Gemometrics

Introducing GemPen®

What is GemPen®?

GemPen® is a portable, battery powered, screening device for gemstones specially designed for the working gemmologist. The technology utilizes specialized UV filtering providing users with the means to efficiently and swiftly indicate whether a diamond, ruby or sapphire is natural, synthetic (man-made) or treated (improved).

How does it work?

After GemPen® is turned on and directed towards a gemstone a fluorescing effect will occur. By analyzing this effect, certain conclusions can be deducted. GemPen® gives instant indicative results.

GemPen® utilizes unique combinations of UV-wave lengths and filtering provoking variable fluorescences in gemstones. With this so called USOF (Ultra Spectrum Optical Filtering) technology, GemPen® showcases unique effects, providing results on treatments and synthetics normally not visible with other UV-light products. The combination of calibrated lighting and filtering distinguishes GemPen® from other UV-light devices – with consistent results and broader use cases.

GemPen® comes with four different filters used on differing occasions based on gemstone and manipulation type. For optimal results, all four filters should be used, in particular to indicate treatments.

GemPen® Capabilities

Time saver
- Screens hundreds of gems in a matter of minutes in the GemPen® Travel Case
- Gems don't have to be handled individually
- Visible to the eye and not locked up in a compartment when performing a screening

Portable
- Screen gemstones in the field
- Battery powered and chargeable
- Reduces risks and enables safer decisions while trading gemstones in the field

Size independent
- Gems of all sizes can be screened
- Works great for melee

Versatile
- Diamonds, rubies and sapphires
- Rough, polished and mounted
- Synthetic gemstones and most known treatments

Innovative
- Filters for GemPen® will be developed for new types of synthetics and treatments
- Filters for GemPen® will be developed for other gemstones
- GemPen® Academy is continuously updated

Design
- Exclusive design
- Designed and assembled in Sweden
- Custom built UV light source

Q&A

What is the difference between GemPen® and other UV-light screeners available on the market?
Answer: Other UV-screeners only use standardized UV light (LW/SW and longwave) whereas GemPen® uses a specific light source in combination with several other filters that are tagged to specific gemstones; both synthetic and treated. This is clearly demonstrated in the GemPen® Gemstone Map. As an example GemPen® can detect both heat and lattice diffusion treatment in sapphires. Other UV-screeners require the gemstones to be inserted one by one in a locked compartment whereas GemPen® can screen a large amount of stones in a matter of seconds. GemPen® works on rough, polished and mounted gemstones. Most other UV-screeners only works on diamonds.

What is GemPen® validating that a normal portable LW/SW light source doesn't validate?
GemPen® utilizes USOF (Ultra Spectrum Optical Filtering) technology, which gives consistent gemstone indication that is beyond the normal capabilities of the average UV lights that you can buy. GemPen® is not merely a UV light, but utilizes a filtered, full spectrum technology which showcases unique fluorescence effects in gemstones, distinguishing it from traditional UV-screening devices.

Can GemPen® distinguish between natural gemstones and all synthetics on the market?
Answer: We have achieved positive validations on all existing synthetic diamonds, both CVD and HPHT. We have achieved positive validations on all existing synthetic rubies and sapphires, both verneuil and hydrothermal. We are currently performing validations on emeralds and spinels. Other gemstones will follow in the future.

Can GemPen® identify other treatments such as?:
- **Heating in corundum**: Yes (both in reducing and oxidizing environment)
- **Beryllium treatment in corundum**: Yes (Heating of corundum together with beryllium to infuse the stone)
- **Glass filling in corundum**: Yes
- **Oiling or fracture filling**: Yes, (depending on how much oil or filling the stones have been subjected to)

Is GemPen® giving indicative or conclusive results?
Answer: The results are indicative. GemPen® is a screening tool that helps with the validation of the identity of gemstones. It is up to the professional gemmologist to interpret the results. You can consult the following information:
- GemPen® Test Tree
- GemPen® Fluorescence Colour Map
- GemPen® Gemstone Map
- GemPen® Diamond Map

Can GemPen® identify different types of synthetic diamonds?
Answer: We have achieved positive validations on all synthetic diamonds, both CVDs (Chemical Vaporised Diamonds) and HPHTs (High-pressure-high-temperature both BELT and BARS).

