS <sub>2</sub> ; inadequate data	b
<b>UM1990--S:RhSb</b>	Can. Mineral. 28, 503		RhSbS; inadequate data; probably same mineral as UM1976-16-S:IrRhSb	b,c
<b>UM1990--Sb:AsBiPdPt</b>	*Dokl. Akad. Nauk SSSR Dokl. Earth Sci. 315, 315, 700	Dokl. Earth Sci. 315, 217	(Pd,Pt) <sub>3</sub> (Sb,As,Bi); probably mertieite	c
<b>UM1990--Sb:AsPd</b>	Can. Mineral. 28, 489		Pd <sub>3</sub> (Sb,As) to Pd <sub>7</sub> (Sb,As) <sub>3</sub> ; not distinguishable from stibiopalladinite, mertieite-I or mertieite-II on available data	b,c
<b>UM1990--Sb:BiFeNiPdTe</b>	Can. Mineral. 28, 409	Am. Mineral. 76, 1437	(Pd,Fe,Ni)(Sb,Te,Bi); not distinguishable from UM1976-23-Sb:BiPdTe	c
<b>UM1990--Sb:Pd</b>	Dokl. Akad. Nauk SSSR Dokl. Earth Sci. 315, 315, 700	Dokl. Earth Sci. 315, 217	Pd <sub>8</sub> Sb <sub>3</sub> ; probably mertieite II	c
<b>UM1990--Se:BiCu</b>	Mineral. Record 21, 133		Cu <sub>11</sub> (Ni,Co) <sub>0.4</sub> Bi <sub>2</sub> Se <sub>13</sub> ; later described under the name eldragónite (Cu <sub>6</sub> BiSe <sub>6</sub> ): Can. Min. 50 (2012), 281; transferred from Valid list	a
<b>UM1990--Se:Ni</b>	Mineral. Record 21, 133		NiSe <sub>2</sub> ; not distinct from penroseite, the cubic polymorph of kullerudite	c
<b>UM1990--Se:PdBi</b>	Dokl. Akad. Nauk SSSR Dokl. Earth Sci. 315, 315, 700	Dokl. Earth Sci. 315, 217	PdBiSe; probably padmaite, described in 1991	c
<b>UM1990--Si:Fe</b>	*Mineral. Zhurn. 12, (3), 17	Am. Mineral. 77, 212	Fe <sub>2</sub> Si <sub>5</sub> ; appears to be the same as UM1986-58-Si:Fe	c
<b>UM1990--Si:FeMn</b>	Mineral. Zhurn. 12, (6), 35	Am. Mineral. 77, 1118	(Mn,Fe) <sub>5</sub> Si <sub>3</sub> ; described later under the name mavlyanovite: Mineral. Mag. 73 (2009), 43; transferred from the Valid list	a
<b>UM1990--SiO:AlCaFeHKMgMnNaTi</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mont St. Hilaire mineral "UK29"; same as UM1979-20-SiO:AlCaFeHKMgMnNaTi	c
<b>UM1990--SiO:AlCaFeHKMnNaTi</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mont St. Hilaire mineral "UK38"; same as UM1986-60-SiO:AlCaFeHKMnNaTi	c
<b>UM1990--SiO:AlCaHKNa</b>	*Khomyakov (1990)	Khomyakov (1995)	(K,Ca,Na) <sub>2</sub> [Al <sub>4</sub> Si <sub>8</sub> O <sub>24</sub> ]•11H <sub>2</sub> O' mineral "M13"; later described under the name gmelinite-K:	a
<b>UM1990--SiO:AlFeHNaTi</b>	*Khomyakov (1990)	Khomyakov (1995)	Na(Ti,Fe <sup>3+</sup> ) <sub>2</sub> Si <sub>4</sub> O <sub>12</sub> (OH)•H <sub>2</sub> O; mineral "M48"; later described under the name paravinogradovite: Can. Mineral. 41 (2003), 989	a
<b>UM1990--SiO:AlHK</b>	*Khomyakov (1990)	Khomyakov (1995)	K <sub>2</sub> Al <sub>2</sub> Si <sub>3</sub> O <sub>10</sub> •3H <sub>2</sub> O; mineral "M12"; an anthropogenetically K-exchanged paranatrolite	f
<b>UM1990--SiO:BaCaFFeHMnNaSrTi</b>	*Khomyakov (1990)	Khomyakov (1995)	Na <sub>2</sub> (Ba,Sr,Ca) <sub>2</sub> (Fe,Mn)TiSi <sub>2</sub> O <sub>9</sub> (F,OH) <sub>2</sub> •2H <sub>2</sub> O; mineral "M74"; later described under the name bussenite: Zap. Vses. Mineral. Ob. 130, 50	a

<b>UM1990-/- SiO:BaCaFHMnNaNbSrTi</b>	*Khomyakov (1990)	Eur. J. Mineral. 21, 251	Ba-bearing titano-niobosilicate; mineral "M73"; later described under the name nechelyustovite: Eur. J. Mineral. 21 (2009), 251	a
<b>UM1990-/- SiO:BaCeFeHKNaTi</b>	*Khomyakov (1990)	Khomyakov (1995)	Na <sub>2</sub> (Ba,K) <sub>6</sub> Ce <sub>2</sub> Fe <sup>2+</sup> Ti <sub>3</sub> [Si <sub>3</sub> O <sub>9</sub> ] <sub>3</sub> [SiO <sub>3</sub> OH] <sub>3</sub> (OH,H <sub>2</sub> O) <sub>9</sub> ; mineral "M30"; later described under the name diversilite-(Ce): Zap. Vser. Mineral. Ob. 132 (5) (2003), 34	a
<b>UM1990-/- SiO:BaFHKMnNaNbTi</b>	*Khomyakov (1990)	Khomyakov (1995)	(Na,K) <sub>4</sub> (Ba,Sr)(Ti,Nb,Mn) <sub>3</sub> Si <sub>4</sub> O <sub>17</sub> F•4H <sub>2</sub> O; mineral "M72"; described later under the name bykovaite: Zap. Vser. Mineral. Ob. 134 (5), 40	a
<b>UM1990-/- SiO:BaFHMnNaNbTi</b>	*Khomyakov (1990)	Khomyakov (1995)	Ba(Na,Ba)Na <sub>3</sub> Ti <sub>3</sub> Si <sub>4</sub> O <sub>16</sub> (OH,F) <sub>2</sub> ; mineral "M54"; not distinct from nabalamprophyllite	c
<b>UM1990-/-SiO:BaNbTi</b>	*Kristallografiya 35, 346	Am. Mineral. 76, 670	Ba <sub>3</sub> TiNb <sub>4</sub> Si <sub>4</sub> O <sub>23</sub> ; later described under the name belkovite: Neues Jb. Mineral. Mh. (1986), 67	a
<b>UM1990-/- SiO:BBeCaFeHREEY</b>	*Rend. Fisiche Accad. Lincei, Ser. 9, 1 159	Am. Mineral. 77, 672	Ca <sub>2</sub> Fe <sup>3+</sup> (Y,Ce,Nd) <sub>2</sub> B <sub>2</sub> BeSi <sub>4</sub> O <sub>15</sub> (OH) <sub>7</sub> ; apparently the same as calcybeborosilite-(Y)	c
<b>UM1990-/-SiO:BBeCaHY</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mont St. Hilaire mineral "UK48"; same as UM1986-61-SiO:BBeCaHY	c
<b>UM1990-/-SiO:BNa</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mont St. Hilaire mineral "UK53A"; transferred to Valid list as a malinkoite polymorph	
<b>UM1990-/-SiO:BNa</b>	*Khomyakov (1990)	Khomyakov (1995)	NaBSiO <sub>4</sub> ; mineral "M65"; described later under the name malinkoite: Zap. Vser. Mineral. Ob. 129 (6) (2000), 35	c
<b>UM1990-/-SiO:BNa</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mont St. Hilaire mineral "UK53A"; later described under the name malinkoite: Zap. Vser. Mineral. Ob. 129 (6) (2000) (6), 35	a
<b>UM1990-/-SiO:CaClFHKNa</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	"UK57"; UM1986-/-SiO:CaClFHKNa (probably fedorite)	c
<b>UM1990-/- SiO:CaClHMnNaZr</b>	*Khomyakov (1990)	Khomyakov (1995)	Na <sub>16</sub> Ca <sub>5</sub> Mn <sub>2</sub> (Zr,Nb) <sub>3</sub> Si <sub>24</sub> O <sub>66</sub> (OH) <sub>6</sub> Cl; mineral "M38", a thesis analysis; not distinct from UM1998-21-SiO:CaCeClHMnNaZr or perhaps UM2006-28-SiO:CaHMnNaZr	c
<b>UM1990-/- SiO:CaFeMnNaTiYZr[1]</b>	*Khomyakov (1990)	Khomyakov (1995)	Na <sub>7</sub> Ca(Mn,Fe,Zr,Ti,Y)Si <sub>6</sub> O <sub>18</sub> ; mineral "M44"; inadequate data - no analysis, unit cell or Xray powder pattern	b
<b>UM1990-/- SiO:CaFeMnNaTiYZr[2]</b>	*Khomyakov (1990)	Khomyakov (1995)	Na <sub>7</sub> Ca(Fe,Mn,Zr,Ti,Y)Si <sub>6</sub> O <sub>18</sub> ; mineral "M45"; inadequate data - no analysis, unit cell or Xray powder pattern	b
<b>UM1990-/-SiO:CaFeNaNbTi</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	"UK74"; X-ray powder diffraction and cell data; later named lintisite: Zap. Vses. Mineral. Ob. 119 (1990) (3), 76. Formerly coded as UM1990-68-SiO:CaFeNaNbTi	a
<b>UM1990-/- SiO:CaFFeMnNaNbTiZr</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	NaCa(Mn,Fe)(Ti,Nb,Zr)Si <sub>2</sub> O <sub>7</sub> (O,F) <sub>2</sub> ; mineral "UK59"; later named normandite: Can. Mineral. 35 (1997), 1035. Formerly coded as UM1990-65-SiO:CaFFeMnNaNbTiZr	a
<b>UM1990-/-SiO:CaHNaNbSrTi</b>	*Khomyakov (1990)	Khomyakov (1995)	Na <sub>2</sub> (Ca,Sr)(Nb,Ti) <sub>2</sub> Si <sub>4</sub> O <sub>12</sub> (O,OH) <sub>4</sub> •3H <sub>2</sub> O; mineral "M70"; data presented do not allow distinction from nenadkevichite	c
<b>UM1990-/-SiO:CaHNaTi</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	"UK61"; Na <sub>1-2</sub> Ca <sub>2</sub> Ti <sub>3</sub> Si <sub>8</sub> O <sub>24</sub> (OH) <sub>1-2</sub> •5H <sub>2</sub> O; later described under the name haineaultite: Can. Mineral. 42 (2004), 769	a
<b>UM1990-/-SiO:CCeHNaThTi</b>	*Khomyakov (1990)	Khomyakov (1995)	(Na,Ce,Th,Ti,Si,C) <sub>x</sub> O <sub>y</sub> •nH <sub>2</sub> O; mineral "M32"; data do not meet the requirements for definition of a mineral	f

<b>UM1990--SiO:Ce</b>	*Khomyakov (1990)	Khomyakov (1995)	Ce <sub>2</sub> Si <sub>6</sub> O <sub>15</sub> ; mineral "M29"; the same as UM1979-22-SiO:CeLaNd	c
<b>UM1990--SiO:CeFHNaSrTi</b>	*Khomyakov (1990)	Khomyakov (1995)	Na <sub>4</sub> SrCeTiSi <sub>8</sub> (O,OH,F) <sub>24</sub> •4H <sub>2</sub> O; mineral M31; later described under the name seidite(Ce): Zap. Vser. Mineral. Ob. 127 (2000), 94	a
<b>UM1990--SiO:CuZn</b>	Austral. Mineral. 5, 125		"UK8" - inadequate data	b
<b>UM1990--SiO:FeHKMnNa[1]</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mont St. Hilaire mineral "UK52"; same as UM1986-63-SiO:FeHKMnNa	c
<b>UM1990--SiO:FeHKMnNa[2]</b>	*Khomyakov (1990)	Khomyakov (1995)	(Na,K) <sub>6</sub> (Mn <sup>2+</sup> ,Fe <sup>2+</sup> ,Fe <sup>3+</sup> ) <sub>3</sub> Si <sub>9</sub> O <sub>24</sub> •6H <sub>2</sub> O; mineral "M20"; not the Fe-analogue of shafranovskite because Fe <sup>2+</sup> is not dominant	c
<b>UM1990--SiO:FeHNa</b>	*Khomyakov (1990)	Khomyakov (1995)	NaH <sub>2</sub> Fe <sup>3+</sup> Si <sub>3</sub> O <sub>9</sub> •nH <sub>2</sub> O; mineral "M21"; inadequate data; compositionally similar to taperssuatsiaite	b
<b>UM1990--SiO:FeHNaTi</b>	*Khomyakov (1990)	Khomyakov (1995)	Na <sub>3</sub> (Fe <sub>2</sub> <sup>+</sup> ,Fe <sub>3</sub> <sup>+</sup> ) <sub>6</sub> Ti <sub>2</sub> Si <sub>12</sub> O <sub>35</sub> (OH) <sub>2</sub> •6H <sub>2</sub> O; mineral "M71"; described later under the name nafertisite: Zap. Vser. Mineral. Ob. 124 (6) (1995), 101	a
<b>UM1990--SiO:FeHNaZr</b>	*Khomyakov (1990)	Khomyakov (1995)	Na <sub>5</sub> FeZr <sub>2</sub> Si <sub>6</sub> O <sub>20</sub> •8H <sub>2</sub> O; mineral "M36"; same as UM1967-13-SiO:FeHNaZr	c
<b>UM1990--SiO:FHNaNbTi</b>	*Khomyakov (1990)	Khomyakov (1995)	Na <sub>10</sub> MnTi <sub>3</sub> Nb <sub>3</sub> (Si <sub>2</sub> O <sub>7</sub> ) <sub>6</sub> (OH) <sub>2</sub> F•12H <sub>2</sub> O mineral "M75"; described later under the name shkatulkaite: Zap. Vser. Mineral. Ob. 125 (1) (1996), 120	a
<b>UM1990--SiO:FHNaZr</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	"UK69"; Na <sub>2</sub> Zr <sub>2</sub> Si <sub>7</sub> O <sub>18</sub> (OH,F) <sub>2</sub> •8H <sub>2</sub> O; described later under the name bobtraillite: Can. Mineral. 43 (2005), 747	a
<b>UM1990--SiO:HKMnNaNbTi</b>	*Khomyakov (1990)	Khomyakov (1995)	(Na,H <sub>3</sub> O,K) <sub>7-x</sub> Mn(Ti,Nb)Si <sub>10</sub> O <sub>26</sub> (OH)•4H <sub>2</sub> O; mineral "M66"; described later under the name intersilite: Zap. Vser. Mineral. Ob. 125 (4) (1996), 79	a
<b>UM1990--SiO:HLiNa</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mont St. Hilaire mineral "UK81"; later described under the name silinaite: Can. Mineral. 29 (1991), 359	a
<b>UM1990--SiO:HMnNaZn</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mont St. Hilaire mineral "UK84"; later described under the name gaultite: Can. Mineral. 32 (1994), 855	a
<b>UM1990--SiO:HMnNaZr[1]</b>	*Khomyakov (1990)	Khomyakov (1995)	Na <sub>2</sub> MnZrSi <sub>4</sub> O <sub>12</sub> •6H <sub>2</sub> O; mineral "M35"; same as UKI-1967-(SiO:HMnNaZr)	c
<b>UM1990--SiO:HMnNaZr[2]</b>	*Khomyakov (1990)	Khomyakov (1995)	Na<6(Mn <sup>2+</sup> ,Mn <sup>4+</sup> ,Ca)<1ZrSi <sub>6</sub> (O,OH) <sub>18</sub> ; mineral "M40"; compositionally and in most other respects, very similar to zirsinalite	c
<b>UM1990--SiO:HNaREETiY</b>	*Khomyakov (1990)	Khomyakov (1995)	Na <sub>5</sub> (Y,REE)(Ti,Nb)Si <sub>6</sub> O <sub>18</sub> •6H <sub>2</sub> O; mineral "M67"; described later under the name pyatenkoite-(Y): Zap. Vser. Mineral. Ob. 125 (4) (1996), 72	a
<b>UM1990--SiO:HNaTi</b>	*Khomyakov (1990)	Khomyakov (1995)	Na <sub>4</sub> Ti <sub>2</sub> Si <sub>8</sub> O <sub>22</sub> •5H <sub>2</sub> O; mineral "M68"; described later under the name penkvilksite-1M: Am. Mineral. 79 (1994), 1185.	a
<b>UM1990--SiO:HNaZr</b>	*Khomyakov (1990)	Khomyakov (1995)	(Na,Ca) <sub>2</sub> Zr <sub>2</sub> Si <sub>4</sub> O <sub>12</sub> (OH,O)•3H <sub>2</sub> O; mineral "M34"; same as UKI-1975-(SiO:HNaZr)	c
<b>UM1990--SiO:KNaNbTi</b>	*Khomyakov (1990)	Khomyakov (1995)	(K,Na) <sub>3</sub> TiNbSi <sub>4</sub> O <sub>14</sub> ; minerals "M51" & "M69"; not distinct from	c

<b>UM1990-//-SiO:NaZr</b>	*Khomyakov (1990)	Khomyakov (1995)	lemmleinite-K Na <sub>8</sub> ZrSi <sub>6</sub> O <sub>18</sub> ; mineral "M39"; later described under the name townendite: Am. Mineral. 95 (2010), 646	a
<b>UM1990-//-SiPO:CaCeFHNa</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mont St. Hilaire mineral "UK64"; later described under the name phosinaite: Can. Mineral. 34 (1996), 107	a
<b>UM1990-//-SO:AlCa</b>	*Mitteilungsbl. Landesmuseums "Joanneum", Abt. Mineral. 58, 15	Am. Mineral. 78, 674	Ca <sub>4</sub> Al <sub>6</sub> O <sub>12</sub> (SO <sub>4</sub> ); probably ye'elimite	c
<b>UM1990-//-SO:AlCHMn</b>	Mineral. Record 21, 363	Am. Mineral. 76, 302	Mn <sub>6</sub> Al <sub>3</sub> (SO <sub>4</sub> ) <sub>2</sub> (CO <sub>3</sub> ) <sub>x</sub> (OH) <sub>17-2x</sub> •yH <sub>2</sub> O; mineral "UK76"; later equated with shigaite by original authors: Rocks & Minerals 70 (1995), 90; formerly UM1990-45-SO:AlCHMn	a
<b>UM1990-//-SO:CuZn</b>	Austral. Mineral. 5, 125		"UK4" - inadequate data; Cu-Zn sulphate with X-ray powder diffraction pattern like parnauite	b,c
<b>UM1990-//-Te:BiPd</b>	Can. Mineral. 28, 489		Pd <sub>8</sub> Bi <sub>6</sub> Te <sub>3</sub> ; probably the same as UM1982-05-Bi:BiPdTe	c
<b>UM1991-//-As:FePtS</b>	Mineral. Petrol. 43, 181		(Fe,Pt)(As,S); inadequate data	b
<b>UM1991-//-As:IrPt</b>	*Dokl. Akad. Nauk SSSR 320, 705	Am. Mineral. 78, 673	(Pt,Ir) <sub>2</sub> (As,S) <sub>3</sub> ; appears to be Ir-bearing variety of UM1991-03-As:PtRhS	c
<b>UM1991-//-As:OsRuTe</b>	Mineral. Petrol. 43, 181		(Ru,Os)(As,Te); inadequate data - possibly Te-bearing anduoite	b,c
<b>UM1991-//-AsO:CaHMn</b>	Aufschluss 42, 1	Am. Mineral. 78, 675	Later described under the name sailaufite: Eur. J. Mineral. 15 (2003), 555	a
<b>UM1991-//-AsO:HMgU</b>	*Acta Cryst. C47, 2013	Am. Mineral. 78, 453	Same as UM1963-01-:AsO:MgU; later described under the name seelite: Mineral. Record 24 (1993), 463	a
<b>UM1991-//-AsTe:Ru</b>	Mineral. Petrol. 43, 181		RuAsTe; inadequate data - only formula	b
<b>UM1991-//-CH:CaHO</b>	*Casopis Mineral. Geol. 36, 77	Am. Mineral. 77, 450	C <sub>4</sub> H <sub>6</sub> CaO <sub>4</sub> •H <sub>2</sub> O; product of burning coal dump; (see also ICDD 30-221)	f
<b>UM1991-//-CO:BaMn</b>	*J. Mineral. Soc. Japan 18, 347	p. Vses. Mineral. Za Ob. 122 (5), 64	BaMn(CO <sub>3</sub> ) <sub>2</sub> ; appears to be the same as UM1988-01-CO:BaMn	c
<b>UM1991-//-CO:CaREEY</b>	*Dokl. Akad. Nauk SSSR 326, 883	Am. Mineral. 79, 188	Ca <sub>4</sub> (Y <sub>0.8</sub> REE <sub>0.2</sub> ) <sub>3</sub> (CO <sub>3</sub> ) <sub>8</sub> (OH)•2H <sub>2</sub> O; probably kamphaugite described later	c,a
<b>UM1991-//-COF:BaCaCe</b>	*Acta Petrol. Mineral. 10, 246	Am. Mineral. 77, 1118	(Ca <sub>0.5</sub> □ <sub>0.5</sub> )BaCe <sub>2</sub> (CO <sub>3</sub> ) <sub>4</sub> F; apparently identical to cordylite-(Ce)	c
<b>UM1991-//-COF:CaCe</b>	*Acta Mineral. Sinica 11, 193	Am. Mineral. 79, 188	10 mixed-layer bastnäsite/synchysite polytypes; without any compositional data	b
<b>UM1991-//-COF:CaMnNa[1]</b>	*Moscow Univ. Geol. Bull. 46 (5), 74		Na <sub>3</sub> Ca(Mn,Ca)(CO <sub>3</sub> ) <sub>3</sub> F; described the same year as rouvilleite: Can. Mineral. 29 (1991), 107	a,c
<b>UM1991-//-COF:CaMnNa[2]</b>	*Kristallografiya 36, 30	Am. Mineral. 77, 450	Na <sub>3</sub> Ca(Mn,Ca)(CO <sub>3</sub> ) <sub>3</sub> F; same as UM1991-//-COF:CaMnNa[1]	c
<b>UM1991-//-E:AuCu</b>	Eur. J. Mineral. 3, 451		CuAu <sub>3</sub> ; probably same as cuproaurite, transferred from Valid list	c

<b>UM1991--E:FePt</b>	*Dokl. Akad. Nauk SSSR Zap. Vser. Mineral. Ob. 317, 1458	122 (5), 64	Fe <sub>3</sub> Pt; not distinct from UM1984-18-E:FeNiPt; formerly coded as UM1991-07-E:FePt	c
<b>UM1991--O:HMn</b>	Dokl. Akad. Nauk SSSR Zap. Vser. Mineral. Ob. 319, 722	122 (5), 64	A 9.8 Å manganese oxide; inadequate data, perhaps a variety of buserite	b,c
<b>UM1991--OH:ClFe</b>	Can. Mineral. 29, 239	Am. Mineral. 77, 672	FeCl(OH) <sub>3</sub> ; apparent the same as UM1989--OH:ClFe (=hibbingite)	c
<b>UM1991--S:AgBiCuPbSe</b>	Mineral. Petrol. 44, 89		(Cu,Ag) <sub>3</sub> (Bi,Pb) <sub>7</sub> (S,Se) <sub>12</sub> ; indistinguishable from UM1986-32-S:AgBiCuPbSe	c
<b>UM1991--S:AgCuPd</b>	Mineral. Petrol. 43, 181		Pd <sub>2</sub> (Cu,Ag) <sub>2</sub> S <sub>3</sub> ; identical to UM1989-17-S:AgCuPd	c
<b>UM1991--S:AsCoFeNi</b>	*Izv. Akad. Nauk Kaz. SSR, Ser. Geol. (4), 51	Am. Mineral. 79, 1213	(Co,Ni,Fe,Cu)AsS; not distinguishable from glaucodot; see also UM1963--S:AsCoNi	c
<b>UM1991--S:AsCu</b>	Novye Dannye Mineral. 37, 81	Am. Mineral. 80, 849	Cu <sub>3</sub> AsS <sub>3</sub> ?; inadequate data; perhaps mgriite	b,c
<b>UM1991--S:AsPt</b>	Mineral. Petrol. 43, 181		PtAs <sub>2</sub> S <sub>4</sub> ; identical to UM1989-20-S:AsPt	c
<b>UM1991--S:AuBi</b>	*Izv. Akad. Nauk Kaz. SSR, Ser. Geol. (3), 63	Am. Mineral. 79, 1212	Bi <sub>5</sub> AuS <sub>4</sub> ; probably same as UM1986-38-S:AuBi	c
<b>UM1991--S:AuBiPb[1]</b>	*Izv. Akad. Nauk Kaz. SSR, Ser. Geol. (3), 63	Am. Mineral. 79, 1212	(Bi,Pb) <sub>5</sub> AuS <sub>4</sub> ; probably same as UM1986-38-S:AuBi	c
<b>UM1991--S:AuBiPb[2]</b>	*Izv. Akad. Nauk Kaz. SSR, Ser. Geol. (3), 63	Am. Mineral. 79, 1212	(Bi,Au,Pb) <sub>6</sub> S <sub>4</sub> ; probably same as UM1986-38-S:AuBi	c
<b>UM1991--S:AuBiPb[3]</b>	*Izv. Akad. Nauk Kaz. SSR, Ser. Geol. (3), 63	Am. Mineral. 79, 1212	(Bi,Au,Pb) <sub>6</sub> S <sub>3</sub> ; probably same as UM1991-13-S:AuBiPb	c
<b>UM1991--S:CuFeMoRe</b>	Eur. J. Mineral. 3, 977	Am. Mineral. 77, 1117	(Cu,Fe)(Re,Mo) <sub>4</sub> S <sub>8</sub> ; same as UM1982--S:CuMoRe; later described under the name tarkianite: Can. Mineral. 42 (2004), 539	a,c
<b>UM1991--S:CuFeZn</b>	*Acta Mineral. Sinica 11 (1) 78	Am. Mineral. 78, 453	(Zn,Fe,Cu)S; anisotropic - probably same as UM1989-24-S:CuFeZn	c
<b>UM1991--S:FeRh</b>	*C. R. Acad. Sci. Paris, Ser. II, 312, 55	Am. Mineral. 76, 1733	FeRh <sub>2</sub> S <sub>4</sub> ; later described under the name ferrorhodsite: Zap. Vser. Mineral. Ob. 127 (1998) (5), 37	a
<b>UM1991--S:IrPtRh</b>	Can. Mineral. 29, 419		(Rh,Ir,Pt) <sub>3</sub> S <sub>4</sub> ; appears to be the same mineral as UM1983--S:IrPtRh & kingstonite	c
<b>UM1991--Sb:BiPtSn</b>	Mineral. Zhurn. 13 (1), 31	Am. Mineral. 78, 233	Pt <sub>3</sub> (Sb,Sn,Bi) <sub>4</sub> ; inadequate data: heavy analytical contamination	b
<b>UM1991--Se:BiCuPb</b>	*Novye Dannye Mineral. 37, 81	Am. Mineral. 80, 848	Inadequate data from impure material; perhaps S-free soucekite	b,c
<b>UM1991--SiO:AICHN</b>	*Dokl. Akad. Nauk SSSR 317, 884	Am. Mineral. 77, 1118	[N(CH <sub>3</sub> ) <sub>4</sub> ][Si <sub>2</sub> (Si <sub>0.5</sub> Al <sub>0.5</sub> )O <sub>6</sub> ] <sub>2</sub> ; later described under the name tsaregorodtsevite: Zap. Vser. Mineral. Ob. 122 (1993) (1), 128	a
<b>UM1991--SiO:AICHNa</b>	*Moscow Univ. Geol. Bull., 46 (5), 74	Am. Mineral. 78, 235	Na <sub>7.2</sub> [Si <sub>7.2</sub> Al <sub>4.8</sub> O <sub>24</sub> ](CO <sub>3</sub> ) <sub>1.2</sub> •3H <sub>2</sub> O; later described under the name cancrisilite: Zap. Vser. Mineral. Ob. 120 (1991) (6), 80	a
<b>UM1991--SiO:BaFeMnTi</b>	*Soviet Phys. Cryst. 36 (2), 186	Am. Mineral. 77, 451	Ba(Mn,Fe) <sub>2</sub> TiSi <sub>2</sub> O <sub>7</sub> (O,OH) <sub>2</sub> ; later named hejzmanite: Eur. J. Mineral. 4 (1992), 35; intergrown and polymorphous with	a

