

矿物X射线鉴定表

辽宁省地质局

地质出版社

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毛主席语录

开发矿业

在生产斗争和科学实验范围内，人类总是不断发展的，自然界也总是不断发展的，永远不会停止在一个水平上。因此，人类总得不断地总结经验，有所发现，有所发明，有所创造，有所前进。

自力更生，艰苦奋斗，破除迷信，解放思想。

前 言

为适应当前地质工作的需要，我们试编了这本《矿物X射线鉴定表》供地质工作者、岩矿鉴定人员及有关从事X光分析工作的同志参考。

本书搜集了国内外近期期刊、杂志的有关资料。其中有一部分在我们的实际工作中得到了验证，也有一小部分是我们的工作成果。全书包括九百六十种矿物，一千三百多个分析数据。是目前常用的A.S.T.M.卡片(1972年版)、矿物伦琴射线鉴定手册(苏联B. И. 米赫耶夫著)以及铀和含铀矿物伦琴射线鉴定表(苏联Г. А. Сидоренко著)中所没有的。

矿物的译名原则，是以科学出版社出版的《英汉综合地质学词汇》为基础，有一部分并参照了地质出版社出版的《俄华简明地质词典》。对于《英汉综合地质学词汇》和《俄华简明地质词典》中没有的名词，则以矿物的化学成分定名，并在名词字首冠以外文第一个字母的译音。

书中衍射强度采用十分级别，对各期刊、杂志所使用的不同强度分级，均按此予以统一。每个矿物数据取其三条强线值编成矿物数据索引。所有晶胞参数，凡未注有KX者，均为埃(Å)单位。Fe/O表示铁靶，无滤波片；Fe/Mn为铁靶，锰滤波片；其他以此类推。B表示宽线；D表示弥散线。除少部分外，每个矿物均注明资料出处。

为查阅方便，书后附有中文、英文、俄文名称索引。索引右边的号码，系卡片号码。

本书承蒙地质科学院、武汉地质学院、长春地质学院以及各兄弟省地质局实验室、研究所的帮助和指导，在此表示感谢。

由于水平所限，谬误之处在所难免，敬请批评指正。

辽宁省地质局

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鉴定表索引

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注：() 内为矿物卡片号

>20.00—20.00						
28.50	14.10	7.10	10	10	10	蓝高岭土 $(K_{0.01}Na_{0.04}Ca_{0.02})(Mg_{0.16}Fe_{0.2}Al_{3.14})$ $[Si_{3.82}Al_{0.18}O_{10}](OH)_8 \cdot 0.36H_2O$ 909a
27.30	14.00	3.60	10	10	10	" 909b
26.60	13.30	5.04	10	10 B	10 B	" 909c
24.70	12.35	3.10	10	10	10	阿水硅铝石 $(Na_{0.72}Ca_{0.51})(Al_{3.79}Mg_{0.12})(Al_{1.51}Si_{6.49}O_{20})(OH)_4 \cdot 2.9H_2O$ 686b
24.21	12.28	3.09	10	10	10	" 686a
21.10	7.60	7.00	10	10	10	晶蛭石 $(H,K)_2O \cdot Al_2O_3 \cdot 2SiO_2$ 955
19.9—18.0						
18.64	9.30	6.19	9	10	6	镁叶绿矾 $(Mg_{1.11}Fe^{2+}_{0.02})Fe^{3+}_{3.92}(SO_4)_{6.00}(OH)_2 \cdot 21.31H_2O$ 401
18.40	9.00	4.20	10	10	10	丝砷铜矿 $Cu_3[AsO_4]_2 \cdot 5H_2O$ 618
18.74	2.86	8.97	10	10	9	水砷铜矿 $Cu_4[AsO_4]_2(OH)_2 \cdot 2.5H_2O$ 619
17.9—16.0						
16.00	3.15	2.94	8	10	8	钠硬硅钙石 $KCO_4Si_5O_{13}(OH)_3$ 809
16.10	1.54	4.61	10	7	4	锌蒙脱石 $Zn_3[Si_4O_{10}](OH)_2 \cdot nH_2O$ 952
15.9—14.0						
14.10	28.5	7.10	10	10	10	蓝高岭土 $(K_{0.01}Na_{0.04}Ca_{0.02})(Mg_{0.16}Fe_{0.2}Al_{3.14})$ $[Si_{3.82}Al_{0.18}O_{10}](OH)_8 \cdot 0.36H_2O$ 909a
14.00	27.30	3.60	10	10	10	" 909b
15-14	4.50	4.48	7	4	3	褐绿泥石 942a
14.50	3.42	3.14	10	8	4	水硅石 $SiO_2 \cdot H_2O$ 171
15.40	2.96	3.92	5	10	5	硅铁钽矿 $Ba_5FeTiSi_6O_{18}(OH)_4$ 712
14.70	2.26	5.59	8	9	8	橙玄玻璃 $3(Al_2O_3, Fe_2O_3) \cdot (MgO, CaO) \cdot 6SiO_2 \cdot xH_2O$ 685
14.20	1.57	2.52	6	8	7	水硼锰矿 $Mn_4[(OH)_4 B_2O_5]$ 509
15.60	1.52	4.56	>10	8	7	富钙锂蒙脱石 $(Mg_{2.53}Fe^{2+}_{0.08}Ti_{0.02}Li_{0.39})(Si_{3.92}Al_{0.06}, Fe^{3+}_{0.04})O_{10}(F, OH)_2$ 948
13.90—12.00						
13.30	26.60	5.04	10 B	1 B	10 B	蓝高岭土 $(K_{0.01}Na_{0.04}Ca_{0.02})(Mg_{0.16}Fe_{0.2}Al_{3.14})$ $(Si_{3.82}Al_{0.18}O_{10})(OH)_8 \cdot 0.36H_2O$ 909c
12.35	24.70	3.10	10	10	10	阿水硅铝石 $(Na_{0.72}Ca_{0.51})(Al_{3.79}Mg_{0.12})[Al_{1.51}Si_{6.49}O_{20}](OH)_4 \cdot 2.9H_2O$ 686b
12.28	24.21	3.09	10	10	10	" 686a
12.30	13.50	6.12	6	10	6	六方水钙镁硼石 $5CaO \cdot MgO \cdot 12B_2O_3 \cdot 30H_2O$ 463
13.50	12.30	6.12	10	6	6	" 463
13.50	8.66	6.54	10	10	10	发光沸石 $(Ca, K_2, Na_2)[AlSi_5O_{12}] \cdot 3H_2O$ 804
13.40	7.08	3.51	7 B	10	10	似单热水白云母 $0.2RO \cdot Al_2O_3 \cdot 3SiO_2 \cdot 2H_2O$ 930
12.77	5.90	2.87	9	10	8	紫钼铀矿 $(UO_2 + UO_3) \cdot 5.5MoO_3 \cdot 5.3H_2O$ 444a
12.15	4.60	2.61	10	10	8	富镁蒙脱石 $Mg_{2.88}Mn_{0.02}Fe_{0.02}[(OH)_2 Si_4O_{10}]_{0.16}x_{0.16}(H_2O)_4$ 950a
12.10	4.59	2.82	10	10 B	10 B	纤铁矾 $Fe_2(SO_4)(OH)_2 \cdot 9H_2O$ 412b
12.33	4.10	3.44	10	2	2 B	硅锰矿 720

