

# Gemometrics

# Introducing GemPen®

GemPen® is a portable, battery powered, tool for validating gemstones through screening. GemPen® takes advantage of UV-light and a unique combination of filters to provoke variable strengths of fluorescence in gemstones, a feature that provide professional users with the means to efficiently determine whether a diamond, ruby or sapphire is natural, synthetic (man-made) or treated (visually improved to increase the value). GemPen® is durable and gives instant indicative results.

## **GemPen® Capabilities**

- Enables professional users to validate the identity of gemstones through screening
- Can distinguish natural from synthetic gemstones
- Can detect treatment of gemstone
- Works in the whole value chain
- Polished (all cuts) and rough gemstones
- Loose and mounted gemstones
- Works for melee (diamonds, rubies & sapphires)
- Validate melee in seconds.
- No size limit

## Q&A

### **What is the difference between GemPen® and other UV-Light testers available on the market?**

Answer: Other UV testers only use standardized UV light (shortwave 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-testers require the stones to be inserted one by one in a locked compartment whereas GemPen® can scan a large amount of stones in a matter of seconds. GemPen® works on rough, polished and mounted gemstones. Most other UV-testers only works on diamonds.

### **Can GemPen® distinguish between natural gemstones and all synthetics on the market?**

Answer: We have tested positive on all existing synthetic diamonds, both CVD and HPHT. We have tested positive on all existing synthetic rubies and sapphires, both verneuil and hydrothermal. We are currently performing tests on emeralds and spinels. Other stones 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

### **Can GemPen® identify different types of synthetic diamonds?**

Answer: We have tested positive 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 fluorescing effect) on both synthetic and treated rubies.

### **Fluorescing in rubies depends on the content of iron (Fe) and chromium (CR). How can you tell the natural fluorescing apart from the effect caused by treatments?**

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

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### **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 stone before testing. 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 stone before testing. GemPen® doesn't substitute diamond 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 stones and can also indicate different treatments such as HPHT-treatment on CVD and natural diamonds.

### **Do you still require laboratory testing?**

Answer: GemPen® is an excellent screening device to get a quick indicative result. If in doubt, further testing 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 effect.

### **Why should I buy a GemPen®?**

Answer: Time saving. Can screen hundred of stones in a matter of minutes compared to other testers where you have to handle each stone individually.

No size limits.

Versatility: Works on diamonds, rubies and sapphires; rough, polished and mounted; CVD and HPHT synthetic diamonds and most treatments.

Portability. Battery powered and chargeable. Innovativeness. Filters for GemPen® will be continuously developed for other gemstones. GemPen® Academy is continuously updated.

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