

AMETHYST

Macrocrystalline variety of quartz · Mineralogical fact sheet

SiO₂ (silicon dioxide) · Trigonal system

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Physical Properties		Main Localities																	
Property	Value	Country / Region		Relevance															
Hardness (Mohs)	7	Brazil		World's main producer · giant geodes															
Specific gravity	2.63 – 2.65 g/cm³	Uruguay		Intense colour · small crystals · high quality															
Refractive index	1.544 – 1.553	Zambia		Deep tones · excellent transparency · premium															
Birefringence	0.009	Russia (Siberia)		Legendary Deep Siberian · reddish flashes															
Optical character	Uniaxial positive	Madagascar		Range of shades · medium to high quality															
Fracture	Conchoidal	Bolivia		Natural ametrine · amethyst + citrine · unique															
Cleavage	None (indistinct)	IDENTIFICATION & DIFFERENTIATION <table><tr><th>vs.</th><th>Amethyst</th><th>Key distinction</th></tr><tr><td>Dyed glass</td><td>SG 2.63–2.65 Irregular zoning</td><td>Glass: SG ~2.5 · no zoning · spherical bubbles</td></tr><tr><td>Synth. amethyst</td><td>Same chemical composition SiO₂■</td><td>Synthetic: perfect, no inclusions · must be disclosed</td></tr><tr><td>Purple fluorite</td><td>Hardness 7 Conchoidal fracture</td><td>Fluorite: hardness 4 · perfect cleavage · much softer</td></tr><tr><td>Tanzanite</td><td>RI 1.544–1.553</td><td>Tanzanite: RI 1.691–1.700 · higher birefringence</td></tr></table>			vs.	Amethyst	Key distinction	Dyed glass	SG 2.63–2.65 Irregular zoning	Glass: SG ~2.5 · no zoning · spherical bubbles	Synth. amethyst	Same chemical composition SiO ₂ ■	Synthetic: perfect, no inclusions · must be disclosed	Purple fluorite	Hardness 7 Conchoidal fracture	Fluorite: hardness 4 · perfect cleavage · much softer	Tanzanite	RI 1.544–1.553	Tanzanite: RI 1.691–1.700 · higher birefringence
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Lustre	Vitreous																		
Streak	White																		
Fluorescence	Inert or weak under UV																		
Varieties & Colours		CARE & MAINTENANCE <table><tr><td>✓ Cleaning</td><td>Warm water + mild soap + soft brush + microfibre cloth</td></tr><tr><td>✓ Storage</td><td>Lined case · away from harder gems · dark location</td></tr><tr><td>✗ Avoid</td><td>Direct sunlight · heat >250°C · ultrasonic · steam · acids</td></tr><tr><td>■ Important</td><td>Photosensitive: colour may fade with prolonged sun exposure</td></tr></table>			✓ Cleaning	Warm water + mild soap + soft brush + microfibre cloth	✓ Storage	Lined case · away from harder gems · dark location	✗ Avoid	Direct sunlight · heat >250°C · ultrasonic · steam · acids	■ Important	Photosensitive: colour may fade with prolonged sun exposure							
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Variety	Description																		
Deep Siberian	Intense violet with reddish/bluish flashes · most prized																		
Rose de France	Pale pink to soft lilac · popular in fine jewellery																		
Chevron Amethyst	V-shaped bands of amethyst and white quartz · collectors																		
Ametrine (Bolivia)	Amethyst + citrine zones in one crystal · unique																		
<i>Weak pleochroism: reddish-violet / greyish-violet depending on angle. Much less pronounced than in other minerals. Irregular colour zoning is the most diagnostic visual feature of natural amethyst.</i>																			
Optical Phenomena																			
Colour zoning	Irregular violet distribution · diagnostic of natural stone																		
Photosensitivity	■ May fade with prolonged direct sunlight exposure																		
Heat change	400–500°C → citrine (yellow) · 500–600°C → prasiolite (green)																		
Inclusions	Haematite, goethite, liquid bubbles · natural identification																		
Special Properties																			
<i>Amethyst is an electrical insulator and non-magnetic. Resistant to acids and bases; soluble only in hydrofluoric acid. Photosensitive: store away from direct sunlight to preserve colour.</i>																			
Historical context		Mineralogical classification		Curiosity															
Used since Antiquity by Greeks, Romans, Egyptians and Hebrews. 16th–19th centuries: ranked as a precious stone alongside diamond, ruby, emerald and sapphire. Democratised after large Brazilian deposits were found (19th c.).		Quartz variety (SiO ₂ ■) · Class: Tectosilicates · Trigonal system. Birthstone for February · 6th wedding anniversary gemstone. Present in British and Russian royal jewellery.		Greek legend tells that Dionysus poured wine over a pure crystal statue (the maiden Amethystos), staining it violet — hence the name: «amethystos» = «not drunk».															