The Hot New Rock on the Block

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Over the past 70 years, "A Diamond is Forever" has reached iconic status in the world of advertising, having been tagged the "slogan of the century" by Advertising Age magazine; even beating out "Just do it" (Nike), "The pause that refreshes" (Coca-Cola) and numerous other American classics.

It began in 1948 with the release of that famous tag line by DeBeers. Fast forward to today, the cultural imperative of the diamond engagement ring faces a new hot rock on the block. Today, the global $80 billion natural diamond industry is experiencing the same disruption being faced by many other well-known product segments…….and the root cause is technological innovation. Today, the "hot new rock" is laboratory grown diamonds!

Laboratory grown diamonds (LGDs) didn't just suddenly appear. Their origin traces back to the early 1950s. However, the original focus was creating diamonds for industrial purposes. Why? Because diamond is one of the most unique materials on earth. It is formed primarily from carbon, one of the lightest elements known, yet it is well known as the hardest substance on earth. What is not well known is that this material possesses many other unique properties that serves it well in a multitude of industries. For instance, diamonds have the highest coefficient of thermal conductivity, which means it can dissipate heat faster than any other material. This property is used in military fighter jets, medical lasers and our space program. Diamond is also chemically inert, so it can operate in corrosive environments and is now used in water purification processes. Most diamonds are electrically non-conductive, so it is an excellent electrical insulator. Research is currently being conducted to utilize diamond in quantum computing as scientists have discovered its properties provide unusually high data storage capacity far exceeding the present day silicon chip. These are just some of the modern day examples where laboratory grown diamonds are used.

After over six decades of continuing development and research, the production of "gem quality" laboratory created diamonds for jewelry purposes has, in the past 5 years, seen some remarkable advances. In April, 2013, the world's record for a gem quality diamond was 1.30 carat (E Color, VVS2 clarity). In 2015, a 10.02 carat (E color, VS1 clarity) was unveiled at the country's largest jewelry trade show in Las Vegas. Today, the largest LGD submitted to a gemological laboratory for grading is a 15.32 carat (G color, SI2 clarity).

Laboratory grown diamonds are created by one of two methods: **HPHT** or **CVD**. The first, HPHT, stands for "High Pressure High Temperature" and this process closely resembles the natural process found deep within the earth. The second method, CVD stands for "Chemical Vapor Deposition" and has recently been improved greatly. Quite different from HPHT, it utilizes a lower pressure environment whereby "diamond seeds" are placed on a pedestal inside a "reactor", then a carbon containing gas fills the chamber, followed by a microwave energy beam that separates the gas into its components with the carbon molecules falling downwards and then attaching to the diamond seed plates. Both methods requires a high degree of complexity, precision controls, advanced scientific knowledge and dependent on size, average growing times of a few weeks.

IIa Technology's CVD Laboratory in Singapore

From a consumer perspective, one of the first things you should know is that LGDs are chemically, physically and optically the same as diamonds produced in the earth by nature. They are NOT simulants (Cubic Zirconia, Moissanite, etc.). The only difference between natural and lab grown diamonds is the origin of the material and the different growth processes. Rather than being formed over billions of years deep within the earth, LGDs are grown in a matter of weeks in a very controlled environment. Many marketers of LGDs claim they are superior in the context of less environmental impact than its natural counterpart. While this may or not be true, to date there are no empirical studies taking all relevant criteria into account to substantiate the claim. On the other hand, the natural diamond industry claims that LGDs can be easily reproduced and have no sustaining, long term value or secondary market value. Again, there is no evidence to support this claim either. Growing LGDs is no easy feat……..it requires huge capital investments

combined with advanced proprietary and complex processes developed and sustained by highly educated scientists. Like most technology driven new products, pricing is expected to decline with advancements, but again, the market and time will tell the amount of this change.

At present, LGD pricing as compared to its natural counterpart varies considerably based on size and quality of the individual diamond but as a general rule, LGD pricing is approximately 30 to 50% below the identical natural diamond. So, for the same price one could either upgrade the quality of the LGD diamond or, purchase a LGD that is significantly larger than its natural counterpart.

The global natural diamond market produces annually somewhere in the 130 to 150 million carats. Today, best estimates of LGD production volumes vary considerably ranging somewhere between 3 – 6 million carats or approximately 3 – 5% of the natural product but it's rapidly increasing.

In June 2018, DeBeers, the world's largest diamond mining company by value, made a shocking announcement with their entry into the laboratory grown diamond market through their proprietary brand, Lightbox Jewelry. The product is only sold online through www.lightboxjewelry.com, which went live in September 2018. DeBeers noted their intention to add a retail distribution element in the future. The product offering includes three colors: Blues, Pinks and Colorless but is limited to a maximum size of 1 carat.

Whether natural earth mined diamonds or laboratory grown diamonds, all sellers of this product must fully disclose to the consumer, the exact nature of the material. A recent Federal Trade Commission (FTC) release amended the "*Jewelry Guides*" to include a revised definition of a diamond and reiterated the LGD sellers' obligation to disclose to consumers. Under the revised guidelines, a retailer of this product may use several descriptive terms including "laboratory grown", "laboratory created", "Manufacturer's name grown diamond", "cultured diamond" and other similar variations but the key is they MUST clearly disclose that this is a man-made product as opposed to an earth mined diamond. If the word "diamond" is used without any qualifiers, then it is implied to be of natural origin.

Not all retailers have embraced the new LGD products. Many are philosophically against stocking LGDs in their store. However, the rate of acceptance is increasing as the market comes to grip with this potentially disruptive new product. Whether your local retailer carries this product or not, many believe it's here to stay. Like similarly positioned environmentally sensitive products, the millennials, who represent today's key Engagement Ring market segment, have been open to embracing LGDs. A 2016 survey from MVI, a jewelry industry research marketing firm, disclosed that when asked the question, "If you were shopping for an Engagement Ring, would you consider a LGD for the center stone? The responses in 2016 were: Yes = **55%**, No = 24% and Not Sure = 21%. A year later in 2017, the same survey revealed Yes = **68%** (+13% more), No = 9% (15% less) and Not Sure = 22%.....quite a shift in only one year's time.

If you're in the market for a diamond and want to consider LGDs, choose a retailer that has professional gemological credentials, recognized ethics and one that has kept up with this fast evolving product category. You should also request a diamond accompanied by a grading report from a recognized third party accredited laboratory. These laboratories have the required advanced instrumentation not normally found in a jewelry store to conclusively identify a Lab Grown Diamond. The retailer's mission is to provide products in an honest, straightforward manner with full disclosure, thus providing a **choice** for the end consumer, who is always the final arbiter.

Purchasing diamond jewelry can be a major purchase and not having the right information can be costly. To ensure confidence in your purchase, a professionally trained credentialed appraiser can eliminate anxiety and confirm your purchase decision. Searching for a professional gems & jewelry appraiser is easy: go to the American Society of Appraisers (ASA) website, www.appraisers.org and click on "Find an Appraiser", then enter your zip code and select the "Gems & Jewelry Discipline.

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