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What are Lab-grown diamonds ?

A summary of facts.

"Large, high-quality, perfectly cut diamonds are no longer unattainable"

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Introduction

As an industry, we are experiencing a revolution and I don't say this lightly. Approximately 10 years ago I heard about the increasing quality achieved by producers of lab-grown diamonds. Previously, these stones were very low-grade and only used for industrial purposes.

Recently I was asked to source a lab–grown diamond for a customer. As a traditional fine jeweller who works with natural diamonds and gemstones, I was very skeptical. I didn't believe this would be something I wanted to associate with.
However, after a little research, I found an excellent source for lab-grown diamonds that were not only of extremely impressive quality, but they were also highly affordable for my customer.

We are seeing huge growth in the lab-grown diamond industry. I would estimate that 40% of the diamonds I am asked to source for customers are now lab-grown.

Since working with that very first lab-grown stone I have become a convert; these diamonds offer my consumers another extremely viable option when searching for their perfect stone.

Lab-grown diamonds offer excellent value for money. When cut well (this is extremely important) these diamonds are extremely bright with incredible scintillation, sparkle, and fire - just like well cut natural diamonds.

No mining occurs during their production. Although the process does use energy, we are seeing factories using increasingly sustainable and renewable energy sources such as solar.

Of course, lab-grown diamonds are not everyone's cup of tea and some customers will always prefer a natural diamond (or a colored gem for that matter). Ultimately, it is for you the customer to decide.

With 33 years of experience, my role is to assist my customers to make a truly informed decision, when selecting the best quality coloured stones or diamonds, be it lab-grown or natural, with whatever budget they have.

Lab-grown diamonds offer consumer's another viable option when considering their options.

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History

Lab-grown diamonds are not a new phenomenon. In fact, the technology used to create them was first achieved by General Electric back in 1954.

However, as mentioned above, these diamonds were very low grade, low in aesthetic quality, and initially only proposed for industrial applications such as abrasives and cutting tools. Since then, however, thanks to astonishing advancements in technology, growing gem-quality rough diamonds has become much more common. The rough diamond is then cut by expert cutters into various shapes.

The quality of the CUT is vitally important, I will explain more about that shortly.

Expertly cut, gem quality, rough diamonds

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The only difference is the origin.

A Lab-grown diamond is grown in highly controlled laboratory conditions.

A growing chamber simulates the exact conditions a mined diamond would have undergone millions of years ago deep within the earth's surface.

Other than the origin, there is no difference between a mined and a lab-grown diamond. They are identical in chemical, optical, and physical composition down to the atom.

Mined diamonds are a 100% carbon crystal structure, that is 10/10 on the Mohs hardness scale, with a refractive index of 2.42.

Lab-grown diamonds are a 100% carbon crystal structure, that is 10/10 on the Mohs hardness scale, with a refractive index of 2.42.

In short; there is nothing 'fake' about a lab-grown diamond.

Lab-grown diamonds are 100% atomically identical to mined diamonds.

Natural

Lab-grown

Diamonds grown with Technology
rather than Geology

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How are they grown ?

There are two methods:
HPHT (High-Pressure High-Temperature) or CVD (Chemical Vapour Deposition)
both result in a rough stone that has the same chemical properties and qualities as any mined natural diamond. Both of these methods are initiated with a natural diamond seed (a small diamond).
The seed is exposed to extreme conditions in a highly controlled environment, mimicking the conditions that formed natural diamonds in the earth's crust millions of years ago. Today we can grow fine gem-quality rough diamonds that are cut to perfection by highly skilled diamond cutters, just as a natural diamond would be.

HPHT

This method takes place in a small capsule, capable of withstanding extremely high temperatures, with high pressure being applied from all sides- much like the pressure that occurs beneath the earth's surface. Starting with a seed crystal, an organic pure-carbon substance is dropped through a molten metal flux, allowing it to attach to the crystal. This then gradually grows, becoming a rough-cut octahedron-shaped crystal.

CVD

With this method, the diamond starts out on a seed plate slowly growing from a carbon-rich gas. An energy source, much like a microwave beam, is shone through the high-temperature plasma-like gas cloud. This breaks down the molecules causing the carbon atoms to precipitate, falling onto the seed plate. Crystallization then begins and occurs over several weeks. The rough stones grow to exhibit a flat tabular shape with dark edges of graphite.