		UM1989-33-SiO:BaHMnTi		
<b>UM1991--SiO:BNa</b>	*Dokl. Akad. Nauk SSSR 319, 879	Zap. Vses. Mineral. Ob. 122 (5), 64	NaBSiO <sub>4</sub> ; appears to be the same as UM1990-64-SiO:BNa	c
<b>UM1991--SiO:FeHKMnNaTi</b>	*Kristallografiya 36, 892.	Am. Mineral. 77, 673	Na <sub>4</sub> K <sub>3</sub> (Fe,Mn,Ti) <sub>2</sub> Si <sub>8</sub> O <sub>20</sub> (OH) <sub>4</sub> •4H <sub>2</sub> O; later described under the name ershovite: Zap. Vser. Mineral. Ob. 122 (1993) (1), 116	a
<b>UM1991--SiO:HMnSr</b>	*Ber. dtsch. Mineral. Gesell. 4 (1), 13	Zap. Vses. Mineral. Ob. 122 (5), 64	SrMn <sub>2</sub> [Si <sub>2</sub> O <sub>7</sub> ](OH) <sub>2</sub> •2H <sub>2</sub> O; later described under the name hennomartinite: Schweiz. Mineral. Petrog. Mitt. 73 (1993), 349	a
<b>UM1991--SO:HCuZn</b>	J. Russel Soc. 4 (1), 13	Am. Mineral. 78, 674	(Zn,Cu) <sub>5</sub> (SO <sub>4</sub> ) <sub>2</sub> (OH) <sub>6</sub> •6H <sub>2</sub> O; the Zn-analogue of ktenasite and apparently the same mineral as UM1979-18-SO:CuHZn	c
<b>UM1991--STe:CuFePdSn</b>	Mineral. Petrol. 43, 181		Pd <sub>5</sub> (Cu,Fe)SnTe <sub>2</sub> S; inadequate data - formula only	b
<b>UM1991--Te:Bi</b>	*Acta Geol. Sinica 65, 127	Can. Min. 45, 665	Bi <sub>2</sub> Te; presumably the same as UM1980-16-Te:Bi	c
<b>UM1991--Te:BiPd</b>	Mineral. Petrol. 43, 181		PdBiTe <sub>2</sub> ; inadequate data - formula only	b
<b>UM1991--Te:BiSse</b>	*Geol. Surv. Finland. Sp. Paper 12, 81	Can. Min. 45, 665	Bi <sub>2</sub> (Te,Se); probably not distinct from UM1980-16-Te:Bi	c
<b>UM1991--Te:Pd</b>	Mineral. Petrol. 43, 181		Pd <sub>8</sub> Te <sub>3</sub> ; apparently identical to UM1989--Te:Pd	c
<b>UM1992--As:NiRh</b>	Mineral. Petrol. 47, 37	Am. Mineral. 78, 1111	(Rh,Ru)(Ni,Fe)(As,Sb); probably the same as UM1983-03-As:NiRh	c
<b>UM1992--As:Pd[1]</b>	Can. Mineral. 30, 121	Am. Mineral. 77, 1307	Pd <sub>5</sub> As <sub>2</sub> ; same as UM1975-05-As:Pd	c
<b>UM1992--As:Pd[2]</b>	Dokl. Bolg. Akad. Nauk 45, 37	Am. Mineral. 79, 37	Pd <sub>4</sub> As <sub>3</sub> ; not distinguishable from UM1984-07-As:Pd	c
<b>UM1992--CO:CaHREEY</b>	*Dokl. Akad. Nauk SSSR 326, 883	Am. Mineral. 79, 188	Ca <sub>4</sub> (Y <sub>0.8</sub> REE <sub>0.2</sub> ) <sub>3</sub> (CO <sub>3</sub> ) <sub>8</sub> (OH)•2H <sub>2</sub> O; unsatisfactory data; perhaps kamphaugite-(Y)	b,c
<b>UM1992--COPO:NaSr</b>	*Dokl. Akad. Nauk SSSR 322, 531	Am. Mineral. 78, 235	Na <sub>3</sub> Sr(PO <sub>4</sub> )(CO <sub>3</sub> ); later described under the name crawfordite: Zap. Vser. Mineral. Ob. 123 (1994) (3), 41	a
<b>UM1992--COSO:BaCIFHNaREE</b>	*Soviet Phys. Cryst. 37, 753	Am. Mineral. 79, 189	Na <sub>25</sub> BaREE <sub>2</sub> (CO <sub>3</sub> ) <sub>11</sub> (HCO <sub>3</sub> ) <sub>4</sub> (SO <sub>4</sub> ) <sub>2</sub> F <sub>2</sub> Cl; described later under the name mineevite-(Y): Zap. Vser. Mineral. Ob. 121 (1992) (6), 138	a
<b>UM1992--E:AuCu</b>	Eur. J. Mineral. 4, 683	Mineral. Petrol. 60, 185	Only qualitative compositional information	b
<b>UM1992--E:AuCuPd</b>	Eur. J. Mineral. 4, 683	Mineral. Petrol. 60, 185	Only qualitative compositional information	b
<b>UM1992--E:AuCuPdPt</b>	Austral. J. Earth Sci. 39, 389		(Pd,Pt,Au) <sub>2</sub> Cu; same as UM1992-07-E:AuCuPdPt	c
<b>UM1992--E:AuCuPt</b>	Eur. J. Mineral. 4, 683	Mineral. Petrol. 60, 185	Only qualitative compositional information	b
<b>UM1992--E:AuPbSn</b>	Eur. J. Mineral. 4, 683	Mineral. Petrol. 60, 185	Only qualitative compositional information	b
<b>UM1992--E:AuPd</b>	Eur. J. Mineral. 4, 683	Mineral. Petrol. 60, 185	Only qualitative compositional information	b
<b>UM1992--E:AuPdPtSn</b>	Eur. J. Mineral. 4, 683	Mineral. Petrol. 60, 185	Only qualitative compositional information	b
<b>UM1992--E:CuPdSn</b>	Mineral. Petrol. 46, 85	Mineral. Petrol. 60, 185	(Pd,Cu) <sub>3</sub> Sn, same as UM1970--E:CuPdSn	c



<b>UM1992--E:CuPtSb</b>	Mineral. Zhurn. 14 (2), 12	Am. Mineral. 80, 406	Pt(Cu,Sb) <sub>3</sub> ; probably a Sb-bearing variety of UM1986-17-E:CuPt	c
<b>UM1992--O:BaHTiV</b>	*Soviet Phys. Cryst. 37, 311	Am. Mineral. 79, 188	Ba(Ti,V,Cr,Fe,Mg,Al) <sub>8</sub> (O,OH) <sub>16</sub> ; only c cell dimension (5x) differs significantly from ankangite	b
<b>UM1992--O:CaFe</b>	*Chesnokov <i>et al.</i> (1992), 126	Eur. J. Mineral. 17, 623	CaFe <sub>4</sub> O <sub>7</sub> ; from burning coal dumps; not a legitimate mineral	f
<b>UM1992--O:FeIrPtRh</b>	Explor. Mining Geol. 5, 73		(Ir,Fe,Rh,Pt) <sub>2</sub> O <sub>2</sub> ; not distinct from UM1992-13-O:IrPt	c
<b>UM1992--O:Ir</b>	Austral. J. Earth Sci. 39, 389	Am. Mineral. 78, 1110	IrO <sub>2</sub> ; same as UM1992-13-O:IrPt	c
<b>UM1992--PO:AlFe</b>	Mineral. Record 23 (4), 4		Fe, Al & P present; weak diffraction pattern; inadequate data	b
<b>UM1992--S:AgCuPd[1]</b>	*Geol. Rudn. Mest. (1992) (2), 32	Am. Mineral. 78, 673	(Pd,Ag,Cu) <sub>4</sub> S <sub>3</sub> ; same mineral as UM1989-17-S:AgCuPd	c
<b>UM1992--S:AgCuPd[2]</b>	Internat. Geol. Rev. 34, 503	Mineral. Petrol. 60, 185	(Pd,Ag,Cu) <sub>4</sub> S <sub>3</sub> ; probably same as UM1989-17-S:AgCuPd	c
<b>UM1992--S:AuBi</b>	*Izv. Akad. Nauk Kaz. SSR, Ser. Geol. (1991) (3), 63	Am. Mineral. 79, 1212	Bi <sub>5</sub> AuS <sub>4</sub> ; appears to be the same mineral as UM1986-38-S:AuBi	c
<b>UM1992--S:AuBiPb[1]</b>	*Izv. Akad. Nauk Kaz. SSR, Ser. Geol. (1991) (3), 63	Am. Mineral. 79, 1212	(Bi,Pb) <sub>5</sub> AuS <sub>4</sub> ; appears to be a Pb-bearing variety of UM1986-38-S:AuBi	c
<b>UM1992--S:AuBiPb[2]</b>	*Izv. Akad. Nauk Kaz. SSR, Ser. Geol. (1991) (3), 63	Am. Mineral. 79, 1212	(Bi,Au,Pb) <sub>6</sub> S <sub>3</sub> ; probably not distinct from UM1991-13-S:AuBiPb	c
<b>UM1992--S:AuCuOsPdPtRh</b>	Austral. J. Earth Sci. 39, 389		(Pt,Cu,Pd,Rh,Os,Au,Ir,Ni) <sub>3</sub> S <sub>2</sub> ; same as UM1992-26-S:CuOsPdPtRh	c
<b>UM1992--S:BiFeRhSb</b>	Mineral. Petrol. 47, 37	Am. Mineral. 78, 1111	(Rh,Fe)(Sb,Bi) <sub>2</sub> S; probably same as UM1976-16-S:IrRhSb & UM1992--S:IrPtRhSb	c
<b>UM1992--S:Cu</b>	*Dokl. Akad. Nauk SSSR 323, 1170	Am. Mineral. 79, 187	Cu <sub>1.96</sub> S; possibly a metastable tetragonal polymorph of djurleite but phase disappeared after 6 years in storage	b,c
<b>UM1992--S:CuFeInZn</b>	Mining Geol. 39, 355	Am. Mineral. 80, 407	Same as UM1980--S:CuFeInZn (=sakuraiite)	c
<b>UM1992--S:CuFePdSnTe[1]</b>	*Geol. Rudn. Mest. (1992) (2), 32	Am. Mineral. 78, 673	(Pd,Cu,Pt,Fe) <sub>9</sub> Sn(Te,S) <sub>4</sub> ; not compositionally distinct from oulankaite	c
<b>UM1992--S:CuFePdSnTe[2]</b>	*Dokl. Akad. Nauk SSSR 323, 539	Am. Mineral. 79, 390	(Pd,Cu,Pt,Fe,Ag) <sub>9</sub> Sn(Te,S) <sub>4</sub> ; not compositionally distinct from oulankaite	c
<b>UM1992--S:CuGeW</b>	Ann. Geol. Penins. Balk. 57, 301	Zap. Vser. Mineral. Ob. 125 (6), 88	Cu <sub>6</sub> GeWS <sub>8</sub> ; later described under the name catamarcaite: Can. Mineral. 44 (2006), 1481	a
<b>UM1992--S:CuNiPdPt</b>	Austral. J. Earth Sci. 39, 389		(Pd,Pt) <sub>3</sub> (Cu,Ni) <sub>2</sub> S <sub>2</sub> ; same as UM1992-27-S:CuPdPt & UM1992--S:CuPdPt	c
<b>UM1992--S:CuNiPdPtRh</b>	Austral. J. Earth Sci. 39, 389	Am. Mineral. 78, 1110	(Rh,Ir)(Pt,Pd)(Cu,Ni) <sub>4</sub> S <sub>4</sub> ; inadequate data - probably cuprorhodsite	b,c

<b>UM1992--S:CuOsPdPtRh</b>	Austral. J. Earth Sci. 39, 389		(Pt,Pd,Rh)3S2; same as UM1992-26-S:CuOsPdPtRh	c
<b>UM1992--S:CuPdPt</b>	Austral. J. Earth Sci. 39, 389	Am. Mineral. 78, 1110	(Pd,Pt)3(Cu,Ni)S2; same as UM1992-27-S:CuPdPt	c
<b>UM1992--S:CuPdPtRh</b>	Austral. J. Earth Sci. 39, 389	Am. Mineral. 78, 1110	(Pd,Pt)2RhCuS4; same as UM1992-28-S:CuPdPtRh	c
<b>UM1992--S:FeNiRh</b>	*Mineral. Zhurn. 14, (1), 29	Am. Mineral. 79, 1211	(Ni,Fe,Rh)S; probably same mineral as UM1990-38-S:CuFeIrNiPtRh	c
<b>UM1992--S:IrPtRhSb</b>	Mineral. Petrol. 47, 37	Am. Mineral. 78, 1111	(Rh,Pt,Ir,Fe)SbS; probably same as UM1976-16-S:IrRhSb	c
<b>UM1992--S:IrRhSb</b>	*Mineral. Zhurn. 14, (1), 29	Am. Mineral. 79, 1211	(Rh,Ir)SbS; probably same mineral as UM1976-16-S:IrRhSb & UM1992--S:BiFeRhSb	c
<b>UM1992--S:Pd</b>	Austral. J. Earth Sci. 39, 389			c
<b>UM1992--S:PdPt</b>	Austral. J. Earth Sci. 39, 389	Am. Mineral. 78, 1110	Pd4S; same as UM1992-29-S:Pd (Pd,Pt)2S; same as UM1992-30-S:PdPt	c
<b>UM1992--Sb:AsPd[1]</b>	Can. Mineral. 30, 121	Am. Mineral. 78, 1111	Pd2(Sb,As); appears to be an As-bearing variety of UM1974-15-Sb:Pd	c
<b>UM1992--Sb:AsPd[2]</b>	*Russian Geol. Geophys. 33 (1), 87	Am. Mineral. 78, 1111	Pd2(Sb,As); appears to be an As-bearing variety of UM1974-15-Sb:Pd	c
<b>UM1992--Sb:Pd[1]</b>	*Geol. Rudn. Mest. (1992) (2), 32	Am. Mineral. 78, 673	Pd8Sb3; not compositionally distinct from mertieite-II	c
<b>UM1992--Sb:Pd[2]</b>	Internat. Geol. Rev. 34, 503	Mineral. Petrol. 60, 185	Pd8Sb3; same as UM1975--Sb:Pd	c
<b>UM1992--Sb:Pd[3]</b>	*Mineral. Zhurn. 14, (1), 29	Am. Mineral. 79, 1211	(Pd,Cu)3Sb; probably the same as UM1986-53-Sb:AsPdSn	c
<b>UM1992--Sb:PdPt</b>	*Mineral. Zhurn. 14, (1), 29	Am. Mineral. 79, 1211	(Pd,Pt)4Sb3; same as ungavaite described later: Can. Mineral. 43 (2005), 1735	a
<b>UM1992--Se:BiCu</b>	Mineral. Polonica 23 (2), 35	Am. Mineral. 80, 186	(Bi,Cu)4Se3; apparently a Cu-bearing and S-free laitakarite	c
<b>UM1992--SiO:AlCaFeMgV</b>	Can. Mineral. 30, 153	Am. Mineral. 77, 1307	Ca8(V,Mg,Fe)4(V,Al)8Si12O46-56(OH)0-10; closely related to pumpellyite; later described under the name poppiite: Am. Mineral. 91, 584; transferred from valid list	a
<b>UM1992--SiO:BaFHMnNa</b>	*Soviet Phys. Cryst. 37, 174	Am. Mineral. 78, 675	NaBa3(Mn <sup>2+</sup> ,Mn <sup>3+</sup> )4[Si4O10(OH)2][Si2O7]O2F•H2O; later described under the name strakhovite: Zap. Vser. Mineral. Ob. 123 (1994) (4), 94	a
<b>UM1992--SiO:HKNa</b>	*Soviet Phys. Cryst. 37, 167	Am. Mineral. 78, 676	Na8K[Si9O18(OH)9]•19H2O; later described under the name megacyclite: Zap. Vser. Mineral. Ob. 122 (1993) (1), 125	a
<b>UM1992--SiO:HKNaNbREETiYzr</b>	*Soviet Phys. Cryst. 37, 845	Am. Mineral. 79, 189	(Na,K)5(Y,REE)(Zr,Ti,Nb)Si6O18•6H2O; later described under the name sazykinaite-(Y): Zap. Vser. Mineral. Ob. 122 (1993) (5), 76	a
<b>UM1992--SiO:HMnSr</b>	Eur. J. Mineral. 4, 17	Am. Mineral. 77, 1307	Later described under the name hennomartinite: Schweiz. Mineral. Petrog. Mitt. 73 (1993), 349	a

<b>UM1992--SiO:KTi</b>	Can. Mineral. 30, 1153	Am. Mineral. 78, 1112	K <sub>2</sub> TiSi <sub>3</sub> O <sub>9</sub> ; same as UM1989-35-SiO:KTi; probably the Ti-analogue of wadeite; formerly coded as UM1992-37-SiO:KTi	c
<b>UM1992--Sn:PdSb</b>	Internat. Geol. Rev. 34, 503	Mineral. Petrol. 60, 185	Pd <sub>2</sub> (Sn,Sb); same as UM1976-27-Sn:PdSb	c
<b>UM1992--Te:AgBiPd</b>	*Geol. Rudn. Mest. (1992) (2), 32	Am. Mineral. 78, 673	(Pd,Ag) <sub>8</sub> (Te,Bi) <sub>3</sub> ; possibly a Bi-bearing variant of UM1981-31-Te:Pd	c
<b>UM1992--Te:AgPd</b>	*Geol. Rudn. Mest. (1992) (2), 32	Am. Mineral. 78, 673	Pd <sub>6</sub> AgTe <sub>4</sub> ; same as UM1991-25-Te:AgPd	c
<b>UM1992--Te:AsPdPt</b>	Austral. J. Earth Sci. 39, 389		(Pt,Pd) <sub>3</sub> (Te,As); inadequate data	b
<b>UM1992--Te:AsPdPtS</b>	Can. Mineral. 30, 983	Am. Mineral. 78, 1110	(Pd,Pt) <sub>3</sub> (Te,As,S); perhaps keithconnite or UM1974-24-Te:Pd	c
<b>UM1992--Te:CuFePdPtSnS</b>	Internat. Geol. Rev. 34, 503	Mineral. Petrol. 60, 185	(Pd,Pt,Cu,Fe) <sub>9</sub> Sn(Te,S) <sub>4</sub> ; apparently oulankaite	c
<b>UM1992--Te:Pd</b>	Internat. Geol. Rev. 34, 503	Mineral. Petrol. 60, 185	Pd <sub>8</sub> Te <sub>3</sub> ; same as UM1981-31-Te:Pd	c
<b>UM1993--AsO:AlCuFe</b>	Mineral. Record 24, 203		No formula or other data	b
<b>UM1993--AsO:BiCu</b>	Mineral. Record 24, 11		No formula or other data	b
<b>UM1993--AsO:CaClCuNaP</b>	Mineral. Record 24, 203		No formula or other data	b
<b>UM1993--AsO:CuH</b>	Mineral. Record 24, 203		No formula or other data; reported as arsenate-analogue of pseudomalachite; probably cornwallite	b,c
<b>UM1993--AsO:FeHSTI</b>	Mineral. Record 24, 437		Fe <sub>2</sub> Tl(As,S) <sub>3</sub> O <sub>12</sub> •4H <sub>2</sub> O; inadequate data; same as UM1994-01-AsO:FeHSTI	b,c
<b>UM1993--Bi:PdPtSnTe</b>	Can. Mineral. 31, 31		(Pt,Pd)(Bi,Te,Sn); apparently a mixture	d
<b>UM1993--Bi:PdTe</b>	Explor. Mining Geol. 2, 105		Pd(Bi,Te); inadequate data; not distinguishable from Te-bearing sobolevskite	c
<b>UM1993--BO:CaHNa</b>	Kristallografiya 38, 71	Am. Mineral. 79, 1213	NaCa <sub>2</sub> B <sub>9</sub> O <sub>14</sub> (OH) <sub>4</sub> •2H <sub>2</sub> O; later described under the name studenitsite: Zap. Vser. Mineral. Ob. 124 (1998) (3), 37	a
<b>UM1993--CH:NO</b>	Rivista Mineralogica Italiana 17, 261		C <sub>5</sub> H <sub>4</sub> N <sub>4</sub> O <sub>3</sub> •2H <sub>2</sub> O; as a weathering product, the mineral passes IMA tests for validity.; later described under the name tinnunculite: Zap.Ross.Mineral.Ob. 145, 20; transferred from valid list	a
<b>UM1993--Cl:CaFeO</b>	ICDD 45-1437		CaFeO <sub>3</sub> Cl; product of a burning coal dump and hence not a mineral	f
<b>UM1993--ClS:AgHg</b>	Mineral. Record 24, 203		No formula or other data	b
<b>UM1993--E:AgAuBiTe</b>	Can. Mineral. 31, 613		Inadequate data	b
<b>UM1993--E:AsPdTe</b>	Can. Mineral. 31, 613		Inadequate data	b
<b>UM1993--E:BiPdTe</b>	Can. Mineral. 31, 613		Inadequate data	b

<b>UM1993--E:HgPd</b>	Explor. Mining Geol. 2, 105		A Pd-Hg alloy with no data	b
<b>UM1993--E:IrOsReRu</b>	Explor. Mining Geol. 2, 105		Re>Ir>Os>Ru; no data; perhaps impure rhenium	b,c
<b>UM1993--OH:BaAIS</b>	Mineral. Petrol. 47, 255	Am. Mineral. 78, 1317	Ba <sub>2</sub> Al <sub>2</sub> S <sub>3</sub> (OH)8•8H <sub>2</sub> O; has formed on a slag and hence is not a mineral.	f
<b>UM1993--S:AsPtRh</b>	Can. Mineral. 31, 613		Mineral "UK1"; probably platarsite	c
<b>UM1993--S:AsSbTI</b>	*Ann. Geol. Penins. Balk. 57, 301	Am. Mineral. 81, 1286	Tl <sub>5</sub> Sb <sub>10</sub> As <sub>3</sub> S <sub>22</sub> ; later described under the name jankovicite: Mineral. Petrol. 53 (1995), 125	a
<b>UM1993--S:AsTI</b>	Mineral. Record 24, 203		Tl <sub>3</sub> As <sub>4</sub> ; same as UM1988--S:AsTI; later described under the name fangite: Am. Mineral. 78 (1993), 1096	a
<b>UM1993--S:BaCuFe</b>	Explor. Mining Geol. 2, 105		Probably a barium sulphide but no data	b
<b>UM1993--S:BiCuFePdTe</b>	Can. Mineral. 31, 613		Mineral "UK2"; inadequate data—probable contamination	d,b
<b>UM1993--S:BiPbSe[1]</b>	*Zap. Vser. Mineral. Ob. 122 (3), 1	Am. Mineral. 80, 632.	Pb <sub>2</sub> Bi <sub>2</sub> (S,Se) <sub>3</sub> ; later described under the name babkinite: Dokl. Akad. Nauk 346 (1996), 656	a
<b>UM1993--S:BiPbSe[2]</b>	*Zap. Vser. Mineral. Ob. 122 (3), 1	Am. Mineral. 80, 632.	(Bi,Pb) <sub>3</sub> (S,Se) <sub>4</sub> ; not compositionally distinct from wittite	c
<b>UM1993--S:BiTe</b>	Can. Mineral. 31, 471		~Bi <sub>4</sub> Te <sub>2</sub> S; not compositionally distinct from josëite-B	c
<b>UM1993--S:CdIn</b>	*Geol. Rudn. Mest. 35, 547	Am. Mineral. 80, 1330	CdIn <sub>2</sub> S <sub>4</sub> ; later described under the name cadmoindite: Zap. Vser. Mineral. Ob. 133 (4) (2004), 21; transferred from Valid list	b
<b>UM1993--S:CuFeMoRe</b>	Eur. J. Mineral. 5, 1227	Am. Mineral. 79, 390	(Cu,Fe)(Re,Mo) <sub>4</sub> S <sub>8</sub> ; same as UM1982--S:CuMoRe	c
<b>UM1993--S:IrOsRu</b>	Mineral. Petrol. 47, 263	Am. Mineral. 79, 390	(Ru,Os,Ir) <sub>4</sub> S <sub>5</sub> ; inadequate data	b
<b>UM1993--S:Re</b>	Explor. Mining Geol. 2, 105		A rhenium sulphide with no data	b
<b>UM1993--Sb:BiNiPdTe</b>	Explor. Mining Geol. 2, 105		Pd <sub>3</sub> Ni(Sb,Te,Bi) <sub>5</sub> ; no data	b
<b>UM1993--SiO:AlBaH</b>	Can. Mineral. 31, 687		BaAl <sub>2</sub> Si <sub>6</sub> O <sub>16</sub> •5H <sub>2</sub> O; later named brewsterite-Ba: Can. Mineral. 35 (1997), 1571	a
<b>UM1993--SiO:AlFeK</b>	Mineral. Mag. 57, 289		K(Fe,Al)Si <sub>3</sub> O <sub>8</sub> ; referred to as "ferrian sanidine" but represents a distinct species; later described under the name ferrisanidine: Minerals 9, 770; transferred from valid list	a
<b>UM1993--SiO:AlCaCeFeHLa[1]</b>	Can. Mineral. 31, 159	Can. Mineral. 40, 1411	Ca(Ce,La)Fe <sup>2+</sup> Fe <sup>3+</sup> Al(Si <sub>2</sub> O <sub>7</sub> )(SiO <sub>4</sub> )O(OH); equivalent to ferriallanite-(Ce) in the IMAapproved nomenclature for epidote-group	a
<b>UM1993--SiO:AlCaCeFeHLa[2]</b>	Can. Mineral. 31, 159	Can. Mineral. 40, 1411	Ca(La,Ce)Fe <sup>2+</sup> Fe <sup>3+</sup> Al(Si <sub>2</sub> O <sub>7</sub> )(SiO <sub>4</sub> )O(OH); equivalent to ferriallanite-(La) in the IMAapproved nomenclature for epidote-group	a
<b>UM1993--SO:AlHPb</b>	Mineral. Record 24, 203		No data but X-ray powder diffraction pattern resembles that of alunite	b,c

<b>UM1993--SO:Ba</b>	Mineral. Petrol. 47, 255	Am. Mineral. 78, 1317	BaSO <sub>3</sub> ; has formed on a slag and hence is not a mineral	f
<b>UM1993--SO:BaF</b>	Mineral. Petrol. 47, 255	Am. Mineral. 78, 1317	Ba <sub>2</sub> S <sub>2</sub> O <sub>3</sub> F <sub>2</sub> ; has formed on a slag and hence is not a mineral	f
<b>UM1993--SO:BaH</b>	Mineral. Petrol. 47, 255	Am. Mineral. 78, 1317	BaS <sub>2</sub> O <sub>3</sub> •H <sub>2</sub> O; has formed on a slag and hence is not a mineral	f
<b>UM1993--Te:Ag</b>	Can. Mineral. 31, 471		Ag <sub>2</sub> Te; not compositionally distinct from hessite	c
<b>UM1993--Te:AgPd[1]</b>	Dokl. Akad. Nauk 329, 497		Pd <sub>3</sub> AgTe <sub>4</sub> ; not distinct from Ag-bearing kotulskite	c
<b>UM1993--Te:AgPd[2]</b>	Dokl. Akad. Nauk 329, 497		Approximately (Pd,Ag) <sub>5</sub> Te <sub>3</sub> but not compositionally distinct from UM1991-25-Te:AgPd	c
<b>UM1993--Te:BiNiPd</b>	Can. Mineral. 31, 613		Mineral "UK3"; probably Pd-bearing melonite	c
<b>UM1993--Te:NiPdSb[1]</b>	Explor. Mining Geol. 2, 105		(Pd,Ni) <sub>2</sub> (Te,Sb) <sub>3</sub> ; inadequate data; probably the same as UM2004-48-Te:NiPdSb	b,c
<b>UM1993--Te:NiPdSb[2]</b>	Explor. Mining Geol. 2, 105		(Ni,Pd) <sub>3</sub> (Te,Sb) <sub>4</sub> ; inadequate data	b
<b>UM1993--Te:NiPdSb[3]</b>	Explor. Mining Geol. 2, 105		(Ni,Pd) <sub>2</sub> (Te,Sb) <sub>3</sub> ; inadequate data	b
<b>UM1993--VO:KU</b>	Aufschluss 44, 291	Am. Mineral. 79, 1214	Qualitative compositional information plus d-values, etc. ; later described under the name vandermeersheite: J. Geosci. 64, 219; transferred from valid list	a
<b>UM1994--AsOCO:CuZn</b>	Lapis 19 (7-8), 41	Lapis 32 (6), 58	"U130"; an arsenate/carbonate; only qualitative data	b
<b>UM1994--BO:CaH</b>	Cryst. Reports 39, 905	Am. Mineral. 80, 1331	CaB <sub>3</sub> O <sub>4</sub> (OH) <sub>3</sub> ; later described under the name jarandolite: New Data on Minerals 39 (2004), 26	a
<b>UM1994--Cl:HKMgNO</b>	Neues Jb. Mineral. Mh. (1994), 97	Am. Mineral. 79, 1213	K <sub>2</sub> (NH <sub>4</sub> )Mg <sub>3</sub> Cl <sub>9</sub> •18H <sub>2</sub> O; anthropogenic and not definitely distinct from carnallite	f,c
<b>UM1994--F:OREE</b>	C. R. Acad. Sci. Paris, Ser. II, 318, 1333	Am. Mineral. 80, 187	(La,Ce)F <sub>2</sub> .72O <sub>0.13</sub> ; probably fluocerite	c
<b>UM1994--F:OREE</b>	C. R. Acad. Sci. Paris, Ser. II, 318, 1333	Am. Mineral. 80, 187	(Ce,La)OF; later described under the name håleniusite: Can. Mineral. 60, 713; transferred from valid list	a
<b>UM1994--O:FePdPt</b>	Econ. Geol. 89,1454	Am. Mineral. 80, 847	(Pt,Fe,Ir)O; not distinguishable from UM1990-27-O:Pt	c
<b>UM1994--S:AgAsSbTe</b>	Econ. Geol. 89, 602	Am. Mineral. 80, 186	Ag <sub>9</sub> (Sb,As)Te <sub>2</sub> S <sub>4</sub> ; probably benleonardite	c
<b>UM1994--S:AgFe</b>	Econ. Geol. 89, 602	Am. Mineral. 80, 186	AgFeS <sub>2</sub> ; indistinguishable from lenaite: Zap. Vser. Mineral. Ob. 124 (1995) (5) , 85	c
<b>UM1994--S:AuBi</b>	Bull. Mineral.-petrogr. Odd. NM v Praze 2, 89	Can. Mineral. 44, 1127	AuBi <sub>5</sub> S <sub>4</sub> ; same as UM1986--S:AuBi; later named jonassonite: Can. Mineral. 44 (2006), 1127.	a
<b>UM1994--S:BiPbPt</b>	Can. Mineral. 32, 703		Not distinct from crerarite	c
<b>UM1994--S:CuFeGeMo</b>	*Geol. Rudn. Mest. 36, 370	Am. Mineral. 80, 632	Cu <sub>20</sub> (Fe,Cu,Zn) <sub>6</sub> Mo <sub>2</sub> Ge <sub>6</sub> S <sub>32</sub> ; later described under the name maikainite: Dokl. Earth Sci. 393A, (2003), 1329	a
<b>UM1994--S:CuFeGeWZn</b>	*Geol. Rudn. Mest. 36, 370	Am. Mineral. 80, 632	Cu <sub>20</sub> (Fe,Cu,Zn) <sub>6</sub> W <sub>2</sub> Ge <sub>6</sub> S <sub>32</sub> ; later described under the name ovamboite: Dokl. Earth Sci. 393A, (2003), 1329	a
<b>UM1994--S:CuFeInZn</b>	*Geol. Rudn. Mest. 36 (3), 230	Am. Mineral. 80, 407	Same as UM1980--S:CuFeInZn (=sakuraiite)	c

