Everything You Need to Know About the Rise of Lab-Grown Diamonds

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Not to be confused with imitation diamonds, made from glass or plastic, **lab-grown diamonds are real diamonds** created in a laboratory using a sophisticated process. Lab-grown diamonds are often cheaper than natural diamonds and offer several benefits over their more expensive counterparts.

Lab-grown diamonds are becoming increasingly popular with engagement ring buyers. In 2020, the lab-grown diamond market was **valued at $1.6 billion** worldwide and is expected to increase to $5 billion by 2027.

To keep up with demand, manufacturers create lab-grown diamonds as loose stones or offer preset engagement rings made with lab-created diamonds for consumers.

Discover everything you need to know about the rise of lab-grown diamonds to help you understand the difference between engagement ring stones and make the best choice when it's time to buy a ring to pop the question.

A History of Lab-Grown Diamonds

Lab-grown diamonds have been around since the 1950s, but their popularity has only recently begun to grow. The high cost of production and minimal demand in the past kept lab-grown diamonds out of reach for most consumers.

The first successful attempt to **grow a diamond in a lab** was in 1954 by IBM researcher Henri Moissan. Using a combination of high temperature and pressure inside an electric arc furnace, he successfully replicated the conditions below the earth's surface where diamonds form naturally.

The resulting gemstone was small and unsuitable for jewelry, but it proved that it was possible to create real artificial diamonds.

In the 1970s, General Electric Co. researchers **perfected growing synthetic diamonds** through chemical vapor deposition (CVD). This method allowed carbon and hydrogen to mix at a low temperature before being exposed to energy, creating a thin film that layer-by-layer eventually formed into diamond crystals.

This breakthrough allowed scientists to create larger stones than had previously been achievable.

In the early 2000s, technological advancements and manufacturing processes significantly reduced lab-grown diamond production costs. This progress created a market for man-made diamonds.

How Are Lab-Grown Diamonds Made?

Lab-grown diamond manufacturers use **two methods to produce diamonds**. These diamond-creation techniques are high-pressure/high-temperature (HPHT) process and chemical vapor deposition (CVD).

- **High-pressure/high-temperature process:** The HPHT method involves subjecting carbon in an ovenlike chamber to high pressure, about 870,000 pounds per square inch, and temperature, between 1,300 Celsius (C) to 1,600 C (2,372 Fahrenheit (F) to 2,912 F) for several days or weeks. This extreme environment causes the carbon atoms to realign into a diamond structure.

- **Chemical vapor deposition:** The CVD method involves growing a diamond from a tiny seed crystal in a low-pressure chamber by exposing it to carbon gasses at a temperature of around 900 C to 1200 C (1,652 F to 2,192 F). The gas molecules break down into individual atoms, which attach to the seed crystal, forming layers that build up over time until they form a complete diamond structure.

HPHT and CVD can produce high-quality diamonds that can then be cut and polished just like natural stones. HPHT is considered more popular because it creates diamonds faster than CVD.

CVD requires a precise balance between temperature, pressure and gas exposure to achieve optimal results, while HPHT only requires that the initial conditions be met. It also allows the conditions inside the chamber to adjust as needed during its relatively short processing time. HPHT has been tested and proven over many years, while CVD is still a relatively new method.

Lab-Grown vs. Natural Diamonds

The most significant difference between a diamond and a lab-created diamond is the origin. Natural diamonds are composed of pure carbon atoms formed over millions of years under intense pressure and heat. Lab-grown diamonds are created under similar conditions in a laboratory instead of in nature. Both stones have identical chemical compositions but may differ in trace elements, giving them unique characteristics.

Both lab-grown and natural diamonds are graded similarly on the four Cs — **cut, color, clarity and carat weight**. This means that the quality grading criteria set by the Gemological Institute of America (GIA) apply to lab-grown and natural diamonds alike, ensuring that in terms of quality, one is not better than the other.

When considering availability, many consumers might find that lab-grown diamonds offer more variety than natural diamonds because manufacturers can create them according to customer requirements or specifications. They can also create them more quickly without compromising on the quality standards set for each diamond type.

Benefits of Lab-Grown Diamonds

Lab-grown diamonds offer multiple benefits over natural diamonds. These man-made stones are more affordable, more socially responsible, sustainable and in some cases, more aesthetically pleasing than natural diamonds.

- **Affordable**

Lab-created diamonds cost **around 30% to 40%** less than mined diamonds of the same size and quality. For example, a 1-carat natural diamond with SI1 clarity **may cost $6,100**, while a lab-grown option with the same rating would cost about $2,300.

You can typically purchase a 2-carat lab-grown diamond for roughly the same price as a 1-carat natural diamond. This can be beneficial if you're looking to save money but still get the look and sparkle of a real diamond.

- **Socially Responsible**

Conflict diamonds, also known as blood diamonds, are **mined under oppressive conditions**, often against the laws of governments and international organizations.

