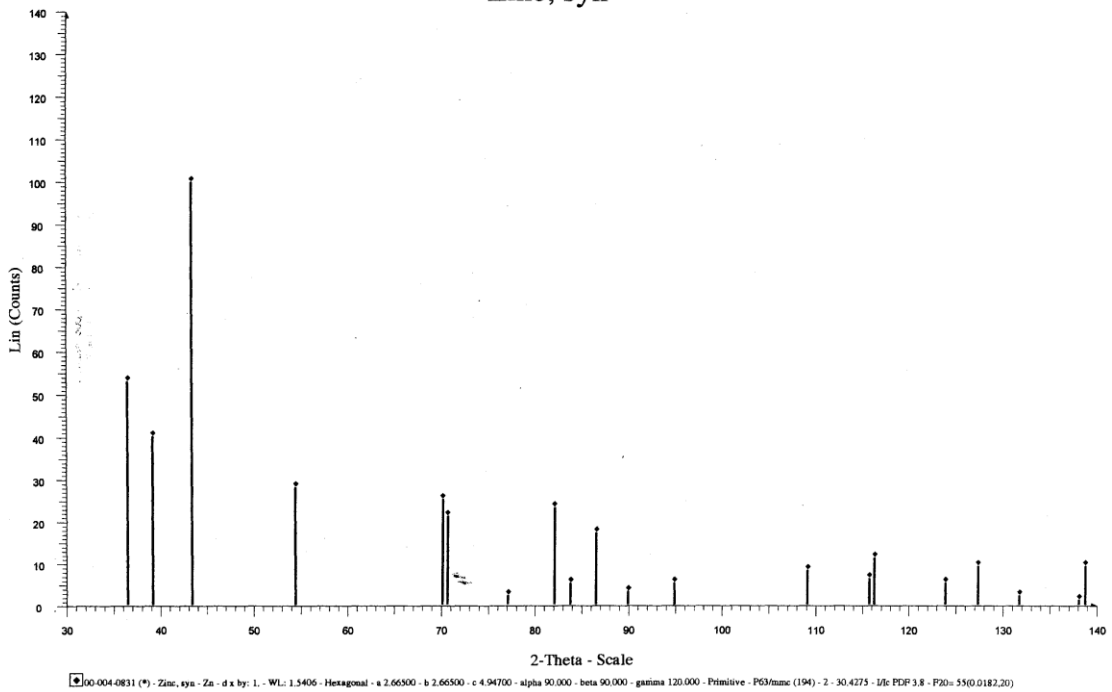
Zinc, syn



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Pattern : 00-004-0831 ***Radiation =*** 1.540560 ***Quality :*** High

Zn

Zinc
Zinc, syn

Lattice : Hexagonal
S.G. : P63/mmc (194)

a = 2.66500
c = 4.94700

Z = 2

Mol. weight = 65.38
Volume [CD] = 30.43
Dx = 7.136
Dm = 7.050
I/Icor = 3.80

Sample source or locality: Sample from New Jersey Zinc Company, Sterling Hill, New Jersey, USA.
Temperature of data collection: Pattern taken at 26 C.
Melting point: 420°
Optical data: B=2.58
Color: Bluish white
Analysis: Spectroscopic analysis shows faint traces of Pb, Cu, Mg, Si.
Data collection flag: Ambient.

Swanson, Tatge., Natl. Bur. Stand. (U.S.), Circ. 539, volume I, page 16 (1953)

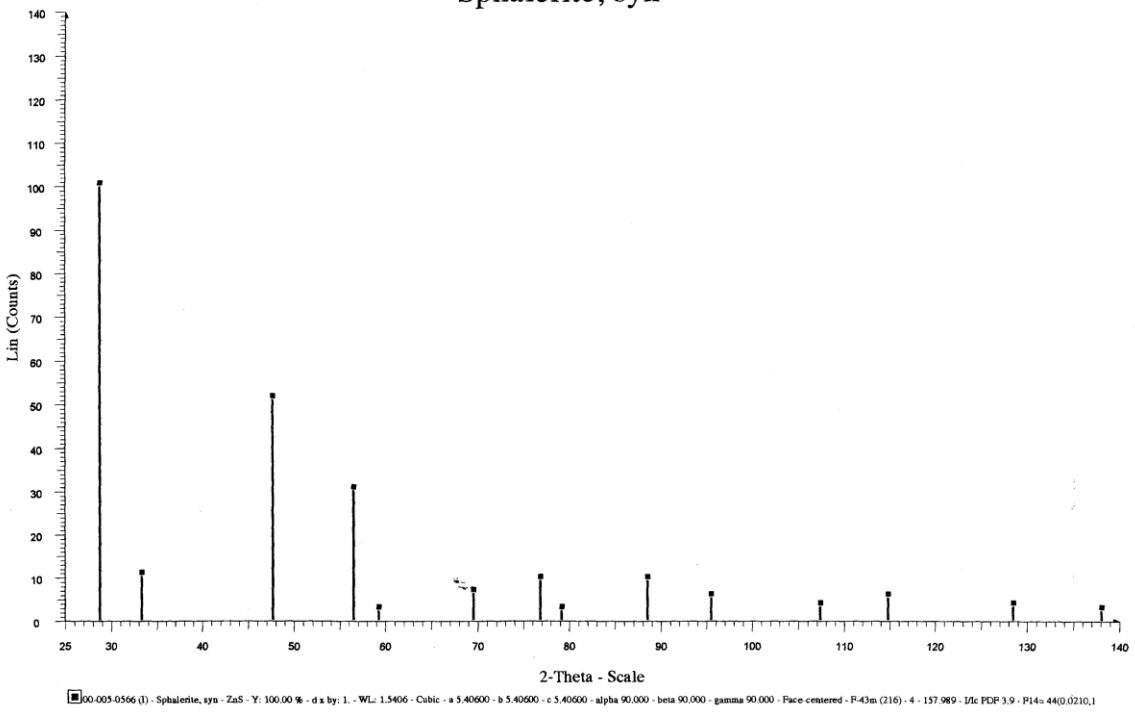
CAS Number: 7440-66-6

Radiation : CuKa1
Lambda : 1.54050
SS/FOM : F20= 55(0.0182,20)

Filter : Beta
d-sp : Not given

d (Å)	i	h	k	l
2.47300	53	0	0	2
2.30800	40	1	0	0
2.09100	100	1	0	1
1.68700	28	1	0	2
1.34200	25	1	0	3
1.33200	21	1	1	0
1.23700	2	0	0	4
1.17290	23	1	1	2
1.15380	5	2	0	0
1.12360	17	2	0	1
1.09010	3	1	0	4
1.04560	5	2	0	2
0.94540	8	2	0	3
0.90930	6	1	0	5
0.90640	11	1	1	4
0.87220	5	2	1	0
0.85890	9	2	1	1
0.84370	2	2	0	4
0.82450	1	0	0	6
0.82250	9	2	1	2

Sphalerite, syn



cuu duong than cong. com

Pattern : 00-005-0566 ***Radiation =*** 1.540560 ***Quality :*** Indexed

ZnS

Zinc Sulfide
Sphalerite, syn
Also called: blende, zinc blende

Lattice : Face-centered cubic
S.G. : F-43m (216)

a = 5.40600

Z = 4

Mol. weight = 97.44
Volume [CD] = 157.99
Dx = 4.097
Dm = 3.900
I/Icor = 3.90

Sample preparation: Prepared at 940 C by RCA Laboratory.
Analysis: Spectroscopic analysis: <0.1% Cu; <0.01% B, Fe, Mg, Si; <0.001% Al, Ca.
Temperature of data collection: Pattern taken at 26 C.
Additional pattern: See 24-1137 for cadmium substitution.
General comments: Opaque mineral optical data on specimen from Snailsbeach, Minsterly, Shropshire, England: RR_2R_e=16.7, Disp.=16, VHN_{100} =218-227, Color values .303, .309, 16.6, Ref.: IMA Commission on Ore Microscopy QDF.
General comments: Measured density and color from *Dana's System of Mineralogy, 7th Ed.*, I 211.
Color: White, yellow white
Data collection flag: Ambient.

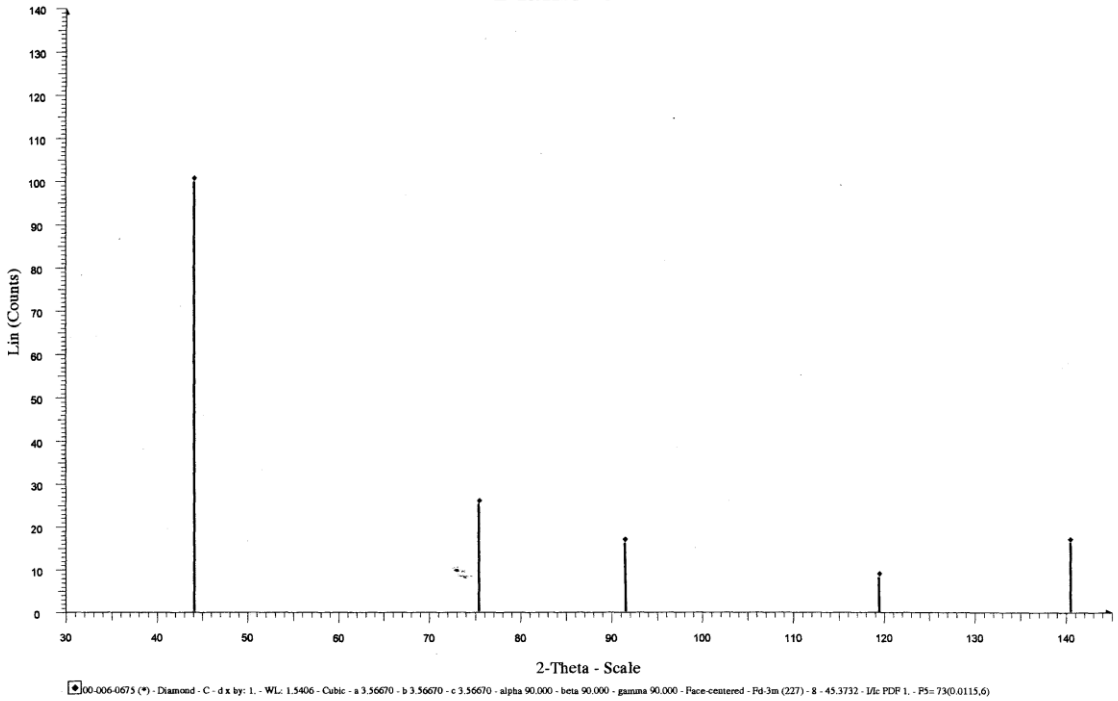
Swanson, Fuyat., Natl. Bur. Stand. (U.S.), Circ. 539, volume II, page 16 (1953)

Radiation : CuKa1
Lambda : 1.54050
SS/FOM : F14= 44(0.0210,15)

Filter : Beta
d-sp : Not given

d (A)	i	h	k	l
3.12300	100	1	1	1
2.70500	10	2	0	0
1.91200	51	2	2	0
1.63300	30	3	1	1
1.56100	2	2	2	2
1.35100	6	4	0	0
1.24000	9	3	3	1
1.20900	2	4	2	0
1.10340	9	4	2	2
1.04030	5	5	1	1
0.95570	3	4	4	0
0.91380	5	5	3	1
0.85480	3	6	2	0
0.82440	2	5	3	3

Diamond



00-006-0675 (*) - Diamond - C - d x by: 1. - WL: 1.5406 - Cubic - a 3.56670 - b 3.56670 - c 3.56670 - alpha 90.000 - beta 90.000 - gamma 90.000 - Face-centered - Fd-3m (227) - 8 - 45.3732 - I/Ic PDF 1. - P5= 73(0.0115,6)

cuu duong than cong. com

Pattern : 00-006-0675 ***Radiation =*** 1.540560 ***Quality :*** High

C

Carbon
Diamond
Also called: bort, carbonado

Lattice : Face-centered cubic
S.G. : Fd-3m (227)

a = 3.56670

Z = 8

Mol. weight = 12.01
Volume [CD] = 45.37
Dx = 3.517
Dm = 3.511

Optical data: B=2.4195
Color: Colorless
Sample source or locality: Specimen was an industrial abrasive powder.
Temperature of data collection: Pattern taken at 26 C.
Additional pattern: To replace 1-1249.
Additional pattern: See ICSD 28857 (PDF 75-219); See ICSD 28858 (PDF 75-220); See ICSD 28859 (PDF 75-221); See ICSD 28860 (PDF 75-222); See ICSD 28861 (PDF 75-223); See ICSD 28862 (PDF 75-224); See ICSD 28863 (PDF 75-225); See ICSD 29068 (PDF 75-409); See ICSD 29151 (PDF 75-465); See ICSD 29324 (PDF 75-623); See ICSD 29325 (PDF 75-624); See ICSD 66464 (PDF 79-1467).
Data collection flag: Ambient.

Natl. Bur. Stand. (U.S.), Circ. 539, volume II, page 5 (1953)

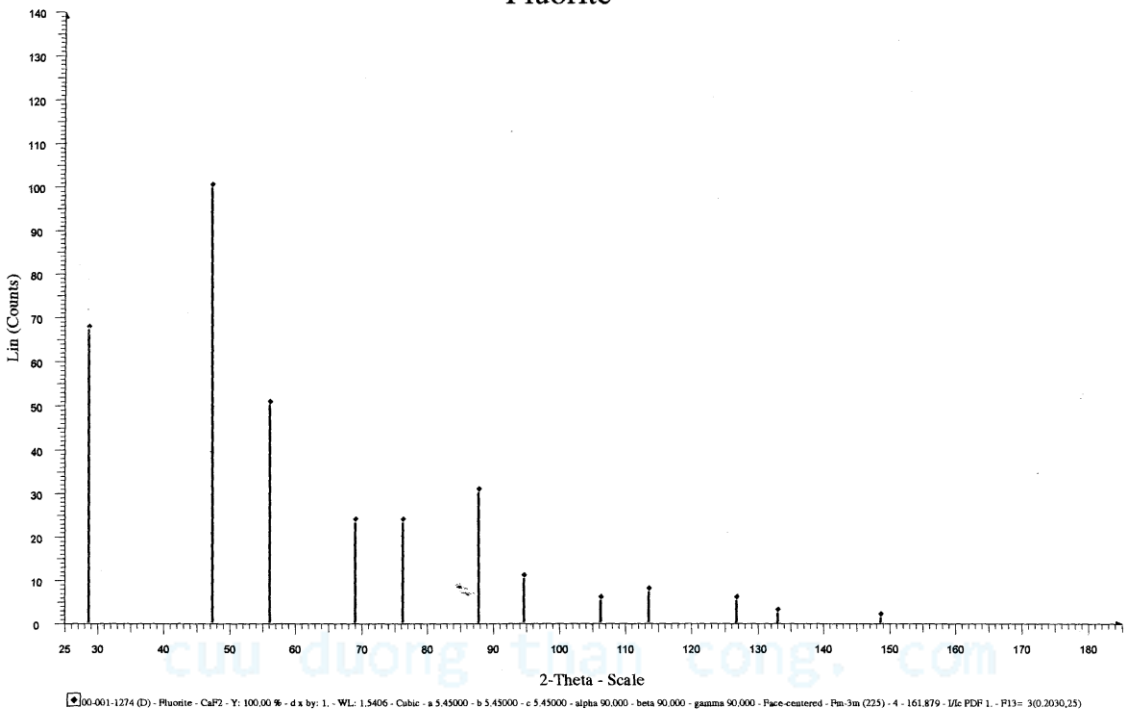
CAS Number: 7782-40-3

Radiation : CuKa1
Lambda : 1.54050
SS/FOM : F5= 73(0.0115,6)

Filter : Beta
d-sp : Not given

d (Å)	*i*	*h*	*k*	*l*
2.06000	100	1	1	1
1.26100	25	2	2	0
1.07540	16	3	1	1
0.89160	8	4	0	0
0.81820	16	3	3	1

Fluorite



Pattern : 00-001-1274 ***Radiation =*** 1.540560 ***Quality :*** Deleted

CaF_2

Calcium Fluoride
Fluorite

Lattice : Face-centered cubic
S.G. : Fm-3m (225)

a = 5.45000

Z = 4

Mol. weight = 78.08
Volume [CD] = 161.88
Dx = 3.204
Dm = 3.180

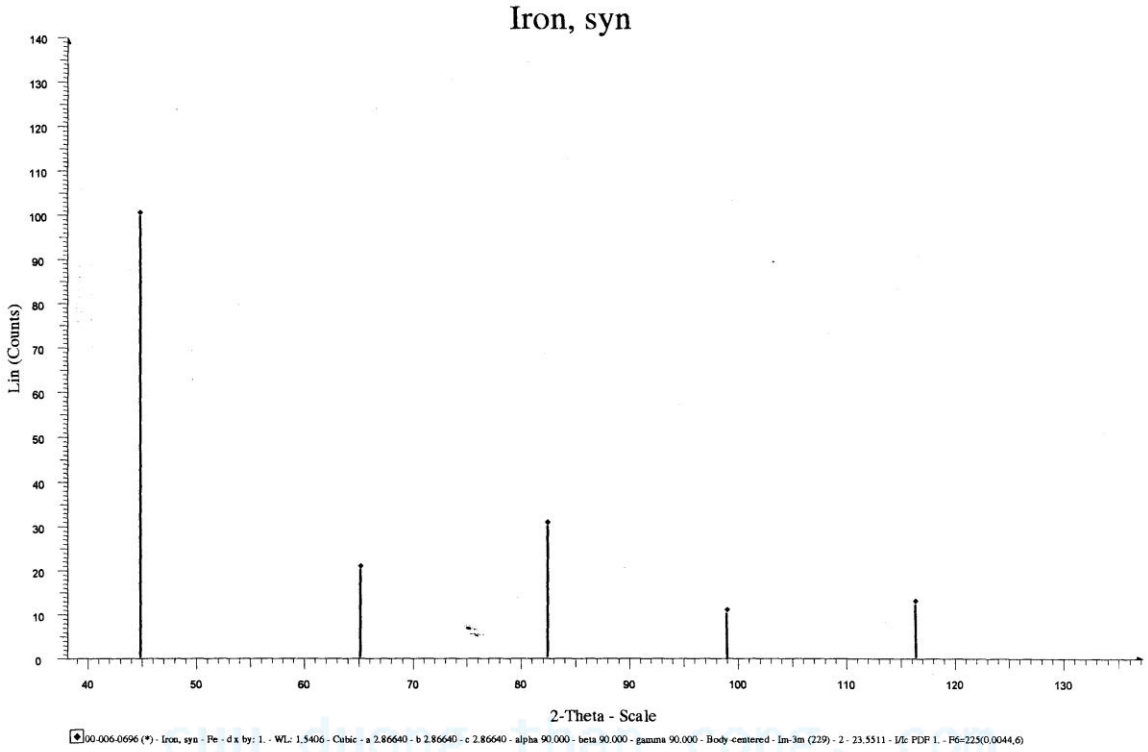
Deleted and rejected by: Deleted by NBS card.
Color: Colorless to varied
Melting point: 1392
Optical data: B=1.4339
Data collection flag: Ambient.

Hanawalt. et al., Anal. Chem., volume 10, page 475 (1938)

Radiation : MoKa
Lambda : 0.70900
SS/FOM : F13= 3(0.2030,25)

Filter : Beta
d-sp : Not given

d (A)	I	h	k	l
3.16000	67	1	1	1
1.93000	100	2	2	0
1.65000	50	3	1	1
1.37000	23	4	0	0
1.26000	23	3	3	1
1.12000	30	4	2	2
1.05000	10	5	1	1
0.97000	5	4	4	0
0.93000	7	5	3	1
0.87000	5	6	2	0
0.84000	2			
0.80000	1			
0.77000	2			
0.73000	5	6	4	2
0.71000	3	7	3	1
0.64000	1	8	2	2



Pattern : 00-006-0696 ***Radiation =*** 1.540560 ***Quality :*** High

Fe

Iron
Iron, syn
Also called: ferrite

d (Å)	*i*	*h*	*k*	*l*
2.02680	100	1	1	0
1.43320	20	2	0	0
1.17020	30	2	1	1
1.01340	10	2	2	0
0.90640	12	3	1	0
0.82750	6	2	2	2

Lattice : Body-centered cubic
S.G. : Im-3m (229)

a = 2.86640

Z = 2

Mol. weight = 55.85
Volume [CD] = 23.55
Dx = 7.875

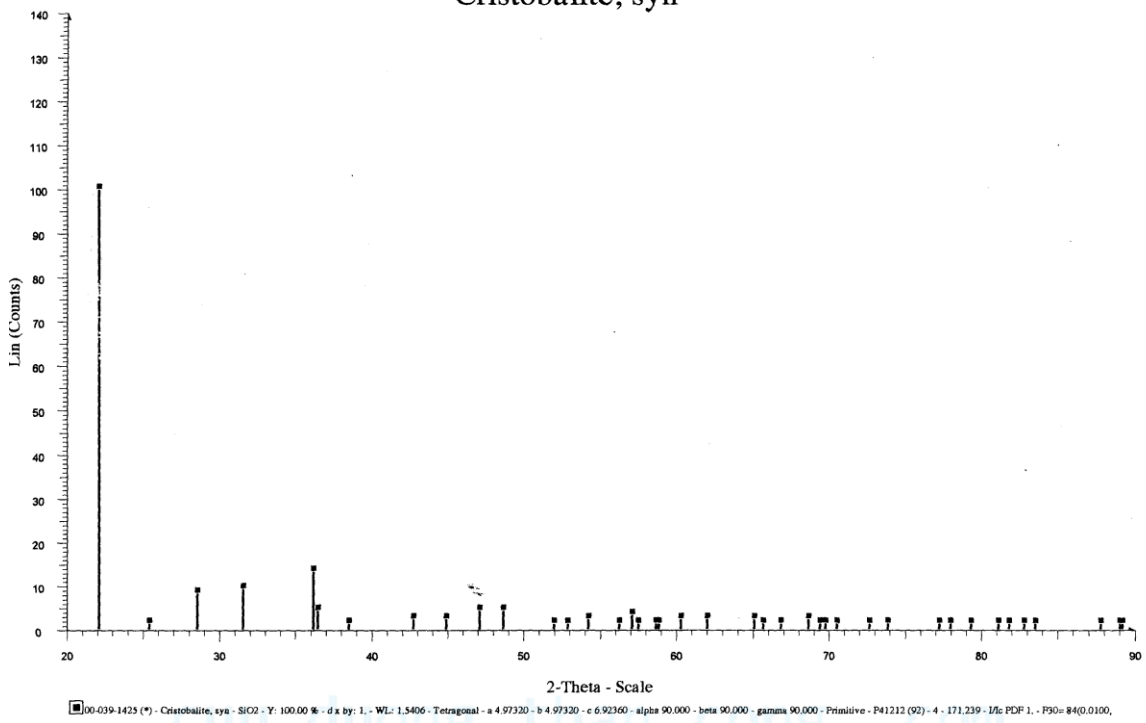
Color: Gray, light gray metallic
General comments: Total impurities of sample <0.0013% each metals and non-metals.
Temperature of data collection: Pattern taken at 25 C.
Sample preparation: The iron used was an exceptionally pure rolled sheet prepared at the NBS, Gaithersburg, Maryland, USA., [Moore, G., *J. Met.*, **5** 1443 (1953)]. It was annealed in an H2 atmosphere for 3 days at 1100 C and slowly cooled in a He atmosphere.
General comments: γ-Fe (fcc)=(1390 C) δ-Fe (bcc).
General comments: Opaque mineral optical data on specimen from Meteorite: RR_2R_e= 57.7, Disp.=16, VHN=158 (mean at 100, 200, 300), Color values=.311, .316, 57.9, Ref.: IMA Commisssion on Ore Microscopy QDF.
Additional pattern: See ICSD 64795 (PDF 85-1410).
Data collection flag: Ambient.

