The polariscope

Français
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is used to test cut or rough gemstones. Two polarising filters allow to observe the structure and optical properties of precious stones or minerals.

The stone is tested by rotating it 360°, between the crossed polarising filters.

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The **isotropic** or **cubic** mineral stays dark and unchanged.
The **anisotrop** or **birefringent** mineral produces a light and dark blinking, 4 times during one rotation of 360°. Attention a minearal which is observed in the direction of the C axis, behaves like isotopic. It is therfore necessary to observe all minerals in more than one direction.
The **micro cristalline** mineral stays bright permanently.
Internal tensions become visible. Like clouds passing over the stone during its rotation. This effect is demasking synthetic spinells of the Verneuil type. Certain diamonds and garnets may produce a similar effect.

The polariscope is used to test quantities of stones either cut or rough.
It allows you to place the tested stone in one of these 4 groups:

isotropic unirefringent cubic amorphous	anisotrope birefringent	micro cristallic	false double refraction due to internal tensions
Analcime Cubic Zirkonia Cuprite Diamond Djevalite Fabulite Fluorite Gahnite Garnet *Almandine* *Andradite* *Topazolite* *Demantoid* *Grossular* *Hessonite* *Melanite* *Pyrope*	Anatase Apophyllite Skapolite Vesuvianite Wulfenite Zircon --- Apatite Benitoite Beryl *Aquamarine* *Bixbit* *Goshenite* *Heliodor* *Morganite* *Emerald* Zinkite	Amber Opal *Fireopal* --- Agate *Aventurine* *Calcedony* *Carneol* *Chrysoprase* *Moosagate*	Diamond Garnet Amber Synthetic Spinel Plastics

- *Rhodolite*
- *Spessartite*
- *Tsavorite*
- *Uvarovite*

Hauyne
Melanite
Periklas
Pollucite
Sphalerite
Spinel
YAG

Glass
- *Moldavite*
- *Obsidian*
- *Tektite*

Calcite
Dioptase
Corundum
- *Ruby*
- *Sapphire*

Phenakite
Quartz
- *Amethyst*
- *Ametrine*
- *Rockcrystal*
- *Smoky Quartz*
- *Citrine*

Rhodochrosite
Turmaline
- *Dravite*
- *Indigolite*
- *Rubellite*

Andalusite
Anglesite
Cerussite
Chrysoberyl
- *Alexandrite*

Enstatite
Hemimorphite
Kornerupine
Cordierite
Peridot
Phrenite
Sinhalite
Topaz
Zoisite
- *Tanzanit*

Azurite
Diopside
Epidote
Euclase
Feldspar
- *Amazonite*
- *Labradorite*
- *Mikroklin*
- *Moonstone*
- *Orthoclase*
- *Oligoclase*
- *Sunstone*
- *Sanidine*

Clinohumite
Petalite
Spodumen
- *Kunzite*
- *Hiddenite*

Staurolite
Titanite
Vivianite

Amblygonite
Axinite
Disthene,
Cyanite
Ulexite

The conoscope is an acessory to the polariscope and allows to visualise the axes of doubly refracting stones.

More information and pricelist here

The conoscope

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The conoscope, is an accessory tool to the polariscope. It allows visualizing the optical axes of a birefringent and transparent mineral.

Fist you observe your specmien under the polariscope. Find the interference colors of the optical axis C. Then put the conoscope in place, between the polarizing filters above the stone. Here you will discover the axes.

Note that at least one facet needs to be exactly perpendicular to the optical axis, oterhwise you will not see the axes. When observing a cobochon or a spere the axes are easier to find.

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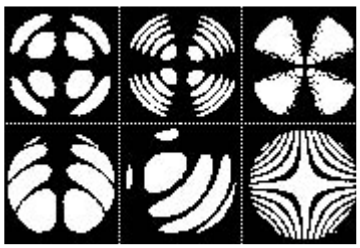
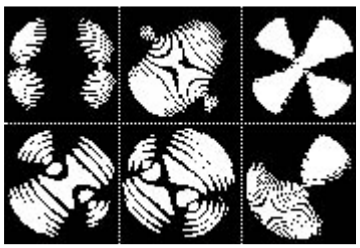


birefringent uniaxial
one optical axis



birefringent biaxial
two optical axes

Quartz is the only optical actif mineral and shows a typical bulls eye effect. Also you may discover if the quartz is left or right turning.