12.02	3.45	2.79	10	7	7	纤铁矾 $\text{Fe}_2\text{O}_3 \cdot 2\text{SO}_3 \cdot 11\text{H}_2\text{O}$	412
12.20	3.16	1.78	7	10	5	水硅铈矿 $(\text{Ca}, \text{Mn})\text{Nb}_2[\text{Si}_2\text{O}_7]\text{O}_3 \cdot 3.5\text{H}_2\text{O}$	750
12.00	3.15	5.00	9	10	9	绿磷铁矿 $\text{Ca}_{9.5}\text{Fe}_6(\text{OH})_6(\text{H}_2\text{O})_2(\text{PO}_4)_4$	576
12.53	3.14	2.70	10	3	1	辉叶石	903
13.30	3.06	3.76	10	10	9	镁毒石 $\text{Ca}_6\text{Mg}(\text{HAsO}_4)_2(\text{AsO}_4)_2 \cdot 12\text{H}_2\text{O}$	613
13.10	2.94	6.60	7	10	9	水钠硅钙石 $(\text{Ca}, \text{Na}_2, \text{K}_2)_{16}\text{Si}_{32}\text{O}_{80} \cdot 24\text{H}_2\text{O}$	811
12.13	2.79	9.98	10 B	3	2 B	水砷镁钙硼石 $4\text{CaO} \cdot \text{MgO} \cdot 6\text{B}_2\text{O}_3 \cdot \text{As}_2\text{O}_5 \cdot 18\text{H}_2\text{O}$	468
13.53	2.77	3.45	8	10	9	准磷硅钛钠石 $\text{Na}_5\text{MnTi}_3[\text{Si}_4\text{P}_2\text{O}_{21}(\text{OH})_3]$	673
12.00	2.75	4.50	10	8	6	纤铁矾 $\text{Fe}_2\text{O}_3 \cdot 2\text{SO}_3 \cdot 10\text{H}_2\text{O}$	412a
12.10	2.57	4.04	>10	10	8	铁黑硬绿泥石 $(\text{Ca}, \text{Na}, \text{K})_4(\text{Ti}_{0.1}\text{Al}_{2.3}\text{Fe}_{35.5}\text{Mn}_{0.8}\text{Mg}_{9.3})[\text{Si}_{63}\text{Al}_9](\text{O}, \text{OH})_{2 \cdot 18} \cdot n\text{H}_2\text{O}$	954
12.70	2.56	4.50	10	10 B	6	锂蒙脱石 $(\text{Mg}, \text{Li})_3[(\text{OH}, \text{F})_1\text{Si}_4\text{O}_{10}]_{0.33}\text{Na}_{0.33}(\text{H}_2\text{O})_4$	947
12.5—							
14.5	2.56	4.49	10	10 B	6	针蒙脱石 $[\text{Mg}_{257}\text{Fe}^{2+}_{0.05}\text{Al}_{0.08}\text{Li}_{0.0}]_n[\text{Si}_{113.98}\text{Al}_{0.02}\text{O}_{10}(\text{OH}, \text{F})_2]$	949
11.90—11.00							
11.20	8.65	3.58	9	10	6	红铁矾 $\text{Fe}_2\text{O}_3 \cdot 2\text{SO}_3 \cdot 7\text{H}_2\text{O}$	407
11.60	7.62	5.75	10	10	7	水磷铝铜矿 $\text{Cu}_3\text{Al}_4(\text{PO}_4)_3(\text{OH})_3 \cdot 4\text{H}_2\text{O}$	581
11.60	6.90	3.38	8	10	8	硅铝钛钠石 $(\text{Na}_{2.8}\text{K}_{0.1}\text{Ca}_{0.1})(\text{Ti}_{1.1}\text{Al}_{0.6}\text{Nb}_{0.3})_2[\text{Si}_2(\text{O}, \text{OH})_7]_2 \cdot 3\text{H}_2\text{O}^+ + \text{H}_2\text{O}^-$	674
11.30	5.73	3.04	6	6	4	水钠硅钙石 $(\text{Ca}, \text{Na}_2, \text{K}_2)_{16}\text{Si}_{32}\text{O}_{80} \cdot 24\text{H}_2\text{O}$	811a
11.38	5.69	3.26	9	10	9	墨铜矿类型矿物 $(\text{Cu}_{0.995}\text{Fe}_{1.005}\text{S}_2) \cdot 1.472[\text{F}(\text{OH})]$	111
11.12	5.58	5.64	10	4	2	水磷硫铁铀矿 $\text{Fe}_2\text{Al}_2(\text{UO}_2)_2(\text{PO}_4)_4(\text{SO}_4)(\text{OH})_2 \cdot 20\text{H}_2\text{O}$	606
11.30	4.54	2.62	10	10	9	富镁蒙脱石 $\text{Mg}_{2.88}\text{Mn}_{0.02}\text{Fe}^{2+}_{0.02}[(\text{OH})_2 \text{SiO}_4\text{O}_{10}]_{0.16}\text{X}_{0.16}(\text{H}_2\text{O})_4$	950c
11.43	4.32	2.86	10	9	8	毛沸石 $(\text{K}_2, \text{Na}_2, \text{Ca})[\text{AlSi}_3\text{O}_8]_2 \cdot 6\text{H}_2\text{O}$	799
11.50	4.30	2.44	10	10	10	水硅钠钛矿 $(\text{Na}_{8.8}\text{Ba}_{0.6}\text{TR}_{0.7})_{10}[\text{Ti}_{4.99}(\text{Fe}, \text{Al}, \text{Nb})_{0.01}]_6[\text{Si}_{13.9}\text{Al}_{0.1}]_{14}(\text{O}_{22}\text{OH}_{44})_{88} \cdot \text{naq}$	707
11.14	3.33	9.94	5	9	7	黝叶石 $\text{K}(\text{Mg}, \text{Fe})_3\text{Si}_4\text{O}_{10}(\text{F}, \text{OH})$	923a
11.80	3.07	6.56	7	9	7	纤硅碱钙石 $(\text{Ca}, \text{Na}_2, \text{K}_2)_8\text{Si}_{16}\text{O}_{40} \cdot 11\text{H}_2\text{O}$	699
11.40	2.94	2.65	10	10	10	水硅钠锰矿 $[\text{Ca}(\text{K}, \text{TR})]_4[\text{Mn}, \text{Ti}, \text{Fe}^{3+}(\text{Mg}, \text{Fe}^{2+})]_3[\text{Si}_2[\text{O}_4(\text{OH})_3]_7]_4 \cdot 5\text{H}_2\text{O}$	722
11.73	2.94	2.45	10	8	8	砷铜钒矿 $(\text{Ca}, \text{Y})_2\text{Cu}_{12}[(\text{AsO}_4)_6(\text{OH})_{12}] \cdot 6\text{H}_2\text{O}$	628
11.55	2.90	5.95	10	10	9	菱镁铁矾 $0.65[\text{Fe}^{2+}, \text{Ca}, \text{Mg}]\text{O} \cdot \text{Fe}_2\text{O}_3 \cdot 3.03\text{SO}_3 \cdot 14.21\text{H}_2\text{O}$	419
11.48	2.56	3.30	9	10	9	石棉 (山软木) $\text{Mg}(\text{Al}, \text{Fe})_2(\text{OH})_2(\text{H}_2\text{O})_4[\text{Si}_4\text{O}_{10}] \cdot \text{H}_2\text{O}$	957a
11.47	2.56	2.64	9	10	9	石棉 (山软木)	957

10.90—10.00

10.60	9.80	3.36	8	10	10	镁黑云母 $K(Mg, Fe, Mn)_3[(OH, F)_2AlSi_3O_{10}]$	931
10.70	9.70	3.36	9	10	10	富铁黑云母 $K(Mg, Fe, Mn)_3[(OH, F)_2AlSi_3O_{10}]$	932
10.20	9.27	3.61	9	10	10	叶绿矾 $(Fe^{2+}Mg)Fe_4^{3+}(SO_4)_6(OH)_2 \cdot 2H_2O$	400a
10.70	9.09	3.07	10	10	3	魏硼镁石 $Mg_6[O_2](OH)_4[B(OH)_4]$	485
10.17	8.94	4.04	9	10	10	红辉沸石	301
10.30	7.40	3.08	9	10	10	柱钾铁矾 $K_2O \cdot Fe_2O_3 \cdot 4SO_3 \cdot 8H_2O$	420
10.68	5.34	5.19	9	10	8	硫铝镁铁矿 $2(Fe_{0.332}S) \cdot 2.11\{Mg_{0.557}Al_{0.11}Fe_{0.303}\}(OH)_2\}$	99
10.40	4.60	1.53	10	10	10	硅镁镍矿 $(Ni, Mg)_4(OH)_4\{Si_4O_{10}\} \cdot 4H_2O$	917
10.00	4.52	2.54	10	9	9	富镁蒙脱石 $Mg_{2.88}Mn_{0.02}Fe_{0.02}[(OH)_2Si_4O_{10}]_{0.16}X_{0.16}(H_2O)_4$	950b
10.00	4.49	3.33	7	7	7	铬硅云母 $K(Fe, Mg)Al[(OH, F)_2(Al, Si)Si_3O_{10}]$	927
10.25	4.28	3.02	5	10	9	铈钙硼石 $6(Ca, Na_2)O \cdot Ce_2O_3 \cdot 12B_2O_3 \cdot 6H_2O$	469
10.85	3.63	3.49	10	10	9	白硼钙石 $4CaO \cdot 5B_2O_3 \cdot 7H_2O$	500
10.52	3.51	2.78	9	10B	8	铈叶石 $(K, Na)_3(Fe, Mn)_7(Nb, Ti)_2(Si, Al)_8(O, OH, F)_{31}$	905
10.30	3.48	2.62	9	10	8	三斜锰星叶石 $\{(K, Na)_2(Fe^{2+}, Mn^{2+}), Ti_2[Si_4O_{12}](O, OH)_3(OH, F)_4\}$	902
10.29	3.46	2.87	10	4	4	钠硝矾 $Na_2(NO_3)(SO_4) \cdot H_2O$	385
10.32	3.45	5.17	10	8	6	比硼钠石 $Na_2[B_5O_7(OH)_3] \cdot 1/2H_2O$	473
10.20	3.45	2.60	10	9	7	水钒铁矿 $Fe_4V_4O_{16} \cdot 5H_2O$	643
10.00	3.44	3.08	10	9	7	纤钠铁矾 $2Na_2O \cdot Fe_2O_3 \cdot 4SO_3 \cdot 7H_2O$	418
10.10	3.38	2.55	8	10	9	单斜镁星叶石 $2\{K_2Na_2(Fe^{2+}, Mn)_2(Fe^{3+}, Fe^{3+})_3Mg_2Ti_2[Si_4O_{12}](OH, O)_3(O, OH, F)_4\}$	901
10.20	3.35	4.26	7	10	2	碳钙铀钒矿 $Na_{1.9}Ba_{4.0}Ca_{1.1}Sr_{0.2}Re^{3+}_{1.5}U^{4+}_{0.3}(CO_3)^{2-}_{0.5} \cdot 5H_2O$	381
10.02	3.34	2.00	10	10	10	带云母 $(K_{0.94}Na_{0.04}Ca_{0.07})_{1.05}(Li_{0.72}Mg_{2.23})_{2.98}[(Si_{3.72}Al_{0.22}Fe^{3+}_{0.06}O_{10}](F_{1.31}OH_{0.69})$	922a
10.09	3.32	2.60	8	9	8	黝叶石 $K(Mg, Fe)_3Si_4O_{10}(F, OH)_2$	923
10.40	3.31	2.59	10	6	3	ρ -水硼锶石 $4[(Sr, Ca)B_6O_{10}] \cdot 2H_2O$	527
10.50	3.23	4.49	10	10	8	石棉 (山软木) $Mg(Al, Fe)_2[OH]_2(H_2O)_4\{Si_4O_{10}\} \cdot H_2O$	957b
10.28	2.94	5.89	10	4	3	硅钽铋铝矿 $Al_{24.6}Sb^{3+}_{2.66}Ta_{1.36}Sb^{5+}_{0.76}Nb_{0.16}Fe^{3+}_{0.10}Be_{0.05}Ti_{0.03}Mn_{0.02}B^{3+}_{1.40}Si_{9.09}O_{66.87}$	687
10.88	2.85	3.35	9	9	8	碳酸钙铋矿 $Ca(BiO)_2(CO_3)_2$	380
10.81	2.41	1.39	10	10	10	羟磷钙铋石 $CaBe_4[PO_4]_2(OH)_4 \cdot 0.5H_2O$	536
10.60	2.41	5.86	10	10	9	水碳镁石 $5MgO \cdot 4CO_2 \cdot 6H_2O$ 或 $Mg_5(CO_3)_4 \cdot 5H_2O$	352