Swanson et al., Natl. Bur. Stand. (U.S.), Circ. 539, volume IV, page 3 (1955)

CAS Number: 7439-89-6

Radiation : CuKa1
Lambda : 1.54050
SS/FOM : F6=225(0.0044,6)

Filter : Beta
d-sp : Not given



Pattern : 00-039-1425 **Radiation =** 1.540560 **Quality :** High

SiO_2

Silicon Oxide
Cristobalite, syn

Lattice : Tetragonal
S.G. : P41212 (92)

a = 4.97320
c = 6.92360
Z = 4

Mol. weight = 60.08
Volume [CD] = 171.24
Dx = 2.331

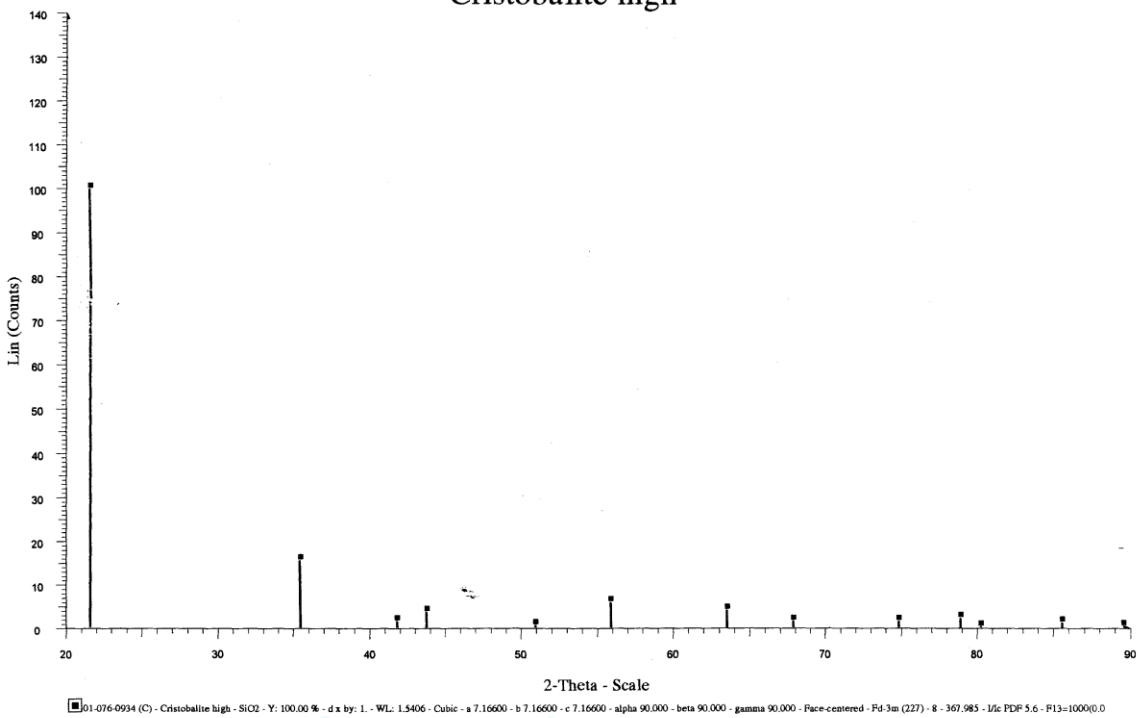
Sample preparation: Cristobalite was prepared by the Trans Tech Company using Berkeley 5 micron MIN-U-SIL(R). A two kilogram sample was heated at 1600 C for eight hours. The sample was then air quenched, treated with 6N HCl and then jet-milled. The +325 mesh fraction was then removed by sieving.
Color: Colorless
Structure: The structure was determined by Peacor (1).
Temperature of data collection: The temperature was ~25 C.
Polymorphism: There are a number of other forms of Si O2.
Additional pattern: To replace 11-695 and validated by calculated pattern.
Additional pattern: See ICSD 75484 (PDF 82-1404); See ICSD 75490 (PDF 82-1410). See ICSD 30269 (PDF 75-923); See ICSD 34927 (PDF 76-935); See ICSD 34928 (PDF 76-936); See ICSD 34929 (PDF 76-937); See ICSD 47219 (PDF 77-1315); See ICSD 47220 (PDF 77-1316); See ICSD 47221 (PDF 77-1317);
Data collection flag: Ambient.

Wong-Ng, W., McMurdie, H., Paretzkin, B., Hubbard, C., Dragoo, A., NBS, Gaithersburg, MD, USA., ICDD Grant-in-Aid (1988)

Radiation : CuKa1
Lambda : 1.54060
SS/FOM : F30= 84(0.0100,36)

Filter : Monochromator crystal
d-sp : Diffractometer
Internal standard : W FP

d (Å)	i	h	k	l
4.03974	100	1	0	1
3.51470	1	1	1	0
3.13592	8	1	1	1
2.84116	9	1	0	2
2.48740	13	2	0	0
2.46750	4	1	1	2
2.34170	1	2	0	1
2.11791	2	2	1	1
2.01957	2	2	0	2
1.92935	4	1	1	3
1.87147	4	2	1	2
1.75907	1	2	2	0
1.73033	1	0	0	4
1.69221	2	2	0	3
1.63488	1	1	0	4
1.61217	3	3	0	1
1.60131	1	2	1	3
1.57207	1	3	1	0
1.56745	1	2	2	2
1.53356	2	3	1	1
1.49520	2	3	0	2
1.43165	2	3	1	2
1.42102	1	2	0	4
1.39908	1	2	2	3
1.36560	2	2	1	4
1.35277	1	3	2	1
1.34650	1	3	0	3
1.33398	1	1	0	5
1.29976	1	3	1	3
1.28133	1	3	2	2
1.23318	1	2	2	4
1.22375	1	4	0	1
1.20599	1	4	1	0
1.18427	1	3	2	3
1.17576	1	2	1	5
1.16384	1	3	1	4
1.15546	1	3	3	1
1.11050	1	3	3	2
1.09783	1	4	2	1
1.09628	1	1	1	6



SiO_2

Silicon Oxide
Cristobalite high

Lattice : Face-centered cubic

S.G. : Fd-3m (227)

a = 7.16600

Z = 8

Mol. weight = 60.08

Volume [CD] = 367.99

Dx = 2.169

I/Icor = 5.60

ICSD collection code: 034926
Temperature factor: ATF
Remarks from ICSD/CSD: REM TEM 583.
Sample source or locality: Specimen from Ellora Caves, India.
Additional pattern: See PDF 76-0931.
Data collection flag: Non ambient temperature.

Peacor, D.R., Z. Kristallogr., Kristallgeom., Kristallphys., Kristallchem., volume 138, page 274 (1973)
Calculated from ICSD using POWD-12++ (1997)

Radiation : CuKa1

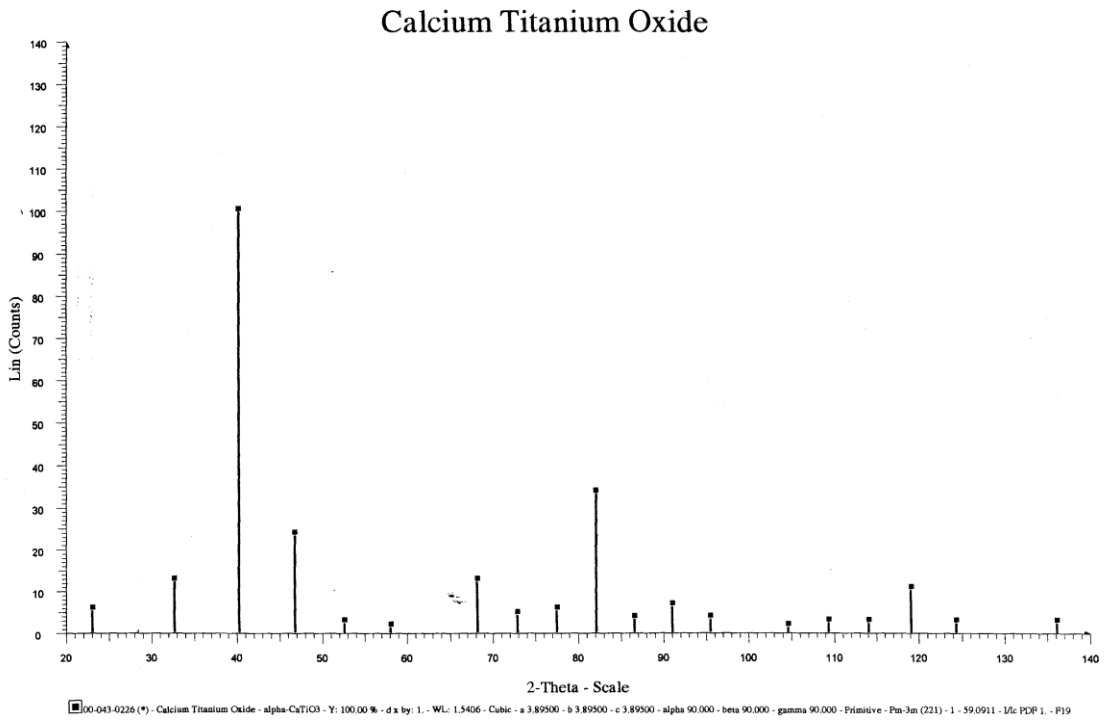
Lambda : 1.54060

SS/FOM : F13=1000(0.0002,13)

Filter : Not specified

d-sp : Calculated spacings

d (A)	*I*	*h*	*k*	*l*
4.13729	999	1	1	1
2.53356	154	2	2	0
2.16063	13	3	1	1
2.06865	34	2	2	2
1.79150	3	4	0	0
1.64399	57	3	3	1
1.46275	39	4	2	2
1.37910	13	5	1	1
1.26678	13	4	4	0
1.21127	20	5	3	1
1.19433	1	4	4	2
1.13304	10	6	2	0
1.09280	2	5	3	3



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Pattern : 00-043-0226 ***Radiation =*** 1.540560 ***Quality :*** High

α-$CaTiO_3$

Calcium Titanium Oxide

Lattice : Cubic
S.G. : Pm-3m (221)

a = 3.89500
Z = 1

Mol. weight = 135.98
Volume [CD] = 59.09
Dx = 3.821

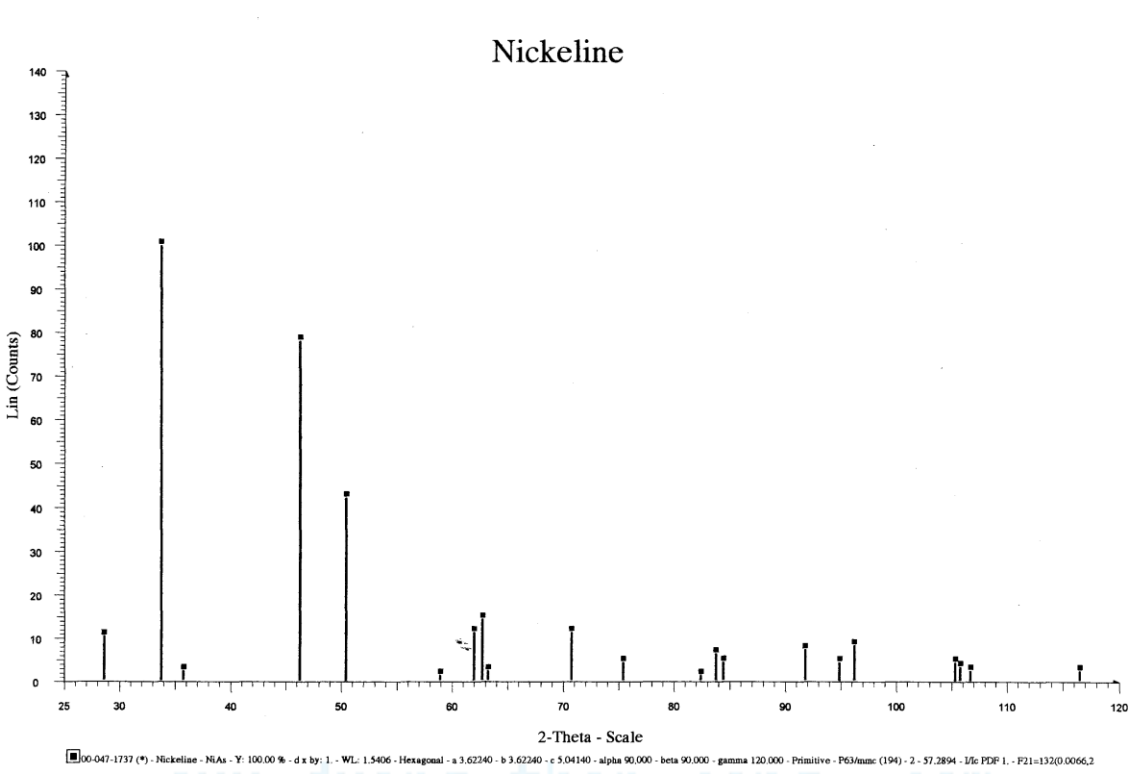
Melting point: 3150 K
Color: Colorless
Sample source or locality: Calcium titanate 99.5% purchased from Alfa Produkte, Karlsruhe, Germany, Lot No. 031280911, washed in acetic acid.
General comments: Sample investigated at 1600 K in platinum can using a mirror furnace, intensities and d-values evaluated by Rietveld method, observed intensities are given.
General comments: High temperature form.
Temperature of data collection: Pattern taken at 1600 K.
Data collection flag: Non ambient temperature.

Fuess, H., Fachbereich Materialwissenschaft, Technische Hochschule Darmstadt, Germany., Private Communication (1991)

Radiation : Neut
Lambda : 1.59400
SS/FOM : F19=134(0.0071,20)

Filter : Monochromator crystal
d-sp : Diffractometer
External standard : Si

d (Å)	I	h	k	l
3.89500	5	1	0	0
2.75400	12	1	1	0
2.24900	100	1	1	1
1.94800	23	2	0	0
1.74200	2	2	1	0
1.59020	1	1	1	2
1.37720	12	2	2	0
1.29840	4	3	0	0
1.23180	5	3	1	0
1.17440	33	3	1	1
1.12440	3	2	2	2
1.08030	6	0	2	3
1.04100	3	1	2	3
0.97380	1	4	0	0
0.94470	2	3	2	2
0.91810	2	3	3	0
0.89360	10	3	3	1
0.87100	2	4	2	0
0.83050	2	3	3	2



Pattern : 00-047-1737 ***Radiation =*** 1.540560 ***Quality :*** High

NiAs

Nickel Arsenide
Nickeline

Lattice : Hexagonal
S.G. : P63/mmc (194)

a = 3.62240
c = 5.04140
Z = 2

Mol. weight = 133.62
Volume [CD] = 57.29
Dx = 7.746
Dm = 7.780

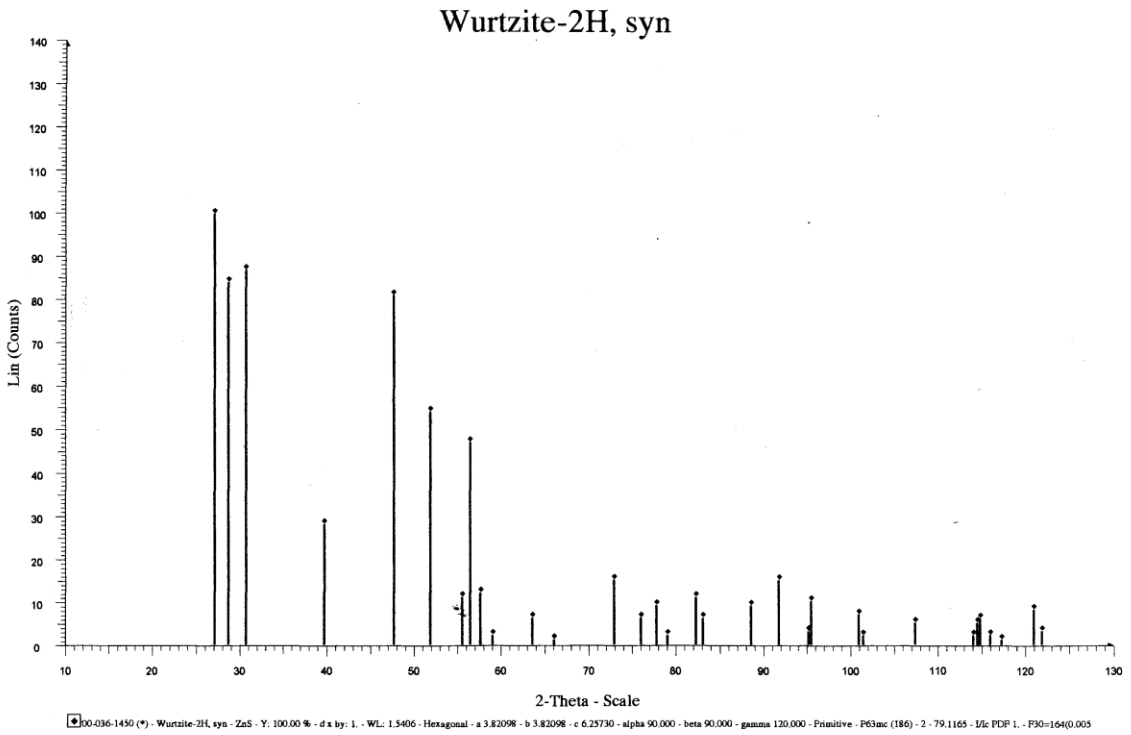
Color: Reddish orange metallic
Sample source or locality: Specimen from Cobalt, Ontario, Canada.
Analysis: X-ray emission analysis under SEM: major Ni and As and trace Co.
General comments: Average relative standard deviation in intensity of the 10 strongest reflections for three specimen mounts = 12.9%.
General comments: Validated with a calculated pattern.
General comments: Several unknown trace impurity reflections present.
Data collection flag: Ambient.

Martin, K., McCarthy, G., Bayliss, P., North Dakota State Univ., Fargo, ND, USA., ICDD Grant-in-Aid (1993)

Radiation : CuKa1
Lambda : 1.54056
SS/FOM : F21=132(0.0066,24)

Filter : Monochromator crystal
d-sp : Diffractometer
Internal standard : Si

d (Å)	i	h	k	l
3.13600	10	1	0	0
2.66400	100	1	0	1
2.52100	2	0	0	2
1.96520	78	1	0	2
1.81140	42	1	1	0
1.56830	1	2	0	0
1.49770	11	2	0	1
1.48150	14	1	0	3
1.47090	2	1	1	2
1.33170	11	2	0	2
1.26030	4	0	0	4
1.16920	1	1	0	4
1.15420	6	2	1	1
1.14660	4	2	0	3
1.07290	7	2	1	2
1.04570	4	3	0	0
1.03460	8	1	1	4
0.96877	4	2	1	3
0.96590	3	3	0	2
0.95997	2	1	0	5
0.90567	2	2	2	0



cuu duong than cong. com

Pattern : 00-036-1450 ***Radiation =*** 1.540560 ***Quality :*** High

ZnS

Zinc Sulfide
Wurtzite-2H, syn

Lattice : Hexagonal
S.G. : P63mc (186)

a = 3.82098
c = 6.25730
Z = 2

Mol. weight = 97.44
Volume [CD] = 79.12
Dx = 4.090
Dm = 4.090

Sample source or locality: Prepared by RCA Labs.
Analysis: Previous spectrographic analysis at NBS, Gaithersburg, Maryland, USA, showed (wt.%): 0.01 to 0.1 Cu; 0.001 to 0.01 each B, Fe, Mg, Si and <0.001 each Al and Ca.
Polymorphism: A cubic form, sphalerite, also exists. ZnS exists in many polytypic forms (1,2).
Temperature of data collection: The mean temperature of data collection was 25.5.
Additional pattern: To replace 5-492 (3) and 10-434 (4).
General comments: Other patterns are cited in (3).
Optical data: B=2.365, Q=2.378, Sign=+
General comments: Optical data on synthetic material.
Color: Colorless
Data collection flag: Ambient.