Does GemPen® work on Rubies?
Answer: Yes, we have achieved a positive result (noticeable red fluorescence) on both synthetic and treated rubies.

Fluorescence in rubies depends on the content of iron (Fe) and chromium (CR). How can you

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tell the natural fluorescence apart from the effect caused by treatments?
Answer: In natural untreated rubies, the low fluorescence effect will be uniform throughout the whole stone. In treated rubies, you will get a noticeable fluorescence more oriented towards the surface of the stone. Synthetic rubies will have a very strong, noticeable red fluorescence. Same type of effect can be observed in blue sapphires, but in this case the fluorescence will be green/ blue. Our GemPen® Gemstone Map clearly demonstrates the different colours and intensity of the fluorescence.

How long does one battery charge last?
Answer: Estimate continuous user-time of approximately 1 hour and it will take 4-5 hours to fully charge using a standard USB-C charger.

What is the difference between GemPen® and diamond testers?
Answer: Diamond testers only determines whether it is a diamond or a simulant? GemPen® will give an indication if it is synthetic or treated diamond. When using GemPen®, it is important to know the identity of the gemstone before screening. GemPen® doesn't substitute diamond testers but complements them.

What is the difference between GemPen® and combi-testers?
Answer: Combi-testers only determines whether it is a diamond or a simulant (including moissanite). GemPen® will give an indication if it is synthetic or treated diamond. When using GemPen®, it is important to know the identity of the gemstone before screening. GemPen® doesn't substitute combi-testers but complements them.

What is the difference between GemPen® and synthetic diamond testers?
Answer: GemPen® works on both CVD and HPHT diamonds in all sizes. GemPen® works on rough, polished and mounted gemstones and can also indicate different treatments such as HPHT-treatment on CVD and natural diamonds.

Do you still require laboratory validation?
Answer: GemPen® is an excellent screening device to get a quick indicative result. If in doubt, further validation is recommended.

Does GemPen® work on HPHT diamonds that are treated with irradiation?
Answer: Yes. GemPen® works on the type of irradiation treatment that has typically been used in order to change the colour of diamonds.

Curved stria is usually visible in some colours of verneuil synthetic sapphires. Why should I use GemPen®?
Answer: It is true that curved stria in synthetic verneuil sapphires can be visible when using magnification. GemPen® is useful as a screening device for the synthetic sapphires where heat treatment has been done in order to reduce the visibility of stria. In mounted stones it may not be possible to detect the stria due to the angle of direction but with GemPen® it does not matter. With tumbled rough sapphires where the stria is not possible to detect, GemPen® can easily distinguish the synthetics from the natural sapphires.

Does GemPen® use fluorescence or phosphorescence?
Answer: Both. In particular when observing a weak to moderate bluish fluorescence in natural diamonds, synthetics or treated natural diamonds will emit an obvious greenish fluorescence with a clear continuing phosphorescence.

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Should I use other tools together with GemPen® when validating gemstones?
Yes, GemPen® is a complementary tool. It is necessary to conduct prior tests to ascertain the type of gemstone that is screened. We recommend using a loupe and/or a diamond/ combi-tester.

What is the difference between GemPen® and instruments like the Presidium Diamondmate®?
The Diamondmate® tests thermal conductivity. The reason it can detect diamonds is because diamonds have five times higher thermal conductivity than lab-created moissanite. The Diamondmate® however cannot differentiate between natural and lab-created diamonds because they both have the same thermal conductivity. GemPen® is used to differentiate natural untreated gemstones from treated and lab-created gemstones.

Why should I buy GemPen®?
Answer:

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