9.99—9.50

9.98	12.13	2.79	2B	10B	3	水砷镁钙硼石 $4CaO \cdot MgO \cdot 6B_2O_3 \cdot As_2O_5 \cdot 18H_2O$	468
9.64	8.80	3.62	8	10	9	砷铅钙铁矿 $CaFe_2[As_2Mo_5O_{24}] \cdot 14H_2O$	441

9.85	7.63	3.96	10	10	10	黄地蜡 $C_{32}H_{17}O$	959
9.50	7.43	3.49	10	10	6	单斜氢碳矿 $C_{24}H_{12}$	958
9.92	7.30	2.23	7	9	8	β -蜡蛇纹石 $Mg_4(OH)_4\{Si_4O_{10}\} \cdot 4H_2O$	916
9.62	5.09	4.81	10	6	5	板磷锰矿 $Mn^{2+}Mn_2^{3+}(PO_4)_2(OH)_2 \cdot 4H_2O$	565
9.98	5.05	3.37	10	4	4	绒铜矿 $Cu_4Al_2(OH)_{12}SO_4 \cdot 2H_2O$	429
9.60	4.82	3.22	9	9	9	三方钠云母 $NaAl_2[(OH, F)_2 AlSi_3O_{10}]$	925
9.60	4.80	2.40	10	8	5	钡镁锰矿 $(Mn^{2+}, Mg, Ca, Ba, K, Na)_2Mn_5^{4+}O_{12} \cdot 3H_2O$	204a
9.56	4.80	3.19	10	8	4	钡镁锰矿 $(Mn^{2+}, Mg, Ca, Ba, K, Na)_2Mn_5^{4+}O_{12} \cdot 3H_2O$	204
9.58	4.79	2.41	10	8	4	钡镁锰矿	204c
9.60	4.79	2.40	10	8	5	钡镁锰矿	204b
9.66	3.79	2.49	10	8	7	硅灰石膏 $CaSiO_3 \cdot CaCO_3 \cdot CaSO_4 \cdot 15H_2O$	393
9.90	3.70	3.34	7	7	7	铁锂云母 $KLiFe^{2+}Al[AlSi_3O_{10}](F, OH)_2$	933
9.51	3.53	3.78	5	10	7	镁碱沸石 $K_{1.4}Na_{1.8}Mg_{0.6}(Si_{31.6}Al_{4.4})O_{72} \cdot 18H_2O$	794
9.61	3.48	4.93	10	5	4	铝铀云母 $HAl(UO_2)_4(PO_4)_4 \cdot 12H_2O$	596
9.70	3.36	10.7	10	10	9	富铁黑云母 $K(Mg, Fe, Mn)_3[(OH, F)_2 AlSi_3O_{10}]$	932
9.80	3.36	10.6	10	10	8	镁黑云母 $K(Mg, Fe, Mn)_3[(OH, F)_2 AlSi_3O_{10}]$	931
9.94	3.33	11.14	7	9	5	黝叶石 $K(Mg, Fe)_3Si_4O_{10}(F, OH)_2$	923a
9.70	3.22	2.54	9	10	8	针钠钙石 $Ca_2Na[Si_3O_8OH]$	692
9.65	3.21	2.52	8	9	8	钠云母 $(Na_{0.946}K_{0.047}Ca_{0.16})(Mn_{0.001}Mg_{0.01})(Al_{2.939}Fe^{3+}_{0.039}Ti_{0.001})Si_3O_{10}(OH)_2$	924
9.50	3.20	6.30	9	10	9	氯硼钠铝石 $KNa_2Al_4(B_2O_5)_3Cl_3 \cdot 13H_2O$	493
9.60	3.18	4.80	7	7	4	富镁蒙脱石 $Mg_{2.88}Mn_{0.02}Fe_{0.02}[(OH)_2 Si_4O_{10}]_{0.16}X_{0.16}(H_2O)_4$	950d
9.90	2.58	4.51	7	10	6	绿云母 $(K_{0.94}Na_{0.14}Ca_{0.06})(Al_{1.44}Ti_{0.07}Cr_{0.03}V_{0.04}Fe_{0.29}Mg_{0.22})(Al_{0.79}Si_{3.21})O_{10.29}(OH)_{1.71}$	928
9.78	1.52	4.52	7	8	7	富镁蒙脱石 $Mg_{2.88}Mn_{0.02}Fe_{0.02}[(OH)_2 Si_4O_{10}]_{0.16}X_{0.16}(H_2O)_4$	950
9.49—9.00							
9.30	18.64	6.19	10	9	6	镁叶绿矾 $(Mg_{1.1}Fe^{2+}_{0.03})Fe^{3+}_{3.92}(SO_4)_{6.00}(OH)_2 \cdot 21.3H_2O$	401
9.00	18.40	4.20	10	10	10	丝砷铜矿 $Cu_3(AsO_4)_2 \cdot 5H_2O$	618
9.09	10.70	3.07	10	10	3	魏硼镁石 $Mg_9[O_2 (OH)_4 B(OH)_4]_2$	485
9.36	8.72	2.64	7	10	9	砷镁锰矿 $Mn_9^{2+}(OH)_9(H_2O)_2(AsO_3)(AsO_4)$	615
9.42	8.27	3.36	5	10	7	针绿矾 $(Fe, Al)_2(SO_4)_3 \cdot 9H_2O$	399b
9.25	6.12	3.56	10	8	6	锌叶绿矾 $ZnO \cdot 2Fe_2O_3 \cdot 6SO_3 \cdot 21H_2O$	402
9.00	6.00	3.52	10	7	6	叶绿矾 $FeO \cdot 2Fe_2O_3 \cdot 6SO_3 \cdot 21H_2O$	400
9.01	5.24	3.24	10	8	6	锌赤铁矿 $2ZnO \cdot Fe_2O_3 \cdot 4SO_3 \cdot 15H_2O$	408
9.04	5.09	2.99	5	10	6	水硅钠石 $[NaSi_2O_3(OH)_3 \cdot H_2O]$	667
9.10	4.69	3.01	7	9	9	辉沸石 $NaCa_2Al_3Si_{13}O_{38} \cdot 14H_2O$	800a
9.26	4.29	2.91	7	10	6	菱沸石 $Ca_{0.19}Mg_{0.19}Na_{1.64}K_{0.13}Al_{2.64}Si_{9.51}O_{24} \cdot 10H_2O$	796