McMurdie, H., Morris, M., Evans, E., Paretzkin, B., Wong-Ng, W., Ettlinger, L., Hubbard, C., Powder Diffraction, volume 1, page 77 (1986)

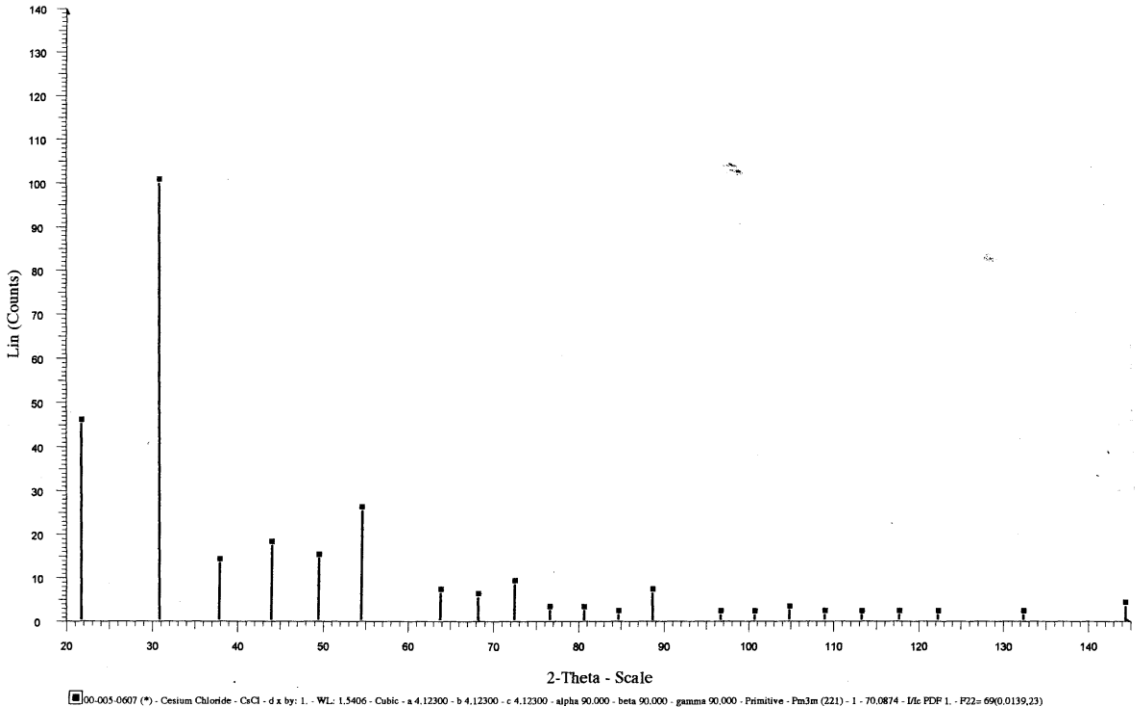
CAS Number: 1314-98-3

Radiation : CuKa1
Lambda : 1.54060
SS/FOM : F30=164(0.0054,34)

Filter : Monochromator crystal
d-sp : Diffractometer
Internal standard : Ag

d (Å)	i	h	k	l
3.30992	100	1	0	0
3.12924	84	0	0	2
2.92592	87	1	0	1
2.27342	28	1	0	2
1.91027	81	1	1	0
1.76423	54	1	0	3
1.65434	11	2	0	0
1.63027	47	1	1	2
1.59943	12	2	0	1
1.56411	2	0	0	4
1.46263	6	2	0	2
1.41427	1	1	0	4
1.29605	15	2	0	3
1.25064	6	2	1	0
1.22637	9	2	1	1
1.21032	2	1	1	4
1.17062	11	1	0	5
1.16139	6	2	1	2
1.10309	9	3	0	0
1.07266	15	2	1	3
1.04283	3	0	0	6
1.04028	10	3	0	2
0.99819	7	2	0	5
0.99466	2	1	0	6
0.95527	5	2	2	0
0.91775	2	3	1	0
0.91537	5	1	1	6
0.91354	6	2	2	2
0.90806	2	3	1	1
0.90144	1	3	0	4
0.88465	8	2	1	5
0.88072	3	3	1	2

Cesium Chloride



Pattern : 00-005-0607 ***Radiation =*** 1.540560 ***Quality :*** High

CsCl

Cesium Chloride

Lattice : Cubic
S.G. : Pm3m (221)

a = 4.12300

Z = 1

Mol. weight = 168.36
Volume [CD] = 70.09
Dx = 3.989

Color: Colorless
Optical data: B=1.639
Sample preparation: Sample prepared at NBS. It was recrystallized three times from dilute hydrochloric acid and heated at 500 C liberating chlorine iodide.
Analysis: Spectroscopic analysis: <0.01% Ca, K, Na; <0.001% Al, Ba, Cu, Fe, Mg, Si.
Temperature of data collection: X-ray pattern at 25 C.
General comments: Merck Index, 8th Ed., p. 225.
Data collection flag: Ambient.

Swanson, Fuyat., Natl. Bur. Stand. (U.S.), Circ. 539, volume 2, page 44 (1953)

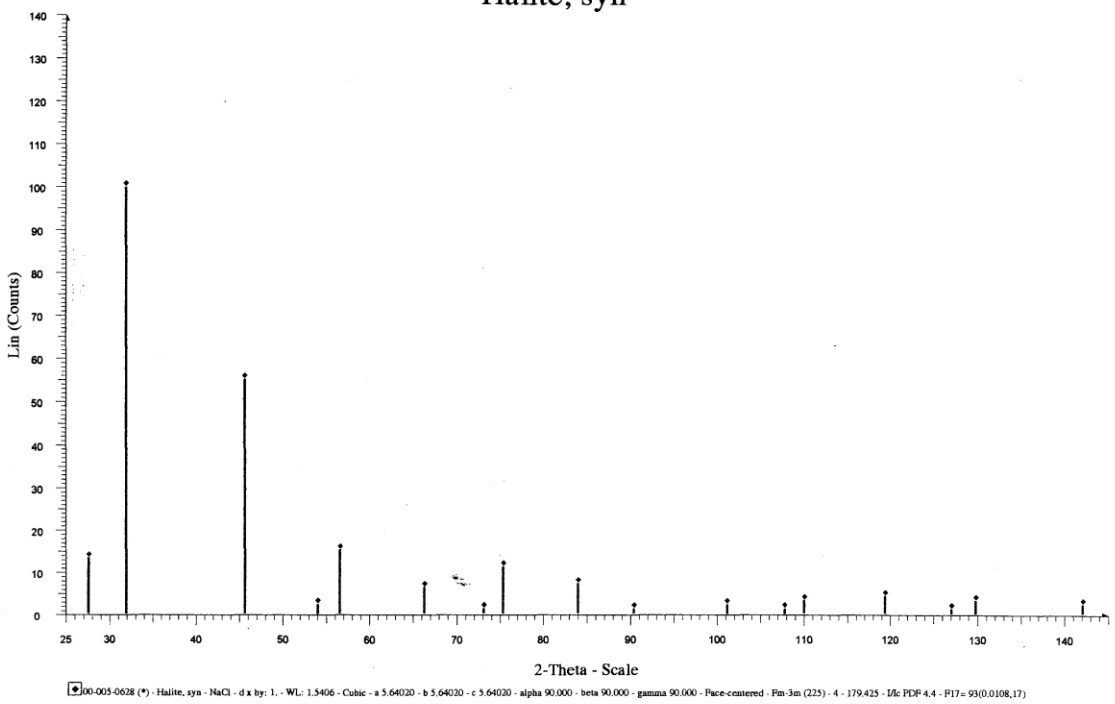
CAS Number: 7647-17-8

Radiation : CuKa1
Lambda : 1.54050
SS/FOM : F22= 69(0.0139,23)

Filter : Beta
d-sp : Not given

d (A)	*I*	*h*	*k*	*l*
4.12000	45	1	0	0
2.91700	100	1	1	0
2.38000	13	1	1	1
2.06200	17	2	0	0
1.84400	14	2	1	0
1.68300	25	2	1	1
1.45700	6	2	2	0
1.37400	5	3	0	0
1.30400	8	3	1	0
1.24300	2	3	1	1
1.19000	2	2	2	2
1.14340	1	3	2	0
1.10190	6	3	2	1
1.03090	1	4	0	0
0.99970	1	4	1	0
0.97190	2	3	3	0
0.94590	1	3	3	1
0.92190	1	4	2	0
0.89970	1	4	2	1
0.87910	1	3	3	2
0.84150	1	4	2	2
0.80860	3	5	1	0

Halite, syn



cuu duong than cong. com

Pattern : 00-005-0628 ***Radiation =*** 1.540560 ***Quality :*** High

NaCl

Sodium Chloride
Halite, syn

Lattice : Face-centered cubic
S.G. : Fm-3m (225)

a = 5.64020

Z = 4

Mol. weight = 58.44
Volume [CD] = 179.43
Dx = 2.163
Dm = 2.168
I/Icor = 4.40

General comments: An ACS reagent-grade sample recrystallized twice from hydrochloric acid.
Temperature of data collection: Pattern taken at 26 C.
Optical data: B=1.542
Color: Colorless
Melting point: 804°
Additional pattern: See ICSD 18189 (PDF 72-1668).
Data collection flag: Ambient.

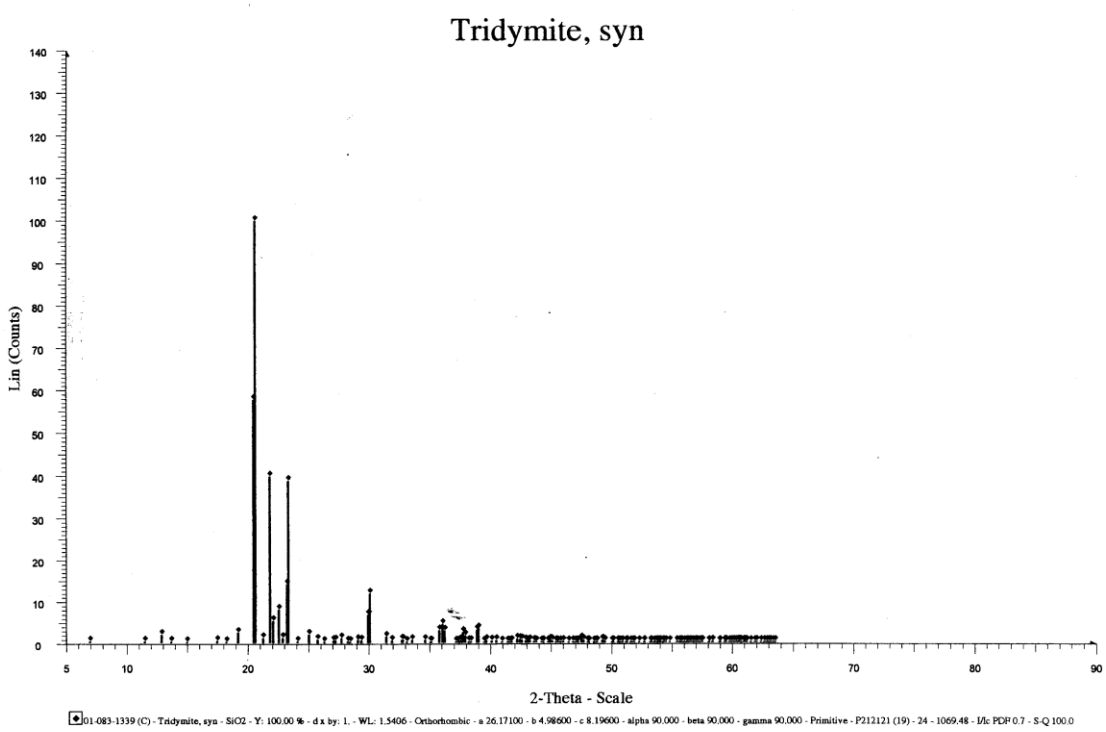
Swanson, Fuyat., Natl. Bur. Stand. (U.S.), Circ. 539, volume II, page 41 (1953)

CAS Number: 7647-14-5

Radiation : CuKa1
Lambda : 1.54050
SS/FOM : F17= 93(0.0108,17)

Filter : Beta
d-sp : Not given

d (Å)	I	h	k	l
3.26000	13	1	1	1
2.82100	100	2	0	0
1.99400	55	2	2	0
1.70100	2	3	1	1
1.62800	15	2	2	2
1.41000	6	4	0	0
1.29400	1	3	3	1
1.26100	11	4	2	0
1.15150	7	4	2	2
1.08550	1	5	1	1
0.99690	2	4	4	0
0.95330	1	5	3	1
0.94010	3	6	0	0
0.89170	4	6	2	0
0.86010	1	5	3	3
0.85030	3	6	2	2
0.81410	2	4	4	4



cuu duong than cong. com

Pattern : 01-083-1339 **Radiation =** 1:540560 **Quality :** Calculated

SiO_2

Silicon Oxide
Tridymite, syn

Lattice : Orthorhombic
S.G. : P212121 (19)

a = 26.17100
b = 4.98600
c = 8.19600
a/b = 5.24890
c/b = 1.64380

Z = 24

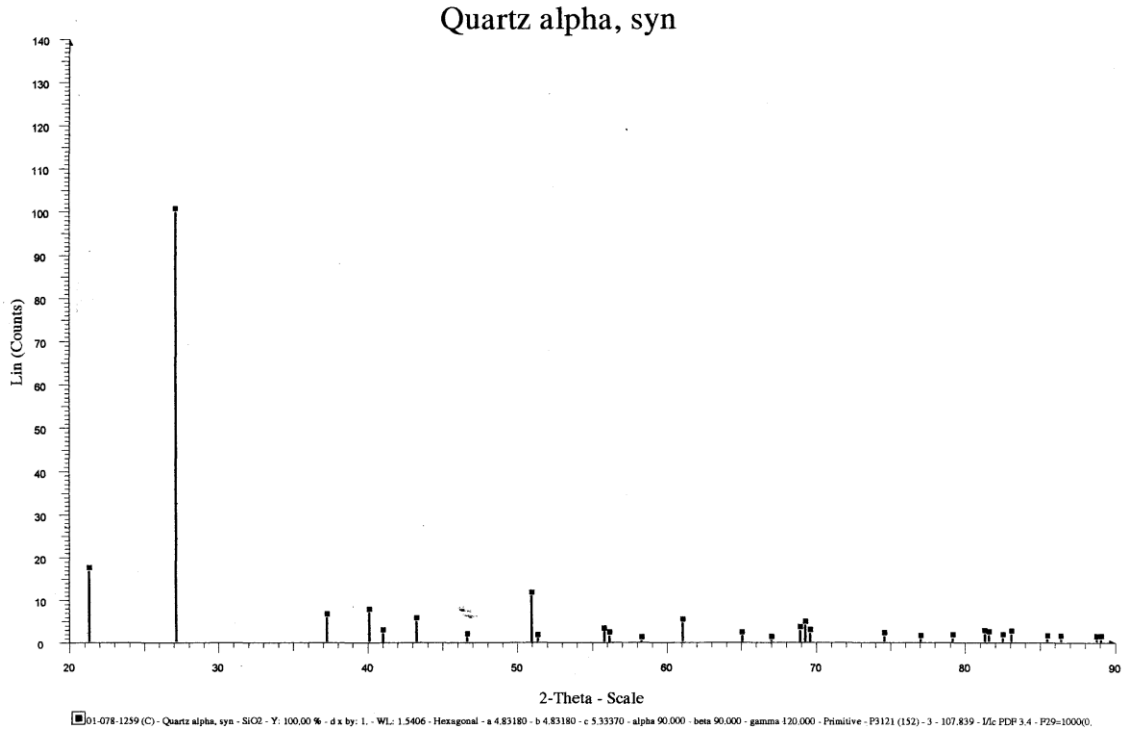
Mol. weight = 60.08
Volume [CD] = 1069.48
Dx = 2.239
Dm = 2.200
I/Icor = 0.66

ICSD collection code: 100199
Temperature factor: ATF
Temperature of data collection: REM TEM 428.
Remarks from ICSD/CSD: REM B Probably wrong: Distances Si3 - O12.
Sample preparation: Prepared from fired silica brick.
Remarks from ICSD/CSD: Origin shifted by 0 0 .25 to fit correct origin.
Remarks from ICSD/CSD: Monoclinic cell at RT: 25.86, 4.99, 18.504, 117.66.
Remarks from ICSD/CSD: Cell at 493 K: 8.75, 5.03, 8.211.
Polymorphism: Transforms at about 378 K.
Test from ICSD: Calc. density unusual but tolerable.
Data collection flag: Non ambient temperature.

Kihara, K., Z. Kristallogr., Kristallgeom., Kristallphys., Kristallchem., volume 146, page 185 (1977)
Calculated from ICSD using POWD-12++

d (Å)	I	h	k	l
13.08550	2	2	0	0
7.82142	2	1	0	1
6.94600	18	2	0	1
6.54275	2	4	0	0
5.97328	1	3	0	1
5.11330	3	4	0	1
4.69790	1	1	1	0
4.65823	23	2	1	0
4.36183	575	6	0	0
4.32884	999	3	1	0
4.20437	10	1	1	1
4.09800	395	0	0	2
4.05049	51	2	1	1
*4.05049	51	1	0	2
3.96572	78	4	1	0
3.91071	10	2	0	2
3.85050	138	6	0	1
3.82775	385	3	1	1
3.70913	2	3	0	2
3.56979	18	4	1	1
3.47300	6	4	0	2
3.40152	1	7	0	1
3.30387	3	5	1	1
3.28291	4	6	1	0
3.22670	9	5	0	2
3.18590	2	0	1	2
3.14298	1	1	1	2
3.07712	5	2	1	2
3.04753	4	6	1	1
2.98664	65	7	1	0
*2.98664	65	6	0	2
2.97598	116	3	1	2
2.84980	13	4	1	2
2.80991	3	7	1	1
2.73520	6	9	0	1
*2.73520	6	8	1	0
2.70892	1	5	1	2
2.67434	5	2	0	3
2.59453	5	8	1	1
2.56215	2	6	1	2
2.55685	2	8	0	2
2.51191	28	9	1	0
2.49300	43	10	0	1
*2.49300	43	0	2	0
2.48177	27	1	2	0
2.42194	1	5	0	3
2.41605	1	7	1	2
2.40165	3	9	1	1
2.39704	4	3	2	0
*2.39704	4	0	1	3
2.38510	24	1	1	3
*2.38510	24	0	2	1
2.37526	15	1	2	1
2.35673	2	2	1	3
2.34645	2	2	2	1
2.31728	29	10	1	0
*2.31728	29	6	0	3
2.31036	32	3	1	3
2.28486	1	11	0	1
2.27500	4	8	1	2
2.25074	3	5	2	0
*2.25074	3	4	1	3
2.22987	4	10	1	1
2.20568	1	7	0	3
*2.20568	1	10	0	2
2.18092	1	12	0	0
*2.18092	1	5	1	3
2.17039	1	5	2	1
2.16442	2	6	2	0
2.14160	8	9	1	2
2.12985	7	0	2	2
2.12283	6	1	2	2
2.10758	3	12	0	1
2.09996	2	2	2	2
*2.09996	2	6	1	3
2.09268	3	6	2	1
2.07417	2	11	1	1
*2.07417	2	7	2	0
2.06907	1	3	2	2
2.04900	1	0	0	4
2.04275	1	1	0	4

d (Å)	I	h	k	l
*1.89521	1	9	2	0
1.89026	1	1	1	4
*1.89026	1	10	0	3
1.87564	1	2	1	4
1.86674	1	14	0	0
*1.86674	1	13	1	0
1.85062	4	7	2	2
*1.85062	4	9	1	3
1.84413	2	9	2	1
1.82255	1	2	2	3
*1.82255	1	14	0	1
1.82012	1	4	1	4
*1.82012	1	13	1	1
1.80690	1	13	0	2
*1.80690	1	10	2	0
1.80182	1	3	2	3
1.79601	1	12	1	2
*1.79601	1	11	0	3
1.78490	1	8	2	2
1.78199	1	5	1	4
1.77265	1	4	2	3
1.76720	1	10	1	3
1.76285	1	10	2	1
1.75038	1	14	1	0
1.73715	1	5	2	3
*1.73715	1	8	0	4
1.72117	1	11	2	0
1.71825	1	9	2	2
1.71178	1	14	1	1
1.70443	1	15	0	1
*1.70443	1	12	0	3
1.70078	1	14	0	2
*1.70076	1	13	1	2
1.69652	1	6	2	3
1.69042	1	7	1	4
1.68822	1	11	1	3
1.68443	1	11	2	1
1.67495	1	9	0	4
1.65866	1	1	3	0
1.65200	1	7	2	3
*1.65200	1	10	2	2
1.64682	1	2	3	0
*1.64682	1	15	1	0
1.64148	1	12	2	0
1.63569	1	1	0	5
*1.63569	1		0	0
1.63263	1	3	3	0
1.62885	1	0	3	1
1.62570	1	2	0	5
*1.62570	1	1	3	1
1.62067	1	13	0	3
1.61637	1	2	3	1
1.61455	1	15	1	1
*1.61455	1	10	0	4
1.60950	1	14	1	2
*1.60950	1	12	2	1
1.60406	1	8	2	3
*1.60406	1		0	1
1.60118	1	3	3	1
1.58688	1	9	1	4
*1.58688	1	11	2	2
1.58060	2	4	3	1
*1.58060	2	1	2	4
1.56625	1	13	2	0
*1.56625	1	5	0	5
1.55528	1	9	2	3
*1.55528	1	5	3	1
1.55308	1	6	3	0
*1.55308	1	11	0	4
1.54629	1	2	1	5
1.54277	1	14	0	3
*1.54277	1	13	1	3
1.53841	1	13	2	1
*1.53841	1	1	3	2
1.53297	1	6	0	5
*1.53297	1	3	1	5
1.52960	2	2	3	2
*1.52960	2	15	1	2
1.52592	1		1	1
*1.52592	1	6	3	1
1.52376	1	12	2	2
1.51815	1		0	2



cuu duong than cong. com

SiO_2

Silicon Oxide
Quartz α, syn

Lattice : Hexagonal
S.G. : P3121 (152)

a = 4.83180
c = 5.33370

Z = 3

Mol. weight = 60.08
Volume [CD] = 107.84
Dx = 2.776
I/Icor = 3.42

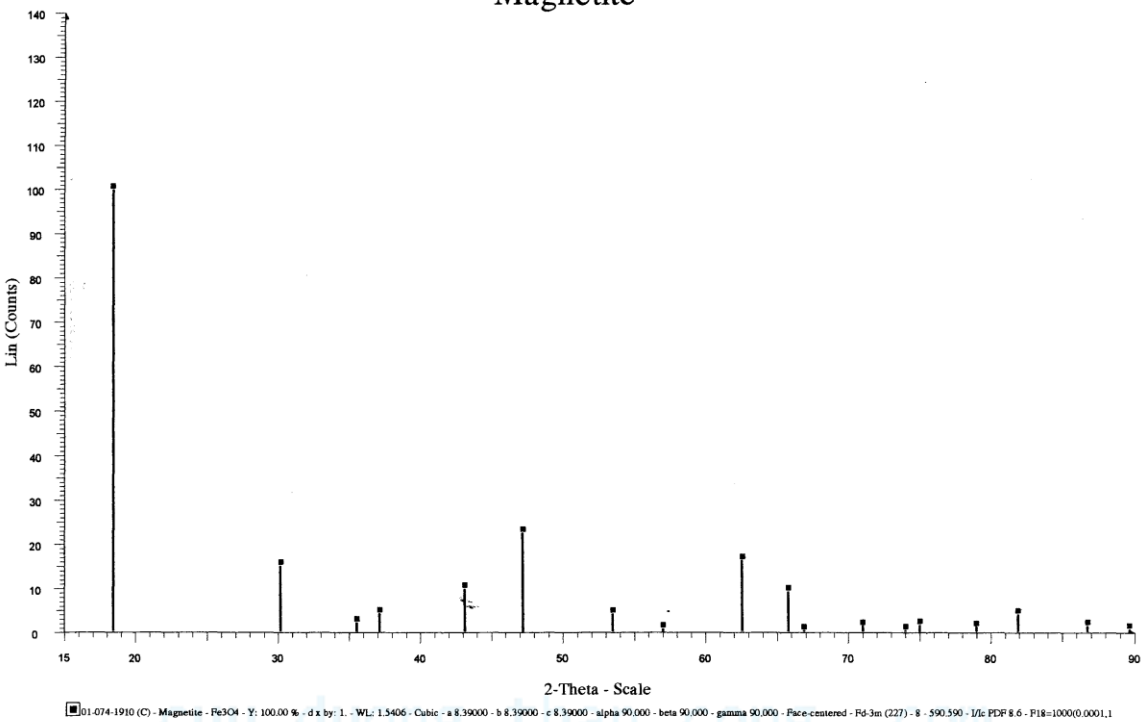
ICSD collection code: 062411
Temperature factor: ATF
Remarks from ICSD/CSD: REM TEM 488.
Remarks from ICSD/CSD: REM PRE 23kbar.
Data collection flag: Non ambient temperature and pressure.