<b>UM1994--S:CuFeIrNiRh</b>	*Zap. Vser. Mineral. Ob. 123 (2), 41	Am. Mineral. 80, 1330	(Rh, Ir, Fe, Ni, Cu) <sub>1-x</sub> S; indistinguishable from UM1981-15-S:CuFeIrNiRh	c
<b>UM1994--S:Re</b>	Nature 369, 51	Am. Mineral. 80, 406	ReS <sub>2</sub> ; later described under the name rheniite: Zap. Ross. Mineral. Ob. 134 (5), (2005), 32; transferred from Valid list	a
<b>UM1994--Sb:CuNi</b>	*Dokl. Akad. Nauk 335, 709	Am. Mineral. 80, 1076	CuNiSb <sub>2</sub> ; later described under the name zlatogorite: Vest. Moscow Univ. Geol. Ser. 4 (1995) (5), 57	a
<b>UM1994--SiO:AlBaCaFFeHKMgNaTi</b>	Mineral. Zhurn. 16 (2), 67	Am. Mineral. 81, 1516	(Ba, K, Na, Ca) <sub>2</sub> (Mg, Fe, Ti) <sub>6</sub> Si <sub>4</sub> Al <sub>4</sub> O <sub>20</sub> (OH, F) <sub>4</sub> ; not distinct from K-bearing kinoshitalite	c
<b>UM1994--SiO:AlCaTi</b>	Meteoritics 29, 673	Am. Mineral. 80, 633	Ca <sub>3</sub> Ti(Al, Ti) <sub>2</sub> (Si, Al) <sub>3</sub> O <sub>14</sub> ; later described under the name paqueite: 47 <sup>th</sup> Lun. Planet. Sci. 1595; transferred from valid list	a
<b>UM1994--SiO:AlK</b>	*J. Mineral. Soc. Japan 23, 171	Earth Planet. Sci. Lett. 176, 259	KAISi <sub>3</sub> O <sub>8</sub> ; K-feldspar composition with hollandite structure; later described under the name liebermannite: Meteor. Planet. Sci. 2017, 1; transferred from valid list	a
<b>UM1994--SiO:HKNaNbTi</b>	Eur. J. Mineral. 6, 503	Am. Mineral. 80, 633	(K, Na) <sub>2</sub> (Nb, Ti) <sub>2</sub> Si <sub>4</sub> O <sub>12</sub> (O, OH) <sub>2</sub> •1.6H <sub>2</sub> O; later described under the name vuoriyarvite: Dokl. Akad. Nauk 358 (1998), 517	a
<b>UM1994--SiO:MgHPb</b>	Mineral Wealth 91, 33	Am. Mineral. 81, 520	Pb <sub>3</sub> Mg <sub>2</sub> Si <sub>2</sub> O <sub>8</sub> (OH) <sub>2</sub> •3.5H <sub>2</sub> O; same as UM1988--SiO:MgHPb	c
<b>UM1994--Te:Bi</b>	*Geol. Surv. Finland Bull. 377, 1	Can. Min. 45, 665	Bi <sub>2</sub> Te; presumably the same as UM1980-16-Te:Bi	c
<b>UM1995--Cl:HKMgNO</b>	Neues Jb. Mineral. Mh. (1995), 351	Am. Mineral. 81, 770	(K, NH <sub>4</sub> )MgCl <sub>3</sub> •6H <sub>2</sub> O; anthropogenic and therefore not a mineral; see also UM1994--Cl:HKMgNO	f
<b>UM1995--CO:CaHREEU</b>	J. Russell Soc. 6 (1), 17		Ca-REE-UO <sub>2</sub> carbonate hydrate; inadequate data	b
<b>UM1995--CO:PbU</b>	J. Russell Soc. 6 (1), 17		Basic Pb-UO <sub>2</sub> carbonate; inadequate data	b
<b>UM1995--E:AuPdPt</b>	S. Afr. J. Geol. 98 (2), 168	Am. Mineral. 81, 1016	(Pt, Au) <sub>0.66</sub> Pd <sub>0.34</sub> ; transferred to Valid list	c
<b>UM1995--E:CuSn</b>	Moscow Univ. Geol. Bull. 50 (6), 65	Am. Mineral. 82, 821	Cu <sub>6</sub> Sn <sub>5</sub> ; apparently the same as UM1965-06-E:CuSn. Formerly coded as UM1995-04-E:CuSn	c
<b>UM1995--E:PtPd</b>	S. Afr. J. Geol. 98 (2), 168	Am. Mineral. 81, 1016	Pt <sub>0.84</sub> Pd <sub>0.16</sub> ; may be simply a substituted platinum	c
<b>UM1995--E:PtRhRu</b>	Chronique de la recherche Minière No. 520, 3	Mineral. Mag. 68, 389	PtRuRh alloy; no data	b
<b>UM1995--O:AuH</b>	*Dokl. Akad. Nauk 344, 525	Am. Mineral. 81, 1286	AuO(OH); probably the same as UM1995-15-O:AuClH	c
<b>UM1995--O:CrMgV</b>	Zap. Vser. Mineral. Ob. 124 (4), 91	Am. Mineral. 81, 1283	Mg(Cr, V) <sub>4</sub> O <sub>9</sub> ; inadequate data	b
<b>UM1995--O:CuPd</b>	Mineral. Mag. 59, 455	Am. Mineral. 81, 1016	(Pd, Cu) <sub>2</sub> O; palladinite	a
<b>UM1995--O:FeIrPtRh</b>	Chronique de la recherche Minière No. 520, 3	Mineral. Mag. 68, 389	Pt-Ir-Fe-Rh oxide; no data	b
<b>UM1995--O:FeMnNbTaW</b>	Kristallografiya 40, 469	Zap. Vser. Mineral. Ob.	(Mn, Fe) <sub>3</sub> (Nb, Ta, Mn) <sub>5</sub> (W, Ta) <sub>2</sub> O <sub>20</sub> ; later described under the	a

<b>UM1995--O:FeMnRu</b>	Chronique de la recherche Minière No. 520, 3	125 (6), 88 Mineral. Mag. 68, 389	name koragoite: Dokl. Akad. Nauk 353 (1997), 516 Ru-Mn-Fe oxide; no data; probably same as UM1994-13-O:FeMnRu	b,c
<b>UM1995--O:FePt</b>	Chronique de la recherche Minière No. 520, 3	Mineral. Mag. 68, 389	Pt-Fe oxide; no data	b
<b>UM1995--PO:AlCaHMgNa</b>	Mineral. Record 26, 449	Am. Mineral. 81, 519	(Na,Ca) <sub>2</sub> Mg <sub>2</sub> Al <sub>10</sub> (PO <sub>4</sub> ) <sub>8</sub> (OH,O) <sub>12</sub> •4H <sub>2</sub> O; appears to be an Mg-analogue of burangaite; later described under the name matioliite: Am. Mineral. 91, 1932; transferred from valid list	a
<b>UM1995--PO:AlCdFH</b>	Mineral. Record 26, 449	Am. Mineral. 81, 519	(Cd,Cu)AlPO <sub>4</sub> (F,OH); "unknown #2"; later described under the name goldquarryite: Mineral. Record 34 (2003), 237	a
<b>UM1995--PO:AlCuFFeHV</b>	Mineral. Record 26, 449	Am. Mineral. 81, 519	Cu(Al,V,Fe) <sub>5</sub> (PO <sub>4</sub> ) <sub>4</sub> (F,OH) <sub>5</sub> •7H <sub>2</sub> O; designated "unknown #1"; later described under the name nevadaite: Can. Mineral. 42 (2004), 741	a
<b>UM1995--S:AgCuFePbSb</b>	*Resource Geol. 45, 323	Am. Mineral. 81, 1515	Pb <sub>2</sub> .12(Sb,Bi)1.69(Cu,Ag)0.33Fe <sub>2</sub> .5S <sub>5</sub> ; composition close to lillianite	c
<b>UM1995--S:BiPbTe</b>	*Zap. Vser. Mineral. Ob. 124 (6), 24	Am. Mineral. 81, 1285	Pb <sub>2</sub> Bi <sub>2</sub> Te <sub>2</sub> S <sub>3</sub> ; later named saddlebackite: Austral. J. Mineral. 3 (1997), 119	a
<b>UM1995--S:ClPbSb</b>	Eur. J. Mineral. 7, 1007	Zap. Vser. Mineral. Ob. 125 (6), 88	Pb <sub>12</sub> .65Sb <sub>11</sub> .35S <sub>28</sub> .35Cl <sub>2</sub> .65; data are from synthetic material; probably the same compound as UM1980-18-S:ClPbSb	c
<b>UM1995--S:CuFeIrNiRh</b>	Can. Mineral. 33, 509	Am. Mineral. 81, 518	(Ni,Fe,Cu) <sub>2</sub> (Ir,Rh)S <sub>3</sub> ; not distinct from UM1990-38-S:CuFeIrNiPtRh	c
<b>UM1995--S:CuIrPtRh</b>	Can. Mineral. 33, 509	Am. Mineral. 81, 518	(Pt <sub>0</sub> .72Rh <sub>0</sub> .43Ir <sub>0</sub> .12Pd <sub>0</sub> .01)Cu <sub>0</sub> .64S <sub>3</sub> .06; very low analytical total; probably not distinct from UM1981-17-S:CuIrPtRh	b,c
<b>UM1995--S:CuMoRe</b>	Mineral. Petrol. 52, 257	Am. Mineral. 80,1076	Cu(Re,Mo,Os) <sub>5</sub> S <sub>9</sub> ; not distinguishable from UM1982--S:CuMoRe	c
<b>UM1995--S:Rh</b>	Chronique de la recherche Minière No. 520, 3	Mineral. Mag. 68, 389	RhS; no data	b
<b>UM1995--Se:CuSb</b>	*Acta Mineral. Sinica 15, 418	Am. Mineral. 81, 1515	CuSbSe <sub>2</sub> ; later described under the name přibramite: Eur. J. Mineral. 29, 653; transferred from valid list	a
<b>UM1995--SiO:AlBaFeHKMgMn</b>	Am. Mineral. 80, 833		(Ba,K) <sub>1-x</sub> (Fe,Mg,Mn,Al) <sub>3</sub> (Si,Al) <sub>4</sub> O <sub>10</sub> (F,OH) <sub>2</sub> ; later described under the name ferrokinoshitalite: Can. Mineral. 37 (1999), 1445	a
<b>UM1995--SiO:AlCrHK</b>	*C. R. Acad. Sci. Paris, ser. Ila, 321, 1127	Am. Mineral. 81, 1016	K <sub>2</sub> Cr <sub>4</sub> Al <sub>2</sub> Si <sub>6</sub> O <sub>20</sub> (OH) <sub>4</sub> ; later described under the name chromphyllite: Zap. Vser. Mineral. Ob. 126 (1997) (2), 110	a
<b>UM1995--SiO:BeCaKLiNaTi</b>	*Cryst. Reports 40, 228	Am. Mineral. 80, 1332	K <sub>2</sub> (Na,Li) <sub>4</sub> Ca <sub>3</sub> Ti <sub>2</sub> Be <sub>4</sub> Si <sub>12</sub> O <sub>38</sub> ; later described under the name odintsovite: Zap. Vser. Mineral. Ob. 124 (1995) (5), 92	a
<b>UM1995--Te:AgPbPdSbSn</b>	Zap. Vser. Mineral. Ob. 124 (5), 1	Am. Mineral. 81, 1016	(Pd,Ag) <sub>2</sub> (Te,Pb,Sb,Sn); probably the same as UM1993-28-Te:AgPdSn	c
<b>UM1996--As:NiPd</b>	Mineral. Mag. 60, 973		Pd <sub>3</sub> Ni <sub>2</sub> As <sub>3</sub> ; later described under the name menshikovite: Mineral. Mag. 64 (2000), 847	a
<b>UM1996--As:Pd</b>	Geol. Surv. Finland Sp.		Pd <sub>5</sub> As <sub>2</sub> ; same as UM1975-05-As:Pd and similar to stillwaterite	c

<b>UM1996--As:PdRh</b>	Paper 26, 63 Explor. Mining Geol. 5, 73		(Rh,Pd,Pt)2As (Table B.31); probably Pt,Pd-bearing rhodarsenide	c
<b>UM1996--As:PdSbTe</b>	Mineral. Mag. 60, 672		Pd8(As,Sb,Te)3; probably arsenopalladinite	c
<b>UM1996--As:PdTe</b>	Geol. Surv. Finland Sp. Paper 26, 63	Can. Mineral. 42, 563	Pd11Te2As2; later described under the name törnroosite: Can. Mineral. 49 (2011), 1643; transferred from Valid list.	a
<b>UM1996--AsO:AlFeGaHPbS</b>	Can. Mineral. 34, 1305		<a href="#">PbGa3(AsO4,SO4)2(OH)6</a> ; the Ga-analogue of segnitite; later described under the name gallobeudantite: Can. Mineral. 34, 1305; transferred from valid list	a
<b>UM1996--E:CuPd</b>	Geol. Surv. Finland Sp. Paper 26, 63		Pd3Cu; same as UM1992-09-E:CuFePt	c
<b>UM1996--E:CuPt</b>	<a href="#">Geol. Surv. Finland Sp. Paper 26, 63</a>		<a href="#">Pt7Cu</a> ; later described under the name kitagohaite: Mineral.Mag. 78, 739; transferred from valid list	a
<b>UM1996--E:FeNiPt</b>	Neues Jb. Mineral. Mh. (1996), 145	Am. Mineral. 82, 209	Pt(Ni,Fe)3; not distinct from UM1986-12-E:CuFeNiPt	c
<b>UM1996--O:FePt</b>	Explor. Mining Geol. 5, 73		~(Pt,Fe)3O2; apparently the same as UM1994-16-O:FePt	c
<b>UM1996--O:IrRh</b>	Explor. Mining Geol. 5, 73		(Rh,Ir)-oxide; inadequate data	b
<b>UM1996--OH:AlCl[1]</b>	Aufschluss 47, 41	Am. Mineral. 82, 623	Al2Cl(OH)5•2H2O; from a burning coal dump; not a mineral; same as lesukite	f
<b>UM1996--OH:AlCl[2]</b>	Aufschluss 47, 41	Am. Mineral. 82, 623	Al5Cl3(OH)12•7.5H2O; from a burning coal dump—hence not a mineral	f
<b>UM1996--PO:BiCaCu</b>	Austral. J. Mineral. 2, 47		Cu-Bi-Ca phosphate; later named bleasdaleite: Austral. J. Mineral. 5 (1999), 69	a
<b>UM1996--PO:CaCeFHNASr</b>	*Kristallografiya 41, 831	Am. Mineral. 82, 821	Ca3.2(Sr,Na,Ce)1.8(PO4)3F; later described under the name fluorcaphte: Zap. Vser. Mineral. Ob. 126 (1997) (3), 87	a
<b>UM1996--PO:HU</b>	*Dokl. Akad. Nauk 349, 361	Am. Mineral. 82, 821	U6(PO4)7(OH)3•4H2O; subsequently given the unapproved name urphoite: Dokl. Earth Sci. 358 (1998), 23	a
<b>UM1996--S:AgBiPb</b>	Can. Mineral. 34, 1323		Ag6.5Pb7Bi14.5S32; probably treasurite with Pb<->(Ag0.5Bi0.5) substitution	c
<b>UM1996--S:AsPb</b>	Mineral. Record 27, 47		Inadequate data; might be the As-analogue of robinsonite	b,c
<b>UM1996--S:CuFeGe</b>	Can. Mineral. 34, 1305		Cu7(Ge,Fe,As)12; later described under the name calvertite: Can. Mineral. 45 (2007), 1519. Formerly coded as UM1996-31-S:CuFeGe	a
<b>UM1996--S:CuFeIrNiRh[1]</b>	Mineral. Petrol. 56, 25	Am. Mineral. 81, 1515	(Ir,Rh)(Ni,Fe,Cu)2S3; not distinguishable from UM1974-11-S:CuFeIrNi	c
<b>UM1996--S:CuFeIrNiRh[2]</b>	Mineral. Petrol. 56, 25	Am. Mineral. 81, 1515	(Ir,Rh)(Fe,Ni,Cu)2S3; not distinguishable from UM1995-29-S:CuFeIrNiRh	c
<b>UM1996--S:CuFeMoRe</b>	Mineral. Mag. 60, 973		(Cu,Fe)(Re,Mo)4S8; same as UM1982--S:CuMoRe	c
<b>UM1996--S:CuPd</b>	Explor. Mining Geol. 5, 73		Pd7Cu3S4; same mineral as UM1990-41-S:CuPd	c
<b>UM1996--S:FeZn</b>	Meteoritics Planet. Sci.		(Fe,Zn)S; later described under the name rudashevskyite: Am.	a



<b>UM1996--S:PdRh</b>	31, 647 Explor. Mining Geol. 5, 73		Mineral. 93 (2008), 902 (Rh,Pd)18S15; probably Pd-bearing miassite	c
<b>UM1996--Sb:AsPd</b>	Geol. Surv. Finland Sp. Paper 26, 63		Pd11Sb3As; not distinguishable from mertieite-I	c
<b>UM1996--SbO:CaFHNa</b>	Mineral. J. 18, 155	Am. Mineral. 82, 1264	(Na1.00Ca0.80Mn0.01)Sb2.00[O5.69F0.89(OH)0.36]; subsequently named fluornatroroméite: Can. Mineral. 48 (2010), 673	a
<b>UM1996--SiO:AlCaHNa</b>	Austral. J. Mineral. 2, 11		Qualitative composition; later identified as mesolite	c
<b>UM1996--SiO:AlFeK</b>	Am. Mineral. 81, 229		Identical to UM1993-25-SiO:AlFeK	c
<b>UM1996--SiO:CaNaTiZr</b>	Can. Mineral. 34, 779	Am. Mineral. 82, 433	Incomplete data for inhomogeneous inclusions; perhaps multiple phases	b,d
<b>UM1996--SiO:HKNaNbTi</b>	*Dokl. Akad. Nauk 351, 207	Am. Mineral. 83, 188	KNaK(Ti,Nb)2(Si4O12)(O,OH)2•2H2O; later described under the name lemmleinite-K: Zap. Vser. Mineral. Ob. 128 (1999) (5), 54	a
<b>UM1996--SiO:HMnNaTi</b>	Kristallografiya 41, 257	Am. Mineral. 81, 1516	Na6MnTiSi10(O,OH)28•4H2O; later described under the name intersilite: Zap. Vser. Mineral. Ob. 125 (1996) (4), 79	a
<b>UM1996--Sn:PdSb</b>	Mineral. Mag. 60, 973		Pd2(Sn0.5Sb0.5); apparently the same as UM1976-27-Sn:PdSb	c
<b>UM1996--SO:CCaGeH</b>	Acta Mineral.-Petrogr., Szeged 37, Suppl. (1996), 76		Ca2Ge(OH)6(SO4,CO3)2•12H2O; later described under the name carraraite: Am. Mineral. 86 (2000), 1293	a
<b>UM1996--Te:AgAuS</b>	*Acta Petrol. Mineral. 15, 80	Am. Mineral. 82, 209	(Ag,Au)2Te4; mineral designated "M2" appears to be sylvanite and/or krennerite	c
<b>UM1996--Te:BiPbS</b>	Rept. Res. Inst. Nat. Resources, Akita Univ. No. 61, 1	Am. Mineral. 82, 821	(Bi,Pb)3(Te,S)4; not compositionally distinct from UM1976-30-Te:BiPbS	c
<b>UM1996--TeO:CuFeHMgZn</b>	Can. Mineral. 34, 49		Cu(Mg,Cu,Fe,Zn)2TeO6•6H2O; designated UKCE-10 and later described under the name leisingite: Mineral. Mag. 60 (1996), 653	a
<b>UM1997--As:FeIrNiPdPtRh</b>	Can. Mineral. 35, 611	Am. Mineral. 83, 402	(Rh,Ir,Pt,Pd)(Ni,Fe)As; not distinct from UM1983-03-As:NiRh	c
<b>UM1997--As:FeIrNiS</b>	J. Petrol. 38, 1419		(Fe,Ni,Cu)Ir1.66AsS0.45; inadequate data - very low total	b
<b>UM1997--As:IrNi</b>	J. Petrol. 38, 1419		(Ni,Ir)5As2; similarities to orcelite; generalised and inadequate data	b
<b>UM1997--As:IrOsTe</b>	Zap. Vser. Mineral. Ob. 126 (6), 23		(Ir,Os)(As,Te); the same minerals as UM1997-03-As:IrOsTe	c
<b>UM1997--As:NiRh</b>	J. Petrol. 38, 1419		NiRhAs; same as UM1983-03-As:NiRh	c
<b>UM1997--As:PdRh[1]</b>	Can. Mineral. 35, 1	Am. Mineral. 82, 1263	(Pd,Rh)2As; later described under the name palladodymite: Zap. Vser. Mineral. Ob. 128 (1999) (2), 39	a
<b>UM1997--As:PdRh[2]</b>	Can. Mineral. 35, 1	Am. Mineral. 82, 1263	(Rh,Pd,Pt)2As; Later described under the name rhoarsenide: Zap. Vser. Mineral. Ob. 128 (1999) (2), 60	a
<b>UM1997--AsO:CaCuH</b>	J. Czech Geol. Soc. 42 (4), 77		An arsenate with a distinct X-ray powder diffraction pattern; later described under the name ondrušite, CaCu4(AsO4)2(AsO3OH)2•10H2O: Can. Mineral. 49, 885; transferred from Valid list	a

<b>UM1997-//-AsO:CaH</b>	J. Czech Geol. Soc. 42 (4), 77	Am. Mineral. 84, 687	Ca(H <sub>2</sub> AsO <sub>4</sub> ) <sub>2</sub> ; later named svenekite: J. Czech Geol. Soc. 48 (1997), 149. Formerly coded as UM1997-07-AsO:CaH	a
<b>UM1997-//-AsO:CuH</b>	J. Czech Geol. Soc. 42 (4), 77		An arsenate with a distinct X-ray powder diffraction pattern; later named slavkovite: Can. Mineral. 48 (2010), 1157	a
<b>UM1997-//-AsO:HMo</b>	J. Czech Geol. Soc. 42 (4), 77	Am. Mineral. 84, 687	MoAs <sub>2</sub> O <sub>9</sub> •3H <sub>2</sub> O; later named vajdakite: Am. Mineral. 87 (2002), 983; formerly coded as UM1997-17-AsO:HMo	a
<b>UM1997-//-AsO:HU</b>	J. Czech Geol. Soc. 42 (4), 77		U <sup>4+</sup> (HAsO <sub>4</sub> ) <sub>2</sub> •4H <sub>2</sub> O; X-ray powder diffraction pattern distinctive; later described under the name štěpíte: Mineral.Mag. 77, 137; transferred from valid list	a
<b>UM1997-//-AsO:HNiU</b>	J. Czech Geol. Soc. 42 (4), 77		Ni(UO <sub>2</sub> ) <sub>2</sub> (AsO <sub>4</sub> ) <sub>2</sub> •6•8H <sub>2</sub> O; later described under the name metarauchite: Can. Mineral. 48 (2010), 335; transferred from Valid list	a
<b>UM1997-//-C:W</b>	*Dokl. Akad. Nauk 353, 354	Am. Mineral. 83, 189	WC - tungsten carbide; same as UM1986-08-C:W	c
<b>UM1997-//-Cl:FeHOPb</b>	Eur. J. Mineral. 9, 43		Pb <sub>2</sub> Fe <sup>3+</sup> Cl <sub>3</sub> (OH) <sub>4</sub> •H <sub>2</sub> O; an alteration product of anthropogenic material, hence not a mineral	f
<b>UM1997-//-CO:NaU</b>	J. Czech Geol. Soc. 42 (4), 77		Na <sub>4</sub> (UO <sub>2</sub> )(CO <sub>3</sub> ) <sub>3</sub> ; later described under the name cejkaite: Am. Mineral. 88 (2003), 686	a
<b>UM1997-//-E:CuFePt</b>	Zap. Vser. Mineral. Ob. 126 (6), 23		The same mineral as UM1986-15-E:CuFePt	c
<b>UM1997-//-E:CuPtSb</b>	Can. Mineral. 35, 1	Am. Mineral. 82, 1263	Pt <sub>3</sub> (Sb,Cu); not distinguishable from UM1992-12-E:IrPtSb	c
<b>UM1997-//-E:FeIrNi</b>	J. Petrol. 38, 1419		Ir(Ni,Fe) <sub>1.5-5</sub> ; wide-ranging data	b
<b>UM1997-//-E:FePt</b>	J. Petrol. 38, 1419		(Ir,Pt,Os) <sub>8</sub> Fe; probably a substituted native iridium	c
<b>UM1997-//-E:IrOsPtRhRu[1]</b>	Can. Mineral. 35, 1	Am. Mineral. 82, 1263	(Ru,Pt,Ir,Rh,Os); indistinguishable from UM1978-05-E:IrOsPtRu	c
<b>UM1997-//-E:IrOsPtRhRu[2]</b>	Can. Mineral. 35, 1	Am. Mineral. 82, 1263	(Ir,Ru,Os,Rh,Pt); indistinguishable from UM1977-06-E:IrOsPtRu	c
<b>UM1997-//-F:KMgNa</b>	Mineral. Mag. 61, 779	Am. Mineral. 83, 910	A Na-bearing variety of UM1960-02-F:KMg?	b,c
<b>UM1997-//-O:CaNbREETHiU</b>	Am. Mineral. 82, 1241		Inadequate data	b
<b>UM1997-//-O:FeHgRu</b>	Can. Mineral. 35, 1	Am. Mineral. 82, 1263	RuO <sub>2</sub> ; Hg may be an amalgamation contaminant making the mineral suspect	f
<b>UM1997-//-O:FeIrOsRu</b>	Can. Mineral. 35, 1431	Am. Mineral. 84, 197	(Ru,Os,Ir,Fe) <sub>2</sub> O <sub>2-3</sub> ; very similar to UM1997-34-O:FeIrOsRu	c
<b>UM1997-//-O:FeREESiTiZr</b>	*Acta Mineral. Sinica 17 (3), 270	Am. Mineral. 83, 910	(Ti <sub>0.86</sub> Zr <sub>0.73</sub> Si <sub>0.19</sub> Fe <sub>0.11</sub> .....)O <sub>4</sub> ; zirconolite / mathiasite mixture?	d,b
<b>UM1997-//-O:HU</b>	J. Czech Geol. Soc. 42 (4), 77		X-ray powder diffraction pattern distinctive; identified later under the name heisenbergite: Neues Jh. Mineral. Abh. 189 (2) (2012), 117; transferred from Valid list	a
<b>UM1997-//-OH:AlCuF</b>	*Dokl. Akad. Nauk 353, 354	Am. Mineral. 83, 188	Cu <sub>4</sub> Al <sub>3</sub> (OH) <sub>14</sub> F <sub>3</sub> •2H <sub>2</sub> O; later described under the name khaidarkanite: Zap. Vser. Mineral. Ob. 128 (1999) (3), 58	a
<b>UM1997-//-PO:AsBiHU</b>	*J. Czech Geol. Soc. 42 (4), 77	Can. Mineral. 42, 963	A P-dominant analogue of walpurgite; later described under the name phosphowalpurgite: Can. Mineral. 42 (2004), 963	a
<b>UM1997-//-PO:BiHU</b>	J. Czech Geol. Soc. 42 (4), 77		Bi <sub>4</sub> (UO <sub>2</sub> )(PO <sub>4</sub> ) <sub>2</sub> O <sub>4</sub> •2H <sub>2</sub> O; later named phosphowalpurgite: Can. Mineral. 42 (2004), 963; formerly coded as UM1997-37-PO:BiHU	a
<b>UM1997-//-S:AgBiPbSb</b>	Mineral. Mag. 61, 387	Am. Mineral. 83, 188	(Pb <sub>2.94</sub> Ag <sub>0.06</sub> )(Bi <sub>1.43</sub> Sb <sub>0.50</sub> Ag <sub>0.18</sub> )(S <sub>5.98</sub> Se <sub>0.01</sub> Te <sub>0.01</sub> ); very close to lillianite composition	c

<b>UM1997--S:AsIrNi</b>	J. Petrol. 38, 1419		(Ir,Ni) <sub>2</sub> AsS <sub>2</sub> ; inadequate data - very low total	b
<b>UM1997--S:AsIrOsTe[1]</b>	Eur. J. Mineral. 9, 457	Am. Mineral. 82, 1263	(Ir,Os)(S,As,Te) <sub>2</sub> ; indistinguishable from UM1973-20-S:IrOs	c
<b>UM1997--S:AsIrOsTe[2]</b>	Zap. Vser. Mineral. Ob. 126 (6), 23		(Ir,Os)(S,As,Te) <sub>2</sub> ; same mineral as UM1997--S:AsIrOsTe[1]	c
<b>UM1997--S:AsNiRu</b>	J. Petrol. 38, 1419		(Ni,Ru) <sub>2</sub> AsS; inadequate data - very high total	b
<b>UM1997--S:BiPbTe</b>	Austral. J. Mineral. 3, 119	Am. Mineral. 83, 1119	PbBi <sub>4</sub> Te <sub>4</sub> S <sub>3</sub> ; same as UM1976-30-Te:BiPbS; formerly coded as UM1997-39-S:BiPbTe	c
<b>UM1997--S:CuFeIrNiOsRhRu</b>	J. Petrol. 38, 1419		Generalised and inadequate data	b
<b>UM1997--S:FeNb</b>	Can. Mineral. 35, 875	Am. Mineral. 83, 1119	Later described under the name edgarite: Contr. Mineral. Petrol. 138 (2000), 229	a
<b>UM1997--S:IrRh</b>	J. Petrol. 38, 1419		(Ir,Rh) <sub>2</sub> S <sub>2</sub> ; Appears to be the same as UM1974-13-S:IrRh	c
<b>UM1997--Se:BiPt</b>	Dokl. Akad. Nauk 354 (1), 82	Dokl. Earth Sci. 354, 486	PtBiSe; no data	b
<b>UM1997--Se:CoCuPtS</b>	Dokl. Akad. Nauk 354 (1), 82	Dokl. Earth Sci. 354, 486	PtCoCu(Se,S); no data	b
<b>UM1997--SiO:AlCaH</b>	Am. Mineral. 82, 1241		Ca <sub>0.8</sub> Al <sub>0.2</sub> SiOn(OH) <sub>m</sub> (H <sub>2</sub> O) <sub>x</sub> ; no data	b
<b>UM1997--SiO:AlCaHNa[1]</b>	Am. Mineral. 82, 1241		Na <sub>2</sub> CaAl <sub>4</sub> Si <sub>4</sub> O <sub>16</sub> •nH <sub>2</sub> O; no data; perhaps gonnardite	b,c
<b>UM1997--SiO:AlCaHNa[2]</b>	Am. Mineral. 82, 1241		Na <sub>2</sub> Ca <sub>4</sub> Si <sub>4</sub> O <sub>15</sub> :(OH) <sub>4</sub> ; no data; perhaps pectolite	b,c
<b>UM1997--SiO:AlFeMg</b>	Nature 387, 486	Am. Mineral. 83, 188	(Mg,Fe <sup>3+</sup> )(Al,Cr,Mn) <sub>2</sub> (Mg,Fe <sup>2+</sup> ) <sub>2</sub> Si <sub>3</sub> O <sub>12</sub> ; acronym "TAPP" (tetragonal almandine-pyrophe phase) used; later described under the name jeffbenite: Mineral.Mag. 80, 1219; transferred from valid list	a
<b>UM1997--SiO:FeMg[1]</b>	Science 277, 1084	Am. Mineral. 83, 402	(Mg,Fe)SiO <sub>3</sub> ; a high-pressure ilmenite-type mineral; later described under the name akimotoite: Am. Mineral. 84, 267; transferred from valid list	a
<b>UM1997--SiO:FeMg[2]</b>	Science 277, 1084	Am. Mineral. 83, 402	(Mg,Fe)SiO <sub>3</sub> ; a high-pressure perovskite-type mineral; later described under the name bridgmanite: Am. Mineral. 105, 913; transferred from valid list	a
<b>UM1997--SiO:HNaNbTi</b>	Dokl. Akad. Nauk 357, 364	Am. Mineral. 84, 195	Na(Ti,Nb)Si <sub>2</sub> O <sub>6</sub> (O,OH)•2H <sub>2</sub> O; Ti-analogue of nenadkevichite; later named korobitsynite: Zap. Vser. Mineral. Ob. 128 (1999) (3), 72	a
<b>UM1997--SO:CuHU</b>	J. Czech Geol. Soc. 42 (4), 77		A uranyl sulphate later equated with pseudojohannite: Am. Mineral. 91 (2006), 929. Formerly coded as UM1997-45-SO:CuHU	a
<b>UM1997--Te:AsIrOs[1]</b>	Eur. J. Mineral. 9, 457	Am. Mineral. 82, 1263	(Ir,Os)(Te,As,Se) <sub>2</sub> ; appears to be the same as shuangfengite	c
<b>UM1997--Te:AsIrOs[2]</b>	Zap. Vser. Mineral. Ob. 126 (6), 23		(Ir,Os)(Te,As,Se) <sub>2</sub> ; the same mineral as UM1997--Te:AsIrOs[1]	c
<b>UM1997--Te:AsIrOs[3]</b>	Zap. Vser. Mineral. Ob. 126 (6), 23		(Ir,Os)(Te,As); equivalent to UM1997-54-Te:AsIrOs	c
<b>UM1997--VO:FeHMnPb</b>	Can. Mineral. 35, 1027	Am. Mineral. 83, 652	Pb <sub>2</sub> (Fe <sup>3+</sup> ,Mn <sup>3+</sup> )(VO <sub>4</sub> ) <sub>2</sub> (OH); the Fe <sup>3+</sup> -analogue of brackebuschite; later described under the name calderonite: Am. Mineral. 88 (2003), 1703	a

