

ANDESINE

Plagioclase feldspar · $An_{30}-An_{50}$ · Mineralogical fact sheet

$(Na,Ca)(Al,Si)_4O_8$ · Triclinic system · Albite-anorthite series

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Physical Properties		Main Localities										
Property	Value	Country / Region		Relevance								
Hardness (Mohs)	6 – 6.5	USA (Oregon, Lake County)		Classic locality of gemological quality								
Specific gravity	2.65 – 2.72 g/cm³	Congo (DRC)		Deposits in volcanic contexts · gemology								
Refractive index	1.543 – 1.556	Canada		Mineralogical specimens · scientific collection								
Birefringence	0.008 – 0.011	Inner Mongolia (China)		Source of base material for treated 'red andesine'								
Optical character	Biaxial positive	Japan / Italy		In volcanic andesites · scientific use								
Fracture	Irregular to uneven	Differentiation from other gems										
Cleavage	Perfect in two directions {001} and {010}											
Lustre	Vitreous to pearly											
Streak	White	vs.	Andesine	Key distinction								
Fluorescence	Weak under short-wave UV	Labradorite	RI 1.543–1.556 SG 2.65–2.72	Labradorite: An ₅₀ –An ₇₀ · strong labradorescence · higher RI								
Varieties & Colours		Oligoclase	An ₃₀ –An ₅₀ Biaxial positive	Oligoclase: An ₁₀ –An ₃₀ · lower RI and SG								
		Quartz	Perfect cleavage 2 dir.	Quartz: no cleavage · conchoidal fracture · uniaxial								
		Dyed glass	SG 2.65–2.72	Glass: SG ~2.5 · no cleavage · no twinning								
<i>Weak to absent pleochroism. Possible optical phenomena: weak iridescence (near An₅₀) and adularescence (sunstone effect) from metallic inclusions. Polysynthetic twinning is diagnostic under a polarising microscope.</i> Optical Phenomena & Identification <table><tr><td>✓ Genuine feldspar</td><td>Perfect cleavage ~94° · polysynthetic twinning · SG 2.65–2.72 · RI 1.543–1.556</td></tr><tr><td>✗ Treated material</td><td>Intense red/orange: >95% probability of copper diffusion treatment · verify</td></tr><tr><td>Tibet provenance</td><td>High correlation with unverifiable origin · red flag</td></tr><tr><td>Professional analysis</td><td>Spectroscopy · chemical analysis · element mapping to detect Cu</td></tr></table> Commercial Warning ⚠ Critical commercial warning: Most 'red andesine' on the market (2002–2010) was copper-diffusion-treated labradorite. Assume treatment for red/orange material unless a top-tier laboratory certificate explicitly states absence of treatment.		✓ Genuine feldspar	Perfect cleavage ~94° · polysynthetic twinning · SG 2.65–2.72 · RI 1.543–1.556	✗ Treated material	Intense red/orange: >95% probability of copper diffusion treatment · verify	Tibet provenance	High correlation with unverifiable origin · red flag	Professional analysis	Spectroscopy · chemical analysis · element mapping to detect Cu	Care & Maintenance		
		✓ Genuine feldspar	Perfect cleavage ~94° · polysynthetic twinning · SG 2.65–2.72 · RI 1.543–1.556									
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		Professional analysis	Spectroscopy · chemical analysis · element mapping to detect Cu									
		✓ Cleaning	Warm water + mild neutral soap + soft brush + dry immediately									
		✓ Storage	Padded case · away from harder gems (quartz, topaz, corundum)									
		✗ Avoid	Ultrasonic with caution · steam · harsh chemicals · direct impacts									
		⚠ Cleavage	Perfect in 2 directions · very vulnerable to impacts · use protective settings									
Historical context		Mineralogical classification		Curiosity								
Described by Gustav Rose in 1841, named after the Andes mountain range. Gemological use is recent (post-2000). 'Red andesine' controversy (2002–2010): investigations revealed copper-treated material and false provenance claims.		Plagioclase feldspar · An ₃₀ –An ₅₀ · Triclinic system. Component of intermediate igneous rocks (andesites, diorites) and medium-to-high grade metamorphic rocks. Natural geothermometer in petrology.		Andesine is a natural geothermometer: its exact chemical composition (% anorthite) allows geologists to estimate the temperature at which the host rock formed.								