Ogata, K., Takeuchi, Y., Kudoh, Y., Z. Kristallogr., volume 179, page 403 (1987)
Calculated from ICSD using POWD-12++ (1997)

d (Å)	i	h	k	l
4.18446	165	1	0	0
3.29221	999	0	1	1
2.41590	55	1	1	0
2.24894	65	1	0	2
2.20068	18	1	1	1
2.09223	45	2	0	0
1.94774	8	0	2	1
1.79046	106	1	1	2
1.77790	6	0	0	3
1.64610	21	2	0	2
1.63633	12	0	1	3
1.58158	1	2	1	0
1.51632	42	1	2	1
1.43194	12	1	1	3
1.39482	1	3	0	0
1.36034	25	2	1	2
1.35481	37	2	0	3
1.34944	18	3	0	1
1.27048	10	1	0	4
1.23598	4	0	3	2
1.20795	6	2	2	0
1.18168	15	2	1	3
1.17811	13	2	2	1
1.16741	7	1	1	4
1.16056	15	3	1	0
1.13403	4	3	1	1
1.12447	3	2	0	4
1.10034	3	2	2	2
1.09740	3	3	0	3

cuu duong than cong. com

Magnetite



Fe_3O_4

Iron Oxide
Magnetite

Lattice : Face-centered cubic

S.G. : Fd-3m (227)

a = 8.39000

Z = 8

Mol. weight = 231.54

Volume [CD] = 590.59

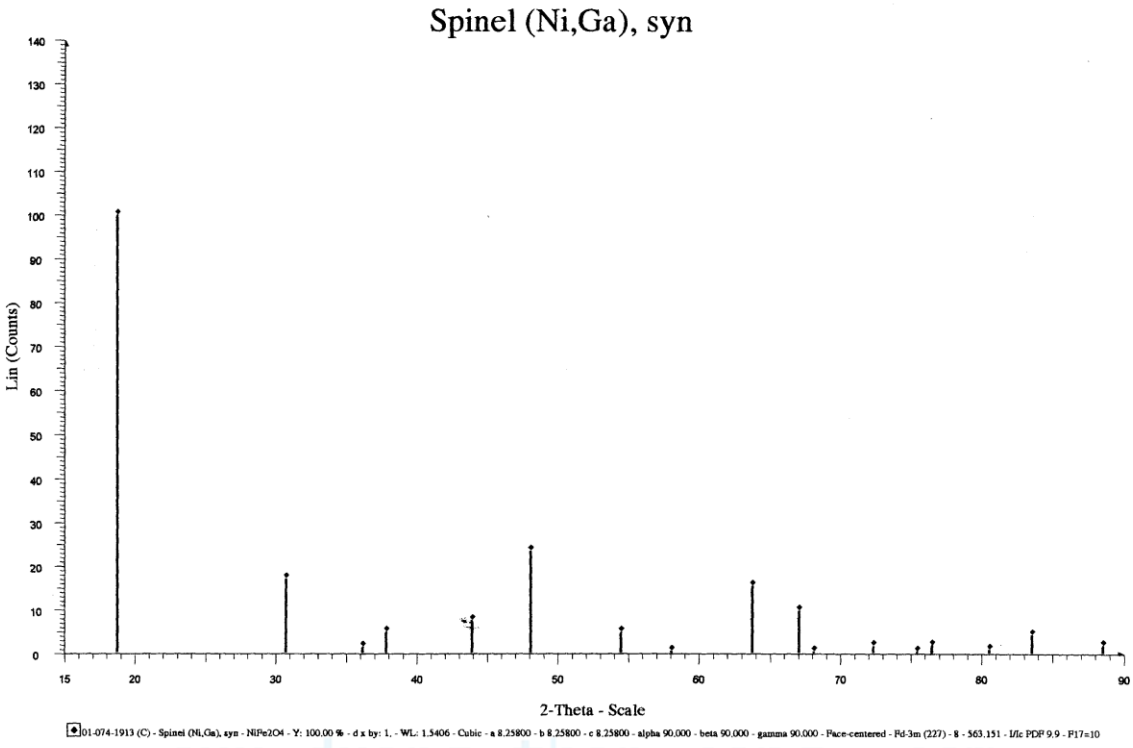
Dx = 5.208

I/Icor = 8.56

ICSD collection code: 027899
Remarks from ICSD/CSD: REM A TEM below transition point of 120 K.
Remarks from ICSD/CSD: REM B Author proposes an ordered distribution within the oct
Remarks from ICSD/CSD: REM interstices..
Test from ICSD: No R value given.
Test from ICSD: At least one TF missing.
Additional pattern: See entry 27898.
Additional pattern: See PDF 74-1919 and PDF 74-1909.
Data collection flag: Non ambient temperature.

de Boer, F., van Santen, J.H., Verwey, E.J.W., J. Chem. Phys., volume 18, page 1032 (1950)
Calculated from ICSD using POWD-12++ (1997)

d (A)	I	h	k	l
4.84397	999	1	1	1
2.96631	147	2	2	0
2.52968	19	3	1	1
2.42198	39	2	2	2
2.09750	96	4	0	0
1.92480	223	3	3	1
1.71260	38	4	2	2
1.61466	4	5	1	1
1.48316	161	4	4	0
1.41817	89	5	3	1
1.39833	1	4	4	2
1.32658	11	6	2	0
1.27946	1	5	3	3
1.26484	14	6	2	2
1.21099	9	4	4	4
1.17483	37	7	1	1
1.12116	12	6	4	2
1.09229	3	7	3	1



cuu duong than cong. com

Pattern : 01-074-1913 ***Radiation =*** 1.540560 ***Quality :*** Calculated

$NiFe_2O_4$

Nickel Iron Oxide
Spinel (Ni,Ga), syn

Lattice : Face-centered cubic
S.G. : Fd-3m (227)

a = 8.25800

Z = 8

Mol. weight = 234.39
Volume [CD] = 563.15
Dx = 5.529
I/Icor = 9.92

ICSD collection code: 027903
Remarks from ICSD/CSD: REM f MAG.
Test from ICSD: No R value given.
Test from ICSD: At least one TF missing.
Sample preparation: Prepared from oxides at 1673 K for 1-2 hours.
Additional pattern: See PDF 10-114.
Test from ICSD: Calc. density unusual but tolerable.
Data collection flag: Ambient.

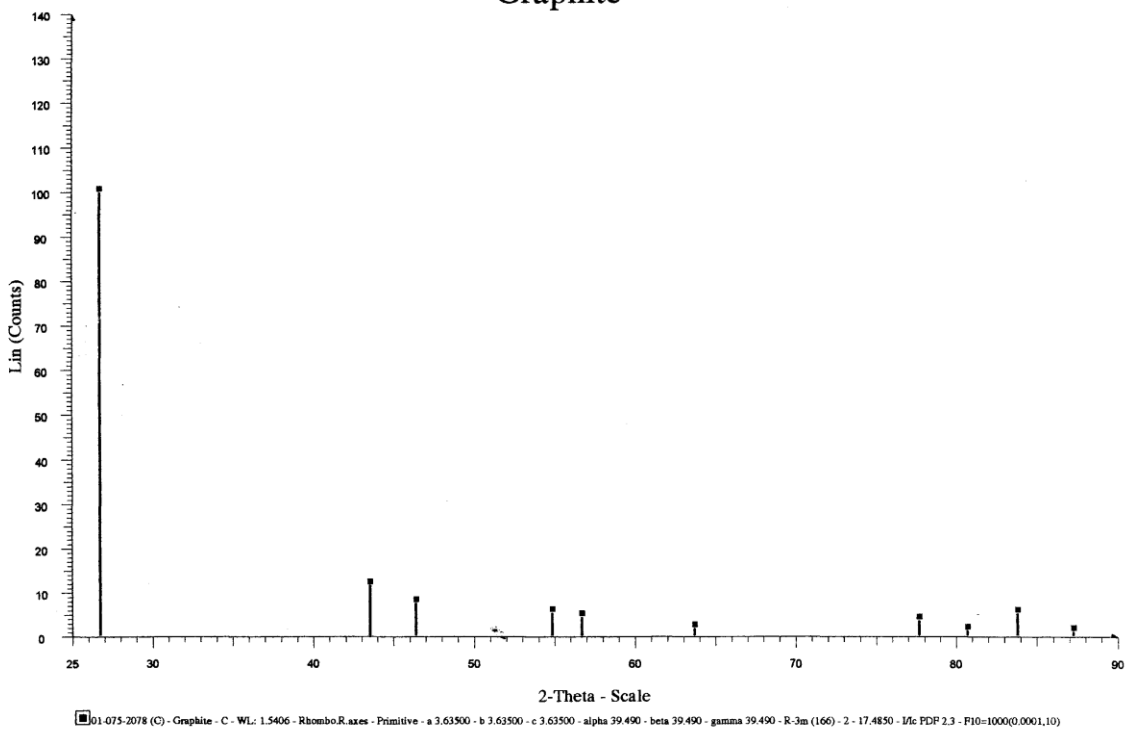
Greenwald, S., Pickart, S.J., Grannis, F.H., J. Chem. Phys., volume 22, page 1597 (1954)
Calculated from ICSD using POWD-12++

Radiation : CuKa1
Lambda : 1.54060
SS/FOM : F17=1000(0.0001,17)

Filter : Not specified
d-sp : Calculated spacings

d (Å)	i	h	k	l
4.76776	999	1	1	1
2.91964	168	2	2	0
2.48988	11	3	1	1
2.38388	45	2	2	2
2.06450	71	4	0	0
1.89452	232	3	3	1
1.68566	45	4	2	2
1.58925	2	5	1	1
1.45982	152	4	4	0
1.39586	94	5	3	1
1.37633	1	4	4	2
1.30570	14	6	2	0
1.25933	1	5	3	3
1.24494	15	6	2	2
1.19194	6	4	4	4
1.15635	40	7	1	1
1.10352	15	6	4	2

Graphite



cuu duong than cong. com

Pattern : 01-075-2078 **Radiation =** 1.540560 **Quality :** Calculated

C

Graphite

Lattice : Rhombohedral
S.G. : R-3m (166)

a = 3.63500 **alpha =** 39.49 **Z =** 2

Mol. weight = 12.01
Volume [CD] = 52.45
Dx = 2.281
I/cor = 2.32

ICSD collection code: 031829
Remarks from ICSD/CSD: PICT.
Test from ICSD: No R value given.
Test from ICSD: At least one TF missing.
Data collection flag: Ambient.

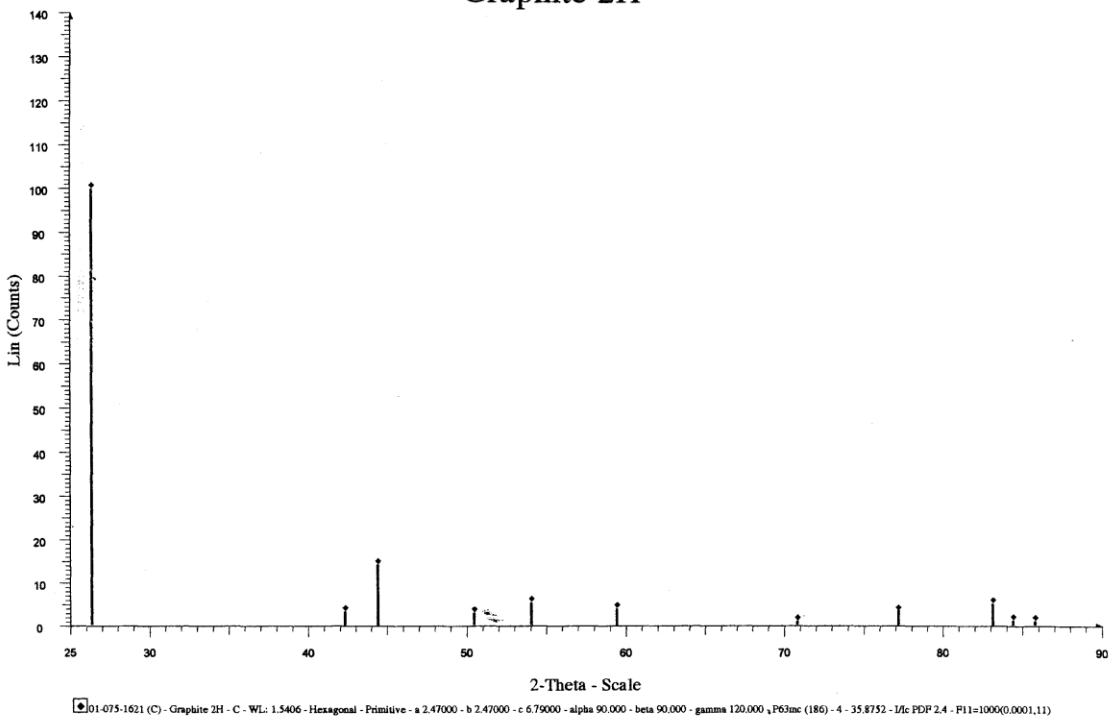
Lipson, H., Stokes, A.R., Proc. R. Soc. London, Ser. A, volume 181, page 101 (1942)
Calculated from ICSD using POWD-12++ (1997)

Radiation : CuKa1
Lambda : 1.54060
SS/FOM : F10=1000(0.0001,10)

Filter : Not specified
d-sp : Calculated spacings

d (A)	I	h	k	l
3.34701	999	1	1	1
2.08083	113	0	1	0
1.95819	72	1	1	0
1.67351	50	2	2	2
1.62279	40	1	1	2
1.46021	14	2	2	1
1.22803	32	-1	1	0
1.18926	10	2	3	2
1.15288	49	1	2	0
1.11567	7	3	3	3

Graphite 2H



cuu duong than cong. com

Pattern : 01-075-1621 ***Radiation =*** 1.540560 ***Quality :*** Calculated

C

Carbon
Graphite 2H

Lattice : Hexagonal
S.G. : P63mc (186)

a = 2.47000
c = 6.79000

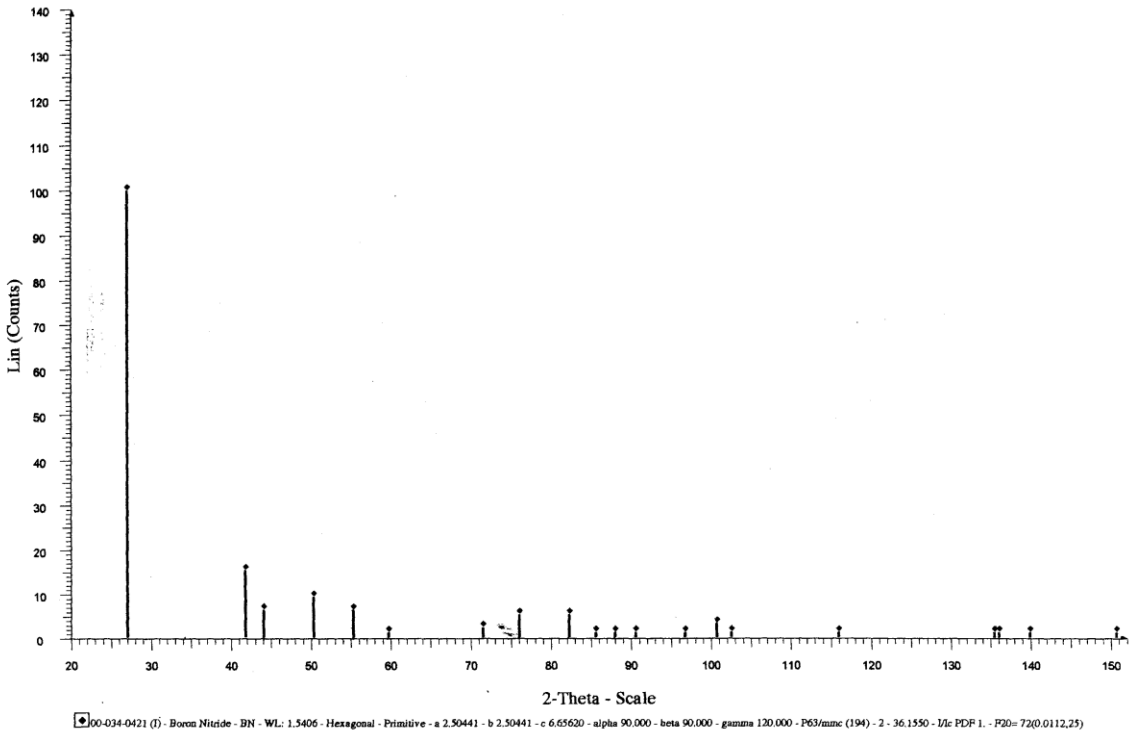
Z = 4

Mol. weight = 12.01
Volume [CD] = 35.88
Dx = 2.224
I/Icor = 2.37

ICSD collection code: 031170
Test from ICSD: No R value given.
Test from ICSD: At least one TF missing.
Sample source or locality: Specimen from Kropfmuhl, Bavaria, Germany.
Test from ICSD: Calc. density unusual but tolerable.
Data collection flag: Ambient.

Hassel, O., Z. Phys., volume 25, page 317 (1924)
Calculated from ICSD using POWD-12++ (1997)

d (Å)	*I*	*h*	*k*	*l*
3.39500	999	0	0	2
2.13908	29	1	0	0
2.04023	138	1	0	1
1.80980	26	1	0	2
1.69750	50	0	0	4
1.55463	36	1	0	3
1.32969	6	1	0	4
1.23500	31	1	1	0
1.16060	48	1	1	2
1.14648	9	1	0	5
1.13167	7	0	0	6



cuu duong than cong. com

Pattern : 00-034-0421 ***Radiation =*** 1.540560 ***Quality :*** Indexed

BN

Boron Nitride

Lattice : Hexagonal

S.G. : P63/mmc (194)

a = 2.50441

c = 6.65620

Z = 2

Mol. weight = 24.82

Volume [CD] = 36.15

Dx = 2.280

Sample source or locality: The sample was obtained from the Carborundum Company, Niagara Falls, New York, USA.
Structure: The structure was done by Pease (1952).
Polymorphism: A high pressure wurtzite type form was described by Soma et al. (1974) and another high pressure zinc blende type structure was described by Coleburn and Forbes (1968).
Color: Colorless
Additional pattern: To replace 9-12.
Data collection flag: Ambient.

Coleburn, N. et al., J. Chem. Phys., volume 48, page 555 (1968)
Natl. Bur. Stand. (U.S.) Monogr. 25, volume 20, page 22 (1983)

CAS Number: 10294-33-4

Radiation : CuKa1

Lambda : 1.54060

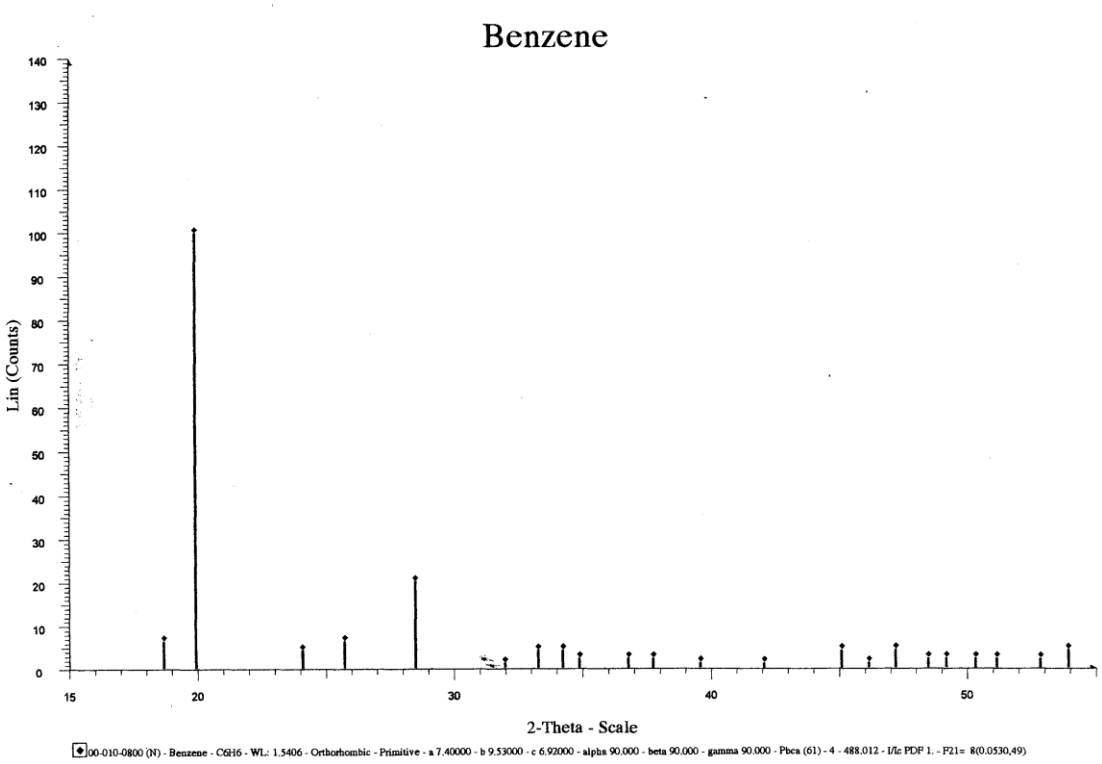
SS/FOM : F20= 72(0.0112,25)

Filter : Monochromator crystal

d-sp : Diffractometer

Internal standard : Si

d (Å)	i	h	k	l
3.32813	100	0	0	2
2.16930	15	1	0	0
2.06190	6	1	0	1
1.81758	9	1	0	2
1.66362	6	0	0	4
1.55090	1	1	0	3
1.31985	2	1	0	4
1.25210	5	1	1	0
1.17205	5	1	1	2
1.13457	1	1	0	5
1.10946	1	0	0	6
1.08432	1	2	0	0
1.03115	1	2	0	2
1.00052	3	1	1	4
0.98770	1	1	0	6
0.90861	1	2	0	4
0.83185	1	0	0	8
0.83036	1	1	1	6
0.81973	1	2	1	0
0.79598	1	2	1	2



cuu duong than cong. com

Pattern : 00-010-0800 ***Radiation =*** 1.540560 ***Quality :*** Not indexed

C_6H_6

Benzene

Lattice : Orthorhombic
S.G. : Pbca (61)

a = 7.40000
b = 9.53000
c = 6.92000
a/b = 0.77650
c/b = 0.72613

Z = 4

Mol. weight = 78.11
Volume [CD] = 488.01
Dx = 1.063

Temperature of data collection: Pattern taken at -25 C.
Data collection flag: Non ambient temperature.