9.42	4.16	3.32	9	9	9	沸石 $\text{Ca}_x(\text{Na}, \text{K})_y\text{Al}_{2x+y}\text{Si}_{24-(2x+y)}\text{O}_{48} \cdot 16\text{H}_2\text{O}$	791
9.04	3.80	3.51	10	9	8	水化钙铀云母 $\text{H}_2\text{UO}_2(\text{PO}_4)_2 \cdot 4\text{H}_2\text{O}$ (人工合成的)	598
9.27	3.61	10.20	10	10	9	叶绿矾 $(\text{Fe}^{2+}, \text{Mg})\text{Fe}_4^{3+}(\text{SO}_4)_6(\text{OH})_2 \cdot 2\text{OH}_2\text{O}$	400a
9.46	3.14	4.99	4	10	3	多水铜铁矾 $[\text{CuFe}(\text{SO}_4)_2(\text{OH}) \cdot 4\text{H}_2\text{O}]$	422
9.40	3.13	1.53	10	8	3	铁滑石 $\text{Fe}_6(\text{Si}_3\text{O}_{10})(\text{OH})_4$	908
9.20	3.08	2.78	9	10	9B	水钙芒硝 $5\text{Na}_2\text{SO}_4 \cdot 3\text{CaSO}_4 \cdot 6\text{H}_2\text{O}$	391
9.25	3.08	1.52	9	9	6	钙滑石 $\text{CaMg}_2[(\text{OH})_2 \text{Si}_4\text{O}_{12}]$	907
9.31	2.87	5.34	9	10	6	磷钙镁铁矿 $\text{CaMg}(\text{H}_2\text{O})_4\text{Fe}^{3+}(\text{OH})[\text{PO}_4]_2$	578
9.10	2.86	3.02	7	9	8	黄磷铁矾 $0.56(\text{Fe}^{2+}, \text{Mg}, \text{Ca}, \text{Cu}, \text{Zn})\text{O} \cdot 1.5$ $(\text{K}, \text{Na})_2\text{O} \cdot \text{Fe}_2\text{O}_3 \cdot 4.01 \text{ SO}_3 \cdot 5.67\text{H}_2\text{O}$	405
9.27	2.83	4.91	10	8B	6B	磷钙锰镁铁矿 $\text{CaMn}^{2+}\text{Mg}_2(\text{H}_2\text{O})_8\text{Fe}^{3+}_2(\text{OH})_2$ $[\text{PO}_4]_4$	579
9.17	2.73	3.15	8	10	9	锰铁闪石 $(\text{Fe}, \text{Mn}, \text{Mg})_7[\text{OH} \text{Si}_4\text{O}_{11}]_2$	881b
8.99—8.50							
8.97	18.74	2.86	9	10	10	水砷铜矿 $\text{Cu}_4[\text{AsO}_4]_2(\text{OH})_2 \cdot 2.5\text{H}_2\text{O}$	619
8.66	13.50	6.54	10	10	10	发光沸石 $(\text{Ca}, \text{K}_2, \text{Na}_2)[\text{AlSi}_6\text{O}_{12}]_2 \cdot 3\text{H}_2\text{O}$	804
8.65	11.20	3.58	10	9	6	红铁矾 $\text{Fe}_2\text{O}_3 \cdot 2\text{SO}_3 \cdot 7\text{H}_2\text{O}$	407
8.81	7.93	3.49	9	10	9	基性水铁矾 $\text{Fe}_2\text{O}_3 \cdot 2\text{SO}_3 \cdot 8\text{H}_2\text{O}$	414
8.80	7.60	6.30	8	7	7	水钼铁矿 $\text{Fe}_2[\text{MoO}_4]_3 \cdot 8\text{H}_2\text{O}$	443b
8.72	5.77	4.06	10	5	5	六方水镁硼石 $2\text{MgO} \cdot 6\text{B}_2\text{O}_3 \cdot 15\text{H}_2\text{O}$	462
8.90	5.54	4.42	9	7	7	准-砷钼矿 $\text{Ba}(\text{UO}_2)(\text{AsO}_4)_2 \cdot 8\text{H}_2\text{O}$	633
8.71	5.44	4.93	2	2	2	准-铜铀云母 $\text{Cu}(\text{UO}_2\text{PO}_4)_2 \cdot 8\text{H}_2\text{O}$	602
8.95	4.36	2.83	10	10	10	磷叶石 $\text{Zn}_2\text{Fe}[\text{PO}_4]_2 \cdot 4\text{H}_2\text{O}$	584
8.94	4.04	10.17	10	10	9	红辉沸石	801
8.96	3.97	2.98	9	9	8	单斜发沸石 $(\text{Na}, \text{K})_{4.86}(\text{Mg}, \text{Ca})_{0.31}\text{Al}_{5.48}\text{Si}_{30.8}$ $\text{O}_{72} \cdot 19\text{H}_2\text{O}$	803a
8.66	3.92	2.94	8	10	10	片沸石 $(\text{K}_{0.25}\text{Na}_{1.14}\text{Sr}_{0.125}\text{Mg}_{0.05}\text{Ca}_{3.5})[\text{Al}_{9.32}$ $\text{Si}_{27}\text{O}_{72}] \cdot 26\text{H}_2\text{O}$	798
8.72	3.80	3.62	10	10	9	磷钼酸铁钙石 $\text{Ca}_2\text{Fe}_2[\text{P}_2\text{O}_4(\text{MoO}_4)_6] \cdot 14\text{H}_2\text{O}$	440
8.55	3.71	5.41	10	10	9	准-砷钼矿 $\text{Ba}(\text{UO}_2)_2(\text{AsO}_4)_2 \cdot 8\text{H}_2\text{O}$	633a
8.59	3.64	5.45	8	4	2	钙铀云母 $\text{Ca}(\text{UO}_2)_2(\text{PO}_4)_2 \cdot 10-12\text{H}_2\text{O}$	597
8.59	3.64	4.28	10	9	8	铅-钙铀云母 $\text{Pb}(\text{UO}_2)_2(\text{PO}_4)_2 \cdot 3\text{H}_2\text{O}$	601
8.73	3.63	1.84	10	9	8	钠砷钼钙铁矿 $(\text{Na}, \text{Ca})\text{Fe}[\text{As}_2\text{O}_4(\text{MoO}_4)_5] \cdot$ $15\text{H}_2\text{O}$	442
8.80	3.62	9.64	10	9	8	砷钼钙铁矿 $\text{CaFe}_2[\text{As}_2\text{Mo}_6\text{O}_{24}] \cdot 14\text{H}_2\text{O}$	441
8.76	3.60	4.36	10	3	1	水钙钒矿 $\text{Na}_4\text{Ca}_x\text{V}^{4+}_{2x}\text{V}^{5+}_{12-2x}\text{O}_{32} \cdot 8\text{H}_2\text{O}$	639
8.68	3.09	2.94	9	9	9	二水菱镁矿 $\text{MgCO}_3 \cdot 2\text{H}_2\text{O}$	348
8.90	2.97	3.89	10	4	3	片沸石 $\text{Ca}[\text{Al}_2\text{Si}_7\text{O}_{18}] \cdot 6\text{H}_2\text{O}$	798a
8.95	2.97	3.98	10	8	6	单斜发沸石 $\text{Na}_{2.3}\text{K}_{1.7}\text{Ca}_{0.8}\text{Mg}_{0.2}\text{Al}_{0.2}(\text{Si}_{30}\text{Al}_6)$ $\text{O}_{72} \cdot 24\text{H}_2\text{O}$	803
8.54	2.80	3.33	10	9	7	磷钙锌矿 $[\text{CaZn}_2(\text{PO}_4)_2] \cdot 2\text{H}_2\text{O}$	583
8.59	2.79	4.23	10	9	7	磷钙锌矿 $[\text{CaZn}_2(\text{PO}_4)_2] \cdot 2\text{H}_2\text{O}$	583a
8.84	2.77	5.62	10	8	5	菱砷铁矿 $\text{Ca}_3\text{Fe}_4^{3+}(\text{OH})_4(\text{H}_2\text{O})_3[\text{AsO}_4]_4$	616

