

TABLE 1

ANGLES OF FORMS PRESENT ON PYRITE FROM FALLS OF FRENCH CREEK

Forms		Symbols		Description	Observed		Calculated	
No.	Letter	Gdt.	Mill.		ϕ	ρ	ϕ	ρ
1	c	0	001	Brilliant, but somewhat wavy	—	0°00'	—	0°00'
		0 ∞	010		0°00'	90 00	0°00'	90 00
		∞ 0	100		90 00	90 00	90 00	90 00
		0 $\frac{1}{2}$	012		0 00	26 30	0 00	26 34
2	e	02	021	Striated, irregular	0 00	63 30	0 00	63 26
		∞ 2	120		26 30	90 00	26 34	90 00
		$\frac{1}{2}$	211		63 29	65 58	63 26	65 54
3	n	$\frac{1}{2}$	112	Brilliant, well developed	45 00	35 20	45 00	35 16
		12	121		26 32	65 58	26 34	65 54
		$\frac{1}{2}$	148		14 00	27 00	14 02	27 16
4	w	$\frac{1}{2}$	184	Minute, curved	7 00	63 00	7 07	63 36
		48	481		26 00	83 00	26 34	83 37
		$\frac{1}{2}$	124		26 30	29 10	26 34	29 12
5	t	$\frac{1}{2}$	142	Brilliant, but somewhat wavy	14 08	64 02	14 02	64 07
		24	241		26 40	77 14	26 34	77 23
		$\frac{1}{2}$	134		18 00	40 00	18 26	38 19
6	H ₁	$\frac{1}{2}$	143	Minute, curved; present on one crystal only	15 00	54 00	14 02	53 57
		34	341		36 00	80 00	36 52	78 41

LISTS OF THE ISOMETRIC MINERALS INCLUDED IN GOLD-SCHMIDT'S WINKELTABELLEN. EDGAR T. WHERRY. *Washington, D.C.*—In the Winkeltabellen the minerals are arranged alphabetically, the crystal system and class being given below each. This makes it easy to locate any desired mineral—a table of synonyms aiding the finding of those included under one name, but sought under another. It is often interesting, however, in connection with various crystallographic studies, to have brought together minerals showing similarity in crystallization. The following grouping of the hundred isometric minerals included in the tables therefore seems worth publishing. The arrangement on the basis of classes and habits needs no explanation. The lists do not pretend to be complete in the sense of covering every mineral known or supposed to crystallize in this system, but they do include practically all which occur in really well developed crystals.

CLASS HOLOHEDRAL

DOMINANT HABIT CUBIC

Copper (Kupfer) Cu	204	Beegerite Pb ₅ Bi ₂ S ₉	Page 64
Iron (Eisen) Fe	122	Halite (Steinsalz) NaCl	327
Platiniferous Iridium Ir, Pt	193	Cerargyrite (Chlorsilber) AgCl	96
Ferriferous Platinum Pt, Fe	268	Embolite Ag(Cl, Br)	126
Oldhamite CaS	251	Bromyrite (Bromsilber) AgBr	79
Argentite (Silberglanz) Ag ₂ S	317	Hydrophilite (Chlorocalcit),	
Naumannite (Selen Silber) Ag ₂ Se	314	CaCl ₂	95
Hessite Ag ₂ Te	176	Fluorite (Fluszspar) CaF ₂	148
Galenite (Bleiglanz) PbS	71	Percylyte (Percylyth),	
Clausthalite (Selenblei) PbSe	314	PbCuCl ₂ (OH) ₂	260
Altaite PbTe	35	Periclase (Periklas) MgO	260
Bornite (Buntkupfererz),		Dysanalyte Ca-Fe-Ti-Cb-O	121
Cu ₅ FeS ₄	82	Pollucite H ₂ Cs ₂ Al ₂ (SiO ₃) ₅	269