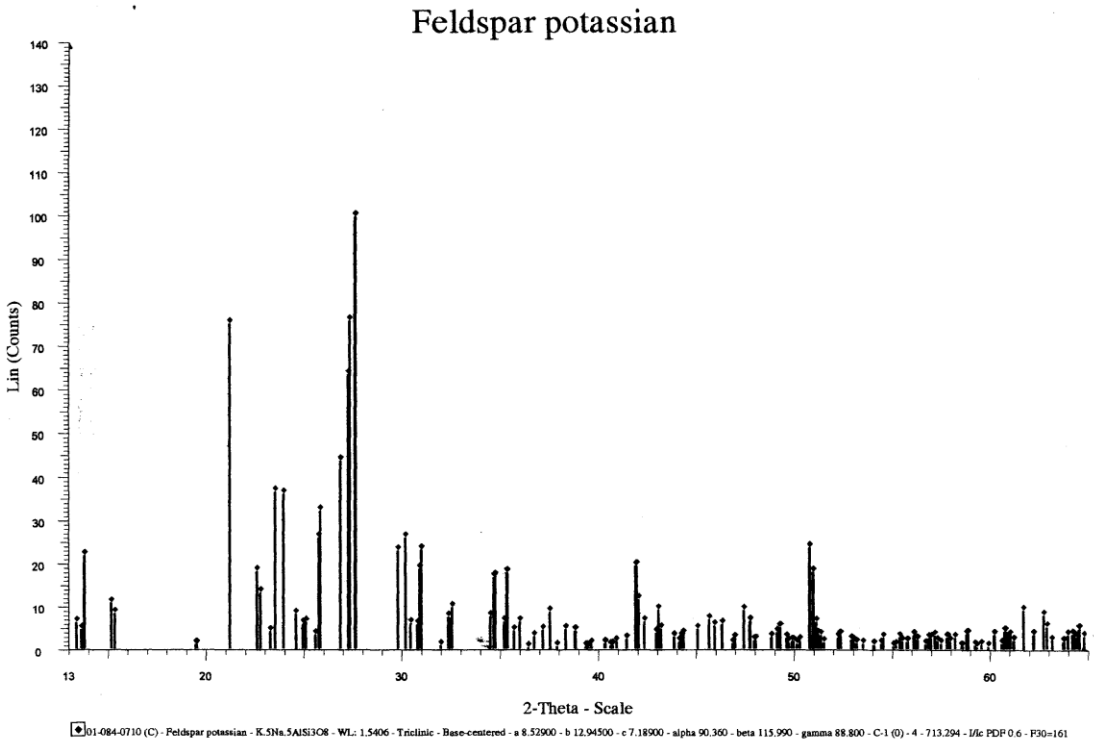
Posner, A., Thesis, Polytechnic Institute of Brooklyn, Brooklyn, New York, USA., Private Communication (1949)

CAS Number: 71-43-2

Radiation : CuKa
Lambda : 1.54180
SS/FOM : F21= 8(0.0530,49)

Filter : Beta
d-sp : Other

d (A)	I	h	k	l
4.76000	6	0	2	0
4.47000	100	1	1	1
3.70000	4	2	0	0
3.47000	6	1	2	1
3.12000	20	1	0	2
2.80300	1	0	2	2
2.69400	4	2	2	1
2.61700	4	1	2	2
2.57100	2			
2.44500	2	2	1	2
2.38800	2	0	4	0
2.28200	1	2	3	1
2.14900	1	1	1	3
2.00900	4	3	0	2
1.96600	1	3	1	2
1.92200	4	2	4	1
1.88200	2	3	3	1
1.85400	2	3	2	2
1.81200	2	2	2	3
1.78400	2	1	5	1
1.73100	2	0	0	4
1.70000	4	3	3	2



cuu duong than cong. com

Pattern : 01-084-0710 **Radiation =** 1.540560 **Quality :** Calculated

$K_{.5}Na_{.5}AlSi_3O_8$

Potassium Sodium Aluminum Silicate
Feldspar potassian

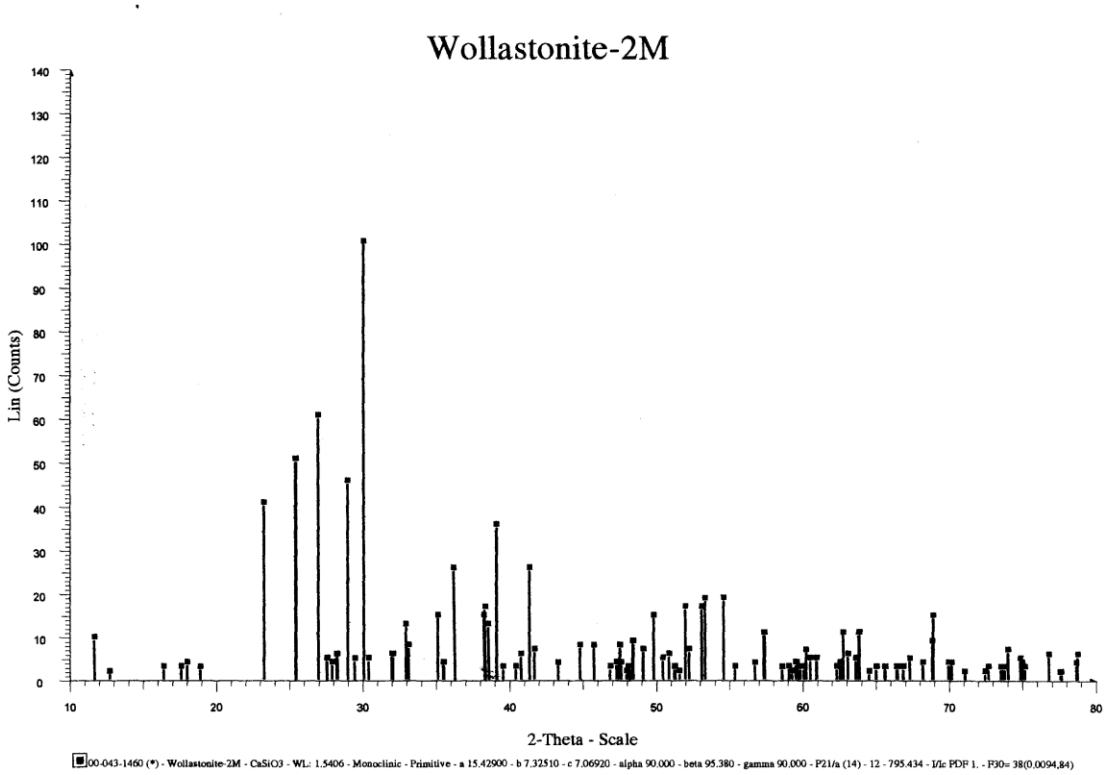
Lattice : Anorthic (triclinic)
S.G. : C-1 (0)

a = 8.52900 **alpha =** 90.36
b = 12.94500 **beta =** 115.99
c = 7.18900 **gamma =** 88.80
a/b = 0.65886 **Z =** 4
c/b = 0.55535

Mol. weight = 270.28
Volume [CD] = 356.65
Dx = 2.517
I/Icor = 0.60

ICSD collection code: 201602
ICSD space group comment: ICSD SG: C1- IT is: 2 SG short form: C-1
Remarks from ICSD/CSD: REM H Diagonalized temperature factors are given in paper.
Sample source or locality: Specimen from Margeride's granite, French Central massive.
Data collection flag: Ambient.

d (Å)	I	h	k	l
6.65436	60	1	1	0
6.53730	43	-1	1	0
6.47105	215	0	2	0
*6.47105	215	0	0	1
5.88085	105	-1	-1	1
5.81467	80	-1	1	1
4.57988	8	0	2	1
*4.57988	8	0	-2	1
4.20164	750	-2	0	1
3.94828	176	1	1	1
3.91876	129	1	-1	1
3.83245	37	2	0	0
3.79242	363	1	3	0
3.72737	358	-1	3	0
3.62703	80	-1	-3	1
3.58056	55	-1	3	1
3.55676	59	-2	-2	1
3.49207	30	-2	2	1
3.46807	257	-1	-1	2
3.45753	319	-1	1	2
3.32718	435	2	2	0
3.27733	633	-2	0	2
3.26865	757	-2	2	0
3.23097	999	0	4	0
*3.23097	999	0	0	2
3.00231	226	1	3	1
2.96389	257	1	-3	1
2.94042	57	-2	-2	2
2.90733	54	-2	2	2
2.89686	184	0	4	1
*2.89686	184	0	2	2
2.88940	229	0	-4	1
*2.88940	229	0	-2	2
2.80144	5	2	0	1
2.76928	72	-1	-3	2
2.76106	55	-3	1	1
2.75324	94	-1	3	2
2.60183	73	-3	-1	2
2.58879	164	-2	-4	1
*2.58879	164	2	2	1
2.56319	168	-3	1	2
2.55147	60	1	1	2
2.53898	176	1	-1	2
*2.53898	176	-2	4	1
2.51628	39	3	1	0
2.49701	60	2	4	0
*2.49701	60	-3	1	0
2.46754	2	1	5	0
2.44798	26	-2	4	0
2.41913	41	-1	-5	1
2.39492	85	-1	5	1
*2.39492	85	-3	-3	1
2.37386	4	-2	0	3
2.34901	43	-3	3	1
2.32106	39	-1	1	3
*2.32106	39	-2	-4	2
2.28994	2	0	4	2
*2.28994	2	-2	4	2
2.28256	1	0	-4	2
2.27424	9	-3	-3	2
2.23740	10	-3	3	2
*2.23740	10	-2	-2	3
2.22219	4	-2	2	3
2.21812	5	3	3	0
*2.21812	5	1	-3	2
2.20598	15	1	5	1
2.18040	20	1	-5	1
*2.18040	20	-3	3	0
2.15702	192	0	6	0
*2.15702	192	0	0	3
2.14945	113	-3	1	3
2.13506	60	2	4	1
2.10580	35	-1	-5	2
*2.10580	35	-4	0	1
1.84981	48	1	-1	3
*1.84981	48	4	2	0
1.83703	23	3	5	0
*1.83703	23	-4	-2	3
1.83363	13	-3	5	2
1.82732	15	-4	2	0
*1.82732	15	1	-5	2
1.81900	9	-4	2	3
1.81352	17	-2	-6	2
1.79691	235	-2	0	4
*1.79691	235	0	6	2
1.79131	177	0	-6	2
*1.79131	177	0	-4	3
1.78600	80	-1	-7	1
1.78227	32	-4	-4	1
1.77638	29	-4	-4	2
1.77295	12	-1	7	1
1.75083	24	2	4	2
1.74807	30	-4	4	1
1.74603	30	-1	-5	3
*1.74603	30	-4	4	2
1.73018	19	2	-4	2
*1.73018	19	-2	2	4
1.72699	16	-1	-1	4
*1.72699	16	-1	1	4
1.72145	11	2	6	1
*1.72145	11	1	3	3
1.71175	9	1	-3	3
1.69402	8	1	7	1
*1.69402	8	-5	-1	2
1.68493	9	-5	1	2
1.68128	23	-3	-5	3
1.66727	3	3	1	2
1.66359	5	4	4	0
1.65817	25	-3	5	3
1.65518	15	-5	-1	1
*1.65518	15	-4	-4	3
1.64803	14	-1	-7	2
*1.64803	14	-5	1	1
1.63743	29	-4	0	4
*1.63743	29	3	5	1
1.63433	19	-4	4	0
*1.63433	19	-3	-3	4
1.62261	7	-5	-1	3
*1.62261	7	-3	3	4
1.61778	22	0	8	0
*1.61778	22	-1	-3	4
1.61493	23	-5	1	3
*1.61493	23	-1	3	4
1.60960	29	3	-5	1
1.60639	16	4	2	1
1.60173	10	2	0	3
1.59386	24	-4	-2	4
*1.59386	24	4	-2	1
1.58932	14	-2	6	3
1.58324	23	-4	2	4
1.57486	4	-2	-4	4
*1.57486	4	-5	3	2
1.56857	33	0	2	4
*1.56857	33	0	-8	1
1.56620	34	-2	4	4
*1.56620	34	0	-2	4
1.55876	6	2	2	3
1.55603	3	3	-3	2
1.55089	7	2	-2	3
1.54188	4	-5	3	1
1.53581	31	-5	-3	3
*1.53581	31	-3	7	1
1.52663	10	0	6	3
*1.52663	10	5	1	0
1.52302	38	-4	-6	1
*1.52302	38	0	-6	3
1.52000	23	-2	-8	1
*1.52000	23	-5	1	0



cuu duong than cong. com

Pattern : 00-043-1460 **Radiation =** 1.540560 **Quality :** High

$CaSiO_3$

Calcium Silicate
Wollastonite-2M
Also called: parawollastonite

Lattice : Monoclinic
S.G. : P21/a (14)

a = 15.42900
b = 7.32510 ***beta =*** 95.38
c = 7.06920
a/b = 2.10632 ***Z =*** 12
c/b = 0.96507

Mol. weight = 116.16
Volume [CD] = 795.43
Dx = 2.910
Dm = 2.910

Analysis: Microprobe analysis (wt.%): Ca 41.44, Si 24.27, O 34.60.
Sample source or locality: Specimen from San Luis Potosi, Mexico.
Color: Colorless
Optical data: A=1.618, B=1.630, Q=1.632, Sign=-, 2V=44°(calc.)
Additional pattern: To replace 10-489 and validated by calculated pattern 27-88.
Data collection flag: Ambient.

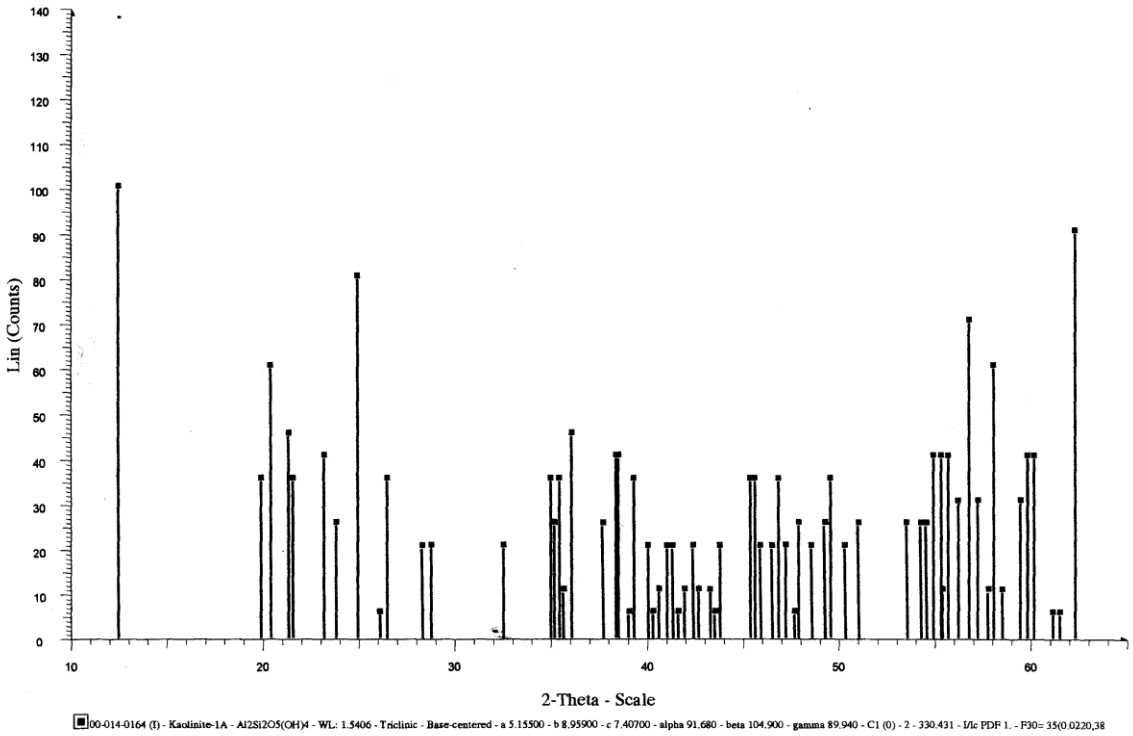
Keller, L., Rask, J., Buseck, P., Arizona State University, Tempe, Arizona, USA., ICDD Grant-in-Aid (1989)

Radiation : CuKa1
Lambda : 1.54060
SS/FOM : F30= 38(0.0094,84)

Filter : Monochromator crystal
d-sp : Diffractometer
Internal standard : Si

d (Å)	I	h	k	l	d (Å)	I	h	k	l
7.68000	9	2	0	0	1.60600	10	7	2	2
7.04000	1	0	0	1	*1.60600	10	5	2	3
5.45000	2	-2	0	1	1.57490	2	2	4	2
5.07500	2	0	1	1	*1.57490	2	3	3	3
4.96200	3	2	0	1	1.56420	2	1	2	4
4.72500	2	1	1	1	1.55920	1	-8	0	3
3.84000	40	4	0	0	*1.55920	1	-9	1	2
3.51900	50	0	0	2	1.55180	3	-3	2	4
*3.51900	50	-4	0	1	*1.55180	3	-5	4	1
3.31900	60	-2	0	2	1.54640	2	-9	2	0
3.24800	4	0	2	1	*1.54640	2	4	0	4
*3.24800	4	4	0	1	1.53910	2	6	3	2
3.20700	3	-1	2	1	*1.53910	2	-9	2	1
3.17000	5	0	1	2	1.53610	6	10	0	0
*3.17000	5	-4	1	1	1.52950	4	-7	2	3
3.09100	45	2	0	2	*1.52950	4	3	4	2
3.04000	4	-2	2	1	1.51970	4	-4	4	2
2.97800	100	-3	2	0	*1.51970	4	5	4	1
2.94700	4	2	2	1	1.48950	2	-6	4	0
2.79900	5	-3	1	2	1.48420	3	9	2	1
*2.79900	5	-3	2	1	*1.48420	3	8	2	2
2.72500	12	-4	0	2	1.48020	10	3	2	4
2.71100	7	-5	1	1	1.47340	5	-6	4	1
2.56000	14	6	0	0	*1.47340	5	4	4	2
2.53300	3	-4	2	1	1.46270	4	-9	2	2
*2.53300	3	-1	2	2	*1.46270	4	-5	4	2
2.48100	25	-6	0	1	1.45840	10	-1	5	0
*2.48100	25	4	0	2	*1.45840	10	-6	3	3
2.35400	14	-5	2	0	1.44340	1	0	4	3
2.35000	16	-6	1	1	*1.44340	1	10	1	1
*2.35000	16	4	1	2	1.43410	2	0	5	1
2.33700	12	-3	2	2	*1.43410	2	-2	4	3
*2.33700	12	6	0	1	1.42500	2	-2	3	4
2.30600	35	-5	1	2	*1.42500	2	8	0	3
*2.30600	35	-2	0	3	1.40680	2	0	0	5
2.28200	2	-5	2	1	*1.40680	2	-7	4	0
2.23400	2	0	1	3	1.39910	2	-6	4	2
2.21500	5	3	2	2	*1.39910	2	-9	3	0
2.18600	25	-4	2	2	1.39050	4	6	0	4
*2.18600	25	5	2	1	1.37410	3	3	5	1
2.16900	6	-6	0	2	*1.37410	3	9	2	2
2.09100	3	-4	0	3	1.36310	8	7	4	1
2.02500	7	-5	2	2	*1.36310	8	5	2	4
1.98380	7	3	1	3	1.36200	14	2	0	5
*1.98380	7	6	0	2	*1.36200	14	10	0	2
1.94010	2	1	2	3	1.34410	3	-10	0	3
1.92180	3	4	0	3	*1.34410	3	1	5	2
*1.92180	3	8	0	0	1.34030	3	-7	2	4
1.91540	7	2	3	2	1.32540	1	8	2	3
*1.91540	7	6	1	2	*1.32540	1	-8	4	0
1.91150	3	-5	3	0	1.30360	1	-11	2	1
1.89820	1	-8	0	1	1.30020	2	-10	3	0
1.89430	2	5	2	2	*1.30020	2	6	2	4
1.88890	2	-5	1	3	1.28640	2	8	4	1
1.88150	8	-7	2	0	*1.28640	2	-6	0	5
*1.88150	8	-7	1	2	1.28330	2	4	0	5
1.85680	6	-8	1	0	1.28010	6	12	0	0
*1.85680	6	-7	2	1	*1.28010	6	7	4	2
1.83130	14	0	4	0	1.26750	4	-8	4	2
1.80980	4	8	0	1	*1.26750	4	-9	1	4
1.79620	5	3	2	3	1.26580	3	-6	1	5
1.78220	2	7	2	1	*1.26580	3	-2	4	4
*1.78220	2	-2	4	0	1.26370	2	4	1	5
1.77230	1	0	4	1	*1.26370	2	11	2	1
1.75940	16	0	0	4	1.24050	5	8	0	4
1.75120	6	-2	0	4	*1.24050	5	-7	3	4
1.72450	16	-5	2	3	1.22920	1	-4	4	4
1.71800	18	2	4	1	*1.22920	1	8	3	3
*1.71800	18	-1	1	4	1.21510	3	9	4	1
1.68110	18	2	0	4	*1.21510	3	-10	0	4
1.65960	2	-4	0	4	1.21410	5	-9	2	4
1.62280	3	-1	4	2	*1.21410	5	-6	5	2

Kaolinite-1A



cuu duong than cong. com

Pattern : 00-014-0164 **Radiation =** 1.540560 **Quality :** Indexed

$Al_2Si_2O_5(OH)_4$

Aluminum Silicate Hydroxide
Kaolinite-1A

Lattice : Anorthic (triclinic)
S.G. : C1 (0)

Mol. weight = 258.16
Volume [CD] = 165.22

a = 5.15500	**alpha =** 91.68	**Dx =** 2.595
b = 8.95900	**beta =** 104.90	**Dm =** 2.645
c = 7.40700	**gamma =** 89.94	
a/b = 0.57540	**Z =** 2	
c/b = 0.82677		

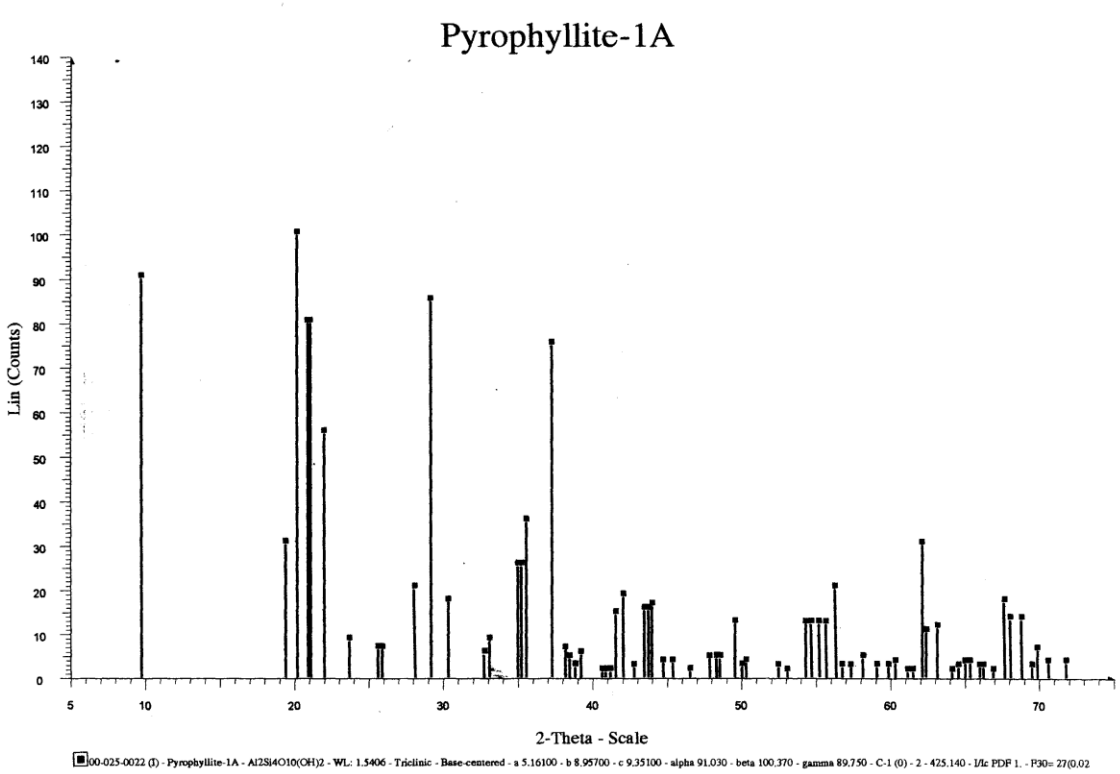
Optical data: A=1.559(6), B=1.564(5), Q=1.565(5), Sign=-, 2V=24-50°
Color: White
Sample source or locality: Specimen from Scalby, Yorkshire, England, UK.
General comments: Validated by calculated pattern Borg and Smith, GSA Memoir, 122.
Additional pattern: To replace 5-143 and 12-447.
Additional pattern: See ICSD 20593 (PDF 72-2300); ICSD 27713 (PDF 74-1784); ICSD 27715 (PDF 74-1786); ICSD 68698 (PDF 80-886); ICSD 31135 (PDF 75-1593); ICSD 63192 (PDF 78-1996); ICSD 68697 (PDF 80-885); ICSD 86571 (PDF 79-1570); ICSD 63315 (PDF 78-2109); ICSD 80082 (PDF 83-971).
Data collection flag: Ambient.