8.63	2.75	5.61	10	6	5	若磷钙锰矿 $\text{Ca}_3\text{Mn}^{3+}(\text{OH})_6(\text{H}_2\text{O})_3[\text{PO}_4]_4$	569
8.75	2.75	3.53	10	7	4	铜碲锌石 $\text{Cu}_4\text{Zn}_3(\text{TeO}_3)_3(\text{OH})_{18}$	653
8.90	2.74	3.47	10	10	7	氟碳钙钇矿 $\text{YCa}(\text{CO}_3)_2\text{F}$	367
8.64	2.72	5.55	10	7	6	胶磷钙铁矿 $\text{Ca}_3\text{Fe}_4^{3+}(\text{OH})_6(\text{H}_2\text{O})_3[\text{PO}_4]_4$	577
8.72	2.64	9.36	10	9	7	砷镁锰矿 $\text{Mn}_9^{2+}(\text{OH})_9(\text{H}_2\text{O})_2(\text{AsO}_3)(\text{AsO}_4)_2$	615
8.51	2.62	3.14	10	3	2	绿水钒钙矿 $\text{CaV}_2\text{O}_9 \cdot 5\text{H}_2\text{O}$	636
8.55	2.59	7.13	10	6	4	水磷铁锰矿 $(\text{Mn}, \text{Fe})_3(\text{PO}_4)_2 \cdot 4\text{H}_2\text{O}$	570
8.49—8.00							
8.41	7.76	2.06	7	10	6	水钙钼铀矿 $\text{Ca}(\text{UO}_2)_3(\text{MoO}_4)_3[\text{OH}]_2 \cdot 8\text{H}_2\text{O}$	445
8.28	7.60	3.90	7	10	6	水钙钼铀矿 $\text{Ca}(\text{UO}_2)_3(\text{MoO}_4)_3[\text{OH}]_2 \cdot 8\text{H}_2\text{O}$	445a
8.30	6.81	3.34	10	6	5	水钼铁矿 $\text{Fe}_2(\text{MoO}_4)_3 \cdot 8\text{H}_2\text{O}$	443a
8.20	6.80	2.71	10	8	7	水钼铁矿 $\text{Fe}_2(\text{MoO}_4)_3 \cdot 8\text{H}_2\text{O}$	443c
8.20	6.80	2.29	10	10	8	水钼铁矿 $\text{Fe}_2(\text{MoO}_4)_3 \cdot 8\text{H}_2\text{O}$	443
8.48	4.52	3.42	8	8	8	钠铁闪石 $\text{Na}_{2.5}\text{Ca}_{0.5}(\text{Fe}^{2+}, \text{Li}, \text{Mg}, \text{Fe}^{3+}, \text{Al})_3[\text{Si}_{7.5}\text{Al}_{0.5}\text{O}_{22}](\text{OH}, \text{F})_2$	887
8.18	4.52	2.41	10	10	10	氟硼镁石 $(\text{Mg}_{2.99}\text{Fe}_{0.22})_{3.01}(\text{B}_{1.02}\text{O}_3)(\text{F}_{1.63}, \text{OH}_{1.28}, \text{O}_{0.09})_3$	489
8.35	4.17	2.90	10	10	9	柯沸石 $\text{KNa}_4\text{Si}_8\text{O}_{12}(\text{CO}_3)_4(\text{F}, \text{OH}) \cdot \text{H}_2\text{O}$	795
8.42	3.65	5.30	7	10	7	准-钡铀云母 $\text{Ba}(\text{UO}_2)_2(\text{PO}_4)_2 \cdot n\text{H}_2\text{O}$	603a
8.48	3.63	3.21	10	10	10	Na-钙铀云母 $\text{Na}_2(\text{UO}_2)_2(\text{PO}_4)_2 \cdot 6\text{H}_2\text{O}$	599
8.22	3.60	5.31	10	10	9	Ca-钙铀云母 $\text{Ca}[\text{UO}_2 \text{PO}_4]_2 \cdot 10\text{H}_2\text{O}$	600
8.19	3.58	2.08	7	10	7	准-钡铀云母 $2[\text{Ba}(\text{UO}_2)_2(\text{PO}_4)_2] \cdot 8\text{H}_2\text{O}$	603
8.11	3.50	3.16	10	10	5	基性水铁矾 $\text{Fe}_2^{3+}(\text{SO}_4)_3 \cdot 7\text{H}_2\text{O}$	414a
8.27	3.36	9.42	10	7	5	针绿矾 $(\text{Fe}, \text{Al})_2(\text{SO}_4)_3 \cdot 9\text{H}_2\text{O}$	399b
8.47	3.22	5.68	10	9	5	银星石 $\text{Al}_6(\text{OH})_6(\text{PO}_4)_4 \cdot 10\text{H}_2\text{O}$	541
8.23	3.19	4.11	10	6	5	五水硼钙石 $\text{CaO} \cdot 3\text{B}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$	502
8.09	3.15	2.71	9	9	8	三斜闪石 $\text{Na}_4[\text{Fe}^{2+}_{10}\text{Ti}_2]\text{Si}_{12}\text{O}_{40}$	896a
8.30	3.12	2.73	10	10	9	纤蓝闪石 $\text{Na}_4\text{Ca}_{9-1}\text{Mg}_{3-4}\text{Fe}^{2+}_{2-3}(\text{Fe}^{3+}, \text{Al})_4[(\text{OH})_4 \text{Si}_{16}\text{O}_{44}]$	894
8.31	3.10	2.35	5	10	8	富锰闪石	885
8.38	3.08	2.77	8	10	10	铁闪石 $\text{Fe}_7^{2+}(\text{Si}_8\text{O}_{22})(\text{OH})_2$	882
8.16	3.08	1.43	9	10	10	亚蓝闪石 $(\text{Na}, \text{K})\text{Ca}_{2-3}\text{Mg}_3\text{Fe}^{2+}_{1-2}(\text{Al}, \text{Fe}, \text{Ti})_2[(\text{OH})_4 \text{Al}_3-4\text{Si}_{13-12}\text{O}_{44}]$	890
8.35	3.07	2.74	9	10	9	锰铁闪石 $(\text{Fe}, \text{Mn}, \text{Mg})_7[\text{OH} \text{Si}_4\text{O}_{11}]_2$	880
8.25	3.06	2.73	8	10	9	锰镁铁闪石 $(\text{Ca}, \text{Mn})_x(\text{Mg}, \text{Fe}, \text{Mn})_{7-x}(\text{OH})_2[\text{Si}_8\text{O}_{22}]$	880
8.16	3.05	3.23	4	8	5	直闪石 $(\text{Mg}, \text{Fe}^{2+})_7(\text{Si}_8\text{O}_{22})[\text{OH}]_2$	874
8.46	3.02	3.24	10	4	3	铜石 $\text{Ce}_2[\text{CO}_3]_2 \cdot 8\text{H}_2\text{O}$	374
8.10	2.98	4.38	10	9	7	锂蓝闪石 $\text{Li}(\text{Mg}, \text{Fe})_3(\text{Al}, \text{Fe})_2\text{Si}_8\text{O}_{22}(\text{OH})_2$	876b
8.00	2.92	1.88	7	10	7	磷铝钼石 $\text{CeAl}_3(\text{PO}_4)_2(\text{OH})_6$	592
8.30	2.76	3.36	8	10	9	针绿矾 $(\text{Fe}, \text{Al})_2(\text{SO}_4)_3 \cdot 9\text{H}_2\text{O}$	399a
8.15	2.71	4.53	10	8	6	针绿矾 $\text{Fe}_2\text{O}_3 \cdot 3\text{SO}_3 \cdot 9\text{H}_2\text{O}$	399
8.40	2.70	3.13	10	10	9	基性角闪石 $(\text{Na}, \text{K})_{2-3}\text{Ca}_4\text{Mg}_{4-6}\text{Fe}_{1-3}\text{Ti}_{0-2}$	

