

Gem Minerals

Some minerals are valued as Gems

Gems are minerals that are cut and polished and used for ornamentation

What properties make certain minerals valuable as gems?

Some Valuable Gemstones - "precious"

• Mineral Name	Gem Name	H
• Diamond (C)	diamond	10
• Beryl $\text{Be}_3\text{Al}_2\text{Si}_6\text{O}_{18}$	emerald	7.5-8
•	aquamarine	
• corundum (Al_2O_3)	ruby	9
•	sapphire	

Star Sapphire (asterism)

More Gems - "semi-precious"

• Mineral Name	Gem Name	H
• opal (SiO ₂)	opal	7
• chrysoberyl (BeAl ₂ O ₄)	alexandrite	8.5
• quartz (SiO ₂)	amethyst	7
•	citrine	7
• topaz (Al ₂ SiO ₄ (OH) ₂)	topaz	8
• garnet (Ca,Fe,Mg,Mn) ₃ Al ₂ Si ₃ O ₁₂		7.5
• tourmaline	tourmaline	7-7.5
• turquoise	turquoise	6
• hydrous CuAl Phosphate		

Opals and opalescence

Cutting and Polishing of Gems

- Some gems are polished or tumbled in a cylinder with abrasive polishing compound
- Harder gems are ground and polished with wheels impregnated with diamonds; commonly faceted with small, flat faces that accentuate the light properties
- Softer gems are ground with a sandstone wheel; commonly with a cabochon cut
- smooth domed top and flat bottom

Tumbled (polished) opals

Cut and polished diamonds