<b>UM1998--AsOSO:CuH</b>	*Mitt. Öster. Mineral. Ges. 143, 325	Mineral. Abst. 50, 99M/2022	Cu <sub>10</sub> (AsO <sub>4</sub> ) <sub>4</sub> (SO <sub>4</sub> )(OH) <sub>6</sub> •8H <sub>2</sub> O; subsequently described under the name leogangite: Mineral. Petrol. 81 (2004), 187	a
<b>UM1998--BOSiO:AlFeMg[1]</b>	Can. Mineral. 36, 399		(Fe,Mg)Al <sub>3</sub> [BO <sub>4</sub> ][SiO <sub>4</sub> ]O; the Fe-dominant analogue of grandidierite; later described under the name ominelite: Am. Mineral. 87 (2002), 160	a
<b>UM1998--BOSiO:AlFeMg[2]</b>	Can. Mineral. 36, 399	Am. Mineral. 84, 993	(Mg,Fe) <sub>2</sub> Al <sub>12</sub> (Al,Fe) <sub>2</sub> Si <sub>4</sub> B <sub>2</sub> (B,Al) <sub>2</sub> O <sub>37</sub> ; originally thought to be the Fe-analogue of werdingite but further research showed that Fe is distributed between sites and not dominant at any; Eur. J. Mineral. 23, 577; transferred from Valid list	c
<b>UM1998--Cl:TI</b>	Lithology & Mineral Resources 33, 525	Am. Mineral. 84, 993	TlCl; later described under the name lafossaite: Mineral. Record 37 (2006), 165; transferred from Valid list	a
<b>UM1998--CO:CaHREE</b>	*Mem. Nat. Sci. Museum Tokyo 31, 49	Am. Mineral. 84, 1466	(Nd,La,Pr,Sm,Ca)CO <sub>3</sub> (OH,H <sub>2</sub> O); later described under the name kozoite-(Nd): Am. Mineral. 85 (2000), 1076	a
<b>UM1998--CO:CoHNI</b>	Clay Minerals, 33, 285	Am. Mineral. 84, 687	Ni <sub>6</sub> Co <sub>2</sub> (CO <sub>3</sub> )(OH) <sub>16</sub> •4H <sub>2</sub> O; some similarities to comblainite; later described under the name kaznakhite: Mineral. Mag. 85, 913; transferred from valid list	a
<b>UM1998--IOCrO:CaClTi</b>	Am. Mineral. 83, 391		An undefined hydrated Ca-K-Ti-iodate-chromate-chloride; no data	b
<b>UM1998--O:CuPd</b>	Austral. J. Mineral. 4, 33		(Cu,Pd)O; Inadequate data; possibly Pd-bearing tenorite	b,c
<b>UM1998--S:AgBiPb</b>	*Dizhi Zhaokuang Luncong 13, 1	Am. Mineral. 85, 628	Pb <sub>3</sub> Ag <sub>2</sub> Bi <sub>2</sub> S <sub>7</sub> ; same mineral as UM1987-07-S:AgBiPb	c
<b>UM1998--S:AgCuFe</b>	Mineralium Deposita 34, 35	Am. Mineral. 84, 1687	(Cu,Ag,Fe) <sub>6</sub> S <sub>4</sub> ; same mineral as UM1990-31-S:AgCuFe	c
<b>UM1998--S:CuFeNi</b>	J. Petrol. Mineral. Econ. Geol. 93, 369	Mineral. bst. 52, 01M/0724	Cu <sub>2</sub> Fe <sub>5</sub> Ni <sub>2</sub> S <sub>8</sub> ; designated mineral "Z"; similarities to UM1975-14-S:CuFeNi; later described under the name Samaniite: J. Mineral. Petrol. Sc. 106, 204; transferred from Valid list	a
<b>UM1998--S:CuFeNiRh</b>	*Zap. Vses. Mineral. Ob. 127 (5), 37	Am. Mineral. 84, 1685	Rh <sub>2</sub> (Fe,Ni,Cu) <sub>4</sub> S <sub>7</sub> ; formula only; no data	b
<b>UM1998--S:FeMgMnZn</b>	Meteoritics Planet. Sci. 33, 501		(Fe,Zn,Mg,Mn)S; later described under the name rudashevskyite: Am. Mineral. 93 (2008), 902	a
<b>UM1998--S:FeNi</b>	J. Petrol. Mineral. Econ. Geol. 93, 369	Mineral. Abst. 52, 01M/0724	Fe <sub>6</sub> Ni <sub>3</sub> S <sub>8</sub> ; designated mineral "X"; similarities to UM1975-14-S:CuFeNi & UM2002-25-S:FeNi; later described under the name Horomanite: J. Mineral. Petrol. Sc. 106, 204; transferred from Valid list	a
<b>UM1998--S:FeZn</b>	Lunar Planet. Sci. 29, 1381		(Fe,Zn)S; later described under the name rudashevskyite: Am. Mineral. 93 (2008), 902	a
<b>UM1998--Se:HgPd</b>	Mineral. Mag. 62, 257		Pd <sub>2</sub> HgSe <sub>3</sub> ; "uk1"; no analytical data; perhaps the Pd analogue of jacutingaite	b
<b>UM1998--Se:Pd</b>	Mineral. Mag. 62, 257		PdSe <sub>2</sub> ; "uk2"; no analytical data; later described under the name verbeekite: Mineral. Mag. 66 (2002), 173	a
<b>UM1998--SiO:BaFHNATi</b>	*Dokl. Akad. Nauk 361, 799	Am. Mineral. 84, 1198	Na <sub>2</sub> (Ba,K,Ca,Sr) <sub>2</sub> Ti <sub>3</sub> Si <sub>4</sub> O <sub>14</sub> (OH,O,F) <sub>2</sub> ; later described under the name nabalamprophyllite: Zap. Vser. Mineral. Ob. 130 (2001)	a

			(1), 59	
<b>UM1998-// SiO:FeHKMgMnNaTi</b>	Acta Cryst. <i>B54</i> , 109	Am. Mineral. <i>83</i> , 1350	K <sub>2</sub> Na <sub>2</sub> (Fe,Mn)4Mg <sub>2</sub> Ti <sub>2</sub> Si <sub>8</sub> O <sub>24</sub> (OH) <sub>4</sub> (OH,F) <sub>2</sub> ; reported as a monoclinic dimorph of astrophyllite, but is just magnesium-astrophyllite	c
<b>UM1998-//Te:BiPd</b>	Austral. J. Mineral. <i>4</i> , 33		Pd <sub>20</sub> (Te,Bi) <sub>7</sub> ; inadequate data; perhaps the same as UM1974-27-Te:Pt	b,c
<b>UM1998-//Te:HgPd</b>	Austral. J. Mineral. <i>4</i> , 33		Pd <sub>8</sub> (Te,Hg) <sub>3</sub> ; inadequate data but possibly a Hg-bearing variety of UM1981-31-Te:Pt	b,c
<b>UM1999-// SiO:CaCIFeHMnNaREESrTiZr</b>	*Z. Krist. <i>214</i> , 271	Am. Mineral. <i>85</i> , 265	A Ti-rich member of the eudialyte group; later described under the name dualite: Zap. Ross. Mineral. Ob. <i>136</i> (2007) (4), 31	a
<b>UM1999-//As:CuPd</b>	Mineral. Mag. <i>63</i> , 345	Am. Mineral. <i>85</i> , 265	(Pd,Cu) <sub>13</sub> As <sub>2</sub> ; no data other than formula	b
<b>UM1999-//As:NiPd</b>	Mineral. Mag. <i>63</i> , 345	Am. Mineral. <i>85</i> , 265	Pd <sub>11</sub> Ni <sub>12</sub> As <sub>11</sub> ; no data other than formula	b
<b>UM1999-//As:NiRh[1]</b>	Can. Mineral. <i>37</i> , 1099		RhNiAs; same as UM1983-//As:NiRh	a,c
<b>UM1999-//As:NiRh[2]</b>	Can. Mineral. <i>37</i> , 1131	Am. Mineral. <i>85</i> , 1325	(Rh,Ni) <sub>7</sub> As <sub>4</sub> ; data do not allow distinction from Ni,Pt-bearing polkanovite	c
<b>UM1999-//As:NiRh[3]</b>	Can. Mineral. <i>37</i> , 1131		(Rh,Ni) <sub>2</sub> As; data do not allow distinction from Ni,Pt-bearing polkanovite	c
<b>UM1999-//AsO:REE[1]</b>	Can. Mineral. <i>37</i> , 961		(Y,Ce,Nd,Th,Ca)(As,P)O <sub>4</sub> ; appears to be chernovite-(Y); formerly coded as UM1999-06-AsO:REE	c
<b>UM1999-//AsO:REE[2]</b>	Can. Mineral. <i>37</i> , 961		(La,Ce,Pr,Nd)(As,V)O <sub>4</sub> ; later described under the name gasparite-(La): Am. Mineral. <i>104</i> , 1469; transferred from valid list	a
<b>UM1999-//AsS:CuPd</b>	Mineral. Mag. <i>63</i> , 345	Am. Mineral. <i>85</i> , 265	(Pd,Cu) <sub>9</sub> (AsS) <sub>2</sub> ; no data other than formula	b
<b>UM1999-//E:CrFe</b>	Dokl. Earth Sci. <i>369</i> , 1161		Fe <sub>7</sub> Cr; appears not to be distinct from chromferide (Fe <sub>15</sub> Cr <sub>2</sub> )	c
<b>UM1999-//E:CrFeNi</b>	Dokl. Earth Sci. <i>369</i> , 1161		Fe <sub>7</sub> Cr <sub>2</sub> Ni; appears not to be distinct from UM1984-16-E:CrFeMnNi	c
<b>UM1999-//E:CuFePt</b>	Can. Mineral. <i>37</i> , 1117		Identical to UM1992-09-E:CuFePt	c
<b>UM1999-//E:CuPbPd</b>	S. Afr. J. Geol. <i>102</i> , 251		(Pd,Pb,Cu); variable data; possibly substituted native palladium	b,c
<b>UM1999-//E:CuPdPt</b>	Can. Mineral. <i>37</i> , 1507		(Pd,Pt)Cu; formula only - not data	b
<b>UM1999-//E:CuSn</b>	Dokl. Earth Sci. <i>369</i> , 1161		Cu <sub>3</sub> Sn; appears to be the same as UM1965-07-E:CuSn	c
<b>UM1999-//E:CuZn</b>	Dokl. Earth Sci. <i>369</i> , 1161		Cu <sub>3</sub> Zn <sub>2</sub> ; thin-film analysis; appears not to be distinct from unapproved mineral zinccopperite (Cu <sub>7</sub> Zn <sub>4</sub> )	b,c
<b>UM1999-// O:CuFeMgNiPdPtSSi</b>	Eur. J. Mineral. <i>11</i> , 363		Pt-Pt-Fe-Mg-Ni-Cu-S-Si-oxides; demonstrably inhomogeneous and probably mixtures	d
<b>UM1999-//O:CuFeMnPdPtRu</b>	S. Afr. J. Geol. <i>102</i> , 251	Mineral. Mag. <i>68</i> , 369	(Pt,Pd,Cu,Fe,Mn,Ru)O; not demonstrably homogeneous	d
<b>UM1999-//O:FeIrOsPtRu</b>	Can. Mineral. <i>37</i> , 1131		(Ru,Ir,Os,Pt,Fe)O <sub>2</sub> ; not distinct from UM1997-//O:FeIrOsRu	c
<b>UM1999-//O:FeREETi</b>	Can. Mineral. <i>37</i> , 177		(Ce,Nd,Pr,La) <sub>1.4</sub> Ti <sub>2</sub> O <sub>6</sub> ; later described under the name anzaite-	a

<b>UM1999--O:MnRhRu</b>	S. Afr. J. Geol. 102, 251	Mineral. Mag. 68, 369	(Ce): Mineral.Mag. 79, 1231; transferred from valid list	d
<b>UM1999--O:Pt[1]</b>	S. Afr. J. Geol. 102, 184		Likely a mixture of PGE metals and other oxides PtO; not distinct from UM1990-27-0:Pt	c
<b>UM1999--O:Pt[2]</b>	S. Afr. J. Geol. 102, 184		PtO <sub>2</sub> ; not distinct from UM1996-23-O:FePt	c
<b>UM1999--PO:AICCaHY</b>	Neues Jb. Mineral. Mh. (1999), 303		A "Ca-Y-Al-PO <sub>4</sub> -CO <sub>3</sub> -OH-H <sub>2</sub> O mineral"; no data; later described under the name micheelsenite: Neues Jb. Mineral. Mh. (2001), 337	a,b
<b>UM1999--PO:FeHPb</b>	Can. Mineral. 37, 1323		Inadequate data; compositionally the same as kintoreite but with doubled c dimension	b,c
<b>UM1999--PO:FeMgMn</b>	Am. Mineral. 84, 1354		(Mg,Fe,Mn) <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> – not distinct from chopinite described later: Eur. J. Mineral. 19 (2007), 229	a
<b>UM1999--S:AsCuFePd</b>	Mineral. Mag. 63, 345		(Pd,Fe,Cu) <sub>21</sub> (AsSb) <sub>5</sub> ; formula only - no data	b
<b>UM1999--S:AuBi</b>	Chron. Rech. Minéral. 536-537, 79	Can. Mineral. 44, 1127	AuBi <sub>5</sub> S <sub>4</sub> ; same as UM1986--S:AuBi; later named jonassonite: Can. Mineral. 44 (2006), 1127	a
<b>UM1999--S:CuFeIrNi</b>	Can. Mineral. 37, 1131		Ir(Ni,Fe,Cu) <sub>2</sub> S <sub>3</sub> ; not compositionally distinct from UM1974-11-S:CuFeIrNi	c
<b>UM1999--S:CuFeNiRh</b>	Can. Mineral. 37, 1507		Rh(Ni,Fe,Cu) <sub>2</sub> S <sub>3</sub> ; formula only - no data	b
<b>UM1999--S:CuPtRh</b>	S. Afr. J. Geol. 102, 251	Mineral. Mag. 68, 369	Close to Cu(Pt,Rh) <sub>2</sub> S <sub>4</sub> ; perhaps a Rh-bearing malanite	c
<b>UM1999--S:PbPd</b>	Can. Mineral. 37, 1507		Inadequate data; later described under the name laflammeite: Can. Mineral. 40 (2002), 671	a,b
<b>UM1999--Sb:AsPd</b>	Mineral. Mag. 63, 345	Am. Mineral. 85, 265.	Pd <sub>3</sub> (Sb,As); Close to mertieite, isomertieite and UM1986-02-As:PdSbSn	c
<b>UM1999--SeO:ClCuHPb</b>	Can. Mineral. 37, 1493	Am. Mineral. 85, 1563	Pb <sub>4</sub> (Cu,Zn)Cl <sub>3</sub> [SeO <sub>3</sub> ](OH,Cl); later described under the name sarrabusite: Acta Cryst. B68 (2012), 15; transferred from Valid list	a
<b>UM1999--Si:Fe</b>	*Zap. Vser. Mineral. Ob. 128 (2), 39	Am. Mineral. 85, 876	FeSi <sub>2</sub> ; not distinct from ferdisilicide	c
<b>UM1999--SiO:</b>	Science 284, 1511	Am. Mineral. 85, 265.	SiO <sub>2</sub> polymorph; later named seifertite: Eur. J. Min. 20 (2009), 523	a
<b>UM1999--SiO:AlCaFeMgMnKNaTi</b>	Neues Jb. Mineral. Mh. (1999), 303		Not distinct from hydroastrophyllite on basis of analysis reported	c
<b>UM1999--SiO:BaFHNATi</b>	*Dokl. Akad. Nauk 368, 492	Am. Mineral. 85, 1846	(Na,Ba) <sub>5</sub> Ti <sub>3</sub> O <sub>2</sub> (Si <sub>2</sub> O <sub>7</sub> ) <sub>2</sub> (O,OH,F) <sub>3</sub> ; later described under the name nabalamprophyllite: Zap. Vser. Mineral. Ob. 130 (2001) (1), 59	a
<b>UM1999--SiO:Ca</b>	Earth Planet. Sci. Lett. 173, 1	Am. Mineral. 85, 876	CaSiO <sub>3</sub> ; polymorph of wollastonite; later described under the name breyite: Am. Mineral. 106, 38; transferred from valid list	a
<b>UM1999--SiO:CaCeFeHNaSrZr</b>	*Dokl. Akad. Nauk 368, 636	Am. Mineral. 85, 1846	Ca <sub>18</sub> Zr <sub>9</sub> Si <sub>76</sub> Nb <sub>2</sub> Fe <sub>7</sub> Ca <sub>10</sub> Na <sub>32</sub> O <sub>216</sub> (OH,Cl,O) <sub>15</sub> •9H <sub>2</sub> O; later described under the name feklichevite: Zap. Vser. Mineral. Ob. 130 (2001) (3), 55	a
<b>UM1999--SiO:CuFePdRh</b>	S. Afr. J. Geol. 102, 251	Mineral. Mag. 68, 369	Inhomogeneous and probably a mixture	d

<b>UM1999--SO:HMg</b>	*Zap. Vser. Mineral. Ob. 128 (4), 99	Am. Mineral. 85, 1564	MgSO <sub>4</sub> •4H <sub>2</sub> O; later named cranswickite: Am. Mineral. 96 (2011), 869; transferred from Valid list	a
<b>UM2000--SiO:CaClFeHMnNaNbSrZr</b>	*Cryst. Reports 45, 930	Am. Mineral. 86, 940	Zr <sub>3</sub> (Ca,Mn) <sub>6</sub> (Fe,Mn,Ti) <sub>3</sub> (Na,Sr) <sub>15</sub> Si <sub>24</sub> O <sub>66</sub> (Nb,Si) <sub>2</sub> Cl(OH) <sub>10</sub> •H <sub>2</sub> O; later described under the name taseqite: Neues Jb. Mineral. Mh. (2004), 83	a
<b>UM2000--SiO:CaClFeHMnNaNbTiZr</b>	*Dokl. Akad. Nauk, 371, 625	Am. Mineral. 86, 200	(Na,H <sub>3</sub> O) <sub>15</sub> (Ca,Mn,Ce) <sub>6</sub> Fe <sup>3+</sup> <sub>2</sub> Zr <sub>3</sub> (□,Zr)(□,Si) <sub>24</sub> O <sub>66</sub> (O,OH) <sub>6</sub> Cl•2-3H <sub>2</sub> O; later described under the name ikranite: Zap. Vser. Mineral. Ob. 132 (2003) (5), 61	a
<b>UM2000--C:Cr</b>	Can. Mineral. 38, 585		A chromium carbide; no data; perhaps tongbaite or UM1984-13-C:Cr	b
<b>UM2000--CO:HU</b>	Rocks & Minerals 75, 240		A secondary U-mineral; designated "unknown number 2"; inadequate data; later described under the name olswaldpetersite: Can. Mineral. 39 (2001), 1685	a
<b>UM2000--E:CuFePdZn</b>	Mineralium Deposita 35, 762	Mineral. Mag. 68, 615	Pd(Cu,Fe,Zn); indistinguishable from mineral described later as skaergaardite: Mineral. Mag. 68 (2004), 615	a
<b>UM2000--E:FeTi</b>	Earth Planet. Sci. Lett. 177, 237		FeTi; inadequate data	b
<b>UM2000--O:BiCuFePdPtTe</b>	Proc. 6th Internat. Cong. Appl. Mineral. (2000), 289	Mineral. Mag. 68, 369	(Pt,Fe,Pd,Cu,Te,Bi)-oxides or hydroxides; inadequate data; probably inhomogeneous	b,d
<b>UM2000--O:Ti</b>	*UK J. Conf. Abs. 5, 379	High-Press. Res. Appl. Earth & Plan. Sci. 67, 447-455; Science 288, 321-324	TiO <sub>2</sub> with alpha-PbO <sub>2</sub> structure; TiO <sub>2</sub> II; Scrutinyite	c
<b>UM2000--P:CrFeNi</b>	Am. Mineral. 85, 1082		(Fe,Ni) <sub>4</sub> Cr <sub>2</sub> P <sub>3</sub> ; evidently the same as andrejivanovite: Am. Mineral 93 (2008), 1295	c
<b>UM2000--PO:AlPbU</b>	Le Regne Minéral 33, 5		A phosphate with undetermined amounts of Al, Pb and U. XRD pattern is similar to ICDD pattern no. 12-259 (synthetic parsonsite)	b,c
<b>UM2000--S:AsSbTI[1]</b>	J. Czech Geol. Soc. 45, 63	Am. Mineral. 86, 941	Tl(Sb,As) <sub>7</sub> S <sub>11</sub> ; same as UM1982-10-S:AsSbTI	c
<b>UM2000--S:AsSbTI[2]</b>	J. Czech Geol. Soc. 45, 63	Am. Mineral. 86, 941	Tl(Sb,As) <sub>10</sub> S <sub>16</sub> ; same as UM1970-20-S:AsSbTI	c
<b>UM2000--S:BiCuPb[1]</b>	Eur. J. Mineral. 12, 899		CuPbBi <sub>7</sub> S <sub>12</sub> ; designated "phase 70"; same as UM1974-09-S:BiCuPb	c
<b>UM2000--S:BiCuPb[2]</b>	Can. Mineral. 38, 611		Later described under the name salzburgite: Can. Mineral. 40 (2002), 239	a
<b>UM2000--S:CuFePdPtRh</b>	Can. Mineral. 38, 1251		(Cu,Fe,Pd,Rh,Ru,Os) <sub>8.93</sub> S <sub>8.07</sub> ; not distinct from kharaelakhite	c
<b>UM2000--SiO:AlNa</b>	Science 287, 1633	Am. Mineral. 85, 1564	NaAlSi <sub>3</sub> O <sub>8</sub> ; a shock-induced albite polymorph; later described under the name lingunite: Earth Planet Sci. Lett. 246 (2006), 317	a
<b>UM2000--</b>	Crystal. Repts. 45, 591	Crystal. Repts. 52, 47	Na <sub>15</sub> (Na,Ca,REE) <sub>3</sub> (Mn,Ca) <sub>3</sub> Fe <sub>3</sub> Zr <sub>3</sub> Si <sub>26</sub> O <sub>72</sub> (OH,O) <sub>4</sub> Cl•H <sub>2</sub> O;	a

<b>SiO:CaCIFeHMnNaZr</b>			later published under the name voronkovite: Zap. Vser. Mineral. Ob. 138 (2) (2009), 66	
<b>UM2000--/SiO:CaCIFeHNaNbZr</b>	*Dokl. Akad. Nauk, 370, 477	Am. Mineral. 85, 1846	Na <sub>15</sub> Ca <sub>6</sub> Fe <sub>3</sub> Zr <sub>3</sub> NbSi <sub>25</sub> O <sub>73</sub> (O,OH,H <sub>2</sub> O) <sub>3</sub> Cl <sub>2</sub> ; later described under the name ferrokentbrooksite: Can. Mineral. 41 (2003), 55	a
<b>UM2000--/SiO:FeMg</b>	*Joanea Mineral. 1, 53	Am. Mineral. 86, 1114	(Fe,Mg,Mn,Al,Zn) <sub>5</sub> Si <sub>12</sub> O <sub>30</sub> ; later described under the name trattnerite: Eur. J. Mineral. 16 (2004), 375; transferred from Valid list	a
<b>UM2000--/SO:CU</b>	Rocks & Minerals 75, 240		Perhaps a U-sulphate, -carbonate or -sulphate-carbonate; designated "unknown number 1"; inadequate data	b
<b>UM2000--/Te:AUtI</b>	Neues Jb. Mineral. Mh. (2000), 557	Am. Mineral. 86, 941	Au <sub>3</sub> TITe <sub>2</sub> ; appears to be identical to UM1993-29-Te:AUtI	c
<b>UM2001--/C:FeMnSi</b>	*Otechestvennaya Geol. (2001) (5), 32	Am. Mineral. 88, 933	(Mn,Fe) <sub>3</sub> (C,Si); same as UM1989-03-C:FeMnSi	c
<b>UM2001--/E:CuPt</b>	Zap. Vser. Mineral. Ob. 130 (4), 61		(Pt,Au)(Cu,Sb) <sub>3</sub> ; not distinct from UM1992-11-E:CuPtSb	c
<b>UM2001--/E:FeMnSi</b>	*Otechestvennaya Geol. (2001) (5), 32	Am. Mineral. 88, 933	Beta-manganese; same as UM1989-09-E:FeMnSi	c
<b>UM2001--/O:CaNbREESiTaTiY</b>	Mineral. Mag. 65, 509	Am. Mineral. 87, 998	(Y,REE,Ca,Th)(Nb,Ti,Si,Ta) <sub>2</sub> (O,OH) <sub>6</sub> ; the Y-analogue of niobo-aeschynite-(Ce); later described under the name niobo-aeschynite-(Y): Can. Mineral. 46, 395; transferred from valid list	a
<b>UM2001--/O:Ti</b>	Earth Planet. Sci. Lett. 192, 485		TiO <sub>2</sub> ; not distinct from UM2000-41-O:Ti. Formerly coded as UM2001-11-O:Ti	c
<b>UM2001--/O:Ti</b>	Science 293, 1467	Am. Mineral. 87, 357	TiO <sub>2</sub> ; a monoclinic polymorph of rutile; later given the name akaogiite: Am. Mineral. 95 (2010), 892	a
<b>UM2001--/S:As</b>	Can. Mineral. 39, 809		As <sub>4</sub> S <sub>4</sub> ; appears to be identical to UM1970-19-S:As	c
<b>UM2001--/S:AsCu</b>	Geol. Kazakhstana (2001) (5/6), 75	Zap. Vser. Mineral. Ob. 133 (6), 45	Cu <sub>3</sub> As <sub>4</sub> ; formula corresponds to that of enargite and arsenosulvanite	c
<b>UM2001--/S:AsCuSbZn</b>	Geol. Kazakhstana (2001) (5/6), 75	Zap. Vser. Mineral. Ob. 133 (6), 45	(Cu, Zn) <sub>3</sub> (Sb,As) <sub>3</sub> S <sub>3</sub> ; probably a Zn- & As-bearing variety of skinnerite	c
<b>UM2001--/S:AuBi</b>	SEG Newsletter 44, 14	Can. Mineral. 44, 1127	AuBi <sub>5</sub> S <sub>4</sub> ; same as UM1986--/S:AuBi; later named jonassonite: Can. Mineral. 44 (2006), 1127	a
<b>UM2001--/S:GePbSn</b>	Eur. J. Mineral. 13, 791	Am. Mineral. 87, 357	(Pb,Sn)GeS <sub>3</sub> ; product of spontaneous combustion of coal dump; not a mineral	f
<b>UM2001--/S:GeSn</b>	Eur. J. Mineral. 13, 791	Am. Mineral. 87, 357	SnGeS <sub>3</sub> ; product of spontaneous combustion of coal dump; not a mineral	f
<b>UM2001--/S:PtSn</b>	Can. Mineral. 39, 1397	Am. Mineral. 87, 998	PtSnS <sub>3</sub> ; later described under the name bowlesite: Mineral.Mag. 84, 468; transferred from valid list	a
<b>UM2001--/SeO:ClCuHPb</b>	Neues Jb. Mineral. Abh. 177, 37		Pb <sub>4</sub> CuCl <sub>3</sub> (SeO <sub>3</sub> ) <sub>3</sub> (OH); appears to be same as UM1999-29-SeO:ClCuHPb	c