						(Fe ²⁺ , Al) ₂₋₃ [(O, OH) ₄ [Al ₄ Si ₁₂ O ₄₄]]	891
8.14	2.70	1.43	8	10	9	青蓝石棉 Na ₂ (Mg, Fe ²⁺) ₄ (Fe ³⁺ , Al) ₂ [Si ₈ O ₂₂](OH)	893
8.17	2.69	2.57	9	10	8B	绿钠闪石 Ca ₂ Na(Fe, Mg) ₄ (Al, Fe)(OH) ₂ [(Al, Si) ₈ O ₂₂]	888a
8.18	2.67	2.42	7	10	9	水磷钠石 Na ₆ H(PO ₄) ₂ F·17H ₂ O	539
8.01	2.62	2.39	10	9	9	水锆钠石 (Na, Ca) ₃ Zr ₂ Si ₃ O ₂₂ ·8H ₂ O	675
7.99—7.50							
7.60	21.10	7.00	10	10	10	晶蛭石 (H, K) ₂ O·Al ₂ O ₃ ·2SiO ₂	955
7.62	11.60	5.75	10	10	7	水磷铝铜矿 Cu ₃ Al ₄ (PO ₄) ₃ (OH) ₉ ·4H ₂ O	581
7.63	9.85	3.96	10	10	10	黄地蜡 C ₃₂ H ₁₇ O	959
7.93	8.81	3.49	10	9	9	基性水铁矾 Fe ₂ O ₃ ·2SO ₃ ·8H ₂ O	414
7.60	8.80	6.30	7	8	7	水钼铁矿 Fe ₂ (MoO ₄) ₃ ·8H ₂ O	443b
7.76	8.41	2.06	10	7	6	水钙钼铀矿 Ca(UO ₂) ₃ (MoO ₄) ₃ [OH] ₂ ·8H ₂ O	445
7.60	8.28	3.90	10	7	6	水钙钼铀矿 Ca(UO ₂) ₃ (MoO ₄) ₃ [OH] ₂ ·8H ₂ O	445a
7.96	6.85	6.13	10	5	3	水硅钙矾矿 Ca(VO)(Si ₄ O ₁₀)·4H ₂ O	717
7.62	5.80	5.24	9	10	9	水碳铝镁石 Mg ₂ Al ₂ [(CO ₃) ₄ (OH) ₂]·15H ₂ O	353
7.69	4.76	2.79	10	7	7	板硼石 Ca[B ₃ O ₃ (OH) ₅]·4H ₂ O	464
7.71	4.30	3.08	10	10	10	毒石 CaHAsO ₄ ·2H ₂ O(2CaO·AS ₂ O ₅ ·5H ₂ O)	612
7.99	4.23	5.80	10	7	6	密蜡石 Al ₂ C ₁₂ O ₁₂ ·18H ₂ O	960
7.51	4.18	3.01	10	10	10	针磷钇铈矿 (Y, Er)PO ₄ ·2H ₂ O	264
7.90	3.97	3.06	10B	5B	5	磷铀矿 Ca(UO ₂) ₄ (PO ₄) ₂ (OH) ₄	604
7.73	3.94	1.97	10	10	7	β-斜硅钙铀矿 CaO·2UO ₃ ·2SiO ₂ ·6H ₂ O	782
7.83	3.90	3.51	10	9	6	β-硅钙铀矿 Ca(UO ₂) ₂ (SiO ₃) ₂ (OH) ₂ ·5H ₂ O	781a
7.80	3.87	1.97	10	10	6	水滑石 Mg ₆ R ³⁺ [(OH) ₁₆ CO ₃]·4H ₂ O(R = Al, Fe, Cr)	356a
7.50	3.84	2.52	3	4	4	β-硅钙铀矿 Ca(UO ₂) ₂ Si ₂ O ₇ ·6H ₂ O	781c
7.61	3.50	4.30	8	10	7	烧石膏 CaO·SO ₃ ·1/2H ₂ O	394
7.67	3.37	3.83	10	8	7	X矿物	329
7.61	3.31	1.91	6B	10	7	紫钼铀矿 (UO ₂ + UO ₃)·5.5MoO ₃ ·5.3H ₂ O	444b
7.84	3.26	2.56	10	8	8	钙钛铁矿 (Ca, Mg)(Fe, Al) ₂ Ti ₄ O ₁₂ ·4H ₂ O	215
7.85	3.21	3.98	10	8	6	水钙钼铀矿 Ca(UO ₂) ₃ (MoO ₄) ₃ [OH] ₂ ·8H ₂ O	445b
7.59	3.03	2.29	7	10	3	板硼石 Ca[B ₃ O ₃ (OH) ₅]·4H ₂ O	464a
7.62	3.02	2.53	5	10	8	钙-硅铅铈矿 (Ca, Pb)ZnSiO ₄	734
7.93	2.99	2.70	10	10	10	单斜锂蓝闪石 (Na _{0.33} K _{0.05}) _{0.38} (Li _{1.76} Ca _{0.07} Na _{0.14}) _{2.00} (Al _{2.21} Mg _{1.93} Fe ²⁺ _{0.68} Li _{0.08} Fe ³⁺ _{0.06} Mn _{0.05}) _{5.00} [Si ₈ O ₂₂][O _{0.63} F _{0.74} OH _{0.63}] _{2.00}	895
7.70	2.95	3.44	10	9	5	针钠铁矾 3Na ₂ O·Fe ₂ O ₃ ·6SO ₃ ·6H ₂ O	417
7.81	2.68	2.54	6	7	7	铝铁硼镁石 (Mg, Fe)[OH](B, Al) ₂ O ₂]	491
7.57	2.67	1.89	10	10	10	单斜碳镁钙硼石 Ca ₄ MgH ₆ (BO ₃) ₄ (CO ₃) ₂	467
7.84	2.20	1.73	9	10	9	斯氯硼钙石 Ca ₈ B ₁₂ Cl ₂ O ₁₆ (OH) ₁₈	504
7.61	2.13	2.97	10	10	9	乌硼钙石 Ca[B ₂ O ₃ (OH) ₂]·H ₂ O	501
7.97	1.47	3.12	9	10	9	钠黝帘石	852

7.49—7.00

7.10	28.50	14.10	10	10	10	蓝高岭土($K_{0.01}Na_{0.04}Ca_{0.02})(Mg_{0.16}Fe_{0.2}Al_{3.14})$ [$Si_{3.82}Al_{0.18}O_{10}](OH)_2 \cdot 0.36H_2O$	909a
7.00	21.10	7.60	10	10	10	晶蛭石(H, K) $_2O \cdot Al_2O_3 \cdot 2SiO_2$	955
7.43	9.50	3.49	10	10	6	单斜氢碳矿 $C_{24}H_{12}$	958
7.13	8.55	2.59	4	10	6	水磷铁锰矿 $(Mn, Fe)_3(PO_4)_2 \cdot 4H_2O$	570
7.00	7.19	3.00	10	10	7	水铜铅矾 $Pb_4Cu(SO_4)(OH)_8$	436
7.19	7.00	3.00	10	10	7	水铜铅矾 $Pb_4Cu(SO_4)(OH)_8$	436
7.40	6.60	3.24	10	9	8	贫水硼砂(合成的) $Na_2[B_4O_6(OH)_2] \cdot 3H_2O$	453
7.01	6.40	5.36	10	10	10	水胆矾 $Cu_{15}(SO_4)_4(OH)_{22} \cdot 6.6H_2O$	427
7.31	5.00	3.18	9	10	8	库水硼镁石 $Mg[B_3O_3(OH)_5] \cdot 5H_2O$	488a
7.12	4.94	3.16	10	10	9	库水硼镁石 $Mg[B_3O_3(OH)_5] \cdot 5H_2O$	488
7.12	4.76	3.57	10	10	9	铬绿泥石 $(Mg, Al, Cr)_3[(OH)_2 AlSi_3O_{10}]$	940b
7.33	4.09	3.50	10	8	7	锆硼石 $(Ca, Sr)O \cdot 2MgO \cdot 12B_2O_3 \cdot 9H_2O$	471
7.03	3.92	3.53	10	9	9	铁锰磷绿泥石 $(Mn_{2.24}Fe^{2+}_{2.5}Zn_{0.01})_{4.75}(Al_{0.18}Fe^{3+}_{1.12})_{1.5}[(Al_{1.42}Si_{2.58})_4O_{10}](OH)_8 \cdot 0.31H_2O$	946
7.45	3.86	2.60	4	5	5	β -硅钙铀矿 $Ca(UO_2)_2Si_2O_7 \cdot 6H_2O$	781b
7.49	3.83	2.80	10	9	9	β -硅钙铀矿 $4[CaO \cdot 2UO_3 \cdot 2SiO_2] \cdot 6H_2O$	781
7.34	3.66	1.54	10	10	9	利蛇纹石 $Mg_6[(OH)_8 Si_4O_{10}]$	913
7.23	3.66	2.44	9	10	7	单斜纤维蛇纹石 $Mg_3[OH]_4\{Si_2O_5\}$	912
7.25	3.65	2.50	7	10	9	正纤维蛇纹石 $Mg_3[OH]_4\{Si_2O_5\}$	911
7.33	3.64	4.46	9	9	8	纤维蛇纹石-石棉 $Mg_3(OH)_4\{Si_2O_5\}$	910
7.26	3.63	2.50	10	10	9	铁蛇纹石 $(Mg_{4.6}Fe_{0.5})_{5.1}Fe_{0.6}(Si_4O_{10})(OH)_4$	918
7.25	3.62	2.48	10	10	6B	镍绿泥石	941
7.29	3.60	2.52	10	10	8	硬蛇纹石 $Mg_6[(OH)_8 Si_4O_{10}]$	914
7.19	3.59	2.38	8	10	8	镁绿泥石 $Mg_{3.2}Al_{2.9}Fe^{3+}_{0.8}[(OH)_8 Al_2Si_2O_{10}]$	939
7.10	3.58	4.74	9	10	9B	绿泥石-石棉 $(Mg, Fe)_{8-2x}(Al, Fe)_{2x}(OH)_8$ [$Si_{4-2x}Al_{2x}O_{10}$]	936
7.10	3.58	1.32	10	10	10	蓝高岭土 $Na_{0.09}(Al_{3.62}Mg_{0.45}Fe_{0.21})_{4.25}[(Si_{3.64}Al_{0.36})_{4.00}O_{10.00}(OH)_8] \cdot 0.2H_2O$	909
7.13	3.57	2.38	9	10	8	叶绿泥石 $Mg_5Al[OH]_8\{Si_3AlO_{10}\}$	937
7.12	3.56	2.42	10	9	8	钼镁锰矿 $(Na, Mn)Mn_3O_7 \cdot nH_2O$	204d
7.08	3.55	4.73	10	10	9	铬绿泥石 $(Mg, Al, Cr)_3[(OH)_2 AlSi_3O_{10}]$	940
7.11	3.55	2.52	9	9	9	铁-鲕绿泥石 $(Fe, Fe^{3+})[(OH)_2 AlSi_3O_{10}]$ $(Fe, Mg)_3(O, OH)_6$	943
7.09	3.54	4.72	9	10	8	镁锰磷绿泥石 $(Mn_{1.69}Mg_{3.65})_{5.34}[(Al_{0.69}Fe^{3+}_{0.17})_{0.86}(Al_{1.27}Si_{2.73})_4O_{10}](OH)_8 \cdot 0.44H_2O$	945
7.10	3.54	2.44	10	9	8	锰鲕绿泥石 $(Mn_4Zn_{0.09})_{4.09}(Al_{1.2}Fe^{3+}_{0.58})_{1.78}$ [$(Al_{1.47}Si_{2.53})_4O_{10}](OH)_8 \cdot 0.4H_2O$	944
7.09	3.54	1.53	10	9	9	淡斜绿泥石 $Mg_5Al(AlSi_3O_{10})(OH)_8$	938
7.05	3.52	2.46	7	7	7	铁-鲕绿泥石 $(Fe, Fe^{3+})_3[(OH)_2 AlSi_3O_{10}]$ $(Fe, Mg)_3(O, OH)_6$	943a
7.08	3.51	13.40	10	10	7B	似单热热水白云母 $0.2RO \cdot Al_2O_3 \cdot 3SiO_2 \cdot 2H_2O$	930
7.12	3.50	3.14	10	10	10	水钙钾铀矿 $K_2O \cdot CaO \cdot 6UO_3 \cdot 9H_2O$	308

