MinIdent-Win - quartz

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Formula: SiO_2
Status: Mineral name is IMA approved or traditional
Level: Species
Parents: tectosilicates
Symmetry: Trigonal
Mean Atomic Number: 10.8
Diffraction Values: 3.343, 4.260, 1.817, 1.540, 2.460

Kretz abbreviation: Qz
First Described in 1529

Space Group: P3(1)21
Z number: 3
ICDD (TM) Number: 33-1161

	Minimum	Maximum	Average	Std. Dev.
a (A)	4.900	4.913	4.907	
b (A)	4.900	4.913	4.907	
c (A)	5.390	5.405	5.398	
Alpha	90.000	90.000	90.000	
Beta	90.000	90.000	90.000	
Gamma	120.000	120.000	120.000	
Volume	112.076	112.985	112.530	

	Minimum	Maximum	Average	Std. Dev.
n(Omega)	1.544	1.544	1.544	
n(Epsilon)	1.553	1.553	1.553	
Max. birefrin	0.009	0.009	0.009	

Optical Sign: +ve

C(Omega) Colourless
C(Epsilon) Colourless

	Minimum	Maximum	Average	Std. Dev.
Mohs	7.0	7.0	*7.0*	
Vickers	1023	1236	*1130*	
Density	2.65	2.70	*2.67*	

	Total Min Wt (%)	Anal. Min Wt (%)	Average Wt (%)	Anal. Max Wt (%)	Total Max Wt (%)	Average Atomic	Coordination
H	0.0000	0.0000	0.0161	0.0436	0.0436	0.0096	
O	52.7209	53.1545	53.2205	53.3344	53.7860	2.0000	
Mg	0.0000	0.0000	0.0148	0.0543	0.0543	0.0004	
Al	0.0000	0.0000	0.0082	0.0222	0.0222	0.0002	
Si	46.2765	46.2765	46.5168	46.6458	47.2140	0.9957	4
Ca	0.0000	0.0000	0.0018	0.0071	0.0071	0.0000	
Ti	0.0000	0.0000	0.0094	0.0288	0.0288	0.0001	
Mn	0.0000	0.0000	0.0045	0.0155	0.0155	0.0000	
Fe	0.0000	0.0000	0.0877	0.2798	0.2798	0.0009	
Ge	0.0000	0.0000	0.1069	0.5344	0.5344	0.0009	4
Pb	0.0000	0.0000	0.0028	0.0056	0.0056	0.0000	
Total			99.9896			3.0079	

Atomic proportions calculated for O = 2.0

Compilation based on 3 general and 5 sample records
Values in italics are calculated from the minimum and maximum values. Other data are from the sample and general records.

Other lumin.  Cathodoluminescent: Green, Greenish Blue, Blue, Dark Blue, Purple, Brown, Bluish Violet, Violet, Red, Orange, Yellow, Grey, White, Dark Purple

MinIdent-Win

Quartz (var. "rock crystal")

Dorian G.W. Smith *Copyright © 2000, Micronex Ltd.*

Caption: Part of a large prismatic crystal of glassy quartz. The specimen shows the vicinal prism faces very clearly, as well as the characteristic vitreous lustre. For scale, the 25 cent coin at lower left is 2.4 cm in diameter. Locality: unknown.

Keywords: quartz; rock crystal; prismatic; vicinal faces; Mohs' hardness 7; vitreous lustre; locality unknown; tectosilicates

Acknowledgements: From the collections of the University of Alberta (specimen no. 1508). Photography by Frank Dimitrov and Dorian Smith.

Comp. Plan.	Comp. Surf.	Twin Plane	Twin Axis	Notes
{010}			[001]	Penetration, Contact
{021}		{021}		Contact
{0-21}		{0-21}		Contact
{001}		{001}		Contact
{010}		{010}		Polysynthetic
			[010]	Parallel, Polysynthetic
			[100]	Parallel, Polysynthetic

Notes on hand specimen data: Commonly exhibits "labradorescence, a play of colours due to submicroscopic, film-lke exsolution.

Polymorphs: coesite,tridymite,stishovite,cristobalite,lechatelierite,melanophlogite, etc.

Synonyms: alpha-quartz, royite, citrine, chrysoprase, agate, moss-agate, mocha-stone, onyx, sardonyx, sard, carnelian, chert, hornstone, flint, heliotrope, blood-stone, prase, plasma, aventurine, cats-eye, milky-quartz, morion, cairngorm-stone, amethyst, ferruginous-quartz, rose-quartz, chalcedony, jasper, basanite

Remarks: Colour is very variable - all of the basic colours as well as white and black having been recorded. Quartz is transparent to opaque and the lustre is vitreous. It is brittle with a conchoidal fracture and no cleavage. Six-sided, prismatic crystals are often terminated by two sets of rhombohedral faces which may have the appearance of a single hexagonal dipyramid. Prism faces usually show horizontal striations. Many crystalline and cryptocrystalline varieties exist.

Occurrences: In siliceous igneous rocks such as granites and rhyolites. Also in pegmatites, detrital sediments, veins and cavities, schists and gneisses.

Localities of samples used in compilation: Brazil Pallavarum, Madras, India. Miyamori village, Kamihei County, Iwate Prefecture, Japan. Railway Block Chrome mine, Selukwe, southern Zimbabwe. Arrens, central Pyrenees, France.

References: Deer et al. (1963) v.4, p.192. Kristall & Technik. v.6, p.109-117. Roberts et al. (1974) Encycl. Mins. Phillips & Griffen (1981) Opt. Min. p.420. TMPM v.31, p.97-119.