Goodyear, Duffin., Mineral. Mag., volume 32, page 902 (1961)

Radiation : CuKa
Lambda : 1.54180
SS/FOM : F30= 35(0.0220,38)

Filter : Monochromator crystal
d-sp : Other

d (A)	I	h	k	l
7.17000	100	0	0	1
4.47800	35	0	2	0
4.36600	60	-1	1	0
4.18600	45	-1	-1	1
4.13900	35	-1	1	1
3.84700	40	0	-2	1
3.74500	25	0	2	1
3.57900	80	0	0	2
3.42000	5	1	-1	1
3.37600	35	1	1	1
3.15500	20	-1	-1	2
3.10700	20	-1	1	2
2.75400	20	0	2	2
2.56600	35	-2	0	1
2.55300	25	1	3	0
2.53500	35	-1	-3	1
2.51900	10	1	-1	2
2.49500	45	2	0	0
2.38500	25	0	0	3
2.34700	40	-2	0	2
2.33800	40	1	-3	1
2.30500	5	-1	1	3
2.29300	35	1	3	1
2.25300	20	-1	-3	2
2.23700	5	0	4	0
2.21800	10	-2	2	1
2.19700	20	-1	3	2
2.18600	20	2	0	1
2.17300	5	2	2	0
2.15100	10	0	-4	1
2.13300	20	0	-2	3
2.11600	10	0	4	1
2.09300	10	-2	-2	2
2.08000	5	0	2	3
2.06400	20	-2	2	2
1.99700	35	-2	0	3
1.98700	35	1	-3	2
1.97400	20	2	-2	1
1.95200	20	2	2	1
1.93900	35	1	3	2
1.92100	20	0	-4	2
1.90600	5	1	1	3
1.89700	25	-1	-3	3
1.87000	20	0	4	2
1.84500	25	-1	3	3
1.83800	35	-2	-2	3
1.81000	20	-2	2	3
1.78900	25	0	0	4
1.71000	25	2	-2	2
1.68900	25	-1	5	0
1.68100	25	-1	-5	1
1.66900	40	-2	4	0
1.66000	40	2	4	0
1.65600	10	0	-4	3
1.64900	40	-3	1	2
1.63300	30	-3	1	0
1.62000	70	1	3	3
1.60700	30	0	4	3
1.59400	10	-1	-5	2
1.58600	60	-1	-3	4
1.57200	10	2	-4	1
1.55300	30	-2	2	4
1.54500	40	1	-1	4
1.53700	40	2	0	3
1.51400	5	3	-1	1
1.50500	5	-2	-4	3
1.48900	90	-3	-3	1



cuu duong than cong. com

Pattern : 00-025-0022 **Radiation =** 1.540560 **Quality :** Indexed

$Al_2Si_4O_{10}(OH)_2$

Aluminum Silicate Hydroxide
Pyrophyllite-1A

Lattice : Anorthic (triclinic)
S.G. : C-1 (0)

a = 5.16100
b = 8.95700
c = 9.35100
a/b = 0.57620
c/b = 1.04399

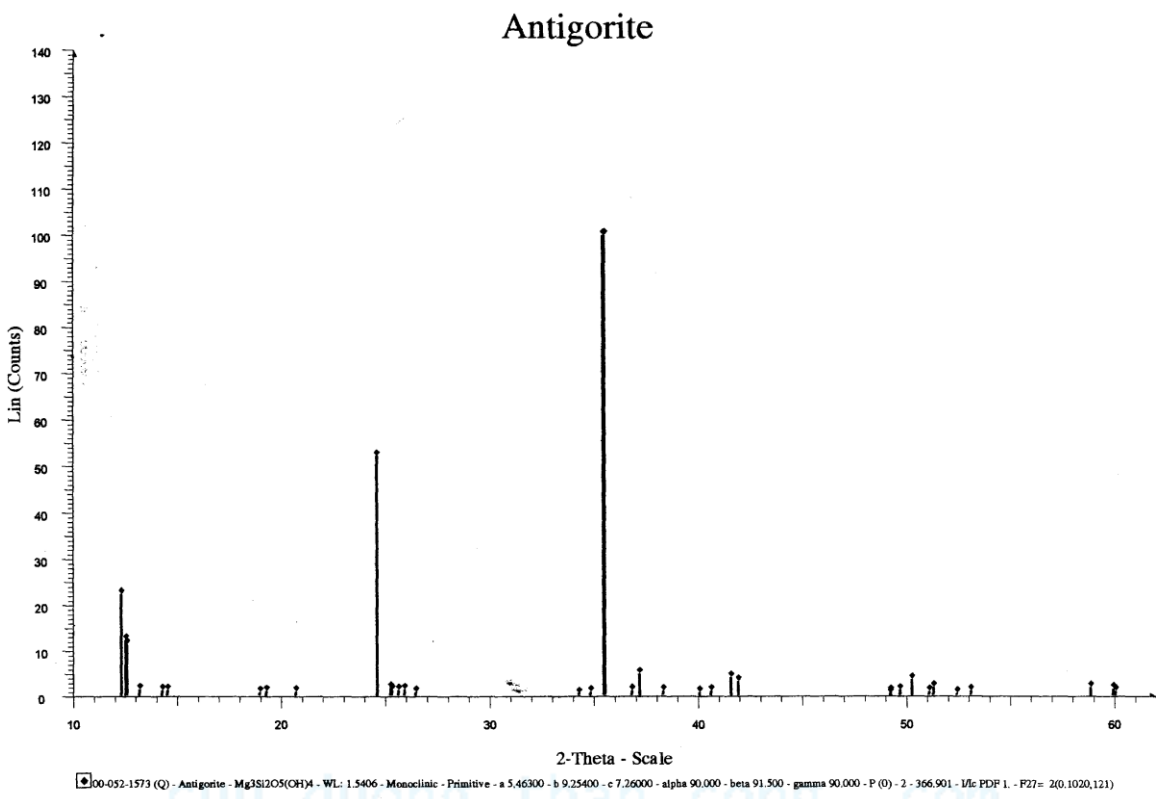
alpha = 91.03
beta = 100.37
gamma = 89.75
Z = 2

Mol. weight = 360.31
Volume [CD] = 212.57
Dx = 2.815

Sample source or locality: Specimen from Coromandel region, New Zealand.
General comments: Calibrated with Si powder (a=5.43062 at 21 C).
Analysis: No analysis given.
Additional pattern: To replace 3-574 and 24-11.
Color: White
Optical data: Sign=-, 2V=~60°
Additional pattern: See ICSD 25-22 (PDF 75-856).
Data collection flag: Ambient.

Wardle, Brindley., Am. Mineral., volume 57, page 732 (1972)

d (A)	i	h	k	l
9.20000	90	0	0	1
4.60000	30	0	0	2
4.42000	100	1	1	0
4.26000	80	-1	-1	1
4.23000	80	-1	1	1
4.06000	55	0	-2	1
3.77000	8	1	-1	1
3.49000	6	-1	-1	2
3.45000	6	-1	1	2
3.18000	20	0	2	2
3.07000	85	0	0	3
2.95300	17	1	1	2
2.74100	5	-1	-1	3
2.71000	8	-1	1	3
2.56900	25	-2	0	1
2.54700	25	0	-2	3
2.53200	35	-1	3	1
2.41600	75	-2	0	2
2.35900	6	1	-1	3
2.34100	4	2	0	1
2.32200	2	-1	3	2
2.30000	5	0	0	4
2.22200	1	-2	2	1
2.20900	1	2	2	0
2.19500	1	-1	-1	4
2.17200	14	-1	1	4
2.15200	18	1	3	2
2.11600	2	-2	2	2
2.08300	15	-1	-3	3
2.07000	15	2	0	2
2.05400	16	0	-2	4
2.02600	3	0	-4	2
1.99800	3	0	4	2
1.95200	1	-2	-2	3
1.90000	4	1	-3	3
1.88300	4	2	-2	2
1.87500	4	1	3	3
1.84100	12	0	0	5
1.82300	2	0	-4	3
1.81200	3	-1	-3	4
1.74400	2	-2	-2	4
1.72200	1	-2	2	4
1.68900	12	-1	5	0
1.67700	12	2	-2	3
1.66100	12	-3	1	0
1.65000	12	-2	-4	2
1.63300	20	-2	4	2
1.62100	2	2	-4	1
1.60700	2	1	1	5
1.58500	4	-3	-1	3
1.56500	2	1	-5	2
1.54400	2	-2	-2	5
1.53200	3	0	0	6
1.51400	1	2	4	2
1.50500	1	-1	5	3
1.49300	30	-3	-3	1
1.48700	10	-3	3	1
1.47200	11	-3	3	0
1.45100	1	-2	-4	4
1.44300	2	0	2	6
1.43300	3	0	-4	5
1.42500	3	1	3	5



Pattern : 00-052-1573 ***Radiation =*** 1.540560 ***Quality :*** Questionable

$Mg_3Si_2O_5(OH)_4$

Magnesium Silicate Hydroxide
Antigorite

Lattice : Monoclinic
S.G. : P (0)

a = 5.46300
b = 9.25400
c = 7.26000
a/b = 0.59034
c/b = 0.78453

beta = 91.50
Z = 2

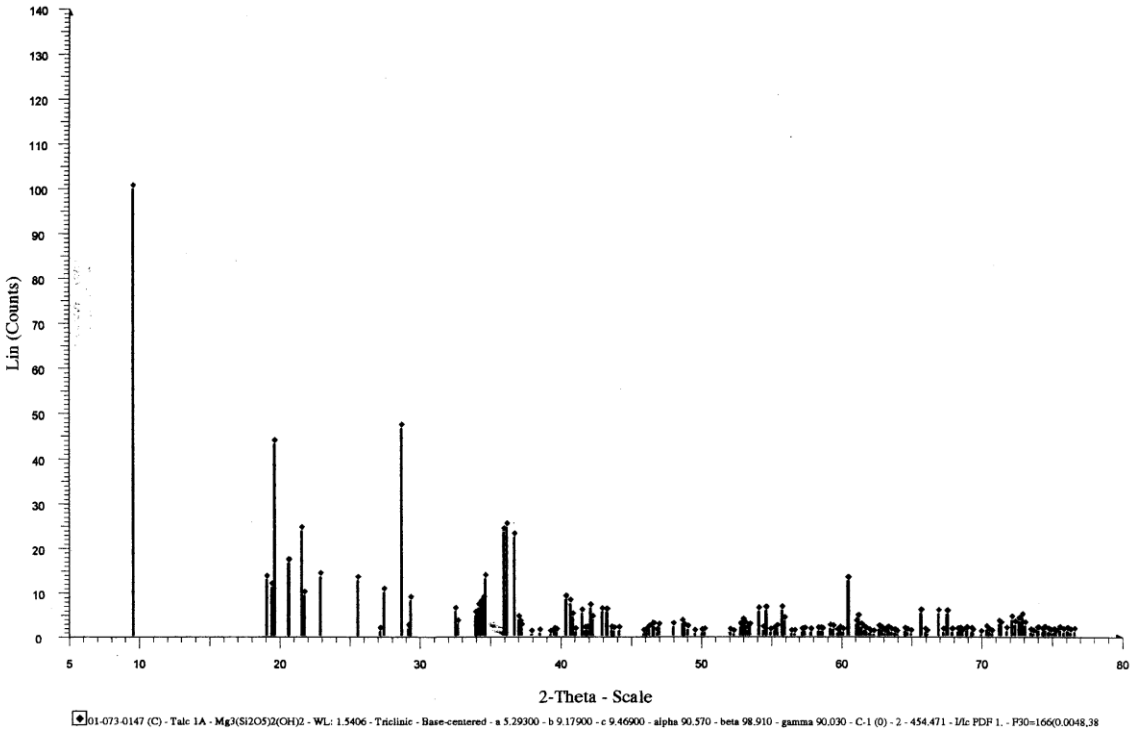
Mol. weight = 277.11
Volume [CD] = 366.90
Dx = 2.508

Color: Light green
Sample source or locality: Specimen from Jin-gatou, Sasaguri-cho, Japan.
General comments: Incommensurate structure.
Analysis: Analysis (wt.%): Si 4.193, Cr 0.021, Fe^{+3} 0.102, Fe^{+2} 0.390, Mg 5.503, Ni 0.021.
Data collection flag: Ambient.

Uehara, S., Shirozu, H., Mineral. J., volume 12, page 299 (1985)

d (Å)	I	h	k	l
7.27000	220	0	0	1
7.14000	120			
7.10000	110			
6.77000	11			
6.25000	9			
6.14000	9			
4.68500	4	1	1	0
4.61800	7	0	2	0
4.21400	6	1	0	1
3.61100	520	0	0	2
3.57400	10	1	2	0
3.53800	14			
3.48500	9			
3.44800	11			
3.39100	5	0	1	2
2.61000	3	2	1	0
2.58200	5	-2	0	1
2.53200	999	2	0	1
*2.53200	999	1	3	-1
2.44700	8	2	1	1
2.41690	46	0	0	3
2.37570	7	-2	2	0
2.26370	5	-2	2	1
2.21830	7	2	2	1
2.17290	38	1	3	-2
2.15600	29	2	0	2
1.86040	3	0	5	0
1.85040	7			
1.83680	10	-2	0	3
1.81390	33	0	0	4
1.78740	6	2	0	3
1.77860	15	0	1	4
1.74610	3	-3	1	1
1.72740	8	3	1	1
1.56870	17	3	3	0
1.54200	12	0	6	0
1.53830	7	3	3	-1

Talc 1A



cuu duong than cong. com

Pattern : 01-073-0147 ***Radiation =*** 1.540560 ***Quality :*** Calculated

$Mg_3(Si_2O_5)_2(OH)_2$

Magnesium Sllicate Hydroxide
Talc 1A

Lattice : Anorthic (triclinic)
S.G. : C-1 (0)

a = 5.29300 ***alpha*** = 90.57
b = 9.17900 ***beta*** = 98.91
c = 9.46900 ***gamma*** = 90.03
a/b = 0.57664 ***Z*** = 2
c/b = 1.03159

Mol. weight = 379.27
Volume [CD] = 227.24
Dx = 2.771
Dm = 2.830
I/Icor = 1.05

ICSD collection code: 021017
ICSD space group comment: ICSD SG: C1- IT is: 2 SG short form: C-1
Temperature factor: ITF
Sample source or locality: Specimen from Harford county, Maryland (U.S. National Museum No. 82519).
Remarks from ICSD/CSD: R(isotropic)=0.149.
Test from ICSD: Calc. density unusual but tolerable.
Data collection flag: Ambient.

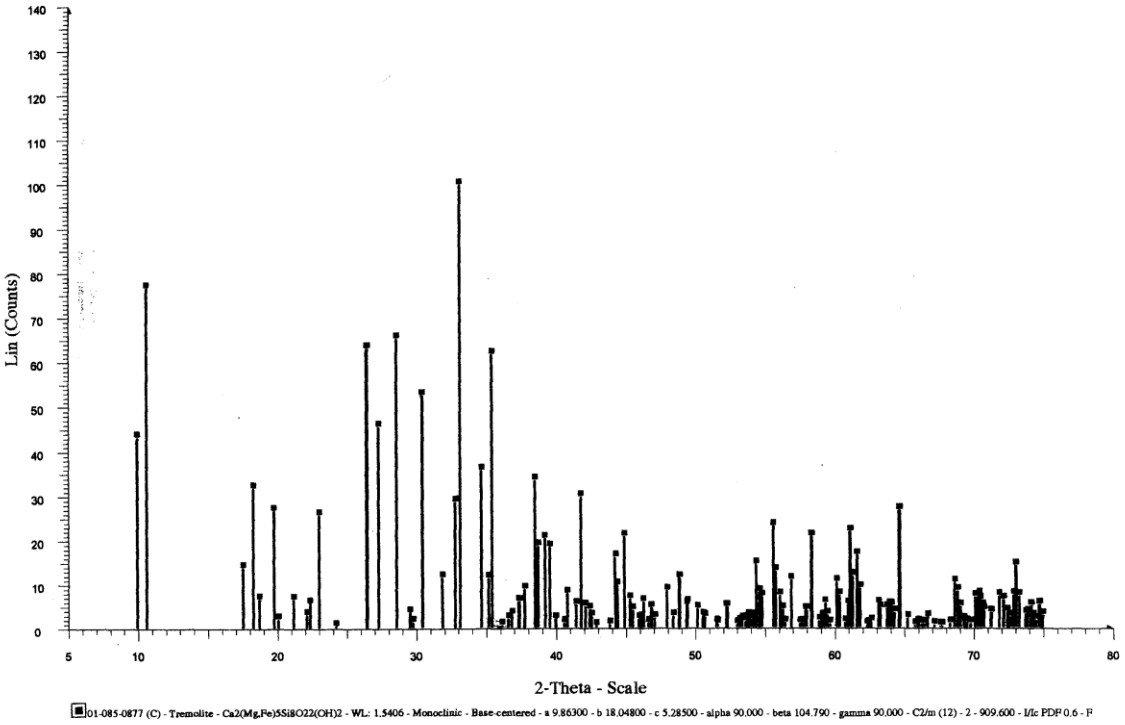
Rayner, J.H., Brown, G., Clays Clay Miner., Proc. Conf., volume 21, page 103 (1973)
Calculated from ICSD using POWD-12++

Radiation : CuKa1
Lambda : 1.54060
SS/FOM : F30=166(0.0048,38)