DOMINANT HABIT OCTAHEDRAL	
Silver (Silber).....Ag	316
Gold.....Au	163
Lead (Blei).....Pb	70
Platiniferous palladium . Pd,Pt	257
Pentlandite.....(Ni,Fe)S	260
Polydymite.....Ni ₃ S ₄	270
Linneite.....Co ₃ S ₄	222
Brongniardite.....PbAg ₂ Sb ₂ S ₃	79
Iodobromite (Jodobromit), Ag ₅ Cl ₂ Br ₂ I	189
Hieratite.....K ₂ SiF ₆	177
Ralstonite. (Na ₂ Mg)Al ₂ F ₆ ·2H ₂ O	291
Arsenolite (Arsenit).....As ₂ O ₃	54
Senarmontite.....Sb ₂ O ₂	316
Manganosite.....MnO	231
Bunsenite.....NiO	82
Spinel.....MgAl ₂ O ₄	324
Chromite (Chromeisenerz), FeCr ₂ O ₄	96
Jacobsite.....MnFe ₂ O ₄	186
Franklinite.....Zn(Fe,Mn) ₂ O ₄	151
Magnetite (Magneteisenerz), Fe ₃ O ₄	225
Uraninite (Uranpecherz), UO ₂ +X	356
Atopite.....Ca ₂ Sb ₂ O ₇	57
Schneebergite.....Ca-Sb-O	312
Monimolite.....Pb ₃ Sb ₂ O ₈	244
Pyrochlorite (Pyrochlor), CaCb ₂ O ₆ +X	279
Hatchettolite .(Ca,UO ₂)Cb ₂ O ₈	171
Microlite.....Ca ₂ Ta ₂ O ₇ +X	241
Voltaite.....K-Fe-S-O	360
Faujasite . . . H-Na-Ca-Al-Si-O	139
DOMINANT HABIT DODECAHEDRAL	
Mercuriferous Silver (Amal- gam).....Ag,Hg	36
Koppite.....Ca ₂ Cb ₂ O ₇ +X	200
Sulfohalite.....Na ₃ Cl ₂ (SO ₄) ₃	332
Garnet (Granat), (Ca,Mg,Fe) ₃ (Al,Fe) ₂ (SiO ₄) ₃	164
DOMINANT HABIT TRAPEZOHEDRAL	
Berzeliite(Ca,Mn)(AsO ₄) ₂	68
Analcite (Analcim), NaAl(SiO ₃) ₂ ·H ₂ O	38
CLASS PYRITOHEDRAL	
DOMINANT HABIT CUBIC	
Pyrite.....FeS ₂	275
Sperryllite.....PtAs ₂	324
DOMINANT HABIT OCTAHEDRAL	
Hauerite.....MnS ₂	172
Cloanthite-smaltite. (Ni,Co)As ₂	94
Laurite.....RuS ₂	214
Skutterudite.....CoAs ₃	322
Alum (Alaun).KAl(SO ₄) ₂ ·12H ₂ O	33

CLASS TETRAHEDRAL	
DOMINANT HABIT TETRAHEDRAL (OR OCTAHEDRAL)	
Diamond.....C	114
Metacinnabarite.....HgS	239
Tiemannite.....HgSe	343
Tetrahedrite (Fahlerz), Cu ₄ SbS ₄ +X	137
Nantokite.....CuCl	246
Helvite (Helvin), (Be,Mn) ₇ S(SiO ₄) ₃	174
Danalite.....(Be,Zr) ₃ S(SiO ₄) ₃	107
Zunyite....Al(F,Cl)-OH-(SiO ₄)	380
Eulytite (Eulytin)Bi ₄ (SiO ₄) ₃	136
DOMINANT HABIT DODECAHEDRAL	
Sphalerite (Zinkblende)ZnS	372
Alabandite (Manganblende), MnS	229
Argyrodite.....Ag ₂ GeS ₅	54
Sodalite.....Na ₄ Al ₃ Cl(SiO ₄) ₃	323
Hauynite (Hauyn), Na ₃ CaAl ₃ (SO ₄)(SiO ₄) ₃	173
Noselite (Nosean), Na ₅ Al ₃ (SO ₄)(SiO ₄) ₃	250
CLASS TETARTOHEDRAL	
DOMINANT HABIT CUBIC	
Cobaltite (Glanzkobalt) .CoSAs	157
Gersdorffite.....NiSAs	157
Ullmannite.....NiSSb	354
DOMINANT HABIT TETRAHEDRAL	
Corynite.....NiS(As,Sb)	104
Nitrobarite (Barytsalpeter), Ba(NO ₃) ₂	63
CLASS GYROIDAL (PLAGIHEDRAL)	
DOMINANT HABIT CUBIC	
Sylvite (Sylvin).....KCl	335
Sal-Ammoniac (Salmiak), NH ₄ Cl	308
Cuprite (Rothkupfererz) .Cu ₂ O	305
SYN-ISOMETRIC (that is, really possessing lower symmetry, but twinned so as to imitate isometric form)	
DOMINANT HABIT CUBIC	
BoleitePb(Cu,Ag)Cl ₂ (OH) ₂	74
MelanophlogiteSiO ₂ +X	236
Perovskite (Perowskit) .CaTiO ₃	261
BoraciteMg ₇ Cl ₂ B ₁₀ O ₃₀	74
Pharmacosiderite, Fe ₄ (OH) ₃ (AsO ₄) ₃	263

