

Framework silicates - QUARTZ

Quartz is the second most abundant mineral in the earth's continental crust, after feldspar. Its crystal structure is a continuous framework of SiO_4 (silicon tetrahedra) with each oxygen being shared between two tetrahedra, giving an overall chemical formula of SiO_2 .

There are many different varieties of quartz, several of which are semi-precious gems. Since antiquity, varieties of quartz have been the most commonly used minerals in the making of jewelry.

General	
Category	oxide mineral ^{[1][2]}
Formula (repeating unit)	SiO_2
Strunz classification	4.DA.05 (Oxides)
Dana classification	75.01.03.01 (tectosilicates)
Crystal system	α -quartz: trigonal β -quartz: hexagonal
Color	Colorless through various colors to black
Crystal habit	6-sided prism ending in 6-sided pyramid (typical), drusy, fine-grained to microcrystalline, massive
Twinning	Common Dauphine law, Brazil law and Japan law
Cleavage	{0110} Indistinct
Fracture	Conchoidal
Tenacity	Brittle
Mohs scale hardness	7 – lower in impure varieties (defining mineral)
Luster	Vitreous – waxy to dull when massive
Streak	White



Forms of Silica, Varieties of Quartz

Quartz- SiO_2 common crystalline form with all the properties of a mineral. Pure quartz is colorless and transparent. Inclusions and impurities can impart color.



Clear quartz



Rose quartz



Citrine



Amethyst



milky quartz



aventurine

Chalcedony– general name for cryptocrystalline quartz

Agate/Onyx – variety of chalcedony with curved or angular banding, onyx has black and white banding

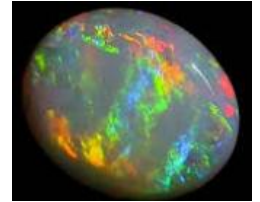


Jasper– red/orange variety of chalcedony where color is due to iron



Forms of Silica, Varities of Quartz

Opal – hydrated (contains water) amorphous form of silica, the water in the structure causes light to be refracted in a multitude of colors. Opal is the gemstone of Australia



Can you identify these ?