The lab process of creating a diamond is so similar to the earth's naturally occurring phenomena that, just like earth-mined diamonds, no two lab-produced diamonds are exactly alike.

They are just as likely to contain naturally occurring inclusions and imperfections as diamonds that have been formed underground.

Diamonds grown with Technology
rather than Geology

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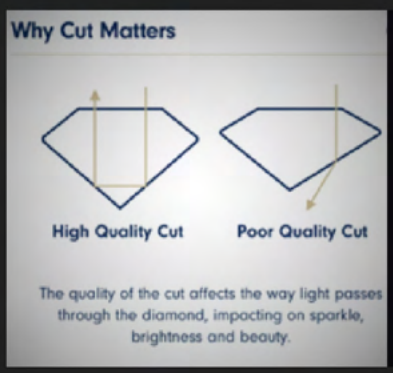
The importance of cut

Simply put, regardless of the shape of the diamond, the quality of its CUT is of the utmost importance. This is what the eye sees most of all.

The captivating flashes of coloured light dispersion are a result of carefully calculated proportions, facet angles, precision cutting and polishing. Diamonds with 'Ideal' and 'Excellent' cut grade have the maximum Scintillation, Sparkle, and fire.

Introducing the Ideal brilliant cut; diamonds cut to perfection that capture light like no other. These diamonds are recognized by diamond experts and gemological laboratories around the world as the ultimate in brilliance, fire, and scintillation.
They were originally developed by Marcel Tolkowsky in 1919, who realised that with precise angles and faceting, his Ideal cut diamond would retain light, showing maximum scintillation, fire, and brilliance. You do not need to be a diamond expert for your eye to see this.

I will only ever show you diamonds with Ideal and Excellent cut grades.



You do not need to be a diamond expert for your eye to see cut.

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Fancy Coloured diamonds.

Any diamond that has an intensity of colour is referred to as 'fancy'.
Statistically, it is said that 1/10,000 diamonds possess a natural colour, so these stones are extremely rare.

These stones are found in nature in a number of colours, most notably the popular pink, followed by grey, blue, yellow, orange, red, green, olive, purple, brown, and black.
These colours are known as Fancy,and include yellow diamonds that exhibit a more intense hue than the D to Z colour grading.

The value of a fancy-coloured diamond increases with the intensity of the most prominent hue within the stone.

At Greg Holland Jewellery we are now able to offer lab-grown diamonds that replicate these beautiful colours.

Coloured diamonds are no longer the sole domain of the super wealthy consumer.

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FAQ's

Are lab-grown diamonds real diamonds?

Yes, they're real diamonds.

They are physically, chemically, and optically 100% the same as mined diamonds, down to the atom. The only difference is how they are created. The Federal Trade Commission in the US ruled recently, that a diamond is a diamond no matter whether is grown in a lab or dug out of the ground.

Can you tell the difference between lab-grown diamonds and mined diamonds?

Because lab-grown diamonds and mined diamonds are exactly the same, the only way to tell them apart is by using specialised equipment used by a trained gemologist. No one can tell them apart without this equipment, not even experienced jewellers under magnification.

What is better: CVD or HPHT diamonds?

You will not be able to tell the difference between a CVD and HPHT diamond with the naked eye. Both methods create a beautiful, sparkling diamond. Both the CVD method and the HPHT method will create a real diamond that is optically, chemically, and physically identical to natural diamonds.

In our expert opinion, we feel that both methods produce high-quality diamonds, therefore we don't choose one over the other when procuring our lab-grown diamonds.

Do lab-grown diamonds come with certificates and grading reports?

Yes, every Lab-grown diamond will comes with its own independent certification and grading report from the International Gemmological Institute (IGI), based in Antwerp, Belgium, the world's largest independent certifier and grader of diamonds, both mined and lab-grown.

Can I buy a coloured Lab-grown diamond?

Yes you can. Lab-grown diamond come in a vast range of colours, such as pink, green, yellow, orange, blue and various shades of colour just like natural diamonds do.

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There is nothing quite like viewing diamonds in person.
If you would like to view a range of Lab-grown diamonds please contact me.

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