DOMINANT HABIT OCTAHEDRAL
 Cristobalite SiO₂ 96
 Kremersite KNH₄FeCl₆.H₂O 201

DOMINANT HABIT DODECAHEDRAL
 Rhodizite (K,Cs)Al₂B₃O₈ 294

DOMINANT HABIT TRAPEZOHEDRAL
 Leucite KAl(SiO₃)₂ 218

ERRONEOUSLY CLASSED AS
 ISOMETRIC

(or as independent species)
 Cubanite and carrollite, mixtures;
 Binnite, a variety of tetrahedrite;
 Polyargyrite, probably impure argen-
 tite; Stannite (Zinnkies), really tet-
 ragonal.

CHORD AND TANGENT TABLES FOR USE WITH
 THE GOLDSCHMIDT METHOD

Natural Tangents X 5 cm. for plotting <u>the</u> angles.													
φ°	0'	10'	20'	30'	40'	50'	φ°	0'	10'	20'	30'	40'	50'
0	0.000	0.014	0.029	0.044	0.058	0.073	45	5.000	5.029	5.058	5.088	5.118	5.148
1	0.087	0.102	0.116	0.131	0.145	0.160	46	5.178	5.208	5.238	5.269	5.300	5.331
2	0.174	0.189	0.204	0.218	0.233	0.247	47	5.362	5.393	5.425	5.456	5.488	5.521
3	0.262	0.277	0.291	0.306	0.320	0.335	48	5.553	5.586	5.618	5.651	5.685	5.718
4	0.350	0.364	0.379	0.393	0.408	0.423	49	5.752	5.786	5.820	5.854	5.889	5.924
5	0.437	0.452	0.467	0.481	0.496	0.511	50	5.959	5.994	6.030	6.065	6.101	6.138
6	0.525	0.540	0.555	0.570	0.584	0.599	51	6.174	6.211	6.248	6.286	6.323	6.361
7	0.614	0.629	0.643	0.657	0.673	0.688	52	6.400	6.438	6.477	6.516	6.555	6.595
8	0.703	0.717	0.732	0.747	0.762	0.777	53	6.635	6.675	6.716	6.757	6.798	6.840
9	0.792	0.807	0.822	0.837	0.852	0.867	54	6.882	6.924	6.967	7.010	7.053	7.097
10	0.882	0.897	0.912	0.927	0.942	0.957	55	7.141	7.185	7.230	7.275	7.320	7.366
11	0.972	0.987	1.002	1.017	1.032	1.047	56	7.413	7.459	7.507	7.554	7.602	7.650
12	1.063	1.078	1.093	1.108	1.124	1.139	57	7.699	7.747	7.798	7.848	7.899	7.950
13	1.154	1.170	1.185	1.200	1.216	1.231	58	8.002	8.054	8.106	8.159	8.213	8.267
14	1.247	1.262	1.278	1.293	1.309	1.324	59	8.321	8.376	8.432	8.488	8.545	8.602
15	1.340	1.355	1.371	1.387	1.402	1.418	60	8.666	8.719	8.778	8.837	8.896	8.959
16	1.434	1.450	1.465	1.481	1.497	1.513	61	9.020	9.082	9.145	9.209	9.273	9.338
17	1.529	1.546	1.560	1.576	1.592	1.608	62	9.404	9.470	9.537	9.605	9.673	9.743
18	1.625	1.641	1.658	1.673	1.689	1.705	63	9.813	9.884	9.956	10.028	10.102	10.176
19	1.722	1.738	1.754	1.771	1.787	1.803	64	10.251	10.328	10.405	10.483	10.562	10.642