7.00	3.46	2.70	10	8	7	铜矾 $4\text{CuO} \cdot 1.01\text{SO}_3 \cdot 4.2\text{H}_2\text{O}$	428
7.31	3.35	5.21	9	10	9	硅钙铁铈钍矿 $\text{CaNaKTh}[\text{Si}_8\text{O}_{20}]$	779a
7.16	3.30	2.04	10	10	10	纤水磷铍石 $\text{Be}_2[\text{PO}_4](\text{OH}) \cdot 4\text{H}_2\text{O}$	533
7.08	3.13	3.49	10	10	9	水铈钾钙铈矿 $2(\text{K}_2\text{O}, \text{CaO}, \text{SrO}) \cdot 6\text{UO}_3 \cdot 8\text{H}_2\text{O}$	309
7.19	3.11	3.00	10	9	9	铁钒钼矿 $(\text{Cu}_{2.91}\text{Fe}_{0.16})_{3.07}(\text{OH})_2(\text{V}_{1.85}\text{Fe}_{0.15}\text{O}_7) \cdot 2\text{H}_2\text{O}$	647
7.40	3.08	10.3	10	10	9	柱钾铁矾 $\text{K}_2\text{O} \cdot \text{Fe}_2\text{O}_3 \cdot 4\text{SO}_3 \cdot 8\text{H}_2\text{O}$	420
7.17	3.01	2.56	10	4	4	钒钼铜矿 $\text{Cu}_3(\text{OH})_2[\text{V}_2\text{O}_7] \cdot 2\text{H}_2\text{O}$	646
7.03	2.97	5.57	7	10	7	硫钾铁石 $\text{K}_3\text{Fe}_9\text{S}_{14}$	100a
7.25	2.87	2.38	10	7	6	水钒铜矿 $\text{Cu}_3[\text{VO}_4]_2 \cdot 3\text{H}_2\text{O}$	644
7.14	2.87	3.58	6	10	6	磷硅铌钽石 $\text{Na}_4\text{TiNb}_2\text{Si}_4\text{O}_{17} \cdot 2\text{Na}_3\text{PO}_4$	679
7.28	2.60	1.42	10	9	6	透视石 $(\text{Cu}_{5.91}\text{Fe}_{0.05}^{3+}\text{Zn}_{0.05}\text{Pb}_{0.01})_{6.02}[(\text{Si}_{5.9}\text{Al}_{0.01}\text{Ti}_{0.01})_{6.01}\text{O}_{18}] \cdot 5.93\text{H}_2\text{O}$	732
7.18	2.60	2.98	10	10	9	镁电气石 $\text{NaMg}_3\text{Al}_6[(\text{OH})_{1+3}](\text{BO}_3)_3[\text{Si}_6\text{O}_{18}]$	807a
7.30	2.50	4.59	10	10	9	利蛇纹石 $\text{Mg}_6[(\text{OH})_8 \text{Si}_4\text{O}_{10}]$	913a
7.04	2.41	2.21	8	10	8	尼硼钙石 $\text{Ca}[\text{B}_2\text{O}_3(\text{OH})_2] \cdot 1.3\text{H}_2\text{O}$	498
7.30	2.23	9.92	9	8	7	β -蜡纹石 $\text{Mg}_4[\text{OH}]_4\{\text{Si}_4\text{O}_{10}\} \cdot 4\text{H}_2\text{O}$	916
7.25	2.10	5.40	8	7	6	基性硼钙锶石 $(\text{Sr}, \text{Ca})_2[\text{B}_{14}\text{O}_{23}] \cdot 8\text{H}_2\text{O}$	528
6.99—6.50							
6.54	13.50	8.66	10	10	10	发光沸石 $(\text{Ca}, \text{K}_2\text{Na}_2)[\text{AlSi}_5\text{O}_{12}]_2 \cdot 3\text{H}_2\text{O}$	804
6.90	11.60	3.38	10	8	8	硅铝钛钠石 $(\text{Na}_{2.8}\text{K}_{0.1}\text{Ca}_{0.1})_3(\text{Ti}_{1.1}\text{Al}_{0.6}\text{Nb}_{0.3})_2[\text{Si}_2(\text{O}, \text{OH})_7]_3 \cdot 3\text{H}_2\text{O}^+ + \text{H}_2\text{O}^-$	674
6.81	8.30	3.34	6	10	5	水钼铁矿 $\text{Fe}_2(\text{MoO}_4)_3 \cdot 8\text{H}_2\text{O}$	443a
6.80	8.20	2.71	8	10	7	水钼铁矿 $\text{Fe}_2(\text{MoO}_4)_3 \cdot 8\text{H}_2\text{O}$	443c
6.80	8.20	2.29	10	10	8	水钼铁矿 $\text{Fe}_2(\text{MoO}_4)_3 \cdot 8\text{H}_2\text{O}$	443
6.85	7.96	6.13	5	10	3	水硅钙钒矿 $\text{Ca}(\text{VO})(\text{Si}_4\text{O}_{10}) \cdot 4\text{H}_2\text{O}$	717
6.60	7.40	3.24	9	10	8	贫水硼砂 (合成的) $\text{Na}_2[\text{B}_4\text{O}_6(\text{OH})_2] \cdot 3\text{H}_2\text{O}$	453
6.59	5.85	2.88	9	10	10	钙沸石 $\text{Ca}(\text{Al}_2\text{Si}_2\text{O}_{10}) \cdot 3\text{H}_2\text{O}$	793
6.82	5.46	4.47	8	10	10	纤铁矾 $\text{FeO} \cdot \text{SO}_3 \cdot 4\text{H}_2\text{O}$	412e
6.50	4.95	4.40	7	7	6	水钒锶钙矿 $\text{CaSrV}_2\text{O}_6(\text{OH})_2 \cdot 2\text{H}_2\text{O}$	637
6.94	4.92	3.10	8	8	8	钾硬锰矿 $\text{Mn}^{4+}_{2.4}(\text{Mn}^{2+}, \text{R}^{2+})_{0.61}(\text{K}, \text{Na})_{0.7}[\text{Ba}_{0.0216}(\text{H}_2\text{O})]_{1.31}$	201a
6.57	4.53	3.87	10	1	1	图硼锶石 $\text{Sr}[\text{B}_6\text{O}_9(\text{OH})_3] \cdot 3\text{H}_2\text{O}$	526
6.88	4.18	3.52	6	10	10	黄油沸石 $(\text{Ca}, \text{K}_2, \text{Na}_2)_2\text{Al}_4(\text{SiO}_3)_8 \cdot 8\text{H}_2\text{O}$	797
6.68	4.08	5.93	7	10	7	基性砷铋矿 $\text{Zn}_2(\text{AsO}_4)(\text{OH}) \cdot \text{H}_2\text{O}$	623
6.95	3.73	3.46	9	8	8	水钨华 $\text{H}_2\text{WO}_4 \cdot \text{H}_2\text{O}$	446
6.78	3.71	2.89	5	10	9	锌绿松石 $\text{ZnAl}_6[(\text{OH})_2](\text{PO}_4)_4 \cdot 5\text{H}_2\text{O}$	582
6.99	3.51	4.53	10	9	<1	铬绿泥石 $(\text{Mg}, \text{Al}, \text{Cr})_3[(\text{OH})_2 \text{Al}_3\text{O}_{10}]$	940a
6.93	3.46	3.10	6	10	8	魏水钙铅铈矿 $(\text{Pb}, \text{Ca})\text{U}_2\text{O}_7 \cdot 2\text{H}_2\text{O}$	327
6.80	3.24	2.99	10	10	10	纤水磷铍石 $\text{Be}_2[\text{PO}_4](\text{OH}) \cdot 4\text{H}_2\text{O}$	533a
6.96	3.11	4.92	7	10	7	钾硬锰矿 $\text{K}_2\text{Mn}_8\text{O}_{16}$	201b
6.96	3.11	2.40	8	10	9	钾硬锰矿 $\text{K}_{\leq 2}\text{Mn}_8\text{O}_{16}$	201
6.94	3.11	2.40	7	10	7	钾硬锰矿 $\text{K}_2\text{Mn}_8\text{O}_{16}$	201c