Filter : Not specified
d-sp : Calculated spacings

d (Å)	i	h	k	l
9.35425	999	0	0	1
4.67713	126	0	0	2
4.58926	108	0	2	0
4.53942	429	-1	1	0
*4.53942	429	1	1	0
4.32794	163	-1	-1	1
*4.32794	163	-1	1	1
4.13676	236	0	-2	1
4.10368	90	0	2	1
3.89805	132	1	-1	1
3.49484	123	-1	1	2
3.29247	8	0	-2	2
3.25922	97	0	2	2
3.11806	464	0	0	3
3.06769	14	1	-1	2
3.05165	78	1	1	2
2.75581	53	-1	-1	3
2.74288	25	-1	1	3
2.63831	44	-1	3	0
*2.63831	44	1	3	0
2.62570	62	-2	0	1
2.61456	69	2	0	0
2.59894	78	-1	-3	1
2.59111	128	0	-2	3
*2.59111	128	-1	3	1
2.49849	233	1	-3	1
2.48349	245	1	3	1
2.44949	222	-2	0	2
2.42893	35	1	-1	3
2.42264	24	2	0	1
2.41760	16	1	1	3
2.37285	2	-1	3	2
2.33856	4	0	0	4
2.29463	1	0	4	0
2.27978	7	-2	-2	1
*2.27978	7	-2	2	1
2.27380	5	-2	2	0
2.26971	5	2	2	0
2.23550	81	1	-3	2
*2.23550	81	0	4	1
2.21896	72	1	3	2
2.20808	41	-1	-1	4
2.19889	7	-1	1	4
2.17626	50	-2	0	3
2.16397	10	-2	-2	2
2.15794	11	-2	2	2
2.14505	61	2	-2	1
*2.14505	61	2	0	2
2.13842	35	2	2	1
2.10636	52	-1	-3	3
2.08913	51	0	-2	4
*2.08913	51	-1	3	3
2.07513	11	0	2	4
2.06838	9	0	4	2
2.05184	10	0	4	2
1.97799	3	1	-1	4
1.97004	4	-2	-2	3
*1.97004	4	1	1	4
1.96232	12	-2	2	3
1.95044	19	1	-3	3
*1.95044	19	2	-2	2
1.93853	4	2	2	2
1.93294	17	1	3	3
1.89500	19	-2	0	4
1.87085	26	0	0	5
1.86618	16	2	0	3
1.85715	12	0	4	3
1.83924	3	0	4	3
1.82154	4	-1	-1	5
1.81495	6	-1	3	4
*1.81495	6	-1	1	5
1.75571	5	-2	-2	4
1.74742	2	-2	2	4
1.73321	18	-1	5	0
*1.73321	18	-3	-1	1
1.72717	28	-2	4	1
*1.72717	28	0	2	5
1.72417	21	2	2	3
*1.72417	21	2	4	0
1.71709	10	-1	5	1
1.71309	17	-3	1	0
*1.71309	17	3	1	0
1.69397	54	1	-3	4
*1.69397	54	-3	1	2
1.68382	11	1	5	1
1.67910	56	1	3	4
*1.67910	56	-2	-4	2
1.66978	5	2	-4	1
1.66218	9	2	4	1
1.65648	14	-1	-5	2
*1.65648	14	1	-1	5
1.64697	57	-2	0	5
*1.64697	57	0	-4	4
1.64190	32	3	-1	1
1.62961	3	0	4	4
1.62263	3	2	0	4
1.60868	6	-3	-1	3
*1.60868	6	-3	1	3
1.60354	8	1	-5	2
1.59281	6	-1	-3	5
*1.59281	6	1	5	2
1.57970	9	-1	3	5
1.57485	9	-2	4	3
1.57200	7	2	-4	2
1.55904	15	0	0	6
1.55394	13	-1	-5	3
*1.55394	13	-2	-2	5
1.54643	4	-2	2	5
1.54250	10	-1	5	3
*1.54250	10	-1	-1	6
1.53720	6	-1	1	6
1.52975	123	0	6	0
*1.52975	123	-3	-3	1
1.51586	25	-3	3	0
1.51314	37	3	3	0
*1.51314	37	0	-6	1
1.50726	18	0	6	1
1.50235	11	-3	-3	2
1.50021	8	-3	3	2
1.49540	4	-3	-1	4
1.49312	2	-3	1	4
1.48873	2	1	-5	3
1.47930	13	0	-2	6
*1.47930	13	1	-3	5
1.47577	10	1	5	3
1.47164	3	0	2	6
1.46713	11	1	3	5
*1.46713	11	-2	-4	4
1.46193	6	3	3	1
1.45636	4	0	-4	5
*1.45636	4	-2	4	4
1.45321	2	2	-4	3
1.44284	8	0	4	5
*1.44284	8	2	4	3
1.44082	8	-2	0	6
1.43883	5	-3	3	3
1.43363	3	-1	-5	4
1.42087	50	2	0	5
*1.42087	50	1	-1	6
1.41436	6	3	-1	3
1.41162	3	3	1	3
1.39642	49	-1	-3	6
1.39012	6	3	-3	2
1.38566	48	-1	3	6
*1.38566	48	3	3	2
1.37892	6	0	-6	3
*1.37892	6	-2	-2	6
1.37144	7	-2	2	6
*1.37144	7	-3	1	5
1.36789	9	0	6	3
1.36546	4	1	-5	4
1.35985	10	2	-2	5
*1.35985	10	-3	-3	4
1.35472	8	-3	3	4
*1.35472	8	2	2	5
1.35249	4	1	5	4
1.34286	1	-2	-4	5
1.33632	12	0	0	7
1.33330	7	-1	-1	7
*1.33330	7	-2	4	5
1.33009	3	2	-4	4
*1.33009	3	-1	1	7
1.32156	25	-2	6	0
*1.32156	25	-2	6	1
1.31916	21	2	4	4
*1.31916	21	2	6	0
1.31285	9	-4	0	2
1.30728	35	4	0	0
1.30376	23	1	-3	6
1.29947	31	-2	-6	2
*1.29947	31	3	-3	3
1.29556	40	0	-4	6
*1.29556	40	-2	6	2
1.29235	21	3	-1	4
*1.29235	21	3	3	3
1.28618	5	0	-2	7
*1.28618	5	0	-6	4
1.28351	3	0	4	6
1.27828	10	0	2	7
*1.27828	10	-4	0	3
1.27427	7	0	6	4
1.27246	11	-2	0	7
*1.27246	11	-4	-2	1
1.26805	7	4	0	1
*1.26805	7	-1	-7	1
1.26533	4	-1	7	1
*1.26533	4	-3	5	0
1.26269	5	3	5	0
*1.26269	5	-4	2	2
1.26044	3	-3	3	5
1.25619	11	4	2	0
*1.25619	11	2	0	6
1.25267	6	-3	-1	6
1.24925	9	2	-6	2
*1.24925	9	-2	6	3
1.24577	5	1	-5	5
1.24174	7	2	6	2
*1.24174	7	-1	-7	2

Tremolite



cuu duong than cong. com

Pattern : 01-085-0877 **Radiation =** 1.540560 **Quality :** Calculated

$Ca_2(Mg,Fe)_5Si_8O_{22}(OH)_2$

Magnesium Calcium Silicate Hydroxide
Tremolite

Lattice : Base-centered monoclinic **Mol. weight =** 812.37

S.G. : C2/m (12) **Volume [CD] =** 909.60

a = 9.86300 **Dx =** 2.966

b = 18.04800 **beta =** 104.79 **Dm =** 2.900

c = 5.28500

a/b = 0.54649 **Z =** 2 **I/Icor =** 0.64

c/b = 0.29283

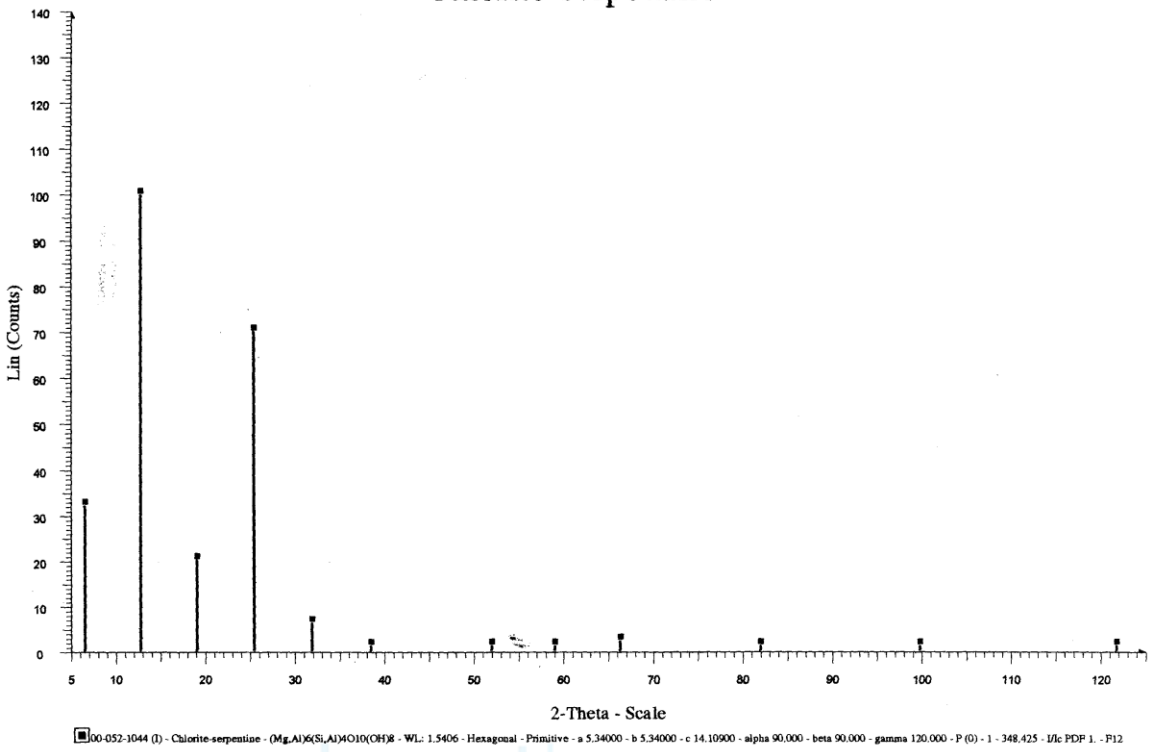
ICSD collection code: 030123
Remarks from ICSD/CSD: ATOM H 1 +1. 4.00 Atoms not located in unit cell.
Temperature factor: ATF
Additional pattern: REM M PDF 44-1402 and ICSD 30126.
Bond distance: REM M Mean T-O: 1.629, 1.635.
Test from ICSD: Charge sum slightly deviates from zero.
Temperature factor: ITF
Analysis: Na0.38 K0.12 Ca1.80 Mg5 Fe0.01 Al0.24 Si7.76 O22 (O H)2.
Sample source or locality: Specimen from Gouverneur district, New York, USA.
Remarks from ICSD/CSD: H position from neutron data.
Remarks from ICSD/CSD: R(iso)=0.048.
Test from ICSD: Calc. density unusual but tolerable.
Data collection flag: Ambient.

Hawthorne, F.C., Grundy, H.D., Can. Mineral., volume 14, page 334 (1976)
Calculated from ICSD using POWD-12++

d (A)	i	h	k	l
9.02400	429	0	2	0
8.43159	765	1	1	0
5.08612	134	1	3	0
4.88236	314	-1	1	1
4.78611	62	2	0	0
4.51200	264	0	4	0
4.44851	16	0	2	1
4.21579	61	2	2	0
4.03802	26	-2	0	1
3.98911	53	1	1	1
3.87938	254	-1	3	1
3.68583	1	-2	2	1
3.38251	628	1	3	1
*3.38251	628	1	5	0
3.27727	452	2	4	0
3.13055	650	3	1	0
3.03026	33	-3	1	1
3.00898	10	-2	4	1
*3.00898	10	0	6	0
2.94222	523	2	2	1
*2.94222	523	-1	5	1
2.81053	113	3	3	0
2.73728	283	-3	3	1
2.70644	999	1	5	1
2.59222	355	0	6	1
2.55495	110	0	0	2
2.53781	615	-2	0	2
2.48892	3	1	7	0
2.45832	17	0	2	2
2.44304	27	-2	2	2
2.41227	57	-2	6	1
*2.41227	57	-4	0	1
2.38557	85	3	5	0
*2.38557	85	4	0	0
2.34029	333	-3	5	1
2.32741	184	-4	2	1
2.29871	201	-1	7	1
2.28001	181	-3	1	2
2.25689	18	3	3	1
*2.25689	18	0	8	0
2.22325	8	0	4	2
2.21194	76	-2	4	2
2.18113	49	1	7	1
2.16291	295	2	6	1
2.14707	45	-3	3	2
2.13208	36	-1	5	2
2.12502	22	-4	4	1
2.10790	2	4	4	0
2.08381	4	0	8	1
2.04514	159	2	0	2
2.03926	95	2	8	0
2.01846	206	-4	0	2
*2.01846	206	3	5	1
2.00241	62	3	7	0
1.99456	36	2	2	2
1.97541	16	4	0	1
*1.97541	16	-3	7	1
1.97030	19	-4	2	2
*1.97030	19	-2	8	1
1.96241	56	1	9	0
1.94866	8	0	6	2
*1.94866	8	-5	1	1
1.93875	43	-2	6	2
*1.93875	43	-3	5	2
1.93012	19	4	2	1
1.89668	82	5	1	0
1.88028	23	-4	6	1
1.86505	111	-1	9	1
*1.86505	111	2	4	2
1.84533	49	-1	7	2
1.84292	53	-4	4	2
1.81807	40	5	3	0
1.80480	24	0	10	0
1.80058	21	1	9	1
1.77308	8	3	1	2
1.77018	5	3	7	1
1.75036	44	-5	1	2
*1.75036	44	-1	1	3
1.72626	4	1	7	2

d (A)	i	h	k	l
1.59765	7	3	5	2
*1.59765	7	-1	9	2
1.59471	6	5	3	1
*1.59471	6	0	4	3
1.58937	36	-4	0	3
*1.58937	36	6	0	0
1.57917	205	-5	5	2
*1.57917	205	-1	5	3
1.56528	12	-4	2	3
*1.56528	12	6	2	0
1.56128	21	2	10	1
*1.56128	21	-1	11	1
1.55936	22	-5	7	1
1.55615	53	4	0	2
1.55279	26	1	3	3
1.54789	5	3	9	1
1.53695	101	-6	0	2
1.53332	70	5	7	0
*1.53332	70	-3	5	3
1.52278	8	1	11	1
1.51827	50	1	9	2
1.51389	216	-6	2	2
*1.51389	216	-2	6	3
1.51105	115	-3	9	2
1.50400	163	0	12	0
*1.50400	163	5	5	1
1.49908	87	-4	4	3
*1.49908	87	6	4	0
1.48818	3	2	0	3
1.48637	4	4	8	1
1.48217	10	0	6	3
1.47111	51	4	4	2
*1.47111	51	-2	10	2
1.46835	41	2	2	3
*1.46835	41	1	5	3
1.45797	41	3	11	0
1.45486	48	-6	4	2
*1.45486	48	-5	7	2
1.45145	46	-1	7	3
1.44744	31	-3	11	1
1.44064	264	-6	6	1
*1.44064	264	4	10	0
1.42849	19	-5	3	3
1.41843	2	6	0	1
1.41452	8	-3	7	3
*1.41452	8	2	4	3
1.40941	5	-2	12	1
1.40662	5	-4	8	3
*1.40662	5	6	6	0
1.40123	20	6	2	1
*1.40123	20	-5	9	1
1.39208	3	5	7	1
1.38371	1	-2	8	3
1.38214	1	4	6	2
*1.38214	1	5	9	0
1.37179	6	-7	3	1
1.36597	100	5	1	2
1.36186	81	-5	5	3
1.35845	45	0	8	3
*1.35845	45	7	1	0
1.35417	14	2	12	1
1.35322	10	2	10	2
*1.35322	10	8	4	1
1.35037	9	-7	1	2
1.34557	6	-6	0	3
*1.34557	6	-4	10	2
1.34036	67	1	11	2
*1.34036	67	-1	13	1
1.33539	73	5	3	2
*1.33539	73	-3	11	2
1.33386	60	2	6	3
1.33128	45	3	9	2
*1.33128	45	-6	2	3
1.32970	36	3	3	3
1.32222	31	-5	9	2
*1.32222	31	-7	3	2
1.31247	70	-7	5	1
1.30753	61	-1	1	4
*1.30753	61	-2	2	4
1.30291	33	-3	1	4

Chlorite-serpentine



cuu duong than cong. com

Pattern : 00-052-1044 ***Radiation =*** 1.540560 ***Quality :*** Indexed

$(Mg,Al)_6(Si,Al)_4O_{10}(OH)_8$

Magnesium Aluminum Silicate Hydroxide
Chlorite-serpentine

Lattice : Hexagonal
S.G. : P (0)

a = 5.34000
c = 14.10900
Z = 1

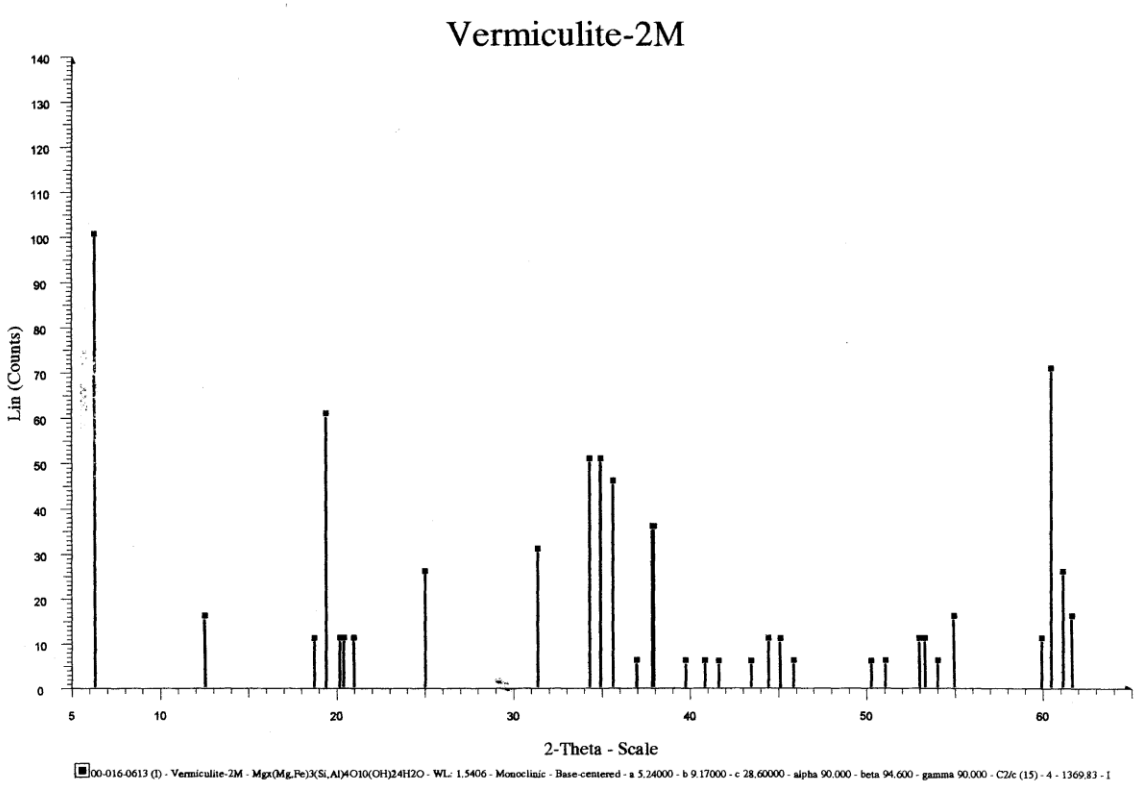
Mol. weight = 554.22
Volume [CD] = 348.43
Dx = 2.641

Sample source or locality: Specimen from Tuscaloosa Formation, Louisiana, USA.
General comments: Only 00l reflections are recorded.
Data collection flag: Ambient.

Reynolds, Jr., R., DiStefano, M., Lahann, R., Clays Clay Miner., volume 40, page 262 (1992)

d (Å)	I	h	k	l
14.15000	32	0	0	1
7.04000	100	0	0	2
4.70000	20	0	0	3
3.52500	70	0	0	4
2.82500	6	0	0	5
2.35300	1	0	0	6
1.76300	1	0	0	8
1.56800	1	0	0	9
1.41200	2	0	0	10
1.17700	1	0	0	12
1.00830	1	0	0	14
0.88180	1	0	0	

cuu duong than cong. com



cuu duong than cong. com

Pattern : 00-016-0613 **Radiation =** 1.540560 **Quality :** Indexed

$Mgx(Mg,Fe)_3(Si,Al)_4O_{10}(OH)_2 \cdot 4H_2O$

Magnesium Iron Aluminum Silicate Hydroxide Hydrate
Vermiculite-2M

Lattice : Base-centered monoclinic
S.G. : C2/c (15)

a = 5.24000
b = 9.17000
c = 28.60000
a/b = 0.57143
c/b = 3.11887

beta = 94.60
Z = 4

Volume [CD] = 1369.83
Dm = 2.280

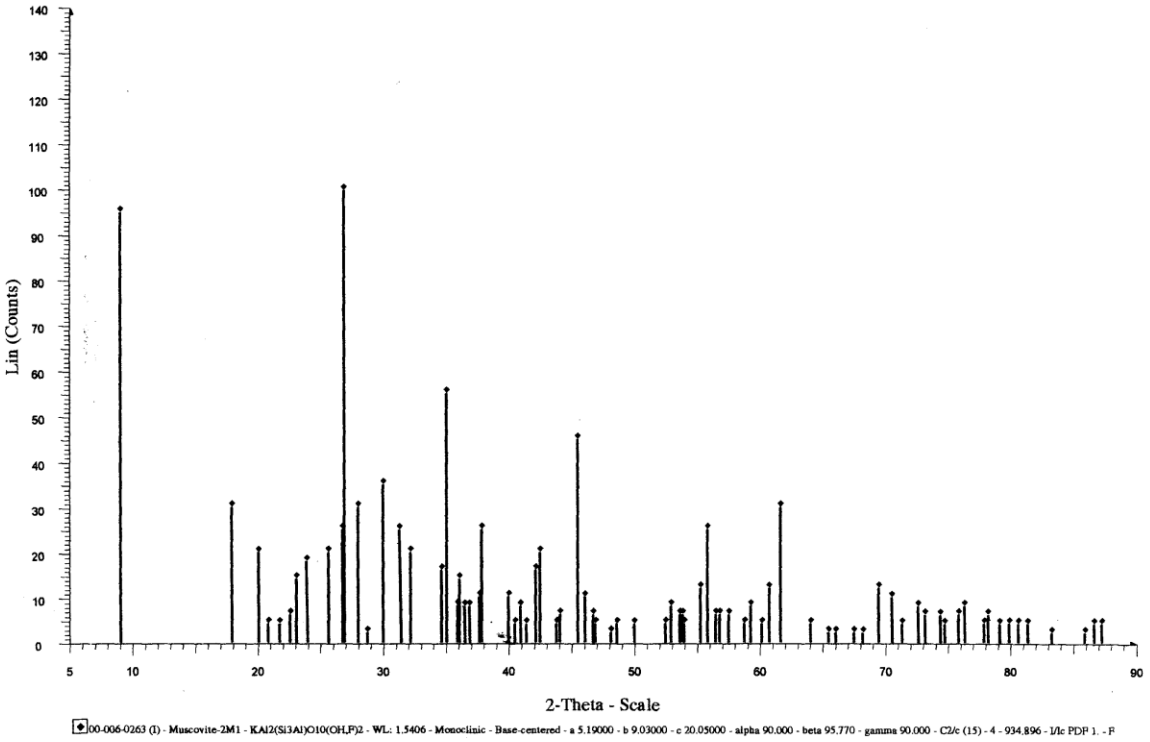
Optical data: A=1.525, B=1.545, Q=1.545, Sign=-, 2V=0°
Color: Brown, green
Sample source or locality: Specimen from Ajmer-Marwar, India (Indian Museum 8247).
Analysis: Analysis (wt.%): Si O2 34.92, Al2 O3 13.97, Fe2 O3 6.25, FeO 0.52, MgO 20.37, CaO 2.15, Na2 O 0.32, H2 O 21.00.
Additional pattern: To replace 10-418 and validated by calculated pattern 34-166.
Additional pattern: See ICSD 37442 (PDF 77-22).
Data collection flag: Ambient.