<b>UM2001--Si:Fe</b>	*Dokl. Earth Sci. 378, 464	Am. Mineral. 87, 182	Fe <sub>2</sub> Si; not distinct on the information available from the mineral later described under the name hapkeite: Proc. Nat. Acad. Sci. 101 (2004), 6847	a
<b>UM2001--SiO:AlCaClFeMgNa</b>	Can. Mineral. 39, 639	Am. Mineral. 87, 183	Compositions fall within the fields of chloroferropargasite and chlorohastingsite	c
<b>UM2001--SiO:CaClFeHKNaZr</b>	Cryst. Reports 46, 647		Na <sub>27</sub> K <sub>8</sub> Ca <sub>12</sub> Fe <sub>3</sub> Zr <sub>6</sub> Si <sub>52</sub> O <sub>144</sub> (O,OH,H <sub>2</sub> O) <sub>6</sub> Cl <sub>2</sub> ; later described under the name rastsvetaevite: Zap. Ross. Mineral. Ob. 135 (2006) (1), 49	a
<b>UM2001--SiO:CaFeHKNaSrTiZr</b>	*Cryst. Reports 46, 752	Am. Mineral. 87, 767	(Na,Sr,K) <sub>35</sub> Ca <sub>12</sub> Fe <sub>3</sub> Zr <sub>6</sub> TiSi <sub>51</sub> O <sub>144</sub> (O,OH,H <sub>2</sub> O) <sub>9</sub> Cl <sub>3</sub> ; later named labyrinthite: Zap. Ross. Mineral. Ob. 107 (2006) (2), 340	a
<b>UM2001--SiO:CaHKMnTi</b>	Cryst. Reports 48, 569	Am. Mineral. 87, 183	K <sub>3</sub> Ca(K,Ca,Ba,□)Mn <sub>2</sub> Ti <sub>8</sub> Si <sub>16</sub> O <sub>48</sub> (O,OH) <sub>8</sub> •10H <sub>2</sub> O; appears to be the same as gutkovaiteMn: Zap. Vser. Mineral. Ob. 131 (2002) (2), 51	a
<b>UM2001--SiO:Zr</b>	Geology 29, 371	Am. Mineral. 86, 1114	ZrSiO <sub>4</sub> ; a high pressure dimorph of zircon subsequently described under the name reidite: Am. Mineral. 87 (2002), 562	a
<b>UM2001--Te:AgPd</b>	Can. Mineral. 39, 639		Pd <sub>6</sub> AgTe <sub>4</sub> ; same as UM1991-25-Te:AgPd	c
<b>UM2001--Te:BiSe</b>	Neues Jb. Mineral. Mh. (2001), 289	Am. Mineral. 87, 182	Bi <sub>2</sub> (Te,Se); not distinct from UM1980-16-Te:Bi on the basis of available data	c
<b>UM2001--VO:FeHMnPbZn</b>	*Dokl. Akad. Nauk 378, 204-207	Am. Mineral. 87, 183	(Pb,Zn) <sub>2</sub> (Fe <sup>3+</sup> ,Mn <sup>3+</sup> )[VO <sub>4</sub> ] <sub>2</sub> (OH); later described under the name calderonite: Am. Mineral. 88 (2003), 1703	a
<b>UM2002--Bi:PbPd</b>	Can. Mineral. 40, 329		Pd(Bi,Pb); not distinct from polarite	c
<b>UM2002--BiSb:Pd</b>	Can. Mineral. 40, 277		Pd <sub>2</sub> BiSb; "Un7"; ( Table 7, anal. 17 & 18); apparently the same as UM1985-01-Bi:PdSb; formerly coded as UM2002-01-BiSb:Pd	c
<b>UM2002--E:AgHg</b>	Can. Mineral. 40, 225		Ag <sub>0.7-0.8</sub> Hg <sub>0.2-0.3</sub> ; probably not distinct from luanheite	c
<b>UM2002--E:CuFePt</b>	Can. Mineral. 40, 329		Pt <sub>2</sub> CuFe; not definitely distinct from tulameenite	c
<b>UM2002--O:AlCa</b>	Meteor. Planet. Sci. 37, 1337		CaAl <sub>2</sub> O <sub>4</sub> ; later described under the name dmitryivanovite: Am. Mineral. 94 (2009), 746	a
<b>UM2002--O:CaNaNbREETaTiTh</b>	Can. Mineral. 40, 1609		(Na,Ca,REE,Th) <sub>2</sub> (Nb,Ti,Ta) <sub>2</sub> (O,OH) <sub>7</sub> ; the Na-analogue of pyrochlore; later named "natropyrochlore": Can. Mineral. 48 (2010), 673	a
<b>UM2002--O:FeRu</b>	9 <sup>th</sup> Internat. Platinum Symp. Ext. Abst., 153	Mineral. Mag. 68, 369	(Ru,Fe)-oxide; no data	b
<b>UM2002--O:HW</b>	Austral. J. Mineral. 8 (2), 55	Am. Mineral. 89, 470	WO <sub>3</sub> •0.5H <sub>2</sub> O; later described under the name elsmoreite: Can. Mineral. 43 (2005), 1061	a
<b>UM2002--O:Pd</b>	Can. Mineral. 40, 1451		~PdO; ("Table 9", anal. 5 & 6); not distinct from UM1995-17-O:CuPd	c
<b>UM2002--O:PdPt</b>	Can. Mineral. 40, 419		An intimate mixture of several phases	d
<b>UM2002--OH:CuPt</b>	Can. Mineral. 40, 419		Inadequate data	b

<b>UM2002--OS:CuFe</b>	Geol. Rudn. Mest. 44, 385	Zap. Vser. Mineral. Ob. 133 (6), 45	Inadequate data; an oxysulphide of Cu-Fe	b
<b>UM2002--PO:Ca</b>	Geochim. Cosmochim. Acta 66, 2439	Am. Mineral. 88, 478	Gamma-Ca <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> ; later described under the name tuite: Eur. J. Mineral. 15 (2003), 1001	a
<b>UM2002--PO:FeH</b>	Mineralien-Welt 13 (6), 18	Eur. J. Mineral. 18, 793	Fe <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>3</sub> •5H <sub>2</sub> O; later named allanpringite: Eur. J. Mineral. 18 (2006), 793	a
<b>UM2002--S:AgBi</b>	*Aufschluss 23, 279	Am. Mineral. 88, 1628	AgBiS <sub>2</sub> ; cubic dimorph of matildite; previously named schapbachite	c
<b>UM2002--S:CuFe</b>	Geol. Rudn. Mest. 44, 385	Zap. Vser. Mineral. Ob. 133 (6), 45	Inadequate data	b
<b>UM2002--S:CuFeIrNiPdPtRh</b>	Can. Mineral. 40, 357		Very low total; probably equivalent to UM1990-38-S:CuFeIrNiPdPtRh	c
<b>UM2002--S:CuFeIrNiPt</b>	Can. Mineral. 40, 395		(Fe,Cu,Ni)(Ir,Pt)S; inadequate data	b
<b>UM2002--S:CuFeK</b>	*Geol. Ore Deposits 44, 385	Am. Mineral. 88, 934	KCu <sup>1+</sup> 19Cu <sup>2+</sup> 18Fe <sup>2+</sup> 10S <sub>38</sub> ; reported earlier as "Cu <sub>4</sub> FeS <sub>4</sub> "; same as UKI-1990-(S:CuFeK)	c
<b>UM2002--S:FeGaMgMnZn</b>	Meteoritics Planet. Sci. 37, 577		(Fe,Zn,Ga,Mn,Mg)S; later described under the name rudashevskyite: Am. Mineral. 93 (2008), 902	a
<b>UM2002--S:FeIrNi</b>	Can. Mineral. 40, 481		Inadequate data	b
<b>UM2002--S:FeMnZn</b>	Meteor. Planet. Sci. 37, 577		(Fe,Zn,Mn)S; one of many reports of this mineral in the meteoritical and planetary sciences literature. Eventually named rudashevskyite: Am. Mineral. 93 (2008), 203	a
<b>UM2002--Sb:BiPd</b>	Can. Mineral. 40, 277		"Un7" analyses 15 & 16; indistinguishable from UM1961-08-Sb:BiPd	c
<b>UM2002--Se:CuFe</b>	Can. Mineral. 40, 225		(Fe <sub>0.84</sub> Cu <sub>0.14</sub> )Se <sub>2.01</sub> ; there appears to be no reason to consider this to be other than Cubearing ferroselite	c
<b>UM2002--Se:CuPd[1]</b>	Can. Mineral. 40, 419		A mixture of several phases	d
<b>UM2002--Se:CuPd[2]</b>	Can. Mineral. 40, 419	Am. Mineral. 88, 254	Cu <sub>2</sub> Pd <sub>3</sub> Se <sub>4</sub> ; later named jagu�ite: Can. Mineral. 42 (2004), 1745	a
<b>UM2002--Se:HgPd</b>	Mineral. Mag. 66, 173		Pd <sub>2</sub> HgSe <sub>3</sub> ; no data; same as UM1998--Se:HgPd	b,c
<b>UM2002--SiO:AlFeHMgMnTiZn</b>	Geochem. Internat. 40, 1225	Am. Mineral. 88, 1629	Ca <sub>0.02</sub> (Fe <sub>2.23</sub> Mn <sub>1.06</sub> Mg <sub>0.52</sub> Zn <sub>0.17</sub> Ti <sub>0.08</sub> )(Si <sub>5.94</sub> Al <sub>0.06</sub> )O <sub>15</sub> [(OH) <sub>1.74</sub> O <sub>0.26</sub> ]•nH <sub>2</sub> O; later approved as the Fe-dominant analogue of sepiolite (IMA 2010-061); transferred from the Valid list	a
<b>UM2002--SiO:AlFeHMgNa</b>	Clay Minerals 34, 579	Am. Mineral. 88, 1628	(Na,K) <sub>0.42</sub> (Fe <sup>3+</sup> ,Mg,Al,Fe <sup>2+</sup> ,Cr,Ni) <sub>2.17</sub> Si <sub>4</sub> O <sub>10</sub> (OH) <sub>2</sub> ; possibly nontronite, sepiolite or a mixture of clay mineral species	d
<b>UM2002--SiO:CaFeTi</b>	Mineral. Petrol. 76, 1		Not distinguishable from schorlomite	c
<b>UM2002--SiO:FeHKNaNbTi</b>	Cryst. Reports 47, 408	Am. Mineral. 89, 1829	NaK <sub>3</sub> Fe(Ti,Nb) <sub>4</sub> (Si <sub>4</sub> O <sub>12</sub> ) <sub>2</sub> (O,OH) <sub>4</sub> •6H <sub>2</sub> O; Nb-rich analogue of labuntsovite-Fe later described under the name neskevaaraitite-Fe: New Data on Minerals 38 (2003), 8	a

<b>UM2002--Te:AgBiPdSb</b>	Can. Mineral. 40, 277	~(Pd,Ag)(Te,Sb,Bi); "Un3"; later described under the name ahrensite: <i>Geochem. Cosmochem. Acta.</i> 184, 240; transferred from valid list	a
<b>UM2002--Te:BiPdSb[1]</b>	Can. Mineral. 40, 277	Pd(Te,Sb,Bi); "Un1"; indistinguishable from UM1974-19-Te:BiNiPdSb	c
<b>UM2002--Te:BiPdSb[2]</b>	Can. Mineral. 40, 277	"Un5"; indistinguishable from testibiopalladite	c
<b>UM2002--Te:NiPdSb</b>	Can. Mineral. 40, 277	"Un2"; indistinguishable from hexatestibiopanickelite	c
<b>UM2002--Te:PdSb</b>	Can. Mineral. 40, 277	"Un4"; indistinguishable from borovskite	c
<b>UM2003--SiO:AlCaClFeHHfKMnNaSrTiZr</b>	Cryst. Reports 48, Suppl. Cryst. Reports 52, 47 1, S69	Designated "hydrated eudialyte-II"; reported data inadequate for subsequent recognition elsewhere	b
<b>UM2003--SiO:BaCaCeClFeHHfKMnNaNbSrTi</b>	Cryst. Reports 48, Suppl. Cryst. Reports 52, 47 1, S69	Designated "Mineral 1408" - eudialyte group member; reported data inadequate for subsequent recognition elsewhere	b
<b>UM2003--SiO:CaCeClFeHMnNaSrTiZr</b>	Cryst. Reports 48, Suppl. Cryst. Reports 52, 47 1, S69	Designated "hydrated eudialyte-I"; reported data inadequate for subsequent recognition elsewhere	b
<b>UM2003--As:NiPd</b>	Geol. Ore Deposits 45, 329	Pd <sub>3</sub> Ni <sub>2</sub> As <sub>3</sub> ; Table 5, No. 4; not distinct from menshikovite	c
<b>UM2003--As:PdSb[1]</b>	Geol. Ore Deposits 45, 329	Pd <sub>2</sub> (As,Sb); Table 5, No. 7; probably palladoarsenide or UM1974-01-As:PdSb	c
<b>UM2003--As:PdSb[2]</b>	Geol. Ore Deposits 45, 329	"Pd <sub>5</sub> (As,Sb) <sub>2</sub> "; Table 5, No. 10; not distinct from palladoarsenide	c
<b>UM2003--AsO:AlCaClCuHNa</b>	Mineral. Record 34 (4), 315	"Unknown #1"; inadequate data; later described under the names barahonaite-(Al) and barahonaite-(Fe): <i>Can. Mineral.</i> 46 (2008), 205	b,a
<b>UM2003--AsO:FeNiPt</b>	Geol. Ore Deposits 45, 329	(Ni,Pt,Cu)–As–O; Table 5, No. 24; inadequate data; no charge balance	b
<b>UM2003--AsO:FePd</b>	Geol. Ore Deposits 45, 329	(Pd,Fe)–As–O; Table 5, Nos. 22-23; inadequate data; no charge balance	b
<b>UM2003--E:CuFeNiPdPt</b>	Geol. Ore Deposits 45, 329	Cu, Fe,Ni, Pd, & Pt alloys of very variable composition; Table 6, Nos. 6-9	b
<b>UM2003--E:CuPd</b>	Geol. Ore Deposits 45, 329	Cu <sub>3</sub> Pd; Table 6, No. 3; not distinct from nielsenite (named later).	a
<b>UM2003--E:CuPt[1]</b>	Geol. Ore Deposits 45, 329	CuPt; Table 6, No. 4; not distinct from hongshiite	c
<b>UM2003--E:CuPt[2]</b>	Geol. Ore Deposits 45, 329	Cu <sub>3</sub> Pt; Table 6, No. 5; appears to be the same as UM1992-11-E:CuPtSb	c
<b>UM2003--E:FeNiPt</b>	Neues Jb. Mineral. Abh. 179, 143	~Pt <sub>2</sub> (Fe,Ni); not distinct from UM1996-13-E:FePt	c
<b>UM2003--E:PdTI</b>	Geol. Ore Deposits 45,	Pd <sub>3</sub> Tl; Figure 4; no data reported; perhaps the same as UM1982-	b,c

<b>UM2003--O:CrFe[1]</b>	329 Geochim. Cosmochim. Acta 67, 3937	Am. Mineral. 89, 897	//-E:PdTi FeCr <sub>2</sub> O <sub>4</sub> ; a high-pressure, high-temperature polymorph of chromite; later described under the name xieite: Chinese Science Bulletin 53 (2008), 3341	a
<b>UM2003--O:CrFe[2]</b>	Proc. Nat. Acad. Sci. (USA) 100 (25) 14651	Am. Mineral. 89, 1578	FeCr <sub>2</sub> O <sub>4</sub> ; another high-pressure orthorhombic polymorph of chromite; later described under the name chenmingite: Am. Mineral. 104, 1521; transferred from valid list	a
<b>UM2003--O:FeHrOsRu</b>	Can. Mineral. 41, 597		(Ru,Os,Fe,Ir) <sub>2-3</sub> (O) <sub>1-2</sub> •nH <sub>2</sub> O; inadequate data; several compounds and H <sub>2</sub> O likely present.	b,d
<b>UM2003--O:Pd</b>	Mineral. Mag. 67, 453		Pd-oxides of very variable composition and perhaps in part equivalent to UM1995-17-O:CuPd	b,c
<b>UM2003--OC:MnH</b>	Erzgräber 17, 9		Mn <sub>2</sub> O <sub>4</sub> •2H <sub>2</sub> O; later described under the name lindbergite: Am. Mineral. 89 (2004), 1087	a
<b>UM2003--S:AgFeTe</b>	Eur. J. Mineral. 15, 147		Ag <sub>9</sub> FeTe <sub>2</sub> S <sub>4</sub> ; later described under the name chenguodaite: Chinese Science Bulletin 53 (2008), 1	a
<b>UM2003--S:AgFeTe</b>	Eur. J. Mineral. 15, 147		Ag <sub>9</sub> FeTe <sub>2</sub> S <sub>4</sub> ; later described under the name chenguodaite: Chinese Sci. Bull. 53(22), 3567; transferred from Valid list	a
<b>UM2003--S:As</b>	Eur. J. Mineral. 15, 283	Zap. Vser. Mineral. Ob. 133 (6), 45	As <sub>4</sub> S <sub>4</sub> ; probably the same as UM1970-18-S:As	c
<b>UM2003--S:CuFeIrNiRh[1]</b>	Can. Mineral. 41, 597		(Ir,Rh)(Ni,Cu,Fe) <sub>2</sub> S <sub>4</sub> ; not distinct from UM1974-11-S:CuFeIrNi or perhaps UM1999-25-S:CuIrNiRh	c
<b>UM2003--S:CuFeIrNiRh[2]</b>	Can. Mineral. 41, 597		(Ir,Rh)(Fe,Ni,Cu) <sub>2</sub> S <sub>3</sub> ; not distinct from UM1995-29-S:CuFeIrNiRh	c
<b>UM2003--S:FeZn</b>	Lunar Planet. Sci. 34, 1211		(Fe,Zn)S; later described under the name rudashevskyite: Am. Mineral. 93 (2008), 902	a
<b>UM2003--S:PbPdSe</b>	Geol. Ore Deposits 45, 329		~Pd <sub>3</sub> Pb <sub>2</sub> S <sub>2</sub> ; Table 4, Nos. 3-7; described later under the name of laflammitite	a
<b>UM2003--SiO:AlCsFLi</b>	Am. Mineral. 88, 1832		CsLi <sub>2</sub> AlSi <sub>4</sub> O <sub>10</sub> (F,OH) <sub>2</sub> ; Cs-analogue of polyolithionite; later described under the name sokolovaite: New Data on Minerals 41 (2006), 5. Formerly coded as UM2003-29SiO:AlCsFLi	a
<b>UM2003--SiO:BaCaHKNaNbSrTi</b>	Dokl. Akad. Nauk 393, 784	Am. Mineral. 89, 1829	[Sr <sub>0.9</sub> K <sub>0.8</sub> Na <sub>0.4</sub> Ca <sub>0.4</sub> Ba <sub>0.3</sub> ][(H <sub>2</sub> O) <sub>0.8</sub> Sr <sub>0.4</sub> ][Ti <sub>5.6</sub> Nb <sub>2.4</sub> (OH,O) <sub>8</sub> (Si <sub>4</sub> O <sub>12</sub> ) <sub>4</sub> ]•8.3H <sub>2</sub> O; later named tsepinite-Sr: New Data on Minerals 40 (2005), 11.	a
<b>UM2003--SiO:Ca</b>	Z. Krist. 218, 811		CaSiO <sub>3</sub> ; A naturally-occurring high-pressure polymorph of the synthetic compound "wollastonite-II"; later described under the name breyite: Am. Mineral. 106, 38; transferred from valid list	a
<b>UM2003-33-SiO:CaFFeHKMnNaNbZr</b>	Can. Mineral. 41, 1	Am. Mineral. 89, 252	K <sub>2</sub> (Na,Ca)(Fe <sup>2+</sup> ,Mn) <sub>7</sub> (Zr,Nb) <sub>2</sub> Si <sub>8</sub> O <sub>26</sub> (OH) <sub>4</sub> F; the Fe-dominant analogue of zircophyllite; later described under the name zircophyllite: Int'l. Geol. Rev. 15, 621; transferred from valid list	a
<b>UM2003--SiO:CaFHKMnNa</b>	*Dokl. Chem. 391, 177	Am. Mineral. 89, 470	Ca <sub>4.5</sub> Mn <sub>0.45</sub> Fe <sub>0.05</sub> Na <sub>3</sub> K <sub>3</sub> Si <sub>12</sub> O <sub>30</sub> F <sub>2.8</sub> (OH)•1.2H <sub>2</sub> O; later described under the name fluorcanasite: Zap. Ross. Mineral. Ob. 138 (2) (2009), 52	a

<b>UM2003--Te:AsPd</b>	Geol. Ore Deposits 45, 329		Pd <sub>3</sub> (Te,As); Table 5, No. 16; appears to be the same as UM1991-26-Te:AsPd	c
<b>UM2003--Te:Pd</b>	Geol. Ore Deposits 45, 329		Pd <sub>5</sub> Te <sub>2</sub> ; Figure 4; No data reported; probably same as UM2007-43-Te:Pd	b,c
<b>UM2004--As:IrSSb</b>	Geol. Geofiz. 45, 1128		IrAs(Sb,S); not distinct from UM1991-01-As:IrSb	c
<b>UM2004--As:NiRh</b>	Can. Mineral. 42, 563		RhNiAs; same as UM1983--As:NiRh	a,c
<b>UM2004--As:PdTe</b>	Mineral. Petrol. 82, 137		Pd <sub>3</sub> (As,Te); appears to be Te-bearing vincentite	c
<b>UM2004--AsO:CaCoHMg</b>	Z. Krist. (NCS) 219, 341		Ca <sub>2</sub> (Co,Mg)[AsO <sub>4</sub> ] <sub>2</sub> •2H <sub>2</sub> O; appears to be the same as roselite-β	c
<b>UM2004--AsO:CoFeHNiPb</b>	Lapis (2004) (2), 18		Pb(Ni,Co,Fe) <sub>2</sub> [AsO <sub>4</sub> ] <sub>2</sub> (H <sub>2</sub> O,OH) <sub>2</sub> ; may be the Nd-analogue of tsumcorite; no data	
<b>UM2004--AsO:HU</b>	Erzgräber 18, 24	Am. Mineral. 90, 1232	(UO <sub>2</sub> )H(AsO <sub>3</sub> )•H <sub>2</sub> O; apparently the same as UM1958-05-AsO:HU; mineral "D"; formerly coded as UM2004-003-AsO:HU	c
<b>UM2004--AsTe:Pd</b>	Mineral. Petrol. 82, 137		Pd <sub>8</sub> (As,Te); appears to be same as UM1992-09-E:CuFePt	c
<b>UM2004--E:AgAuCuZn</b>	Dokl. Earth Sci. 395A, 448		(Cu,Au,Ag) <sub>4</sub> Zn; same as UM2003-03-E:AgAuCuZn	c
<b>UM2004--E:AuCu</b>	Mineral. Mag. 68, 615		Au <sub>3</sub> Cu; inadequate data and perhaps same as UM1991-06-E:AuCu	b,c
<b>UM2004--E:AuCuPd[1]</b>	Mineral. Mag. 68, 615		PdAuCu <sub>2</sub> ; inadequate data	b
<b>UM2004--E:AuCuPd[2]</b>	Mineral. Mag. 68, 615		(Cu,Pd,Au); inadequate data	b
<b>UM2004--E:CuFePdPt</b>	Mineral. Mag. 68, 615		(Pt,Cu,Fe,Pd); inadequate data	b
<b>UM2004--E:CuPdPt[1]</b>	Mineral. Mag. 68, 615		PdCu <sub>3</sub> ; apparently the same as nielsenite: Can. Mineral. 46 (2008), 709	b
<b>UM2004--E:CuPdPt[2]</b>	Mineral. Mag. 68, 615		(Pt,Pd)Cu <sub>3</sub> ; inadequate data	b
<b>UM2004--E:CuPdPt[3]</b>	Can. Mineral. 42, 499		(Pd,Pt)Cu; no data; probably same as UM1975--E:CuFePdPt & UM1999--E:CuPdPt	b,c
<b>UM2004--E:CuPdPt[4]</b>	Dokl. Earth Sci. 396 (4), 508		(Pd,Pt)Cu <sub>3</sub> ; Table 1, anal. 17. Apparently equivalent to nielsenite: Can. Mineral. 46 (2008), 709	c
<b>UM2004--E:CuPdSn</b>	Mineral. Mag. 68, 615		(Pd,Cu,Sn); inadequate data	b
<b>UM2004--O:BiH</b>	Can. Mineral. 42, 601		Bi <sub>2</sub> O <sub>3</sub> •3H <sub>2</sub> O; appears to be identical to UM1943-02-OH:Bi	c
<b>UM2004--O:CeHNdSmW</b>	Lapis (2004) (2), 18		(Nd,Ce,Sm)W <sub>2</sub> O <sub>6</sub> (OH) <sub>3</sub> ; may be the Nd-analogue of yttrotungstite; no data	b
<b>UM2004--O:CrFeIrOsPtRhRu</b>	Mineral. Mag. 68, 369		An amorphous alteration product not necessarily of fixed composition	b,d

<b>UM2004--O:IrOsRu</b>	Mineral. Mag. 68, 369		(Os,Ir,Ru)O; inadequate data	b
<b>UM2004--PO:BeCaFeHMg</b>	Dokl. Chem. 398, 191		Ca <sub>2</sub> Be <sub>4</sub> (Fe,Mg) <sub>5</sub> (PO <sub>4</sub> ) <sub>6</sub> (OH) <sub>4</sub> •6H <sub>2</sub> O; later described under the name atencioite: New Data on Minerals 41 (2006), 18; formerly coded as UM2004-30-PO:BeCaFeHMg	a
<b>UM2004--PO:FeHK</b>	Der Erzgräber 18, 17	Am. Mineral. 90, 1228	KFe <sup>3+</sup> 3H <sub>8</sub> (PO <sub>4</sub> ) <sub>6</sub> •6H <sub>2</sub> O; later name gegenbachite: Aufschluss 58 (2007), 125	a
<b>UM2004--S:AgSbTe</b>	Zap. Vser. Mineral. Ob. 133 (3), 45		Ag <sub>18</sub> Sb <sub>2</sub> Te <sub>3</sub> S <sub>9</sub> ; no data	b
<b>UM2004--S:AgSnTe</b>	Zap. Vser. Mineral. Ob. 133 (3), 45		Ag <sub>8</sub> SnTe <sub>2</sub> S <sub>4</sub> ; no data	b
<b>UM2004--S:BiTe</b>	Austral. J. Mineral. 10, 7		Bi <sub>10</sub> Te <sub>2</sub> S <sub>5</sub> ; appears to be the same as UM1962--S:BiTe	b
<b>UM2004--S:CoCuNiPt</b>	Can. Mineral. 42, 455		Cu <sub>2</sub> (Ni,Co)Pt <sub>3</sub> S <sub>8</sub> ; not compositional distinct from UM1981-17-S:CuIrPtRh	c
<b>UM2004--S:CuFeGeZn</b>	Can. Mineral. 42, 1757		Cu <sub>8</sub> Fe <sub>2</sub> ZnGe <sub>2</sub> S <sub>12</sub> ; no data	b
<b>UM2004--S:CuFeIrNiPtRuRh</b>	Geol. Geofiz. 45, 1128		(Fe,Ni,Cu) <sub>1.64</sub> (Rh,Pt,Ru,Ir) <sub>1.34</sub> S <sub>3</sub> ; perhaps not distinct from UM2002-19-S:CuFeIrNiPtRh	c
<b>UM2004--S:CuFeNiRh</b>	Can. Mineral. 42, 499		Rh(Ni,Fe,Cu) <sub>2</sub> S <sub>3</sub> ; no data; same as UM1999--S:CuFeNiRh	b,c
<b>UM2004--S:CuNiPtRh</b>	Can. Mineral. 42, 455		(Pt,Rh,Ir) <sub>3</sub> (Ni,Co,Fe)Cu <sub>2</sub> S <sub>8</sub> ; not distinct from UM1981-17-S:CuIrPtRh and perhaps related to malanite	c
<b>UM2004--S:FeMnZn</b>	Mineral. Mag. 68, 787		(Fe,Zn,Mn)S; cf UM1972--S:FeMnS; later described under the name rudashevskyite: Am. Mineral. 93 (2008), 902	a
<b>UM2004--S:FeNiRh</b>	Can. Mineral. 42, 563		(Fe,Ni,Rh)S; indistinguishable from UM2002-19-S:CuFeIrNiPtRh	c
<b>UM2004--S:NiPdPt</b>	Can. Mineral. 42, 423		(Pd,Ni,Pt)S; Table 3, anal. #6; probably vysotskite	c
<b>UM2004--S:PbSe</b>	Zap. Vser. Mineral. Ob. 133 (3), 45		Pb(S,Se); no data; perhaps Se-bearing galena	b,c
<b>UM2004--S:PtPdPt</b>	Can. Mineral. 42, 423		(Pt,Pd)S; Table 3, anal. #5 & #7; presumably cooperite or braggite	c
<b>UM2004--S:PtRh[1]</b>	Ann. Naturhist. Mus. Wien 105A, 1		(Rh,Pt) <sub>5</sub> S <sub>4</sub> ; appears to be a Pt-bearing variety of UM1995-32-S:Rh	c
<b>UM2004--S:PtRh[2]</b>	Ann. Naturhist. Mus. Wien 105A, 1		(Rh,Pt) <sub>3</sub> S <sub>4</sub> ; appears to be kingstonite; same as UM1983--S:IrPtRh	c
<b>UM2004--SO:AIHNiZn</b>	New Data on Minerals 39, 32		(Zn,Ni)Al <sub>4</sub> (SO <sub>4</sub> )(OH) <sub>12</sub> •3H <sub>2</sub> O; the Zn-analogue of nickelalumite; later described under the name kyrgyzstanite: New Data Mineral. (Mosc.) 40, 23; transferred from valid list	a
<b>UM2004--Sb:CuPd</b>	Dokl. Earth Sci. 396 (4), 508		Pd <sub>2</sub> CuSb; anal. 9-11, Table 1; appears to be the same as UM1961-09-Sb:CuPd	c
<b>UM2004--Se:Bi</b>	Zap. Vser. Mineral. Ob. 133 (3), 45		Bi <sub>3</sub> Se <sub>2</sub> ; no data	b

