Minerals

Opal

$SiO_2 \cdot nH_2O$

Crystallography:

None, amorphous. Massive, often in rounded and botryoidal forms, sometimes pisolitic.

Physical Properties:

Cleavage: None; conchoidal fracture.
Hardness: 5.0-6.0.
Specific Gravity: 2.0-2.25.
Luster: Vitreous or waxy; colored varieties sometimes resinous.
Color: Colorless or white, but also shades of gray, brown, red, green, yellow, or blue with impurities. Also with rich iridescence and play of colors (precious opal). Transparent to nearly opaque.
Streak: White.

Composition/Features:

Opal is an example of a solidified colloidal gel. Distinguished from microcrystalline varieties of quartz by lower hardness and specific gravity and by the presence of water. Soluble in hot, strongly alkaline solutions. Varieties include *common opal* (massive and without internal reflections), *precious opal* (characterized by play of colors), *hyalite* (clear, colorless opal with a globular or botryoidal surface; also commonly fluorescent), *wood opal* (fossil wood replaced by opal), and *diatomite* (fine-grained deposits formed by the siliceous tests of diatoms).

Occurrence/Use:

Opal is deposited at low temperatures from silica-bearing waters and can occur in fissures and cavities in any rock type. Precious opal is prized as a gemstone, and diatomite is used extensively as a filtering medium, as an abrasive, and as an insulator.