6.94	3.08	2.77	10	6	3	意硼钠石 $\text{Na}_4\text{B}_{10}\text{O}_{17} \cdot 7\text{H}_2\text{O}$	475
6.56	3.07	11.8	7	9	7	纤硅碱钙石 $(\text{Ca}, \text{Na}_2, \text{K}_2)_8\text{Si}_{16}\text{O}_{40} \cdot 11\text{H}_2\text{O}$	699
6.51	3.04	2.17	6	7	6	磷铈钨矿 $\text{CePO}_4 \cdot \text{H}_2\text{O}$	590
6.50	2.99	2.54	4	10	6	锥辉石 $\text{Na}_2\text{O} \cdot \text{FeO} \cdot \text{SiO}_2$	872
6.60	2.94	13.10	9	10	7	水钠硅钙石 $(\text{Na}, \text{Na}_2, \text{K}_2)_{16}\text{Si}_{32}\text{O}_{80} \cdot 24\text{H}_2\text{O}$	811
6.71	2.88	3.75	7	10	7	绿纤石 $\text{Ca}_4[\text{Mg}, \text{Fe}^{2+}, \text{Mn}](\text{Al}, \text{Fe}^{3+}, \text{Ti})_3\text{O}(\text{OH})_3[\text{Si}_2\text{O}_7]_2[\text{SiO}_4]_2 \cdot 2\text{H}_2\text{O}$	854
6.92	2.84	3.78	10	8	7	磷硼锰石 $\text{Mn}_3^{2+}(\text{OH})_2[\text{B}(\text{OH})_4[\text{PO}_4]]$	511
6.60	2.77	3.36	9	8	7	钙钇铈矿 $\text{Ca}_4(\text{Y}, \text{Ce})_4\text{Si}_8\text{O}_{23}(\text{CO}_3)_3 \cdot 3\text{H}_2\text{O}$	774b
6.95	2.76	1.15	10	10	10	蓝柱石 $\text{AlBe}(\text{OH})[\text{SiO}_4]$	841
6.50	2.75	3.44	9	9	8	钙钇铈矿 $\text{Ca}_4(\text{Y}, \text{Ce})_4\text{Si}_8\text{O}_{23}(\text{CO}_3)_3 \cdot 3\text{H}_2\text{O}$	774a
6.78	2.57	2.09	10	6	6	诺硼钙石 $\text{Ca}[\text{B}_6\text{O}_9(\text{OH})_2] \cdot 3\text{H}_2\text{O}$	499
6.71	2.44	2.21	8	10	9	水方硼石 $\text{CaMg}[\text{B}_3\text{O}_4(\text{OH})_3]_2 \cdot 3\text{H}_2\text{O}$	460
6.49—6.00							
6.12	13.50	12.30	6	10	6	六方水钙镁硼石 $5\text{CaO} \cdot \text{MgO} \cdot 12\text{B}_2\text{O}_3 \cdot 30\text{H}_2\text{O}$	463
6.19	9.30	18.64	6	10	9	镁叶绿矾 $(\text{Mg}_{1.11}\text{Fe}^{2+}_{0.03})\text{Fe}^{3+}_{3.92}(\text{SO}_4)_{6.00}(\text{OH})_2 \cdot 21.31\text{H}_2\text{O}$	401
6.12	9.25	3.56	8	10	6	铈叶绿矾 $\text{ZnO} \cdot 2\text{Fe}_2\text{O}_3 \cdot 6\text{SO}_3 \cdot 21\text{H}_2\text{O}$	402
6.00	9.00	3.52	7	10	6	叶绿矾 $\text{FeO} \cdot 2\text{Fe}_2\text{O}_3 \cdot 6\text{SO}_3 \cdot 21\text{H}_2\text{O}$	400
6.30	8.80	7.60	7	8	7	水钼铁矿 $\text{Fe}_2[\text{MoO}_4]_3 \cdot 8\text{H}_2\text{O}$	443b
6.13	7.96	6.85	3	10	5	水硅钙钒矿 $\text{Ca}(\text{VO})(\text{Si}_4\text{O}_{10}) \cdot 4\text{H}_2\text{O}$	717
6.40	7.01	5.36	10	10	10	水胆矾 $\text{Cu}_{15}(\text{SO}_4)_4(\text{OH})_{22} \cdot 6.6\text{H}_2\text{O}$	427
6.44	4.72	3.05	7	10	8	水硅钙铜矿 $\text{Cu}_2\text{Ca}_2\text{Si}_3\text{O}_{10} \cdot 2\text{H}_2\text{O}$	730
6.36	4.68	3.54	10	9	9	阿硼镁石 $\text{Mg}[\text{B}_6\text{O}_9(\text{OH})_2] \cdot 4\text{H}_2\text{O}$	484
6.43	3.99	3.49	10	8	6	钒钾铀矿 $\text{K}_2(\text{UO}_2)_2(\text{VO}_4)_2 \cdot 3\text{H}_2\text{O}$	652
6.07	3.92	3.76	10	10	10	异形水硅钙钒矿 $\text{Ca}(\text{VO})(\text{Si}_4\text{O}_{10}) \cdot 4\text{H}_2\text{O}$	718
6.08	3.86	3.47	10	9	8	符硼钙石 $\text{Ca}[\text{B}(\text{OH})_4]_2$	494
6.08	3.86	3.42	10	9	8	钙-水硼钙石 $\text{CaB}_2\text{O}_4 \cdot 3.5\text{H}_2\text{O}$	503
6.00	3.58	3.87	8	10	7	硫方英石 SiO_2	170
6.46	3.38	2.98	5	10	10	红铬铅矿 $\text{Pb}_3[\text{O}](\text{CrO}_4)_2$	437
6.01	3.38	2.84	10	9	7	四水铈的五硼酸盐 $\text{NH}_4\text{B}_5\text{O}_{13} \cdot 4\text{H}_2\text{O}$	454
6.30	3.20	9.50	9	10	9	氯硼钠铝石 $\text{KNa}_2\text{Al}_4(\text{B}_2\text{O}_5)_3\text{Cl}_3 \cdot 13\text{H}_2\text{O}$	493
6.01	3.01	5.30	10	5	2	挪硼钠石 $\text{Na}_2[\text{B}_5\text{O}_7(\text{OH})_3] \cdot 2\text{H}_2\text{O}$ 或 $\text{Na}_2[\text{B}_5\text{O}_6(\text{OH})_3] \cdot \text{H}_2\text{O}$	474
6.40	2.94	4.47	4	10	9	碳钙铀钒矿 $(\text{Na}_{1.9}\text{Ba}_{4.0}\text{Ca}_{1.1}\text{Sr}_{0.2}\text{Re}^{3+}_{1.5}\text{U}^{4+}_{0.3})(\text{CO}_3)_9 \cdot 5\text{H}_2\text{O}$	381a
6.31	2.74	2.47	9	7	7	白硼锰矿 $\text{Mn}_2[\text{B}_2\text{O}_4(\text{OH})](\text{OH})$	510
6.31	2.67	2.56	9	10	9	硼镁石 $\text{Mg}[\text{OH} \text{BO}_2]$	477g
6.17	2.66	2.95	9	10	9	硼镁石 $\text{Mg}[\text{OH} \text{BO}_2]$	477h
6.20	2.66	2.42	10	8	8	硼镁石 $\text{Mg}[\text{OH} \text{BO}_2]$	477i
6.17	2.64	2.56	9	10	9	硼镁石 $\text{Mg}[\text{OH} \text{BO}_2]$	477f
6.16	2.56	1.60	6	10	6	硼镁钛矿 $(\text{Mg}, \text{Fe})_3\text{Ti}[\text{O} \text{BO}_3]_2$	508a
6.20	2.36	2.69	8	10	9	硼镁石 $\text{Mg}[\text{OH} \text{BO}_2]$	477e