<b>UM2004--/Se:BiTe</b>	Zap. Vser. Mineral. Ob. 133 (3), 45		Bi <sub>3</sub> SeTe; no data; cf. UM1983-29-Te:BiSSe	b,c
<b>UM2004--/SiO:AlHNaSr</b>	Dokl. Earth Sci. 395 (2), 260		Na <sub>0.50</sub> Sr <sub>0.25</sub> Al <sub>2</sub> (Na <sub>0.25</sub> □ <sub>0.75</sub> )[Al <sub>1.25</sub> Si <sub>2.75</sub> O <sub>10</sub> ](OH) <sub>2</sub> ; a Sr-bearing brammallite	c
<b>UM2004--/SiO:CaFHNbSTi</b>	Can. Mineral. 42, 769		Inadequate data; "UK61a" possibly a highly disordered polymorph of hainheaultite: (Na,Ca) <sub>5</sub> Ca(Ti,Nb) <sub>5</sub> (Si,S) <sub>12</sub> O <sub>34</sub> (OH,F) <sub>8</sub> •5H <sub>2</sub> O	b,c
<b>UM2004--/Te:AgSSe</b>	Zap. Vser. Mineral. Ob. 133 (3), 45		Ag <sub>2</sub> (Te,Se,S); perhaps Se- and S-bearing hessite	c
<b>UM2004--/Te:BiPdPt</b>	Can. Mineral. 42, 261		FeAuBiPd <sub>4</sub> Te <sub>3</sub> ; no data	b
<b>UM2004--/Te:AuBiSb</b>	Zap. Vser. Mineral. Ob. 133 (3), 45		Au <sub>5</sub> Sb <sub>2</sub> Bi <sub>2</sub> Te <sub>13</sub> ; no data	b
<b>UM2004--/Te:AuSb[1]</b>	Zap. Vser. Mineral. Ob. 133 (3), 45		AuSbTe; no data	b
<b>UM2004--/Te:AuSb[2]</b>	Zap. Vser. Mineral. Ob. 133 (3), 45		Au <sub>5</sub> SbTe; no data	b
<b>UM2004--/Te:BiPdPt</b>	Can. Mineral. 42, 423		(Pd,Pt)(Te,Bi) <sub>1.92</sub> ; Table 3, anal. #8; probably merenskyite	c
<b>UM2004--/Te:BiPt</b>	Can. Mineral. 42, 423		Pt(Te,Bi) <sub>2</sub> ; Table 3, anal. #9; probably moncheite	c
<b>UM2004--/TeAs:Pd</b>	Can. Mineral. 42, 563		Pd <sub>11</sub> Te <sub>2</sub> As <sub>2</sub> ; appears to be the same as UM1996-02-As:PdTe	c
<b>UM2005--/As:NiRh</b>	Can. Mineral. 43, 1711		RhNiAs; same as UM1983--/As:NiRh	a,c
<b>UM2005--/As:Pt</b>	Can. Mineral. 43, 637		Pd <sub>11</sub> Te <sub>2</sub> As <sub>2</sub> ; same as UM1996-02-As:PdTe	c
<b>UM2005--/As:Pt</b>	Can. Mineral. 43, 637	Am. Mineral. 90, 1947	(Pt,Ir) <sub>2</sub> As <sub>3</sub> ; identical in every respect to UM1991--/As:IrPt	c
<b>UM2005--/AsO:AlHMgPScSi</b>	Micro (2005), 81		(Sc,Al,Mg)(As,P,Si) <sub>4</sub> •2H <sub>2</sub> O; a Sc-analogue of metavariscite; later described under the name bonacinaite: Mineral. Mag. 84, 568; transferred from valid list	a
<b>UM2005--/Bi:Pt</b>	Can. Mineral. 43, 637	Am. Mineral. 90, 1947	Pd <sub>5</sub> Bi <sub>2</sub> ; appears to be the same as UM1961-03-Bi:Pt	c
<b>UM2005--/Bi:PtSb</b>	Can. Mineral. 43, 637	Am. Mineral. 90, 1947	(Pt,Pd)(Bi,Sb); apparently a compositional variant of UM1974-02-Bi:AsPdPtSb	c
<b>UM2005--/Bi:Pt</b>	Can. Mineral. 43, 637	Am. Mineral. 90, 1947	PtBi; apparently a compositional variant of UM1974-02-Bi:AsPdPtSb	c
<b>UM2005--/Cl:BrHgl</b>	Mineral. Record 36, 337		Hg-I-(Cl,Br); "CCUK-12" inadequate data	c
<b>UM2005--/Cl:BrHglN</b>	Mineral. Record 36, 337		Hg-N-I-(Cl,Br); "CCUK-10" inadequate data	b
<b>UM2005--/Cl:BrHglO</b>	Mineral. Record 36, 337		Hg <sup>1+</sup> 10Hg <sup>2+</sup> 3O <sub>6</sub> I <sub>2</sub> (Cl,Br) <sub>2</sub> ; "CCUK-15"; inadequate data	
<b>UM2005--/Cl:CdHN</b>	Eur. J. Mineral. 17, 107		NH <sub>4</sub> CdCl <sub>3</sub> ; inadequate data	b
<b>UM2005--/Cl:PbTI</b>	Eur. J. Mineral. 17, 107		Pb <sub>2</sub> TiCl <sub>5</sub> ; later named hephaistosite: Can. Mineral. 46 (2008), 701	a

<b>UM2005--CII:BrPbTI</b>	Eur. J. Mineral. 17, 107		PbTI <sub>3</sub> (Cl,I,Br) <sub>5</sub> ; inadequate data	b
<b>UM2005--E:AuCuPd</b>	Can. Mineral. 43, 1711		Cu <sub>2</sub> PdAu; same as UM2004-08-E:AuCuPd	c,b
<b>UM2005--E:CuPbPdPt</b>	Can. Mineral. 43, 1663		(Pd,Pt) <sub>4</sub> (Pb,Cu); appears to be Cu-rich zvyaginysevite	c
<b>UM2005--E:CuPdTe</b>	Can. Mineral. 43, 1711		Pd(Cu,Te); same as UM2004-09-E:CuPdTe	c,b
<b>UM2005--E:CuZn</b>	Can. Mineral. 43, 1663		(Zn,Cu); inadequate data; possibly an artifact; see also UM1981--E:CuZn[1,2]	b,f
<b>UM2005--E:FePd</b>	Can. Mineral. 43, 1711		Pd <sub>2</sub> Fe; no data	b
<b>UM2005--Ge:Pd</b>	Can. Mineral. 43, 637	Am. Mineral. 90, 1947	Close to Pd <sub>2</sub> Ge; later described under the name palladogermanide: Can. Mineral. 59, 1865; transferred from valid list	a
<b>UM2005--I:BrClHHgINO</b>	Mineral. Record 36, 337		Hg <sup>2+</sup> 2N(I,Cl,Br)•H <sub>2</sub> O; "CCUK-18"; inadequate data; perhaps an I-analogue of mosesite	b
<b>UM2005--I:TI</b>	Eur. J. Mineral. 17, 107		TII (thallium iodide); inadequate data	b
<b>UM2005--O:AsHPdSbTe</b>	Mineral. Mag. 69, 981		~(Pd,Sb,As,Te)O•nH <sub>2</sub> O; probably same as UM1999-18-OH:Pd	c
<b>UM2005--O:AsPdSbTe</b>	Mineral. Mag. 69, 981		~(Pd,Sb,As,Te) <sub>2</sub> O; variable composition; probably same as UM2003-12-O:Pd	c
<b>UM2005--O:BaFe</b>	Eur. J. Mineral. 17, 623		BaFe <sub>3</sub> +12O <sub>19</sub> ; later described under the name barioferrite; Zapiski Ross. Mineral. Ob. 139 (2010) No. 3, 22; transferred from Valid list	a
<b>UM2005--O:CaFeSiTi</b>	Eur. J. Mineral. 17, 623		Fe-oxide?; incomplete analysis (#8) with very low total	b
<b>UM2005--O:CuFeNiPt</b>	Can. Mineral. 43, 1711		~(Pt,Fe,Cu,Ni) <sub>4</sub> O; may be inhomogeneous mixture of more than one phase or same as UM1994-17-O:FePt	d,c
<b>UM2005--O:CuFeNiPtSi</b>	Can. Mineral. 43, 1711		~(Pt,Fe,Cu,Si,Ni) <sub>7</sub> O; may be inhomogeneous mixture of more than one phase	d
<b>UM2005--O:CuFePt</b>	Can. Mineral. 43, 637	Am. Mineral. 90, 1947	(Pt,Cu,Fe) <sub>2</sub> O <sub>3</sub> ; likely a compositional variant of UM1996-22-O:FePt	c
<b>UM2005--O:CuFePtSi</b>	Can. Mineral. 43, 1711		~Pt <sub>2</sub> (Fe,Cu,Si) <sub>3</sub> O <sub>4</sub> ; may be inhomogeneous mixture of more than one phase	d
<b>UM2005--O:FePd</b>	Mineral. Mag. 69, 981		~(Pd,Fe)O; variable composition; probably same as UM1995-17-O:CuPd	c
<b>UM2005--O:FePt[1]</b>	Can. Mineral. 43, 1711		~(Pt,Fe) <sub>3</sub> O; may be inhomogeneous mixture of more than one phase	d
<b>UM2005--O:FePt[2]</b>	Can. Mineral. 43, 637	Am. Mineral. 90, 1947	(Pt,Fe) <sub>2</sub> O <sub>2</sub> ; appears to be the same as UM1996-23-O:FePt	c
<b>UM2005--O:FePtSi[1]</b>	Can. Mineral. 43, 1711		~(Pt,Fe,Si) <sub>2</sub> O; may be inhomogeneous mixture of more than one phase or perhaps the same as UM1994-15-O:FePt	d,c
<b>UM2005--O:FePtSi[2]</b>	Can. Mineral. 43, 1711		~(Pt,Fe,Si)O; may be inhomogeneous mixture of more than one phase or may perhaps be same as UM1994-13-O:FeIrPtRh	d,c



<b>UM2005--O:FeRhRu</b>	Can. Mineral. 43, 1711		(Ru,Rh,Fe)3O2; very inhomogeneous and may be a mixture	d
<b>UM2005--O:PbPd</b>	Can. Mineral. 43, 1663		Pd7PbO8; same mineral as UM1999-16-O:PbPd	c
<b>UM2005--O:PbV</b>	Can. Mineral. 43, 1663		Pb4O(VO4)2; same as UM1999-17-O:PbV	c
<b>UM2005--O:PdPtSi</b>	Can. Mineral. 43, 1711		~(Pt,Si,Pd)11O2; may be inhomogeneous mixture of more than one phase	d
<b>UM2005--O:Ru</b>	Can. Mineral. 43, 1711		RuO2; probably same as UM1997-33-O:FeHglrOsRu	c
<b>UM2005--O:Ti</b>	Am. Mineral. 90, 1458		TiO2; orthorhombic; appears to be same as UM2000-41-O:Ti	b
<b>UM2005--OH:Mn</b>	Am. Mineral. 90, 718		"Vernadite-like mineral"; inadequate data	b
<b>UM2005--PO:</b>	*Mineral. Zhurn. 27 (2), 112	Am. Mineral. 91, 1206	A phosphate of unknown composition	b
<b>UM2005--S:AsBiPbCl</b>	Eur. J. Mineral. 17, 107		Pb3(As,Bi)3S7Cl; inadequate data	b
<b>UM2005--S:AuPd</b>	Can. Mineral. 43, 637	Am. Mineral. 90, 1947	Pd-Au-bearing sulphide; no analytical data	b
<b>UM2005--S:BiBrClPb</b>	Eur. J. Mineral. 17, 107		BiS(Cl,I,Br); inadequate data	b
<b>UM2005--S:BiCdPbSe[1]</b>	Eur. J. Mineral. 17, 107		Cd4PbBi12(S,Se)23; a sulphosalt; inadequate data	b
<b>UM2005--S:BiCdPbSe[2]</b>	Eur. J. Mineral. 17, 107		CdPb4Bi6(S,Se)14; a sulphosalt; inadequate data	b
<b>UM2005--S:BiCuPb</b>	Can. Mineral. 43, 899		CuPbBi4S8; not distinct from salzburgite	c
<b>UM2005--S:CrHHgO</b>	Mineral. Record 36, 337		Hg <sup>2+</sup> -CrO4-S-H2O; "CCUK-8"; inadequate data	b
<b>UM2005--S:CuFeIrNiPbPt</b>	Can. Mineral. 43, 1663		(Cu,Ni,Fe)3+x(Fe,Pb)(Rh,Pd,Ir)8-xS16; same as UM2004-41-S:CuFeIrNiPbPt	c
<b>UM2005--S:CuFeIrNiPtRh</b>	Can. Mineral. 43, 1663		Rh1-x(Ni,Fe,Cu)2+xS3; appears to be same as UM2002-18-S:CuFeIrNiPtRh	c
<b>UM2005--S:CuPbPt</b>	Can. Mineral. 43, 637	Am. Mineral. 90, 1947	Cu3Pb(Pt,Ir,Rh)8S16; a compositional variant of UM2004-36-S:CuFeIrPbPt	c
<b>UM2005--S:FeNiRh</b>	Can. Mineral. 43, 1711		(Rh,Fe,Ni)9S8?; inadequate data; probably miassite	c,b
<b>UM2005--S:IrPtRh</b>	Can. Mineral. 43, 1687		(Ir,Rh,Pt)S; probably same as UM1974-12-S:IrNiRh	c
<b>UM2005--Sb:PdRh</b>	Can. Mineral. 43, 1711		(Pd,Rh)2Sb; no data; would appear to be Rh-rich naldrettite	b,c
<b>UM2005--Se:Bi</b>	Can. Mineral. 43, 899		BiSe; nevskite	c
<b>UM2005--SiO:AlCa</b>	Can. Mineral. 43, 857	Am. Mineral. 91, 220	Ca(Al,Fe,Mg)[AlSi]O6; clinopyroxene with Ca-tschermak's molecule dominant; later described under the name kushiroite; Am. Mineral. 94, 1479; transferred from valid list	a
<b>UM2005--SiO:BaClFeMn</b>	Axis 1 (8), 1		Major Ba, Mn, Cl, Si and O with minor Fe; no other data;	b

<b>UM2005--SiO:BaFeMn</b>	Axis 1 (8), 1		designated #40 Major Ba, Mn Si and O with minor Fe; no other data; designated #41	b
<b>UM2005--SiO:Ca[1]</b>	Eur. J. Mineral. 17, 623		Ca-silicate; incomplete analysis (#1); probably larnite	b,c
<b>UM2005--SiO:Ca[2]</b>	Eur. J. Mineral. 17, 623		Ca-silicate; incomplete analysis (#7) with very low total	b
<b>UM2005--SiO:CaFe</b>	Eur. J. Mineral. 17, 623		Ca,Fe-silicate; incomplete analysis (#10) with very low total	b
<b>UM2005--SiO:CaMg[1]</b>	Eur. J. Mineral. 17, 623		Ca,Mg-silicate; incomplete analysis (#2); probably bredigite	b,c
<b>UM2005--SiO:CaMg[2]</b>	Eur. J. Mineral. 17, 623		Ca,Mg-silicate; incomplete analysis (#3) with very low total	
<b>UM2005--SiO:CaMg[3]</b>	Eur. J. Mineral. 17, 623		Ca,Mg-silicate; incomplete analysis (#5) with very low total	b
<b>UM2005--SiO:CaMg[4]</b>	Eur. J. Mineral. 17, 623		Ca,Mg-silicate; incomplete analysis (#9) with very low total	b
<b>UM2005--SiO:CCaClFeHKNaNbZr</b>	Dokl. Akad. Nauk 400, 640	Am. Mineral. 90, 1467	(Na,Ce) <sub>9</sub> (Ca,Na,K) <sub>12</sub> Zr <sub>3</sub> Fe <sub>2</sub> (Nb,Si) <sub>24</sub> O <sub>72</sub> (CO <sub>3</sub> )Cl <sub>0.5</sub> •0.5H <sub>2</sub> O; later named mogovidite: Zap. Ross. Mineral. Ob. 134 (2005) (6), 36	a
<b>UM2005--SiO:CCaClHKMnNaNbZr</b>	Dokl. Akad. Nauk 403, 636	Dokl. Chem. 403, 148	Na <sub>12</sub> (K,Sr,Ce) <sub>3</sub> Ca <sub>6</sub> Mn <sub>3</sub> Zr <sub>3</sub> NbSi(Si <sub>3</sub> O <sub>9</sub> ) <sub>2</sub> (Si <sub>9</sub> O <sub>27</sub> ) <sub>2</sub> (O,OH) <sub>4</sub> (H <sub>2</sub> O,CO <sub>3</sub> ,Cl) <sub>2</sub> ; a K-analogue of kentbrooksite; later named andrianovite: Zap. Ross. Mineral. Ob. 137 (2008) (2), 43. Formerly coded as UM2005-30-SiO:CClCaHKMnNaNbZr	a
<b>UM2005--SiO:FePb</b>	Can. Mineral. 43, 1663		Inadequate data; very low total (<80%); perhaps hydrous	b
<b>UM2005--SiO:H</b>	Axis 1 (8), 1		SiO <sub>2</sub> •nH <sub>2</sub> O; inadequate data; designated #21	b
<b>UM2005--SiO:Hg[1]</b>	Mineral. Record 36, 337		Hg-silicate; "CCUK-13"; inadequate data	b
<b>UM2005--SiO:Hg[2]</b>	Mineral. Record 36, 337		Hg-silicate; "CCUK-14"; inadequate data	b
<b>UM2005--SiO:HMn</b>	Am. Mineral. 90, 371		An amorphous precipitate from brine; inadequate data	b
<b>UM2005--SiO:Mg</b>	Eur. J. Mineral. 17, 623		Ca,Mg-silicate; incomplete analysis (#7) with very low total	b
<b>UM2005--SiOPO:AlBaFe</b>	Axis 1 (8), 1		A Ba-(Fe,Al) Silicate-Phosphate; no other data; designated #27	b
<b>UM2005--SO:Al</b>	Am. Mineral. 90, 1729		Mineral "UP"; Al-S-O; inadequate data; product of coal combustion	b,f
<b>UM2005--SOSiO:Ca</b>	Eur. J. Mineral. 17, 623		Ca-silicate-sulphate; incomplete analysis (#6) with very low total	b
<b>UM2005--Te:AgPd</b>	Can. Mineral. 43, 1355		(Pd,Ag) <sub>3</sub> Te <sub>4</sub> ; "Unnamed 2"; same as UM1992-40-Te:AgNiPd	c
<b>UM2005--Te:Bi</b>	Can. Mineral. 43, 637	Am. Mineral. 90, 1947	Bi <sub>3</sub> Te; no analytical data	b
<b>UM2005--Te:BiSe</b>	N. Jb. Mineral. Abh. 181, 293		Bi <sub>2</sub> (Te,Se); not distinct from UM1980-16-Te:Bi on the basis of available data	c

IMA-CNMNC-SUM	Invalid minerals	2023		
<b>UM2005--Te:CuPd</b>	Can. Mineral. 43, 1355		(Pd,Cu) <sub>2</sub> Te <sub>3</sub> ; "Unnamed 1" same as UM1992-41-Te:CuPd	c
<b>UM2005--Te:NiPd</b>	Can. Mineral. 43, 1355		PdNiTe <sub>3</sub> ; "Unnamed 3"; no data	b
<b>UM2005--Te:PdRh</b>	Can. Mineral. 43, 1711		(Pd,Rh) <sub>3</sub> Te <sub>2</sub> ; same as UM2004-49-Te:PdRh; see also UM1961-11-Te:BiPd	c,b
<b>UM2006--AsO:CuH</b>	J. Czech Geol. Soc. 51 (1-2), 159		Cu <sub>13</sub> (AsO <sub>4</sub> ) <sub>6</sub> (AsO <sub>3</sub> OH) <sub>4</sub> •23H <sub>2</sub> O; "UNK2"; same as UM1997-13-AsO:CuH	c
<b>UM2006--Bi:Pd</b>	Mineral. Mag. 70, 83		Pd <sub>3</sub> Bi <sub>2</sub> ; no data other than formula	b
<b>UM2006--Bi:PdSbTe</b>	Mineral. Mag. 70, 83		Pd <sub>5</sub> Bi <sub>3</sub> (Te,Sb) <sub>2</sub> ; no data; appears to be the same as UM1976-08-Bi:PdSbTe	b,c
<b>UM2006--Cl:BiHOPd</b>	Mineral. Petrol. 86, 31		(Bi,Pd) <sub>9</sub> (Cl,OH) <sub>5</sub> •6H <sub>2</sub> O; low totals; hence indistinguishable from UM1993-03-Cl:BiHOPd	b
<b>UM2006--Cl:BiPd</b>	Mineral. Petrol. 86, 109		Low analytical totals; indistinguishable from UM1981-03-Cl:BiPd	c
<b>UM2006--CO:CaCrH</b>	Austral. J. Mineral. 12, 9		Perhaps Ca-Cr analogue of dundasite; lacks any analytical data	b
<b>UM2006--E:AgPt</b>	Mineral. Mag. 70, 83		PtAg <sub>2</sub> ; no data other than formula	b
<b>UM2006--E:IrMoOsW</b>	Am. Mineral. 91, 191		(Os,Ir,W,Mo); probably a substituted osmium	c
<b>UM2006--E:IrOsW</b>	Am. Mineral. 91, 191		Os <sub>0.68</sub> W <sub>0.15</sub> Ir <sub>0.12</sub> Fe <sub>0.02</sub> Mo <sub>0.02</sub> Ru <sub>0.01</sub> ; appears to be a W,Ir-substituted variety of osmium	c
<b>UM2006--E:PdTI</b>	Mineral. Mag. 70, 83		Pd <sub>3</sub> TI; no data other than formula; unlike any other known mineral	b
<b>UM2006--E:Re</b>	Dokl. Earth Sci. 407A, 460		Probably native rhenium but inadequate data	b
<b>UM2006--Ge:Pd</b>	Mineral. Mag. 70, 83		(Pd,Pt) <sub>2</sub> Ge; appears to a Pt-bearing variety of UM2005-05-Ge:Pd	c
<b>UM2006--O:BeTiV</b>	Can. Mineral 44, 1147		(Be,□)(V,Ti) <sub>3</sub> O <sub>6</sub> ; distinct similarities to kyzylkumite; later described under the name byrudite: Am. Mineral. 101, 1240; transferred from valid list	a
<b>UM2006--O:CaNbTi</b>	New Data on Minerals, 41, 56		Ca,Ti-niobate; inadequate data; extremely low analytical total	a
<b>UM2006--O:CrHMnPb</b>	Australian J. Mineral. 12, 59		Pb <sub>2</sub> CrMn <sub>2</sub> (O,OH,H <sub>2</sub> O) <sub>8</sub> ; later described under the name reynoldsite: Am. Mineral 97, (2012), 1187; transferred from Valid list	a
<b>UM2006--O:HPbU</b>	J. Czech Geol. Soc. 51 (1-2), 159		Pb(UO <sub>2</sub> ) <sub>3</sub> O <sub>3</sub> (OH) <sub>2</sub> •3H <sub>2</sub> O; "UNK5"; appears to be same as UM1997-35-O:HPbU and similar to masuyite	c
<b>UM2006--O:KRe</b>	Dokl. Earth Sci. 407A, 460		Perhaps KReO <sub>4</sub> , potassium perrhenate; inadequate data	b
<b>UM2006--O:Re</b>	Dokl. Earth Sci. 407A, 460		Perhaps Re <sub>2</sub> O <sub>7</sub> ; inadequate data	b

<b>UM2006--/OH:AlCl</b>	Dokl. Earth Sci. 407A, 460		Perhaps Al(OH,Cl) <sub>3</sub> ; inadequate data	b
<b>UM2006--/PO:AlCaFH</b>	J. Czech Geol. Soc. 51 (1-2), 159	Mineral. Mag. 75, 327	CaAl <sub>3</sub> (PO <sub>4</sub> )(PO <sub>3</sub> OH)(OH,F) <sub>6</sub> ; "UNK4"; indistinguishable from crandallite on available data; reinvestigated and described under the name iangreyite: Mineral. Mag. 75 (2011), 327	a
<b>UM2006--/PO:AlFeHZn</b>	J. Czech Geol. Soc. 51 (1-2), 159		Zn(Fe,Zn,Al) <sub>4</sub> (PO <sub>4</sub> ) <sub>3</sub> (OH) <sub>4</sub> ; "UNK3"; later described under the name plimerite: Mineral. Mag. 73 (2009), 131	a
<b>UM2006--/PO:AsCuFeH</b>	J. Czech Geol. Soc. 51 (1-2), 159		CuFe <sub>2</sub> (PO <sub>4</sub> ) <sub>2</sub> (OH) <sub>2</sub> •4H <sub>2</sub> O; "UNK6" subsequently described under the name kunatite: Austral. J. Mineral. 14 (1) (2008), 3	a
<b>UM2006--/PO:FeHMn</b>	J. Czech Geol. Soc. 51 (1-2), 159		(Mn <sup>2+</sup> ,Fe <sup>2+</sup> ) <sub>2</sub> (Fe <sup>3+</sup> ,Al) <sub>3</sub> (PO <sub>4</sub> ) <sub>3</sub> (OH) <sub>4</sub> •H <sub>2</sub> O; same as UM1982-08-PO:FeHMn	c
<b>UM2006--/S:BiPbSe</b>	Mineral. Mag. 70, 123		A Pb-Bi-Se-S mineral; no other data provided	b
<b>UM2006--/S:CuFeGeZn</b>	Can. Mineral. 44, 1481		Cu <sub>2</sub> (Zn,Fe)GeS <sub>4</sub> ; appears to be the same as UM1965-10-S:CuFeGeZn	c
<b>UM2006--/Sb:BiPdTe</b>	Mineral. Mag. 70, 83		Pd <sub>2</sub> (Sb,Bi,Te); no data other than formula; could be Bi- and Te-bearing naldrettite	b,c
<b>UM2006--/Sb:Pd</b>	Mineral. Mag. 70, 83		Pd <sub>5</sub> Sb <sub>3</sub> ; no data other than formula; close to naldrettite	b
<b>UM2006--/Sb:Pt</b>	Mineral. Mag. 70, 83		PtSbSb; no data other than formula which is likely in error	b
<b>UM2006--/SiO:AlBFFeHNa</b>	Eur. J. Mineral. 18, 583		NaFe <sup>2+</sup> <sub>3</sub> Al <sub>6</sub> Si <sub>6</sub> O <sub>18</sub> (BO <sub>3</sub> ) <sub>3</sub> (OH) <sub>3</sub> F; IMA-approved, the name fluor-schorl: Eur. J. Mineral. 11 (1999), 201; Eur. J. Mineral. 28, 163	c
<b>UM2006--/SiO:BaCaTh</b>	New Data on Minerals, 41, 56		Ba,Ca,Th-silicate; table 3, #13; inadequate data	a
<b>UM2006--/SiO:CaNbPTi</b>	New Data on Minerals, 41, 56		Ca,Nb,Ti-silicate; table 1, #6-8; inadequate data; said to be Ca-analogue of murmanite	a
<b>UM2006--/SiO:CaTh</b>	New Data on Minerals, 41, 56		Ca,Th-silicate; table 3, #14; inadequate data; amorphous	a
<b>UM2006--/SiO:CaThTi</b>	New Data on Minerals, 41, 56		Ca,Th,Ti-silicate; table 3, #12; inadequate data; amorphous	a
<b>UM2006--/SiOPO:AlCaFHSr</b>	J. Czech Geol. Soc. 51 (1-2), 159		(Ca,Sr) <sub>3</sub> Al <sub>7</sub> (SiO <sub>4</sub> ) <sub>3</sub> (PO <sub>4</sub> ) <sub>4</sub> (F,OH) <sub>3</sub> •16.5H <sub>2</sub> O; "UNK1"; later described under the name krásnoite; IMA No. 2011-040; transferred from Valid list	a
<b>UM2006--/Sn:PdSb</b>	Mineral. Mag. 70, 83		Pd <sub>2</sub> (Sn,Sb); no data; appears to be the same as UM1976-27-Sn:PdSb	b,c
<b>UM2006--/Te:PbPd</b>	Mineral. Mag. 70, 83		PdTe <sub>3</sub> Pb <sub>3</sub> ; no data other than formula	b
<b>UM2006--/VO:AsHMn</b>	Can. Mineral. 44, 229		Mn <sub>7</sub> (VO <sub>4</sub> ,AsO <sub>4</sub> ) <sub>2</sub> (OH) <sub>8</sub> ; later described under the name argandite: Am. Mineral. 96, 1894; transferred from Valid list	a
<b>UM2007--/SiO:AlBaCaHKNaNbREETH</b>	New Data on Minerals 42, 33		(K,Ca,Th,Na,Ba,REE) <sub>3.5</sub> (Ti,Nb) <sub>3</sub> (Si,Al) <sub>8</sub> (O,OH) <sub>50</sub> •nH <sub>2</sub> O; inadequate data with low total; perhaps related to vudyavrite	b

i			
<b>UM2007-//-As:CuRh</b>	Acta Petrol. Mineral. 26, 418	(Rh,Cu) <sub>7</sub> As <sub>4</sub> ; Table 5, sample 67-17; probably Cu-rich polkanovite	c
<b>UM2007-//-As:FeOsRu</b>	Can. Mineral. 45, 631	"Ru <sub>3</sub> As <sub>2</sub> "; very low analytical total makes suggested formula suspect; perhaps an Osrich ruthenarsenite	b
<b>UM2007-//-As:IrPt</b>	Acta Petrol. Mineral. 26, 418	(Pt,Ir) <sub>2</sub> As <sub>3</sub> ; probably same as UM1991-03-As:PtRhS; Table 7, sample 71-9-1	c
<b>UM2007-//-As:NiRh</b>	Acta Petrol. Mineral. 26, 418	(Rh,Ni) <sub>12</sub> As <sub>7</sub> ; Table 5, sample 65-2-5; probably Ni-rich polkanovite	c
<b>UM2007-//-As:PdRh[1]</b>	Acta Petrol. Mineral. 26, 418	(Pd,Rh) <sub>2</sub> As; Table 5, sample 71-9-3; appears to be pallododymite	c
<b>UM2007-//-As:PdRh[2]</b>	Acta Petrol. Mineral. 26, 418	(Rh,Pd) <sub>2</sub> As; Table 5, sample 108-23; appears to be rhodarsenide	c
<b>UM2007-//-AsS:Ir</b>	Acta Petrol. Mineral. 26, 418	Ir(S,As) <sub>2</sub> ; Table 8, samples 98-35 to 30-10; probably compositional variants of irarsite	c
<b>UM2007-//-AsS:IrRh</b>	Acta Petrol. Mineral. 26, 418	(Rh,Ir)AsS; Table 8, samples 76-12-2--24, 65-2-5-7 & 67-17-11 probably compositional variants of hollingworthite	c
<b>UM2007-//-AsTe:Ru</b>	Can. Mineral. 45, 751	(Ru <sub>0.89</sub> Rh <sub>0.05</sub> Os <sub>0.04</sub> )As(Te <sub>0.85</sub> As <sub>0.12</sub> Sb <sub>0.01</sub> ); indistinguishable from UM1981-01-AsTe:Ru	c
<b>UM2007-//-Bi:PdPt</b>	Contr. Mineral. Petrol. 154, 171	PdPtBi; no analytical data	b
<b>UM2007-//-Bi:PdPtSb</b>	Neues. Jb. Mineral. Abh. 183, 173	(Pt,Pd)(Bi,Sb); Table 4 anal. 49; not distinct from UM1974-02-Bi:AsPdPtSb	c
<b>UM2007-//-Bi:PdSb</b>	Contr. Mineral. Petrol. 154, 171	Pd(Bi,Sb); no analytical data; could be Sb-rich sobolevskite or equivalent to UM1976-08-Bi:PdSbTe	b
<b>UM2007-//-COPO:CaKNaS</b>	Mineral. Mag. 71, 483	Possibly new unnamed carbonate-phosphate(s) but data are inadequate and analytical totals extremely low; Table 4	a
<b>UM2007-//-E:CuPt</b>	Neues. Jb. Mineral. Abh. 183, 173	Cu <sub>3</sub> Pt; appears to be the same as UM1992-11-E:CuPtSb	c
<b>UM2007-//-E:FeIrNiPt</b>	Can. Mineral. 45, 631	(Fe,Ni) <sub>3</sub> (Pt,Ir); Table 4, anal. 98c211 <i>et seq.</i> appears to be same as UM1984-18-E:FeNiPt	c
<b>UM2007-//-E:FeNi</b>	Can. Mineral. 45, 631	Ni <sub>2</sub> -3Fe; Table 4, analys. 98c 112 & 13; appears to be awaruite	c
<b>UM2007-//-O:BiFePdPt</b>	Neues. Jb. Mineral. Abh. 183, 173	Pd,Bi,Pt,Fe,Cu-oxide; inadequate data	b
<b>UM2007-//-O:BiFePt</b>	Neues. Jb. Mineral. Abh. 183, 173	Bi,Pt,Fe,Cu-oxide; inadequate data	b
<b>UM2007-//-O:FeIrOsRu</b>	Can. Mineral. 45, 631	"PGE oxides"; variable compositions, no oxygen determination and many poor analytical totals; some, at least, equivalent to UM1997-33-O:FeHgIrOsRu	b,c
<b>UM2007-//-PO:CaCIMn</b>	Can. Mineral. 45, 901	Mn <sub>3</sub> Ca <sub>2</sub> (PO <sub>4</sub> ) <sub>3</sub> (Cl,F,OH); the Mn-dominant analogue of apatite later described under the name Parafiniukite: Minerals 8(11), 485; transferred from Valid list	a