20	1.820	1.836	1.853	1.869	1.886	1.903	65	10.723	10.804	10.887	10.971	11.057	11.143
21	1.919	1.936	1.953	1.969	1.986	2.003	66	11.230	11.319	11.408	11.499	11.591	11.685
22	2.020	2.037	2.054	2.071	2.088	2.105	67	11.779	11.875	11.972	12.071	12.171	12.273
23	2.122	2.139	2.157	2.174	2.191	2.209	68	12.375	12.480	12.586	12.693	12.802	12.913
24	2.226	2.243	2.261	2.279	2.296	2.314	69	13.025	13.140	13.255	13.373	13.493	13.614
25	2.331	2.349	2.367	2.385	2.403	2.421	70	13.737	13.863	13.990	14.120	14.251	14.385
26	2.439	2.457	2.475	2.493	2.511	2.529	71	14.521	14.659	14.800	14.943	15.089	15.237
27	2.548	2.566	2.584	2.603	2.621	2.640	72	15.388	15.542	15.699	15.858	16.020	16.186
28	2.658	2.677	2.696	2.715	2.734	2.752	73	16.354	16.526	16.701	16.880	17.062	17.248
29	2.771	2.790	2.810	2.829	2.848	2.867	74	17.437	17.630	17.828	18.029	18.235	18.445
30	2.887	2.906	2.926	2.945	2.965	2.984	75	18.660	18.880	19.104	19.334	19.568	19.808
31	3.004	3.024	3.044	3.064	3.084	3.104	76	20.054	20.305	20.563	20.826	21.097	21.374
32	3.124	3.144	3.165	3.185	3.206	3.226	77	21.657	21.948	22.247	22.554	22.868	23.191
33	3.247	3.268	3.288	3.309	3.330	3.351	78	23.523	23.864	24.215	24.576	24.947	25.329
34	3.372	3.394	3.415	3.436	3.458	3.479	79	25.723	26.128	26.540	26.978	27.423	27.882
35	3.501	3.523	3.544	3.566	3.588	3.610	80	28.356	28.847	29.354	29.879	30.422	30.985
36	3.633	3.655	3.677	3.700	3.722	3.745	81	31.509	32.174	32.863	33.565	34.315	34.841
37	3.768	3.790	3.813	3.837	3.860	3.883	82	35.577	36.334	37.144	37.979	38.852	39.765
38	3.906	3.930	3.953	3.977	4.001	4.025	83	40.722	41.725	42.778	43.884	45.049	46.277
39	4.049	4.073	4.097	4.122	4.146	4.171	84	47.572	48.941	50.390	51.927	53.560	55.297
40	4.195	4.220	4.245	4.270	4.295	4.321	85	57.150	59.131	61.252	63.531	65.984	68.633
41	4.346	4.372	4.398	4.424	4.450	4.476	86	71.503	74.622	78.024	81.750	85.847	90.375
42	4.502	4.528	4.555	4.582	4.608	4.635	87	95.406	101.03	107.35	114.52	122.71	132.16
43	4.663	4.690	4.717	4.745	4.772	4.800	88	143.18	156.21	171.84	190.94	214.82	248.52
44	4.828	4.857	4.885	4.913	4.942	4.971	89	286.45	343.75	429.70	572.95	850.42	1718.9
φ°	0'	10'	20'	30'	40'	50'	φ°	0'	10'	20'	30'	40'	50'