Mukherjee., Clay Miner. Bull., volume 5, page 194 (1963)

CAS Number: 1318-00-9

d (A)	i	h	k	l
14.20000	100	0	0	2
7.14000	15	0	0	4
4.76000	10	0	0	6
4.57000	60	0	2	0
4.41000	10	-1	1	2
4.35000	10	0	2	2
4.25000	10	1	1	2
3.56000	25	0	0	8
2.85000	30	0	0	10
2.61500	50	-1	3	2
2.57000	50	-1	3	3
2.52500	45	-2	0	4
2.43000	5	-1	3	5
2.38000	35	0	0	12
2.36500	35	-2	0	6
2.26500	5	-2	2	2
2.20000	5	-2	2	4
2.17000	5	-1	1	12
2.08000	5	1	3	8
2.04000	10	0	0	14
2.01000	10	-2	0	10
1.97500	5	-1	3	10
1.82000	5	1	3	11
1.79000	5	2	2	9
1.72500	10	-2	4	1
1.71500	10	-3	1	1
1.69500	5	-2	4	4
1.66500	15	-1	5	5
1.54300	10	1	5	8
1.52800	70	0	6	0
1.51400	25	1	3	15
1.50200	15	1	5	9

Muscovite-2M1



cuu duong than cong. com

Pattern : 00-006-0263 **Radiation =** 1.540560 **Quality :** Indexed

$KAl_2(Si_3Al)O_{10}(OH,F)_2$

Potassium Aluminum Silicate Hydroxide
Muscovite-2M1

Lattice : Base-centered monoclinic
S.G. : C2/c (15)

a = 5.19000
b = 9.03000
c = 20.05000
a/b = 0.57475
c/b = 2.22038

beta = 95.77
Z = 4

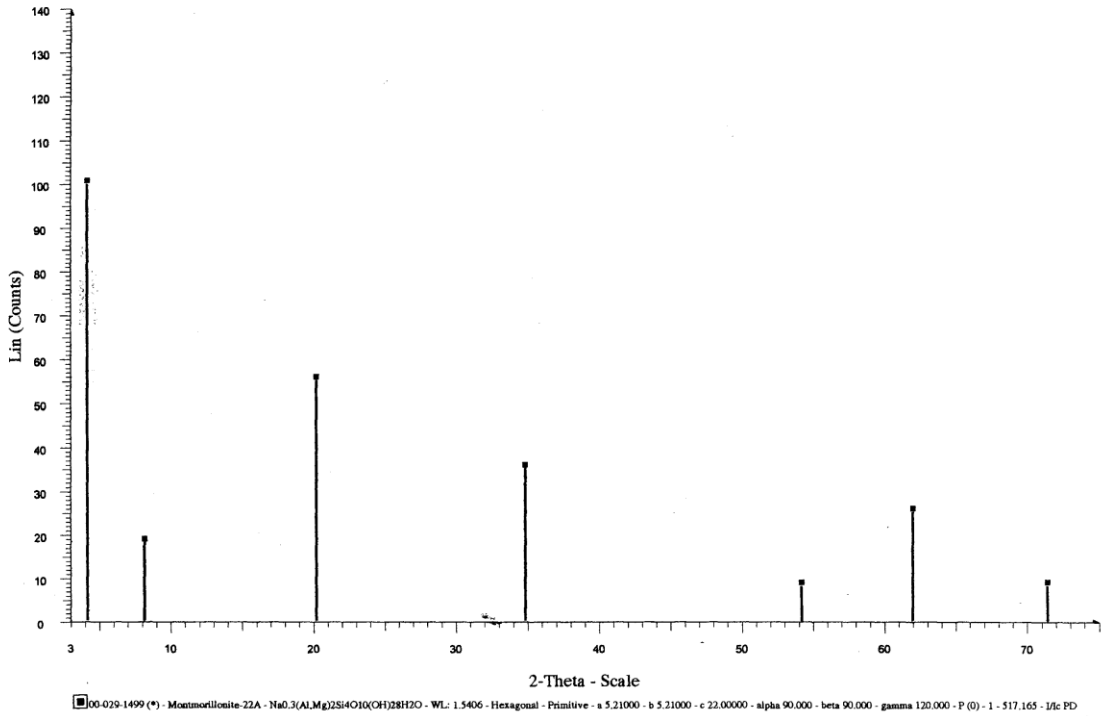
Mol. weight = 398.31
Volume [CD] = 934.90
Dx = 2.830

Optical data: A=1.50-1.56, Q=1.59-1.61, Sign=-, 2V=36-50°
General comments: Space group by Jackson, West, *Z. Kristallogr.*, **76** 211 (1930) and Hendricks, Jefferson, *Am. Mineral.*, **24** 729 (1939).
General comments: Other sources give refractive indexes for muscovites: εα=1.55-1.57, nωβ=1.58-1.61, εγ=1.59-1.62.
General comments: Locality not given.
Color: Colorless
Additional pattern: See ICSD 15868 (PDF 72-496); See ICSD 25803 (PDF 74-345); See ICSD 28553 (PDF 74-2428); See ICSD 30297 (PDF 75-948); See ICSD 34353 (PDF 76-637); See ICSD 34406 (PDF 76-668); See ICSD 34921 (PDF 76-929); See ICSD 60569 (PDF 77-2255); See ICSD 202260 (PDF 84-1302); See ICSD 202262 (PDF 84-1304); See ICSD 68547 (PDF 80-742); See ICSD 67629 (PDF 79-2363); See ICSD 74608 (PDF 82-576); See ICSD 79027 (PDF 82-2450); See ICSD 79029 (PDF 85-2147).
Data collection flag: Ambient.

Gillery, F., Penn State Univ., University Park, PA, USA., Private Communication

d (Å)	I	h	k	l	d (Å)	I	h	k	l
9.95000	95	0	0	2	1.18280	4	-1	7	6
4.97000	30	0	0	4	1.15820	2	0	6	11
4.47000	20	-1	1	1	1.13000	2	2	6	8
4.30000	4	1	1	1	1.12200	4	1	5	13
4.11000	4	0	2	2	1.11670	4	0	6	12
3.95000	6	1	1	2					
3.88000	14	-1	1	3					
3.73000	18	0	2	3					
3.48000	20	-1	1	4					
3.34000	25	0	2	4					
3.32000	100	0	0	6					
3.19000	30	1	1	4					
3.12000	2	-1	1	5					
2.98700	35	0	2	5					
2.85900	25	1	1	5					
2.78900	20	-1	1	6					
2.59600	16	-1	3	1					
2.56600	55	1	1	6					
2.50500	8	-1	1	7					
2.49100	14	0	0	8					
2.46500	8	-1	3	3					
2.45000	8	2	0	2					
2.39800	10	-2	0	4					
2.38400	25	1	3	3					
2.25400	10	0	4	0					
2.23600	4	-1	3	5					
2.20800	8	2	2	1					
2.18900	4	0	2	8					
2.14900	16	2	2	2					
2.13200	20	1	3	5					
2.07000	4	2	2	3					
2.05300	6	0	4	4					
1.99300	45	0	0	10					
1.97200	10	-1	3	7					
1.95100	6	2	0	6					
1.94100	4	-2	2	6					
1.89400	2	-2	0	8					
1.87100	4	1	3	7					
1.82200	4	0	2	10					
1.74600	4	-2	2	8					
1.73100	8	-1	3	9					
1.71000	6	2	0	8					
1.70400	6	-1	5	1					
1.69900	4	-3	1	1					
1.66200	12	0	0	12					
1.64600	25	1	3	9					
1.63100	6	-1	5	4					
1.62000	6	2	4	3					
1.60300	6	-2	4	5					
1.57300	4	-3	1	6					
1.55900	8	-2	2	10					
1.54100	4	-1	5	6					
1.52400	12	-1	3	11					
1.50400	30	-2	4	7					
1.45300	4	0	2	13					
1.42400	2	0	0	14					
1.41400	2	0	4	11					
1.38800	2	1	5	8					
1.37500	2	-3	3	7					
1.35200	12	-1	3	13					

Montmorillonite-22A



cuu duong than cong. com

Pattern : 00-029-1499 ***Radiation =*** 1.540560 ***Quality :*** High

$Na_{0.3}(Al,Mg)_2Si_4O_{10}(OH)_2 \cdot 8H_2O$

Sodium Magnesium Aluminum Silicate Hydroxide Hydrate
Montmorillonite-22A

Lattice : Hexagonal
S.G. : P (0)

a = 5.21000
c = 22.00000
Z = 1

Mol. weight = 511.33
Volume [CD] = 517.16
Dx = 1.642

Sample source or locality: Specimen from Wyoming, USA.
Sample preparation: Stored over water, four days, 100% relative humidity.
General comments: Reflection at 3.15 (I=40) was deleted, because it was probably cristobalite.
Data collection flag: Ambient.

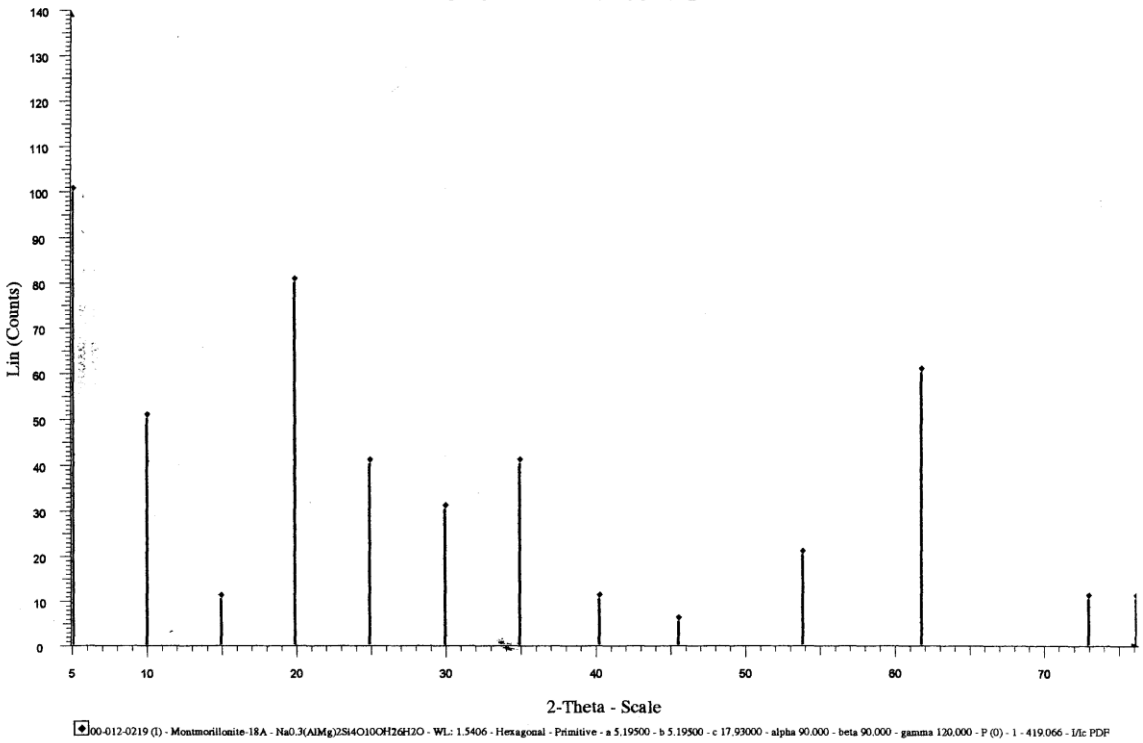
Brindley, G., Penn State Univ., University Park, PA, USA., ICDD Grant-in-Aid (1977)

CAS Number: 1318-93-0

d (A)	I	h	k	l
21.50000	100	0	0	1
10.60000	18	0	0	2
4.45300	55	1	0	1
2.56000	35	1	0	7
1.69000	8	0	0	13
1.49500	25	2	0	11
1.32500	8	3	0	8

cuu duong than cong. com

Montmorillonite-18A



cuu duong than cong. com

Pattern : 00-012-0219 **Radiation =** 1.540560 **Quality :** Indexed

$Na_{0.3}(AlMg)_2Si_4O_{10}OH_2 \cdot 6H_2O$

Sodium Magnesium Aluminum Silicate Hydroxide Hydrate
Montmorillonite-18A

Lattice : Hexagonal
S.G. : P (0)

a = 5.19500
c = 17.93000

Z = 1

Mol. weight = 507.91
Volume [CD] = 419.07
Dx = 2.013

Optical data: A=1.48-1.61, B=1.50-1.64, Q=1.50-1.64, Sign=-, 2V=15(15)°
Color: White, yellow, green
Sample source or locality: Specimen from Chambers, Arizona, USA.
Sample preparation: Glycol sodium saturated.
Additional pattern: To replace 12-204.
Data collection flag: Ambient.

Earley et al., Am. Mineral., volume 38, page 707 (1953)

CAS Number: 1318-93-0

d (A)	i	h	k	l
17.60000	100	0	0	1
9.00000	50	0	0	2
5.99000	10	0	0	3
4.49000	80	0	0	4
3.58000	40	0	0	5
2.99000	30	0	0	6
2.57000	40	1	1	1
2.24200	10	0	0	8
1.98900	5	0	0	9
1.69900	20	2	1	0
1.50400	60	3	0	0
1.29400	10	3	0	7
1.25000	10	3	1	0

Pattern : 00-013-0135 **Radiation =** 1.540560 **Quality :** Not indexed

$Ca_{0.2}(Al,Mg)_2Si_4O_{10}(OH)_2 \cdot 4H_2O$

Calcium Magnesium Aluminum Silicate Hydroxide Hydrate
Montmorillonite-15A

Lattice : Hexagonal
S.G. : P (0)

a = 5.16900
c = 15.02000
Z = 1

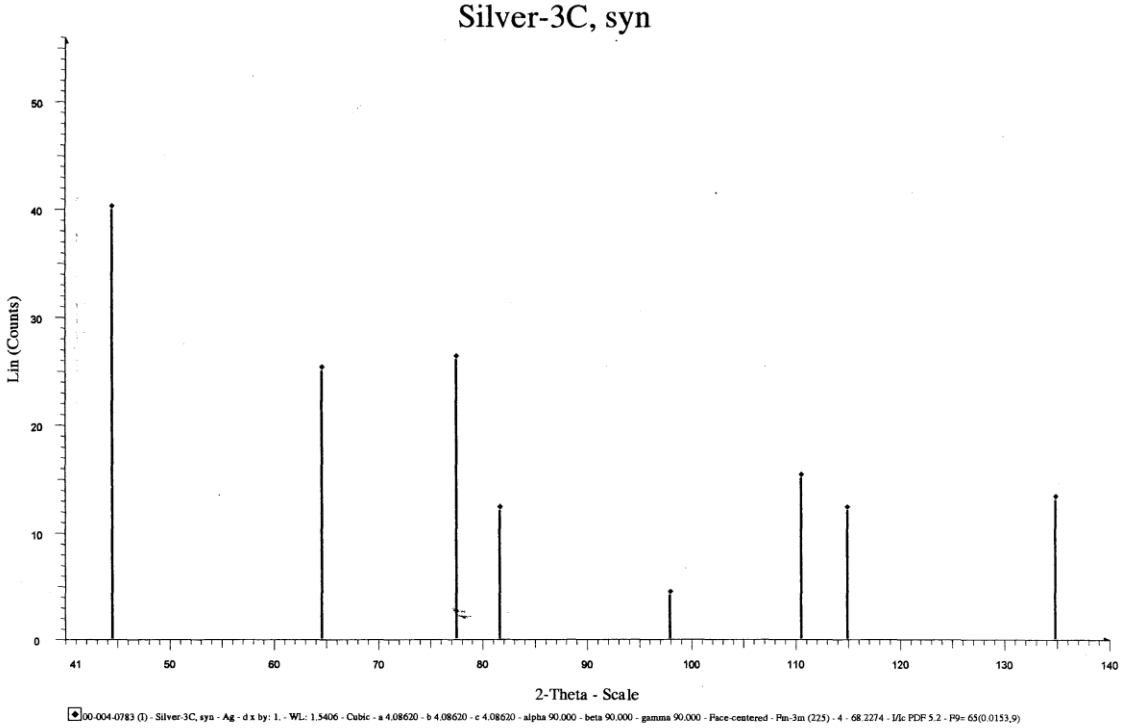
Mol. weight = 440.39
Volume [CD] = 347.55
Dx = 2.104
Dm = 2.300

Optical data: A=1.545(6), B=1.57(7), Q=1.57(7), Sign=-, 2V=0(15)°
Color: White, yellow, green
Sample source or locality: Specimen from Skyrvedalen, Hemsedal, Norway.
Analysis: Analysis (wt.%): Si O2 59.58, Al2 O3 22.96, Fe2 O3 0.47, MgO 3.67, CaO 3.38, Na2 O 0.06, loss 110-950° 9.61.
Footnote for d-spacings and intensities: 1 15.0 expands to 18.0 with glycerol treatment.
Data collection flag: Ambient.

Rosenquist., Nor. Geol. Tidsskr., volume 39, page 350 (1959)

CAS Number: 1318-93-0

d (Å)	I	h	k	l
15.00000	100	0	0	1
5.01000	60	0	0	3
4.50000	80	1	0	0
3.77000	20	0	0	4
3.50000	10			
3.30000	10	1	0	3
3.02000	60	0	0	5
2.58000	40	1	1	0
2.50000	40	0	0	6
2.26000	10	2	0	0
2.15000	10	0	0	7
1.88000	10	0	0	8
1.70000	30	2	1	0
1.50000	50	0	0	10
1.49300	50	3	0	0
1.28500	20	2	2	1
1.24300	20	3	1	0



cuu duong than cong. com

Pattern : 00-004-0783 ***Radiation =*** 1.540560 ***Quality :*** Indexed

Ag

Silver
Silver-3C, syn

Lattice : Face-centered cubic
S.G. : Fm-3m (225)

a = 4.08620

Z = 4

Mol. weight = 107.87
Volume [CD] = 68.23
Dx = 10.501
Dm = 10.500
I/Icor = 5.20

Color: Light gray metallic
Sample source or locality: Sample obtained from Johnson Matthey Company, Ltd.
General comments: Purity >99.999%.
Analysis: Spectrographic analysis indicated faint traces of Ca, Fe and Cu.
Temperature of data collection: Pattern taken at 27 C.
Optical data: B=0.181
Melting point: 960.6°
General comments: Opaque mineral optical data on specimen from Great Bear Lake, Canada: RR_2R_e=94.1, Disp.=16, VHN_{100}=55-63, Color values .314, .321, 94.2, Ref.: IMA Commission on Ore Microscopy QDF.
Additional pattern: See ICSD 64706 (PDF 87-597).
Data collection flag: Ambient.

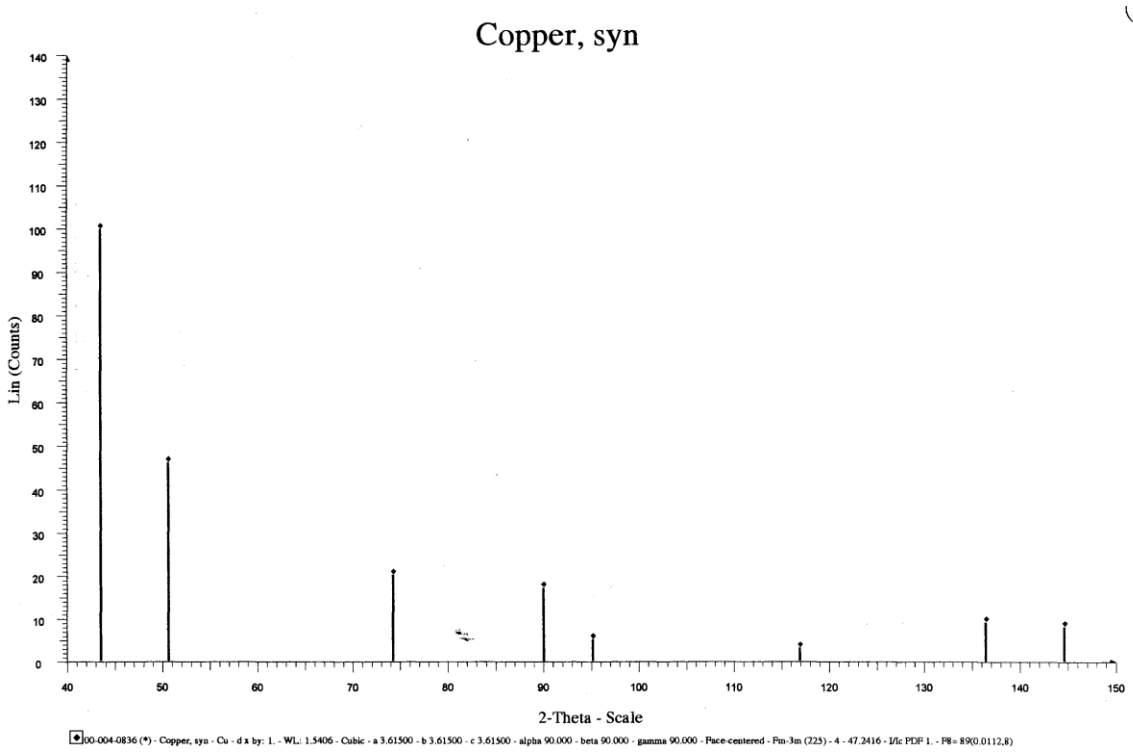
Swanson, Tatge., Natl. Bur. Stand. (U.S.), Circ. 539, volume I, page 23 (1953)

CAS Number: 7440-22-4

Radiation : CuKa1
Lambda : 1.54056
SS/FOM : F9= 65(0.0153,9)

Filter : Beta
d-sp : Not given

d (Å)	I	h	k	l
2.35900	100	1	1	1
2.04400	40	2	0	0
1.44500	25	2	2	0
1.23100	26	3	1	1
1.17960	12	2	2	2
1.02150	4	4	0	0
0.93750	15	3	3	1
0.91370	12	4	2	0
0.83410	13	4	2	2



cuu duong than cong. com

Pattern : 00-004-0836 ***Radiation =*** 1.540560 ***Quality :*** High

Cu

Copper
Copper, syn

Lattice : Face-centered cubic
S.G. : Fm-3m (225)

a = 3.61500

Z = 4

Mol. weight = 63.55
Volume [CD] = 47.24
Dx = 8.935
Dm = 8.950

Melting point: 1083°
Sample preparation: It had been heated in an H2 atmosphere at 300 C.
Sample source or locality: Sample from metallurgical laboratory of NBS, Gaithersburg, Maryland, USA.
General comments: Impurities from 0.001-0.01%, Ag, Al, Bi, Fe, Si, Zn.
Reflectance: Opaque mineral optical data on specimen from unspecified locality, R_3R%=60.65, Disp.=Std.
Vickers hardness number: VHN_{100}=96-104,
General comments: Measured density and color from *Dana's System of Mineralogy, 7th Ed.*, I 99.
Color: Red
Additional pattern: See ICSD 64699 (PDF 85-1326).
Temperature of data collection: Pattern taken at 26 C.
Data collection flag: Ambient.

Swanson, Tatge., Natl. Bur. Stand. (U.S.), Circ. 539, volume I, page 15 (1953)

CAS Number: 7440-50-8

d (Å)	*I*	*h*	*k*	*l*
2.08800	100	1	1	1
1.80800	46	2	0	0
1.27800	20	2	2	0
1.09000	17	3	1	1
1.04360	5	2	2	2
0.90380	3	4	0	0
0.82930	9	3	3	1
0.80830	8	4	2	0