<b>UM2007--/PO:CaFeHMg</b>	Can. Mineral. 45, 293	Ca(Fe <sup>2+</sup> ,Mn <sup>2+</sup> )Mg <sub>2</sub> Fe <sup>3+</sup> <sub>2</sub> [PO <sub>4</sub> ] <sub>4</sub> [OH] <sub>2</sub> •8H <sub>2</sub> O; later described under the name Jahnsite-(CaFeMg): Eur. J. Mineral. 28, 991; transferred from valid list	a
<b>UM2007--/S:Ag</b>	Contr. Mineral. Petrol. 154, 171	Ag <sub>4</sub> S; distinct fomula but no analytical data	b
<b>UM2007--/S:AgBiCuFePbSe</b>	Izv. Akad. Nauk Kaz., Ser. Geol. (2007) (1), 17	Fe <sub>3</sub> CuBi(Ag,Pb)(S,Se) <sub>3</sub> ; very low total; appears to be the same as UM1989-15-S:AgBiCuFePbSe	c
<b>UM2007--/S:AgBiCuPb</b>	Izv. Akad. Nauk Kaz., Ser. Geol. (2007) (1), 17	(Cu,Pb,BiAg)S; compositionally indistinguishable from berryite	c
<b>UM2007--/S:AgPd</b>	Dokl. Earth Sci. 414, 511	(Pd,Ag) <sub>4</sub> S; no analytical data; perhaps a Ag-rich variety of UM1992-28-S:Pd	b,c
<b>UM2007--/S:BiCuPt</b>	Contr. Mineral. Petrol. 154, 171	PtCuBiS <sub>3</sub> ; formula distinct, but no data	b
<b>UM2007--/S:CuFeIrNi</b>	Acta Petrol. Mineral. 26, 418	(Ni,Ir,Fe,Cu) <sub>8</sub> S <sub>9</sub> ; Table 1, samples 96-6-2-3 & 76-3-6; similarities to UM1974-11-S:CuFeIrNi; likely Ir-rich godlevskite	b,a
<b>UM2007--/S:CuFeIrNiOsRu</b>	Can. Mineral. 45, 631	"Partially desulfurized laurite"; variable compositions and very poor analytical totals	b
<b>UM2007--/S:CuFeIrNiPtRh</b>	Acta Petrol. Mineral. 26, 418	(Ir,Cu,Ni,Pt,Rh,Fe)S; Table 1, anal. 3; same as UM1990-38-S:CuFeIrNiPtRh	c
<b>UM2007--/S:Culr</b>	Acta Petrol. Mineral. 26, 418	(Ir,Cu) <sub>2</sub> S <sub>3</sub> ; Table 9, sample 36-15; probably same as UM1976-15-S:CulrRh	c
<b>UM2007--/S:CulrRhPt</b>	Contr. Mineral. Petrol. 154, 171	(Pt,Cu,Rh,Ir) <sub>2</sub> S <sub>3</sub> ; no analytical data	b
<b>UM2007--/S:FeK</b>	Mineral. Mag. 71, 483	K <sub>1-2</sub> Fe <sub>2-3</sub> S <sub>3-4</sub> ; same as UM1997-44-S:FeK	c
<b>UM2007--/S:FeNi</b>	Can. Mineral. 45, 631	(Fe,Ni)S; appears to be the same as UM1989-25-S:FeNi	c
<b>UM2007--/S:IrRh</b>	Can. Mineral. 45, 355	Rh-Ir-S mineral "Un#2"; no other data provided	b
<b>UM2007--/S:NiRh</b>	Can. Mineral. 45, 355	Rh-Ni-S mineral "Un#1"; no other data provided	b
<b>UM2007--/S:PtRhSb</b>	Neues. Jb. Mineral. Abh. 183, 173	(Rh,Pt)SbS; appears to be the same as UM1976-16-S:IrRhSb	c
<b>UM2007--/S:Rh</b>	Acta Petrol. Mineral. 26, 418	RhS; Table 9 sample 76-12-2; same as UM2002-27-S:Rh; note Rh value omitted from table assumed by difference;	c
<b>UM2007--/Sb:BiPd</b>	Mineral. Petrol. 89,159	Pd(Sb,Bi); appears not to be distinct from UM1961-08-Sb:BiPd	c
<b>UM2007--/Sb:BiPdPt</b>	Neues. Jb. Mineral. Abh. 183, 173	(Pt,Pd)(Sb,Bi); Table 4 anal. 211; probably a Pd-rich stumpflite	c
<b>UM2007--/Sb:CuPd</b>	Neues. Jb. Mineral. Abh. 183, 173	Pd <sub>2</sub> CuSb; same as UM1961-09-Sb:CuPd	c
<b>UM2007--/Sb:Pd[1]</b>	Mineral. Petrol. 89,159	PdSb; appears not to be distinct from sudburyite	c
<b>UM2007--/Sb:Pd[2]</b>	Mineral. Petrol. 89,159	Pd <sub>4</sub> Sb <sub>3</sub> ; not distinct from ungavaite	c

<b>UM2007--/Se:Bi</b>	Can. Mineral. 45, 665	Bi <sub>4</sub> Se <sub>3</sub> ; same as UM1992--/Se:BiCu	c
<b>UM2007--/SiO:AlCaFFeMgREE[1]</b>	Can. Mineral. 45, 1073	(Ce,La) <sub>3</sub> CaAl <sub>2</sub> (Fe <sup>3+</sup> ,Al)(Fe <sup>2+</sup> ,Mg)[Si <sub>2</sub> O <sub>7</sub> ][SiO <sub>4</sub> ] <sub>3</sub> O(OH) <sub>2</sub> ; an Fe <sup>3+</sup> -Fe <sup>2+</sup> -analogue of västmanlandite-(Ce); later described under the name of ferriperbøeite-(Ce), [CaCe <sub>3</sub> ] <sub>Σ4</sub> [Fe <sup>3+</sup> Al <sub>2</sub> Fe <sup>2+</sup> ] <sub>Σ4</sub> [Si <sub>2</sub> O <sub>7</sub> ][SiO <sub>4</sub> ] <sub>3</sub> O(OH) <sub>2</sub> ; Eur.J.Mineral., 31, 173-181; transferred from Valid List	a
<b>UM2007--/SiO:AlCaFFeMgREE[2]</b>	Can. Mineral. 45, 1073	(Ce,La) <sub>3</sub> CaAl <sub>2</sub> (Fe <sup>3+</sup> ,Al)(Mg,Fe <sup>2+</sup> )[Si <sub>2</sub> O <sub>7</sub> ][SiO <sub>4</sub> ] <sub>3</sub> O(OH) <sub>2</sub> ; an Fe <sup>3+</sup> -analogue of västmanlandite-(Ce); later described under the name of ferriperbøeite-(La), [CaLa <sub>3</sub> ] <sub>Σ4</sub> [Fe <sup>3+</sup> Al <sub>2</sub> Fe <sup>2+</sup> ] <sub>Σ4</sub> [Si <sub>2</sub> O <sub>7</sub> ][SiO <sub>4</sub> ] <sub>3</sub> O(OH) <sub>2</sub> ; Eur.J.Mineral., 31, 173-181; transferred from Valid List	a
<b>UM2007--/SiO:CaFREEY</b>	Can. Mineral. 45, 1073	(Ca,Ce) <sub>2</sub> (Y,Nd,Ce) <sub>3</sub> (SiO <sub>4</sub> ,PO <sub>4</sub> ) <sub>3</sub> (F,OH); later described under the name fluorbritholite-(Y): Neues. Jb. Mineral. Abh. 188: 191; transferred from Valid list	a
<b>UM2007--/SO:CCuHZn</b>	J. Mineral. Petrol. Sci. 102, 233	(Zn,Cu) <sub>7</sub> (SO <sub>4</sub> ,CO <sub>3</sub> ) <sub>2</sub> (OH) <sub>10</sub> •3H <sub>2</sub> O; appears to be identical to UM1992-30-SO:CCuHZn	c
<b>UM2007--/Te:AgAsAuPbTe</b>	Mineral. Petrol. 91, 249	Au <sub>3</sub> (Ag,Pb)As <sub>2</sub> Te <sub>3</sub> ; appears to be identical to UM1989-02-AsTe:AgAuPb	c
<b>UM2007--/Te:AsPd</b>	Dokl. Earth Sci. 414, 511	Pd <sub>3</sub> (Te,As); not distinct from UM1991-26-Te:AsPd	c
<b>UM2007--/Te:AsRu</b>	Can. Mineral. 45, 751	RuAsTe; Table 4, anal. 6; clearly the same as UM1981-01-AsTe:Ru	c
<b>UM2007--/Te:Bi[1]</b>	Can. Mineral. 45, 665	Bi <sub>2</sub> Te <sub>5</sub> ; appears not to be distinct from UM1968-05-Te:Bi	c
<b>UM2007--/Te:Bi[2]</b>	Can. Mineral. 45, 665	Bi <sub>2</sub> Te; appears not to be distinct from UM1980-16-Te:Bi	c
<b>UM2007--/Te:Bi[3]</b>	Can. Mineral. 45, 665	Bi <sub>3</sub> Te <sub>2</sub> ; appears not to be distinct from UM1983-29-Te:BiS <sub>2</sub> Se	c
<b>UM2007--/Te:BiSe</b>	Can. Mineral. 45, 665	Bi <sub>4</sub> Te <sub>2</sub> Se; same as UM2001-24-Te:BiSe	c
<b>UM2007--/Te:BiS<sub>2</sub>Se[1]</b>	Can. Mineral. 45, 665	Bi <sub>3</sub> Te <sub>2</sub> (Se,S) <sub>2</sub> ; appears to be the same as UM1995-45-Te:BiS <sub>2</sub> Se	c
<b>UM2007--/Te:BiS<sub>2</sub>Se[2]</b>	Can. Mineral. 45, 665	Bi <sub>3</sub> Te(S,Se); appears not to be distinct from protojosëite	c
<b>UM2008--/?[1]</b>	Fjölrít náttúrufræðistofnunar Nr. 52, 1	Mineral "EA"; no composition, only some X-ray powder data	b
<b>UM2008--/?[10]</b>	Fjölrít náttúrufræðistofnunar Nr. 52, 1	Mineral "HS"; no composition, only some X-ray powder data	b
<b>UM2008--/?[11]</b>	Fjölrít náttúrufræðistofnunar Nr. 52, 1	Mineral "SB"; no composition, only some X-ray powder data	b

IMA-CNMNC-SUM	Invalid minerals	2023		
<b>UM2008---[12]</b>	Fjölrit náttúrufræðistofnunar Nr. 52, 1		Mineral "SC"; no composition, only some X-ray powder data	b
<b>UM2008---[13]</b>	Fjölrit náttúrufræðistofnunar Nr. 52, 1		Mineral "SF"; no composition, only some X-ray powder data	b
<b>UM2008---[14]</b>	Fjölrit náttúrufræðistofnunar Nr. 52, 1		Mineral "SG"; no composition, only some X-ray powder data	b
<b>UM2008---[2]</b>	Fjölrit náttúrufræðistofnunar Nr. 52, 1		Mineral "EB"; no composition, only some X-ray powder data	b
<b>UM2008---[3]</b>	Fjölrit náttúrufræðistofnunar Nr. 52, 1		Mineral "EH"; no composition, only some X-ray powder data	b
<b>UM2008---[4]</b>	Fjölrit náttúrufræðistofnunar Nr. 52, 1		Mineral "EI"; no composition, only some X-ray powder data	b
<b>UM2008---[5]</b>	Fjölrit náttúrufræðistofnunar Nr. 52, 1		Mineral "HA"; no composition, only some X-ray powder data; later named jakobssonite; Mineral. Mag. 46, (2012) 751	a,b
<b>UM2008---[6]</b>	Fjölrit náttúrufræðistofnunar Nr. 52, 1		Mineral "HB"; no composition, only some X-ray powder data	b
<b>UM2008---[7]</b>	Fjölrit náttúrufræðistofnunar Nr. 52, 1		Mineral "HC"; no composition, only some X-ray powder data	b
<b>UM2008---[8]</b>	Fjölrit náttúrufræðistofnunar Nr. 52, 1		Mineral "HM"; no composition, only some X-ray powder data	b
<b>UM2008---[9]</b>	Fjölrit náttúrufræðistofnunar Nr. 52, 1		Mineral "HN"; no composition, only some X-ray powder data	b
<b>UM2008--As:FeIrNiS</b>	Mineral. Petrol. 92, 31		(Ir,Fe,Ni) <sub>3</sub> (As,S) <sub>2</sub> ; Table 8, #9; same as UM1997-01-As:FeIrNiS	c
<b>UM2008--As:IrNi[1]</b>	Mineral. Petrol. 92, 31		(Ni,Ir) <sub>5</sub> As <sub>2</sub> ; Table 8, #5; appears to be orcelite	c
<b>UM2008--As:IrNi[2]</b>	Mineral. Petrol. 92, 31		(Ni,Ir) <sub>7</sub> As <sub>3</sub> ; Table 8, #4; compositional variant of UM1973-01-As:NiPd	c
<b>UM2008--As:IrNi</b>	Mineral. Petrol. 92, 31		(Ni,Ir) <sub>3</sub> As; Table 8, #6 & p.44 (Ni <sub>2.45</sub> Ir <sub>0.40</sub> Fe <sub>0.11</sub> Cu <sub>0.02</sub> Os <sub>0.01</sub> Ru <sub>0.01</sub> )As <sub>1.01</sub> ; Iridian dienerite; transferred from valid list	a
<b>UM2008--As:IrNiOsRu</b>	Mineral. Petrol. 92, 31		(Ru,Ni,Os,Ir)As; Table 8, #3; probably compositional variant of	c



<b>UM2008--As:IrOs</b>	Mineral. Petrol. 92, 31	ruthenarsenide (Ir,Os)2As; Table 8, #7; same as UM1997-02-As:IrOs	c
<b>UM2008--As:NiPd</b>	Mineral. Petrol. 92, 283	Pd3Ni2As3; p.296, para. 3, line 3; not distinct from menshikovite	c
<b>UM2008--As:NiRh</b>	Mineral. Petrol. 92, 31	RhNiAs; Table 8, #1; same as 1983--As:NiRh	a,c
<b>UM2008--As:OsRu</b>	Mineral. Petrol. 92, 31	(Os,Ru)As2; Table 8, #2; poor total; appears to be omeiite	c
<b>UM2008--As:PdSbSn</b>	Mineral. Petrol. 92, 283	Pd11As2(Sb,Sn)2; Table 5, anal. 29; not distinct from isomertieite	c
<b>UM2008--As:PdSn</b>	Mineral. Petrol. 92, 283	Pd3(As,Sn); Table 5, anal. 25 & 27; not distinct from stillwaterite or arsenopalladinite	c
<b>UM2008--AsO:FeHPbZn</b>	Can. Mineral. 46, 1355	Pb(Zn0.5□0.5)Fe3(AsO4)2(OH)6; subsequently described under the name kolitschite: Austral. J. Mineral. 14 (2), 63	a
<b>UM2008--AsS:IrOs</b>	Mineral. Petrol. 92, 31	(Ir,Os)AsS; Table 8, #14, 15 & 19-21; appears to be irarsite	c
<b>UM2008--AsS:OsRu</b>	Mineral. Petrol. 92, 31	(Ru,Os)AsS; Table 8, #10 & 11; appears to be ruarsite	c
<b>UM2008--Bi:AgAu</b>	Dokl. Earth Sci. 421A, 919	(Au,Ag)2Bi; could be equated with Ag-bearing maldonite	c
<b>UM2008--Bi:PdSbTe</b>	Mineral. Petrol. 92, 129	Pd(Bi,Te,Sb); Table 4, 1st, 2nd, 3rd, 5th, 6th & 9th; appear to be same as UM1976-08-Bi:PdSbTe	c
<b>UM2008--Bi:PdTe</b>	Mineral. Petrol. 92, 283	Pd3(Bi,Te); Table 5, anal. 26; appears to be Te-rich variety of UM2004-05-Bi:Pd	c
<b>UM2008--BiSb:Pd</b>	Mineral. Petrol. 92, 129	Pd(Bi,Sb); Table 4, 4th & 7th; appears to be same as UM2002-01-BiSb:Pd	c
<b>UM2008--BO:FHMgSi</b>	Eur. J. Mineral. 20, 951	Mg2(BO3)1-x(SiO4)x(OH,F)1-x; later named pertsevite-(OH): Am. Mineral. 95 (2010), 953	c
<b>UM2008--C:CrFeNi</b>	Acta Geol. Sinica 83 (1), 52	Perhaps (Fe,Cr,Ni)7C3 but wildly erratic analyses; data inadequate	b
<b>UM2008--Cl:Rh[1]</b>	Dokl. Earth Sci. 421A, 919	RhCl2	b
<b>UM2008--Cl:Rh[2]</b>	Dokl. Earth Sci. 421A, 919	RhCl4	b
<b>UM2008--CO:CaSr</b>	Can. Mineral. 46, 753	(Sr0.5Ca0.5)CO3; same as UM1989-07-CO:CaSr	c
<b>UM2008--COPO:CaKNaS[1]</b>	Mineral. Mag. 71, 483	High-P, CO2 assumed and probably hydrous; likely a new mineral but inadequate data and no formula	b
<b>UM2008--COPO:CaKNaS[2]</b>	Mineral. Mag. 71, 483	Low-P, CO2 assumed and probably hydrous; likely a new mineral but inadequate data and no formula	b
<b>UM2008--E:AgW[1]</b>	Dokl. Earth Sci. 421A, 919	AgW; no data	b
<b>UM2008--E:AgW[2]</b>	Dokl. Earth Sci. 421A, 919	Ag2W; no data	b

<b>UM2008--E:AgW[3]</b>	Dokl. Earth Sci. 421A, 919	AgW <sub>2</sub> ; no data	b
<b>UM2008--E:AuCu</b>	Dokl. Earth Sci. 421A, 919	Cu <sub>2</sub> Au; no data	b
<b>UM2008--E:AuCuFeNiPt</b>	Can. Mineral. 46, 329	Pt(Fe,Cu,Ni,Au); Table 3, anal. 32; appears to be a Cu-Au-bearing tetraferroplatinum	c
<b>UM2008--E:AuFeNiPt</b>	Can. Mineral. 46, 329	(Fe,Ni,Au)Pt <sub>2</sub> ; Table 3, anal. 33; appears to be a Ni,Au-bearing variant of UM1996-13-E:FePt	c
<b>UM2008--E:AuPd</b>	Neues Jh. Mineral. Abh. 184, 329	Au <sub>2</sub> Pd; appears to be the same as UM2000-04-E:AuCuPd	c
<b>UM2008--E:BiPdPt</b>	Dokl. Earth Sci. 421A, 919	(Pt,Bi) <sub>2</sub> Pd; not distinct from UKI-1995-(E:AuPdPt)	c
<b>UM2008--E:CuFeNiPt</b>	Can. Mineral. 46, 329	(Ni,Fe,Cu) <sub>3</sub> Pt; Table 3, anal. 33; a compositional variant of UM1986-12-E:CuFeNiPt	c
<b>UM2008--E:CuFeOsRu</b>	Mineral. Petrol. 92, 31	(Os,Ru)(Cu,Fe); appears to be the same as UM1997-29-E:CuFeOsRu	c
<b>UM2008--E:CuPdPt [1]</b>	Can. Mineral. 46, 329	Cu <sub>3</sub> (Pd,Pt); Table 3, anal. 50; not distinct from nielsenite: Can. Mineral. 46 (2008), 709	c
<b>UM2008--E:CuPdPt [2]</b>	Can. Mineral. 46, 329	Cu <sub>4</sub> (Pd,Pt); Table 3, anal. 36; not distinct from UM2004-12-E:CuPdPt	c
<b>UM2008--E:CuSn</b>	Dokl. Earth Sci. 421A, 923	Cu <sub>6</sub> Sn <sub>5</sub> ; termed "η-bronze"; same as UM1965-06-E:CuSn	c
<b>UM2008--E:FeIrNi</b>	Mineral. Petrol. 92, 31	Ir(Ni,Fe) <sub>3</sub> ; Table 4, #2; later described under the name garutiite: Eur. J. Mineral. 22 (2010), 293	a
<b>UM2008--E:FeNiPt</b>	Can. Mineral. 46, 329	(Ni,Fe) <sub>3</sub> Pt; Table 3, anal. 21; appears to be a compositional variant of UM1986-12-E:CuFeNiPt	c
<b>UM2008--E:FePt</b>	Mineral. Deposita 43, 791	Pt <sub>2</sub> Fe; appears to be same as UM1996-13-E:FePt	c
<b>UM2008--E:IrMoOsW[1]</b>	Am. Mineral. 93, 1574	(Os,Ir,W,Mo); same as UM2006--E:IrMoOsW; probably a substituted osmium	c
<b>UM2008--E:IrMoOsW[2]</b>	Am. Mineral. 93, 1574	(Ir,Os,W,Mo); probably a substituted iridium	c
<b>UM2008--E:MoRuTi</b>	Dokl. Earth Sci. 421A, 919	(Mo,Ru)Ti; no data	b
<b>UM2008--E:NiPb</b>	Mineral. Petrol. 92, 31	PbNi; p.41, BM alloys; no analytical data	b
<b>UM2008--F:AlCaNa</b>	Fjölrít náttúrufræðistofnunar Nr. 52, 1	Na <sub>2</sub> Ca <sub>3</sub> Al <sub>2</sub> F <sub>14</sub> ; "mineral HG"; X-ray powder data and formula only; later described under the name verneite: Minerals 8, 553; transferred from valid list	a
<b>UM2008--F:AlHMgO</b>	Fjölrít náttúrufræðistofnunar Nr. 52, 1	MgAlF <sub>5</sub> •2H <sub>2</sub> O; "mineral HR"; later named leonardsenite: Mineral. Mag. 75 (2011), 2889; transferred from Valid list	a

<b>UM2008--F:FeHO</b>	Fjölrít náttúrufræðistofnunar Nr. 52, 1		$\text{Fe}^{3+}\text{F}_3\cdot 3\text{H}_2\text{O}$ ; "mineral HI"; X-ray powder data and formula only; later described under the name topsøeite: Eur. J. Mineral. 30, 841; transferred from valid list	a
<b>UM2008--F:KMg</b>	Can. Mineral. 46, 843		$\text{KMgF}_3$ ; the K-analogue of neighborite; same as UM1960-02-F:KMg	c
<b>UM2008--O:BiPdSb</b>	Mineral. Petrol. 92, 283		$\text{Pd}_{1-2}(\text{Sb},\text{Bi})\text{O}_{1-2}$ ; p.299, line 8; corresponds to UM2000-28-O:BiPdSb	c
<b>UM2008--O:CaMnREETi</b>	Dokl. Earth Sci. 421A, 923		"Phase A"; perhaps (REE,Mn,Ca) $5\text{Ti}_5\text{O}_{16}$ ; only qualitative analytical data	b
<b>UM2008--O:CaMnREETiZr[1]</b>	Dokl. Earth Sci. 421A, 923		"Phase B"; perhaps (Mn,Ca,Zr,REE) $5\text{Ti}_5\text{O}_{16.5}$ ; only qualitative analytical data	b
<b>UM2008--O:CaMnREETiZr[2]</b>	Dokl. Earth Sci. 421A, 923		"Phase C"; perhaps (Ca,Mn,Zr,REE) $4.5\text{Ti}_5.5\text{O}_{16}$ ; only qualitative analytical data	b
<b>UM2008--O:CaNbU</b>	Mineral. Deposita 43, 933	Mineral. Mag. 76, 75	A uranium niobate, not distinct from carlobarboseite on the basis of available data	a,c
<b>UM2008--O:ClNaSSb</b>	Dokl. Earth Sci. 421A, 923		Perhaps $\text{Na}_9(\text{Sb}_2\text{O}_3)_9(\text{SbS}_3)\text{SO}_{1.5}\text{Cl}$ ; only qualitative analytical data	b
<b>UM2008--O:FeHMgPdSi</b>	Can. Mineral. 46, 329		$(\text{Fe},\text{Si},\text{Mg},\text{Pd})_2\text{O}_3\cdot n\text{H}_2\text{O}$ ; inadequate data; low analytical total (perhaps due to $\text{H}_2\text{O}$ )	b
<b>UM2008--O:PdSb</b>	Mineral. Petrol. 92, 283		$\text{Pd}_5\text{Sb}_2\text{O}_4$ ; p.299, line 3; corresponds to UM2000-40-O:PdSb	c
<b>UM2008--S:AgBiFeTe</b>	Chinese Science Bulletin (2008), 1		$\text{Ag}_{16}\text{FeBiTe}_3\text{S}_8$ ; same as UM2003-14-S:AgBiFeTe	c
<b>UM2008--S:AgBiPb[1]</b>	Neues Jh. Mineral. Abh. 185, 199		$\text{PbAgBiS}_3$ ; same as UM1987-06	c
<b>UM2008--S:AgBiPb[2]</b>	Neues Jh. Mineral. Abh. 185, 199		$\text{Pb}_3\text{Ag}_2\text{Bi}_2\text{S}_7$ ; same as UM1987-07	c
<b>UM2008--S:AgBiPbSb</b>	Austral. J. Mineral. 14, 19		Table 5; probably not distinct from treasureite	c
<b>UM2008--S:AgHg[1]</b>	Dokl. Earth Sci. 421A, 919		$\text{Ag}_{10}\text{Hg}_3\text{S}_8$ ; no data	b
<b>UM2008--S:AgHg[2]</b>	Dokl. Earth Sci. 421A, 919		$\text{Ag}_7\text{HgS}_4$ ; no data	b
<b>UM2008--S:AgTe</b>	Chinese Science Bulletin (2008), 1		$\text{Ag}_6\text{TeS}_2$ ; same as UM2003-17-S:AgTe	c
<b>UM2008--S:AsCuFeIr</b>	Mineral. Petrol. 92, 31		$(\text{Ir},\text{Cu},\text{Fe},\text{Ni})_2(\text{S},\text{As})_3$ ; p.43, para. 2; compositional variant of UM1997-38-S:AsIrOs	c
<b>UM2008--S:AsFeIrOs</b>	Mineral. Petrol. 92, 31		$(\text{Ir},\text{Os},\text{Fe})_2(\text{S},\text{As})_3$ ; p.43, para. 2; same as UM1997-38-S:AsIrOs	c
<b>UM2008--S:CuFe</b>	Can. Mineral. 46, 545		$\text{Cu}_2\text{Fe}_3\text{S}_5$ ; Table 7; appears to be the same as UM1986-42-S:CuFe	c
<b>UM2008--S:CuFeNi</b>	Can. Mineral. 46, 233		$\text{Cu}_2(\text{Fe},\text{Ni})_7\text{S}_8$ ; mineral "Z"; identical to UM1998-14-S:CuFeNi	c

IMA-CNMNC-SUM	Invalid minerals	2023		
<b>UM2008--S:CuIr</b>	Mineral. Petrol. 92, 31		Ir <sub>2</sub> CuS <sub>4</sub> ; Table 6, #1; appears to be cuproiridsite	c
<b>UM2008--S:CuIrNi[1]</b>	Mineral. Petrol. 92, 31		(Ir,Cu,Rh,Ni) <sub>3</sub> S <sub>4</sub> ; Table 6, #3; probably xingzhongite	c
<b>UM2008--S:CuIrNi[2]</b>	Mineral. Petrol. 92, 31		(Ir,Rh)(Ni,Fe,Cu) <sub>2</sub> S <sub>3</sub> ; Table 6, #5, 6 & 8; probably same as UM1974-11-S:CuFeIrNi	c
<b>UM2008--S:Fe,Ni</b>	Can. Mineral. 46, 233		(Fe,Ni,Co,Cu) <sub>9</sub> S <sub>8</sub> ; mineral "X"; identical to UM1998-16-S:FeNi	c
<b>UM2008--S:IrOs</b>	Mineral. Petrol. 92, 31		(Ir,Os) <sub>2</sub> S <sub>3</sub> ; Table 6, #2; a compositional variant of UM1990-42-S:IrOsPbPt	c
<b>UM2008--S:IrRh</b>	Mineral. Petrol. 92, 31		(Ir,Rh) <sub>2</sub> S <sub>2</sub> ; p.42, line 3; a compositional variant of UM1974-13-S:IrRh	c
<b>UM2008--Sb:AsPd</b>	Mineral. Petrol. 92, 283		Pd <sub>8</sub> (Sb,As) <sub>3</sub> ; Table 5, anal. 28; not distinct from mertieite-II	c
<b>UM2008--Sb:BiPd</b>	Mineral. Petrol. 92, 129		Pd(Sb,Bi); Table 4, 10th; appears to be a Bi-rich sudburyite or perhaps Bi-rich UM1974-15-Sb:Pd	c
<b>UM2008--Se:HgPdPt</b>	Terra Nova 20, 32		(Pt,Pd) <sub>2</sub> HgSe <sub>3</sub> ; later named jacutingaite: Mineral. Mag. 75 (2011), 289; transferred from Valid list	a
<b>UM2008--Se:PdPt</b>	Dokl. Earth Sci. 423A, 1400		(Pd,Pt) <sub>3</sub> Se <sub>2</sub> ; appears to be a Pt-bearing variety of UM1995-39-Se:Pd	c
<b>UM2008--Sn:Pd</b>	Dokl. Earth Sci. 423A, 1400		PdSn <sub>2</sub> ; appears to be identical to UM1995-44-Sn:Pd	c
<b>UM2008--SO:CaHNa</b>	Fjölrít náttúrufræðistofnunar Nr. 52, 1		Ca <sub>1.66</sub> Na <sub>0.66</sub> (SO <sub>4</sub> ) <sub>2</sub> •H <sub>2</sub> O; "mineral SA"; later named omongwaite: Mineral. Mag. 72 (2008), 1209	a
<b>UM2008--Te:BiFeS</b>	J. Geosci. 53, 1		(Bi,Fe) <sub>5</sub> (Te,S) <sub>3</sub> ; probably not distinct from UM1982-26-Te:BiSse	c
<b>UM2008--Te:BiS</b>	J. Geosci. 53, 1		Bi <sub>2</sub> (Te,S); not distinct from UM1980-16-Te:Bi	c
<b>UM2009--As:NiRh</b>	Neues. Jb. Mineral. Abh. 185 (3), 335		RhNiAs; but actual atomic proportions rather variable; close to both UM2007-03-As:NiRh and UM1983-03-As:NiRh	c,b
<b>UM2009--As:PdTe</b>	Geol. Ore Deposits 51, 467		Pd <sub>11</sub> As <sub>2</sub> Te <sub>2</sub> ; Table 1 #42; no data, only formula	b
<b>UM2009--C:B</b>	Proc. Nat. Acad. Sci. (U.S.A.) 106 (46), 19233		Boron carbide; stoichiometry not known; inadequate data	b
<b>UM2009--C:MnSi</b>	Mineral. Mag. 73, 43		Identified only as a manganese silicic carbide; no data presented	b
<b>UM2009--CN:FeHKZn</b>	Can. Mineral. 47, 525		(Na,K) <sub>2</sub> Zn <sub>3</sub> [Fe(CN) <sub>6</sub> ] <sub>2</sub> •nH <sub>2</sub> O; of anthropogenic origin; does not meet IMA criteria for definition of a mineral	f
<b>UM2009--E:AgAuHg</b>	Can. Mineral. 47, 433		(Au,Ag) <sub>3</sub> Hg; may be the Au-dominant analogue of luanheite (Ag <sub>3</sub> Hg); but considered to be of anthropogenic origin and therefore not a mineral	f
<b>UM2009--E:AuCuPd</b>	Geol. Ore Deposits 51, 467		Cu <sub>2</sub> AuPd; Table 1 #41; appears to be the same as UM2004-08-E:AuCuPd	c