bulls eye

left turning

More information and pricelist here

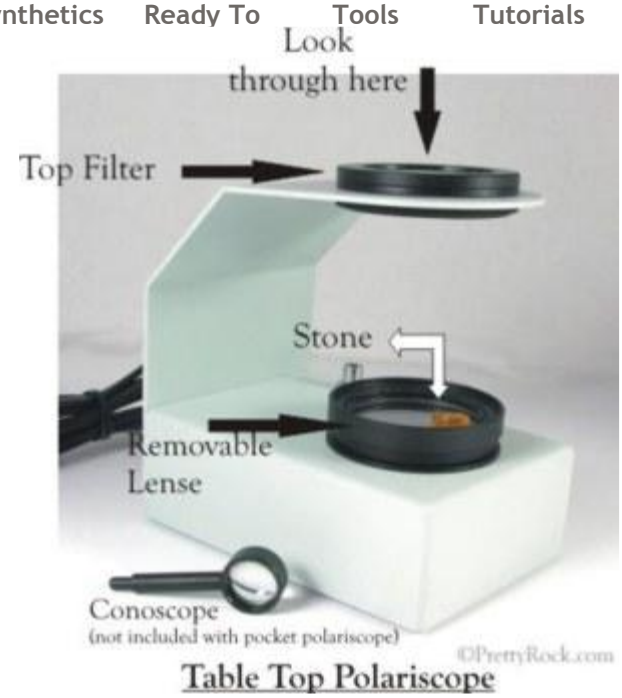
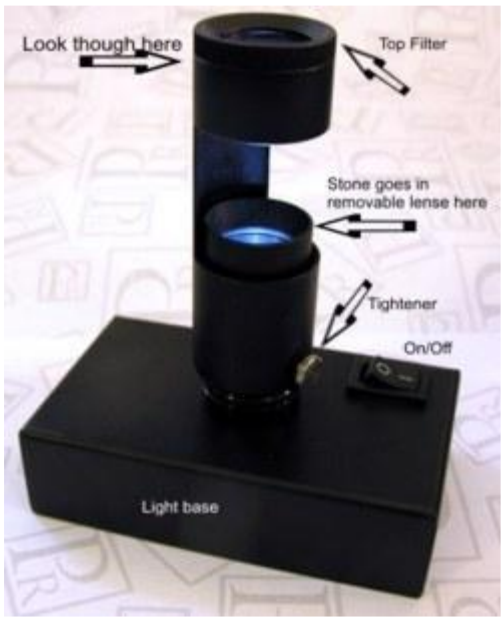
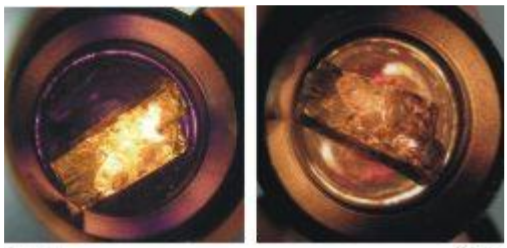


Table Top Polariscope



A polariscope is used to differentiate between singly (isotropic) and doubly refractive (anisotropic) A stone is placed between two polarizing filters and the top filter is then turned. If used with a cor interference figures can also be seen with a polariscope. Conoscopes are difficult to explain in wor directions for use are not covered here. We suggest you consult http://www.gemologyproject.com have videos showing the use of the conoscope.

Step 1:
Turn it on. You may have to attach the power cord on a table top model, or put batteries in the flashlight of a hand held model.



Light Dark

Anisotropic Stone seen through the polariscope.

Step 2:
Gently place your stone on the removable lense. Some people prefer to use tweezers to hold th stone between the two filters. We find this requires 3 hands, and prefer to simply rest the stone

Stone stays light = AGG
If you see anything else (blinks or snake bands), take the next step:

Step 4:
Return the polariscope to the dark (crossed filter position.) Use the stone holder to turn the sto to its lightest position. Then looking down through the top filter, quickly turn the top filter 1/4 turn. Results:
Stone becomes NOTICEABLY lighter = SR- ADR
Anything else (stays the same, gets darker) = Double Refractive

Compare your findings to the chart below or plug your findings into our handy dandy Gem Wizar

Determining Refraction:
Isotropic (single refractive or SR)-stays dark throughout a 360° rotation.
Anisotropic (double refractive or DR)-blinks 4 times,2 light and 2 dark during a 360° rotation .
Aggregate (AGG)-stays light throughout a 360° rotation
Anomalous Double Refraction (ADR) -twinkles instead of blinks. Looks like double refractive but is single refractive.
ADR is when a stone looks like it might be blinking, but really is just showing lighter where the stone is thinner or where there is a veil or weakness in the stone. Garnet and diamond sometim display this phenomena. Tips! Be careful with using the polariscope for red / purple / orange stones. They often give confusing ADR results. Use your dicroscope or refractometer to confirm. Stones with very high RI's can also give misleading results.
Remember: Always complete at least three tests when identifying a stone. No one test is conclusive.

Isotropic	Anisotropic
	Zircon
Opal	Quartz
Amber	Beryl
Glass	Apatite
Plastic	Corundum
Diamond	Tourmaline
Spinel	Topaz
Garnet	Zoisite (Tanzanite)
	Peridot
	Orthoclase
	Spodumene
	Labradorite
	Axenite
	Mossenite (Syn. Diamond)