These illegal diamond activities have been linked to supporting civil wars, armed conflicts, human trafficking and other human rights violations. They are typically mined in countries such as Angola, the Central African Republic, the Democratic Republic of Congo, Liberia and Sierra Leone.

The U.S. outlawed the sale of blood diamonds through the **Clean Diamond Trade Act** in 2003, and many nations worked together through the **Kimberley Process** to prevent conflict diamonds from being sold.

Despite these protections, natural diamonds can carry these negative associations, leading to the preference for a more socially responsible option for an engagement ring stone.

Lab-grown diamonds offer a responsible alternative to natural diamonds potentially sourced from conflict diamond locations. Lab-grown diamonds are created synthetically in a laboratory under controlled conditions by skilled, fairly compensated workers. This eliminates the risk of conflict diamonds entering the market, as they have no origin in unethical labor practices or environmental destruction.

- **Sustainable**

Compared to natural diamonds, lab-grown stones may be more sustainable and cause **less negative environmental impact**. Diamond companies mine natural stones through marine, open-pit and underground mining.

These methods require digging pits hundreds of meters deep, which can damage surrounding ecosystems. They are also expensive and require heavy machinery and a large workforce. These resources can release nearly 160 kilograms of greenhouse gasses per diamond carat.

While the sustainability of lab-grown diamonds depends on the manufacturing process, companies that use renewable energy sources like solar power reduce the industry's carbon footprint.

Many customers prefer lab-grown diamonds for jewelry that is beautiful and sustainable. Using lab-grown diamonds is an excellent way to show your partner that you are conscious of the planet's climate and the environmental impact of mining for natural diamonds.

- **Aesthetically Identical to Natural Diamonds**

Lab-grown diamonds are aesthetically identical to natural diamonds. Lab-grown diamonds have improved clarity compared to natural diamonds because they can be created in a controlled environment that prevents flaws from occurring.

Experienced gemologists know how to tell whether a diamond is real by using specialized equipment and testing. Lab-grown diamonds usually have no fluorescence when exposed to ultraviolet light, while natural diamonds tend to produce a yellowish glow under this light source.

Infrared testing can also reveal whether a diamond is synthetic because it will absorb certain types of infrared radiation differently than its natural counterparts. CVD-grown diamonds also lack certain surface features such as feathers and chips that are commonly found in naturally mined stones because of their exposure during mining.

Are Lab-Created Diamonds Worth Anything?

Lab-grown diamonds carry their value based on similar aspects as natural diamonds. The worth and resale value varies depending on the market demand for the lab-grown diamond's type, quality and brand.

For instance, **HPHT-created diamonds** are more durable than CVD-created diamonds and generally hold their value better over time. HPHT-created diamonds are also sometimes higher in purity than CVD-created stones and can have higher worth for this reason.

Specific types of lab-grown diamonds have been increasing in value lately. Prices for lab-created melee — **small diamonds weighing less than one-fifth carat** — have risen because retailers need several small stones to accompany center stones.

The resale value of lab-grown diamonds is typically less than that of a natural diamond. Natural diamonds can hold **between 25% and 50%** of their initial value, but lab-grown diamonds usually only bring in **minimal returns** when reselling.

Should You Insure Your Lab-Grown Diamond?

No matter what type of diamond you buy, it's always worth insuring important jewelry pieces. Rings made with lab-grown diamonds can cost thousands of dollars, with the average expenditure being **$4,383 in 2021**.

Insuring a significant financial investment, like an engagement ring, protects you in the event of theft, loss or damage. Regular homeowners insurance policies often do not cover these items or limit their coverage of personal items to between $1,000 and $2,000. This makes purchasing a jewelry-specific policy a wise option for full coverage on a lab-grown diamond ring.

Getting a diamond insured starts with **obtaining an appraisal from a qualified gemologist or jeweler**. An appraisal ensures you have accurate information about the size and quality of your stone and its estimated value, which will be important when selecting the right policy and coverage options.

Once you have this information, you can choose a full-coverage jewelry insurance policy for your ring. A full-coverage policy typically covers theft, loss, accidental damage and mysterious disappearance. Some specialty jewelry policies provide coverage, such as replacement services, if your stone cannot be repaired.

A jewelry insurer like BriteCo™ offers convenient, **full-coverage jewelry insurance** for lab-grown engagement rings. BriteCo lets you fill out a series of short questions online so you can receive a quote in a matter of minutes. BriteCo's policies go as low as $4.51 per month and can be paid in monthly or yearly premiums.

Lab-Grown Diamonds vs. Real Diamonds: Which One Should You Choose?

When choosing between lab-grown and natural diamonds for your engagement ring, consider the benefits of each type of stone. If you are looking for a beautiful yet more affordable option, a lab-grown diamond may be preferable to a natural stone.

Lab-grown diamonds offer the same brilliant shine as natural diamonds and are ideal for environmentally and socially conscious couples. Grooms looking for the perfect diamond ring for their partner can choose a lab-grown diamond ring and have it insured to start their engagement off on the right financial footing and have peace of mind for this important piece of jewelry.

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