<b>UM2009--E:AuCuPdPt</b>	Geol. Ore Deposits 51, 467	Cu <sub>3</sub> (Pt,Au,Pd); Table 1 #51; appears to be the same as UM1999-07-E:AuCuPt	c
<b>UM2009--E:AuHgPd</b>	Eur. J. Mineral. 21, 811	Pd <sub>3</sub> (Hg,Au) <sub>2</sub> ; appears to be an auriferous variety of UM1993-05-E:CuFeHgPd	c
<b>UM2009--E:CuFePdPt</b>	Geol. Ore Deposits 51, 467	(Pt,Pd) <sub>2</sub> CuFe; Table 1 #44; appears to be a Pd-rich tulameenite	c
<b>UM2009--E:CuPd</b>	Geol. Ore Deposits 51, 467	Cu <sub>3</sub> Pt; Table 1 #40; appears to be the same as UM1992-11-E:CuPtSb	c
<b>UM2009--E:FeIrNi[1]</b>	Neues. Jb. Mineral. Abh. 185 (3), 335	Ir(Ni,Fe) <sub>3</sub> ; appears to be the same as UKI-2008-(E:FeIrNi)	c
<b>UM2009--E:FeIrNi[2]</b>	Neues. Jb. Mineral. Abh. 185 (3), 335	Ir(Ni,Fe) <sub>4</sub> ; appears to be the same as UM2000-15-E:FeIrNi	c
<b>UM2009--E:FeIrOsRu.</b>	Neues. Jb. Mineral. Abh. 185 (3), 335	Ru,Os,Ir,Fe-alloys; poor data - analytical totals shown are seriously in error; some similarities to UM2007-13-E:FeIrNiOsRu	b
<b>UM2009--E:FeNiPt</b>	Neues. Jb. Mineral. Abh. 185 (3), 335	Pt(Ni,Fe) <sub>3</sub> ; appears not to be distinct from UM1986-12-E:CuFeNiPt	c
<b>UM2009--E:FePdPt</b>	Geol. Ore Deposits 51, 467	(Pt,Pd) <sub>2</sub> CuFe; Table 1 #45; appears to be a Pd-rich isoferroplatinum	c
<b>UM2009--N:B</b>	Proc. Nat. Acad. Sci. (U.S.A.) 106 (46),	<b>Qingsongite</b> ; transferred from Valid list	
<b>UM2009--N:B</b>	Proc. Nat. Acad. Sci. (U.S.A.) 106 (46), 19233	BN (boron nitride); known commercially as "cBN" or "beta-BN"; later described under the name qingsongite: Am. Mineral. 99, 764; transferred from Invalid list	a
<b>UM2009--O:CuFePdPt</b>	Geol. Ore Deposits 51, 467	~(Pt,Cu,Fe,Pd) <sub>8</sub> O <sub>9</sub> ; Table 4 #12; not demonstrably homogeneous; may be a mixture	b
<b>UM2009--O:CuFePt[1]</b>	Geol. Ore Deposits 51, 467	~(Fe,Pt,Cu) <sub>3</sub> O <sub>4</sub> ; Table 4 #8 & 10; not demonstrably homogeneous; may be a mixture	b
<b>UM2009--O:CuFePt[2]</b>	Geol. Ore Deposits 51, 467	~(Fe,Pt,Cu) <sub>2</sub> O <sub>2</sub> ; Table 4 #9; not demonstrably homogeneous; may be a mixture	b
<b>UM2009--O:CuFePt[3]</b>	Geol. Ore Deposits 51, 467	~(Fe,Pt,Cu) <sub>2</sub> O; Table 4 #11; not demonstrably homogeneous; may be a mixture	b
<b>UM2009--O:FeIrOsRu[1]</b>	Neues. Jb. Mineral. Abh. 185 (3), 335	(Ru,Os,Ir,Fe) <sub>2</sub> O; Table 1 - var. analyses; probably same as UM1999-15-O:IrOsRu	c
<b>UM2009--O:FeIrOsRu[2]</b>	Neues. Jb. Mineral. Abh. 185 (3), 335	(Ru,Os,Ir,Fe) <sub>2</sub> O <sub>3</sub> ; Table 1 - var. analyses; probably same as UM1997-34-O:FeIrOsRu	c
<b>UM2009--O:FePt</b>	Geol. Ore Deposits 51, 467	~(Pt,Fe) <sub>5</sub> O <sub>4</sub> ; Table 4 #7; not demonstrably homogeneous; may be a mixture	b,d
<b>UM2009--P:MnSi</b>	Mineral. Mag. 73, 43	Identified only as a manganese silicic phosphide; no data presented	b
<b>UM2009--PO:AlNa</b>	Can. Mineral. 47, 1225	Described as a white, Na-Al phosphate; no other data	b
<b>UM2009--PO:HZr</b>	Mineral. Mag. 73, 415	Zr(PO <sub>3</sub> OH) <sub>2</sub> (H <sub>2</sub> O) <sub>4</sub> ; formula but no data presented	b

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<b>UM2009--S:CoNi</b>	Proc. Nat. Acad. Sci. Kazakhstan Geol. Ser.		(Ni,Co) <sub>2</sub> (S,Te) <sub>3</sub> ; inadequate data - very low total and Te shown in formula not reported	b
<b>UM2009--S:CuFe[1]</b>	Mineral. Deposita 44, 285		Unidentified sulphide (~Cu <sub>4.7</sub> Fe <sub>1.3</sub> S <sub>5</sub> ); no other data; perhaps a mixture	b,d
<b>UM2009--S:CuFe[2]</b>	Mineral. Deposita 44, 285		Unidentified sulphide (~Cu <sub>5.7</sub> Fe <sub>1.2</sub> S <sub>5</sub> ); no other data; perhaps a mixture	b,d
<b>UM2009--S:CuFePdPt</b>	Geol. Ore Deposits 51, 467		(Pt,PdCuFe)S; Table 1 #46; not compositionally distinct from cooperite and braggite	c
<b>UM2009--S:OPbSb</b>	Can Mineral. 47, 3		Pb <sub>15-2x</sub> Sb <sub>14+2x</sub> S <sub>36</sub> O <sub>x</sub> ; later described under the name chovanite: Eur. J. Mineral. 24 (2012), 727; transferred from Valid list	a
<b>UM2009--Se:PbPd</b>	Geol. Ore Deposits 51, 467		(Pd,Pb) <sub>2</sub> (Se,S); Table 1 #50; no data; perhaps the Se-analogue of UM1977-12-S:PbPdSe	b
<b>UM2009--SiO:AlCaFeHMnREE</b>	Am. Mineral. 94, 121		CaCeFe <sup>3+</sup> AlMn <sup>2+</sup> (Si <sub>2</sub> O <sub>7</sub> )(SiO <sub>4</sub> )O(OH); Mn analogue of ferriallanite in which Mn <sup>2+</sup> takes the place of Fe <sup>2+</sup> ; later described under the name ferriakasakaite-(Ce): Minerals 9, 353; transferred from valid list	a
<b>UM2009--SiO:AlCaFeNbSnTaTi</b>	Mineral. Mag. 73, 709		Ca(Ti,Al,Ta,Sn,Fe,Nb)SiO <sub>5</sub> ; a triclinic polymorph of titanite; a variety: Mineral. Mag. 73, 709; transferred from valid list	a
<b>UM2009--SiO:AlCaKNa</b>	Eur. J. Mineral. 21, 1325		"Unidentified aluminosilicate"; inadequate data	b
<b>UM2009--SiO:CaClFeHKNaZr</b>	Dokl. Chem. 424 (1), 11		Na <sub>12</sub> K <sub>3</sub> Ca <sub>6</sub> Fe <sub>3</sub> Zr <sub>3</sub> Si <sub>26</sub> O <sub>72</sub> (O,OH) <sub>2</sub> Cl <sub>2</sub> ; later described under the name d'avinciite: Mineral. Mag. 75, 2552 (IMA No. 2011-019); transferred from Valid list	a
<b>UM2009--SiO:CaFH</b>	Am. Mineral. 94, 1361		Ca <sub>7</sub> (SiO <sub>4</sub> ) <sub>3</sub> F <sub>2</sub> ; given working name "Ca-humite" but later described under the name fluorchegemite: Mineral. Mag. 76 (2012), 812; transferred from Valid list	a
<b>UM2009--SO:CaHZr</b>	Mineral. Mag. 73, 251		Ba <sub>2</sub> F <sub>2</sub> (S <sup>6+</sup> O <sub>3</sub> S <sup>2-</sup> ); a thiosulphate produced by the weathering of man-made material; does not meet the requirements for a mineral	f
<b>UM2009--SO:FeNa</b>	Mineral. Mag. 73, 51		Na <sub>3</sub> Fe(SO <sub>4</sub> ) <sub>3</sub> ; no data - only formula	b
<b>UM2009--SSiO:CuFeMgPdPt</b>	Geol. Ore Deposits 51, 467		Table 4 #13 & 14; not demonstrably homogeneous; may be a silicate and sulphate mixture	b,d
<b>UM2009--Te:AgPd</b>	Geol. Ore Deposits 51, 467		Pd <sub>6</sub> AgTe <sub>4</sub> ; Table 1 #37; appears to be the same as UM1991-25-Te:AgPd	c
<b>UM2009--Te:AsNiPd</b>	Geol. Ore Deposits 51, 467		Pd <sub>2</sub> Ni(Te,As) <sub>2</sub> ; Table 2, #7-9; later described under the name monchtundraite: Mineral. Petrol. 114, 263; transferred from valid list	a
<b>UM2009--Te:BiPbPd</b>	Can. Mineral. 47, 53		Pd(Pb,Te,Bi); apparently the same as UM1972-17-Te:BiPbPd	c
<b>UM2009--Te:PbPt</b>	Geol. Ore Deposits 51, 467		Pd(Te,Pb); Table 1 #54; no data; probably a Pb-bearing kotulskite	b

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<b>UM2009--/TI:Pd</b>	Geol. Ore Deposits 51, 467		Pd3TI; Table 1 #43; no data only formula	b
<b>UM2010--/As:NiRh</b>	Eur. J. Mineral. 22, 293		RhNiAs; appears to be the same as UM1983--/As:NiRh	a,c
<b>UM2010--/As:Pd</b>	Geol. Ore Deposits 52, 624		(Pd,Au)5(As,Sn)2; (Table 2 "(Pd,Au)2+x(As,Sn)"); not distinct from UM1975-05-As:Pd	c
<b>UM2010--/E:CoFeIrNiOsPtRu</b>	Eur. J. Mineral. 22, 293		(Fe,Ru,Ni,Os,Ir,Co)2S; inadequate data	b
<b>UM2010--/E:FeNiPt</b>	Eur. J. Mineral. 22, 293		Pt(Ni,Fe)3; appears to be the same as UM1986-12-E:CuFeNiPt	c
<b>UM2010--/F:AlCa</b>	IMA 2010, CD of Abstracts, p.496.		CaAlF5; same as UM2008--/?[5]; later named jakobssonite: Mineral. Mag. 46, (2012) 751; transferred from Valid list	a
<b>UM2010--/F:AlMgHO</b>	IMA2010, CD of Abstracts, p. 496.		MgAlF5•1.5H2O; apparently same as UM2008-28-F:AlHMgO	c
<b>UM2010--/NbO:CaFNaSiSrTi</b>	Zap. Ross. Mineral. Ob. 139 (2), 32	Geol. Ore Deposits 52, 748	(Na2.11K0.21Ca1.27Sr0.27Ce0.06La0.3)(Nb2.79Ti0.51Fe3+0.09) Si1.00O12.01F1.87•nH2O; inadequate data with low totals; possibly a pyrochlore group mineral	b
<b>UM2010--/PO:CaClMn</b>	Am. Mineral. 95, 1478		Mn3Ca2(PO4)3Cl; Mn-dominant apatite-like phase; no data	b
<b>UM2010--/PO:FSr</b>	Can. Mineral. 48, 1487		Sr2PO4F; no data, only formula	b
<b>UM2010--/S:Cr</b>	73rd A. Meteo. Soc. Meet., 5135.pdf		Cr5S6; later described under the name Murchisite: Am. Mineral. 96, 1905; transferred from Valid list	a
<b>UM2010--/SiO:AlBaH</b>	Eur. J. Mineral. 22, 199		Hydrated Ba,Al-silicate; harmatome lies within compositional range reported	c
<b>UM2010--/SiO:AlCaHK[1]</b>	Cent. Eur. J. Geosci. 2 (2), 175		(Ca,K)3(Si,Al)16O32•13H2O; "Mineral X3"; not distinct from phillipsite-Ca	c
<b>UM2010--/SiO:AlCaHK[2]</b>	Cent. Eur. J. Geosci. 2 (2), 175		(Ca,K)4(Si,Al)16O32•10H2O; "Mineral X5"; not distinct from phillipsite-Ca partially dehydrated	c
<b>UM2010--/SiO:AlCaHKNa</b>	Cent. Eur. J. Geosci. 2 (2), 175		(Ca,Na,K)4(Si,Al)16O32•13H2O; "Mineral X4"; not distinct from phillipsite-Ca	c
<b>UM2010--/SO:AlCaH</b>	Cent. Eur. J. Geosci. 2 (2), 175		Ca6Al2(SO4)3(OH)12•3.3H2O; "Mineral X1"; appears to be dehydrated ettringite	c
<b>UM2010--/Te:AsPd</b>	Geol. Ore Deposits 52, 624		Pd3(Te,As); appears to be the same as UM1991-26-Te:AsPd	c
<b>UM2010--/Te:Pt</b>	Geol. Ore Deposits 52, 624		Pt4Te5 (Table 2 "Pt5Te7"); appears not to be distinct from UM1992-42-Te:PtRh	c
<b>UM2011--/AsO:FeH</b>	Bull. Geol. Soc. Denmark 59, 13		Inadequate data; possibly Fe3(AsO4)2•H2O, (vivianite group) assuming very low analytical total reflects presence of O and H2O	b
<b>UM2011--/Br:BiHN</b>	Campostrini <i>et al.</i> (2011)		Designated UKI-fo01-(Br:BiNH4); inadequate data	b
<b>UM2011--/Br:PbTI</b>	Campostrini <i>et al.</i> (2011)		Designated UKI-fo02-(Br:PbTI); inadequate data	b

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<b>UM2011-//-Br:TI[1]</b>	Campostrini <i>et al.</i> (2011)		Designated UKI-fo03-(Br:TI); inadequate data	b
<b>UM2011-//-Br:TI[2]</b>	Campostrini <i>et al.</i> (2011)		Designated UKI-fo04-(Br:TI); inadequate data	b
<b>UM2011-//-Cl:BiHN</b>	Campostrini <i>et al.</i> (2011)		(NH <sub>4</sub> ) <sub>7</sub> Bi <sub>3</sub> Cl <sub>16</sub> ; designated: UKI-fo05-(Cl:NH <sub>4</sub> Bi); later named argesite: Mineral Mag. v. 75 (2011), 2892	a
<b>UM2011-//-CISO:FeK</b>	Campostrini <i>et al.</i> (2011)		Designated UKI-fo07-(CISO:KFe); inadequate data	b
<b>UM2011-//-CISO:FeNa</b>	Campostrini <i>et al.</i> (2011)		Designated UKI-fo06-(CISO:FeNa); inadequate data	b
<b>UM2011-//-F:K</b>	Campostrini <i>et al.</i> (2011)		Designated UKI-fo08-(F:K); inadequate data	b
<b>UM2011-//-I:BiTI</b>	Campostrini <i>et al.</i> (2011)		Designated UKI-fo10-(I:TI,Bi); inadequate data	b
<b>UM2011-//-I:TI</b>	Campostrini <i>et al.</i> (2011)		Designated UKI-fo09-(I:TI); inadequate data	b
<b>UM2011-//-OH:CuFePbSb</b>	Bull. Geol. Soc. Denmark 59, 13		Inadequate data ; possibly (Cu,Fe)Pb <sub>2</sub> Sb <sub>12</sub> (OH) <sub>24</sub> •nH <sub>2</sub> O, assuming very low analytical total reflects presence of (OH) and H <sub>2</sub> O	b
<b>UM2011-//-OH:CuPb</b>	Bull. Geol. Soc. Denmark 59, 13		Inadequate data ; possibly PbCu <sub>2</sub> (OH) <sub>5</sub> •nH <sub>2</sub> O, assuming very low analytical total reflects presence of (OH) and H <sub>2</sub> O	b
<b>UM2011-//-OH:CuSb</b>	Bull. Geol. Soc. Denmark 59, 13		Inadequate data; possibly Cu <sub>2</sub> Sb <sub>5</sub> (OH) <sub>8</sub> •nH <sub>2</sub> O, assuming very low analytical total reflects presence of (OH) and H <sub>2</sub> O	b
<b>UM2011-//-S:Bi</b>	Campostrini <i>et al.</i> (2011)		Designated UKI-fo12-(SO:Bi); inadequate data	b
<b>UM2011-//-S:BiCu</b>	Campostrini <i>et al.</i> (2011)		Designated UKI-fo11-(S:BiCu); inadequate data	b
<b>UM2011-//-S:BiPbTe</b>	Can. Mineral. 49, 1297		PbBi <sub>4</sub> Te <sub>4</sub> S <sub>3</sub> ; same as UM1976-30-Te:BiPbS	c
<b>UM2011-//-S:FeK</b>	Dokl. Akad. Nauk 440, 521	Dokl. Earth Sci. 440, 1404	(K) <sub>1-2</sub> (Fe) <sub>2-3</sub> (S) <sub>3-4</sub> ; probably the same mineral as UM1997-44-S:FeK	c
<b>UM2011-//-Se:BiSTe</b>	Mineral. Petrol. 103, 79		Bi <sub>2</sub> (Se,S) <sub>2</sub> Te - Tab. 4, #16; not distinct from S-bearing skippenite on basis of available data	c
<b>UM2011-//-SiO:CH</b>	Nature Commun. 2, 196	Z. Krist. 166, 11	SiO <sub>2</sub> •n(CH <sub>4</sub> ,C <sub>2</sub> H <sub>6</sub> ,C <sub>3</sub> H <sub>8</sub> ,C <sub>4</sub> H <sub>10</sub> ); isostructural with the sH natural gas hydrate; later described under the name bosoite: Mineral. Mag. 84, 941; transferred from valid list	a
<b>UM2011-//-SiO:FeMg</b>	Am. Mineral. 96, 1480		(Fe,Mg) <sub>2</sub> SiO <sub>4</sub> ; the Fe analogue of ringwoodite; same as UM2002-44-SiO:Fe	c
<b>UM2011-//-SiOVO:AsHMgMn</b>	Am. Mineral. 96, 1894		Appears to be the same as UM2006-20-VO:AsHMnSi	c
<b>UM2011-//-SO:AgCaKREESr</b>	Campostrini <i>et al.</i> (2011)		Designated UKI-fo13-(SO:Ca,K,Ag,Sr,REE); inadequate data	b
<b>UM2011-//-SO:AIHN</b>	Campostrini <i>et al.</i> (2011)		(NH <sub>4</sub> ) <sub>3</sub> Al(SO <sub>4</sub> ) <sub>3</sub> ; designated: UKI-fo16-(SO:NH <sub>4</sub> Al); later described under the name aluminopyracmonite: Mineral. Mag. 77, 443; transferred from valid list	a



<b>UM2011--SO:AlKNa</b>	Campostrini <i>et al.</i> (2011)	Designated UKI-fo20-(SO:NaAlK); inadequate data	b	
<b>UM2011--SO:BaKSr</b>	Campostrini <i>et al.</i> (2011)	Designated UKI-fo25-(SO:SrBaK); inadequate data	b	
<b>UM2011--SO:BiNa</b>	Campostrini <i>et al.</i> (2011)	<a href="#">Bi<sub>3+</sub>,Na(NH<sub>4</sub>)<sub>2</sub>Na<sub>2</sub>(SO<sub>4</sub>)<sub>6</sub>·H<sub>2</sub>O</a> ; designated UKI-fo21-(SO:NaBi); later described under the name <a href="#">campostriniite</a> ; <a href="#">Mineral. Mag., 79, 1007-1018</a>	b	
<b>UM2011--SO:CaCeNaSr</b>	Campostrini <i>et al.</i> (2011)	Designated UKI-fo32-(SO:CaCeNaSr); inadequate data	b	
<b>UM2011--SO:CaK</b>	Campostrini <i>et al.</i> (2011)	Designated UKI-fo34-(SO:KCa); inadequate data	b	
<b>UM2011--SO:FeHKNNa</b>	Campostrini <i>et al.</i> (2011)	Designated UKI-fo18-(SO:NH <sub>4</sub> FeNaK); inadequate data	b	
<b>UM2011--SO:FeKNaTi</b>	Campostrini <i>et al.</i> (2011)	Designated UKI-fo23-(SO:NaKFeTi); inadequate data	b	
<b>UM2011--SO:FeNa[1]</b>	Campostrini <i>et al.</i> (2011)	Designated UKI-fo14-(SO:FeNa); inadequate data	b	
<b>UM2011--SO:FeNa[2]</b>	Campostrini <i>et al.</i> (2011)	Designated UKI-fo15-(SO:NaFe); inadequate data	b	
<b>UM2011--SO:KNa</b>	Campostrini <i>et al.</i> (2011)	Designated UKI-fo22-(SO:NaK); inadequate data	b	
<b>UM2011--SO:KPb</b>	Campostrini <i>et al.</i> (2011)	Designated UKI-fo24-(SO:PbK); inadequate data	b	
<b>UM2011--SO:Pb</b>	Campostrini <i>et al.</i> (2011)	<a href="#">Pb(SO<sub>4</sub>)</a> ; Designated UKI-fo19-(SO:Pb); <a href="#">anglesite</a>	b	
<b>UM2011--SOCl:AlHKN</b>	Campostrini <i>et al.</i> (2011)	Designated UKI-fo31-(SOCl:KNH <sub>4</sub> Al); inadequate data	b	
<b>UM2011--SOCl:AlMgNa</b>	Campostrini <i>et al.</i> (2011)	Designated UKI-fo28-(SOCl:NaAlMg); inadequate data	b	
<b>UM2011--SOCl:FeHNNa</b>	Campostrini <i>et al.</i> (2011)	<a href="#">(NH<sub>4</sub>,K)<sub>4</sub>Na(Fe,Al)<sub>2</sub>(SO<sub>4</sub>)<sub>4</sub>Cl(OH)<sub>2</sub></a> ; designated: UKI-fo30-(SOCl:NH <sub>4</sub> NaFe); later described under the name <a href="#">adranosite-(Fe)</a> : <a href="#">Can. Mineral. 51, 57</a> ; transferred from valid list	a	
<b>UM2011--SOCl:FeNa</b>	Campostrini <i>et al.</i> (2011)	Designated UKI-fo33-(SOCl:NaFe); inadequate data	b	
<b>UM2011--SOCl:Na</b>	Campostrini <i>et al.</i> (2011)	<a href="#">Na<sub>21</sub>Fe[(SO<sub>4</sub>)<sub>10</sub>Cl<sub>3</sub>]</a> ; designated UKI-fo29; SO:NaFeCl; later described under the name <a href="#">d'ansite-(Fe)</a> ; transferred from Valid list	a	
<b>UM2011--SOCl:NaPb</b>	Campostrini <i>et al.</i> (2011)	Designated UKI-fo27-(SOCl:NaPb); inadequate data	b	
<b>UM2011--Te: Au</b>	<a href="#">*Geol. Bull. of China 30 (11), 1779-1784</a>	<a href="#">Min. &amp; Petr. 108, 853-871</a>	<a href="#">Au<sub>2</sub>Te</a> ; Mixture of gold and calaverite: <a href="#">Can. Mineral. 55, 181</a> ; transferred from Valid list.	d
<b>UM2012--AsO:ClHPb</b>	<a href="#">Mineral. Mag. 76, 597</a>	<a href="#">Pb<sub>2</sub>(AsO<sub>2</sub>OH)Cl<sub>2</sub></a> ; reported only from anthropogenic slags and hence not a mineral	f	

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<b>UM2012--CO:BaMn</b>	Chem. Erde 72, 85		BaMn(CO <sub>3</sub> ) <sub>2</sub> ; the same as UM1988-01-CO:BaMn	c
<b>UM2012--E:CuPt</b>	Neues Jb. Mineral. Abh, 189 (2), 217		Pt <sub>7</sub> Cu; not distinct from UM1996-11-E:CuPt	c
<b>UM2012--S:AgBiCu</b>	Can. Mineral. 50, 313		(Cu <sub>7.28</sub> Fe <sub>0.53</sub> )(Bi <sub>13.84</sub> Ag <sub>1.88</sub> Cd <sub>0.16</sub> )S <sub>26.30</sub> ; an unnamed member of the cuprobismutite homologous series; designated "phase X"; not distinct from <a href="#">UM2003-42-S:AgBiCu</a>	c
<b>UM2013--SiO:AlFLiK</b>	*Acta Min. Sinica 33(4), 713		Later named Fluorluanshiweiite: Minerals 10, 93; Transferred from Valid list	a
<b>UM2015--Bi:Pd</b>	*Can. Min. 53 (5), 845-857	Geokhimiya No. 10, 1155; Yushko-Zakharova et al. (1972), 58	Pd <sub>2</sub> Bi; same as UM2000-78-Te:Pd	c
<b>UM2015--Ge:Pd</b>	*Can. Min. 53 (5), 845		Pd <sub>2</sub> Ge; Palladogermanide; IMA2016-086; Similar to UM2005-05-Ge:Pd; Can. Mineral. 59, 1865; transferred from Valid list	a
<b>UM2015--Te:Ag</b>	*Can. Min. 52, 883		AgTe <sub>3</sub> ; Phase A; later named lingbaoite: J. Earth Planet. Mat., 105 (5), 745; transferred from Valid list	a
<b>UM2016--As:Ni</b>	*Min. Mag. 80, 187		Ni <sub>3</sub> As; later redefined as Dienerite: Can. Mineral 59, 1887; transferred from valid list	a
<b>UM2016--Sb:Ni</b>	*Min. Mag. 80, 187-198	Can. Mineral. 28, 503; Am. Mineral. 76, 1436	Same as UM1990-49-Sb:Ni	c
<b>UM2016--Te:Bi</b>	*Ore Geol. Rev. 79, 408-424	Zap. Vses. Mineral. Ob. 109, 230; Am. Mineral. 66, 439	Same as UM1980-16-Te:Bi; Relationship to Hedleyite?; Significant deviations from proposed formula Bi <sub>2</sub> Te; many similarities to hedleyite]; [UM1982--Te:Bi; Int. Geol. Rev. 24, 451; Can. Min. 45, 665 Bi <sub>2</sub> Te; same as UM1980-16-Te:Bi ]	c
<b>UM2018--S:CrCu</b>	* IX Russ. Young Sci. Conf., 229		Phase CuCrS <sub>2</sub> ; later described as Grokhovskiyite: Mineral. Mag. 83, 890; transferred from Valid list	a
<b>UM2019--O:AsMnSbTaTiU</b>	*Am. Min. 104, 1043-1050		[(Mn,Fe)<3U>1]Σ <sub>4</sub> (As <sub>2</sub> Sb <sub>2</sub> )Σ <sub>4</sub> [(Ta,Nb)>2Ti<2]Σ <sub>4</sub> O <sub>20</sub> ; Same as UM2010-02-O:AsMnSbTaTiU	c
<b>UM2020--Si:FeTi</b>	*EJM 32 (6), 557		FeTiSi; later described as toledoite: EJM 34, 394; transferred from Valid list	a
<b>UM2020--Si:Ti[1]</b>	*EJM 32 (6), 557	*Goldschmidt Abstr.2020, 2928	Ti <sub>10</sub> (Si,P,□) <sub>7</sub> ; later described as Wenjiite: Amer. Mineral (in press); transferred from Valid list	a
<b>UM2020--Si:Ti[2]</b>	*EJM 32 (6), 557	*Goldschmidt Abstr.2020, 2928	Ti <sub>11</sub> (Si,P) <sub>10</sub> ; later described as Kangjinlaite: Amer. Mineral (in press); transferred from Valid list	a
<b>UM2021--SO:KNaFe</b>	*Crystals. 10, 1062		(K,Na) <sub>3</sub> Na <sub>3</sub> (Fe,Al) <sub>2</sub> (SO <sub>4</sub> ) <sub>6</sub> ; technogenic mineral from burnt dumps	f

