

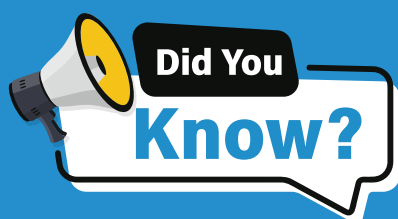
LAB-GROWN DIAMONDS

SPARKLING THE WORLD



The Rise of Lab-Grown Diamonds

In times when the global diamond industry has been challenged, lab-grown diamonds have seemed to emerge slowly as a ray of hope and establish a growing footprint in the gems and jewelry industry.



In India exports of polished lab-grown diamonds may double in the current financial year started April 1 from \$1.3 billion in the prior year. India has a huge potential to grow exports to \$7 billion-\$8 billion in the next few years on the back of US demand and acceptability in the UK and Australia. Even in the COVID times, these diamonds were the shining stars;

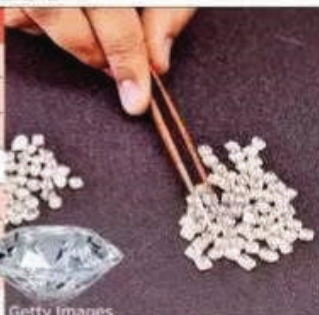
GAINING POPULARITY

Month/year	2020	2019	Diff in %
Aug	373	266	40
Jul	290	237	22
Jun	226	164	37

Natural polished diamond exports

Month/year	2020	2019	Diff in %
Aug	9,000	11,600	-22
Jul	6,800	10,300	-33
Jun	6,800	11,600	-42

All figures in crore, Source: GJEPC



“My unit with 300 workers is working at full capacity due to the increased demand for lab diamonds from US. Consumers in US prefer cheap lab-grown diamonds studded in gold, silver, steel and platinum jewellery

Sanjeev Shah | LAB-GROWN DIAMOND MAKER

Contact us

Palak Agarwal +91 84607 49299 | Vikram Kasat +91 93727 92797

What are lab-grown diamonds?

These diamonds are as real as the natural diamonds, only difference is instead of digging the earth; it is created in a laboratory under a machine. Lab-made diamonds are developed from a carbon seed placed in a microwave chamber and superheated into a glowing plasma ball. The process creates particles that crystallise into diamonds in weeks.

This technology-based manufacturing is directly cutting down the capital and labor-intensive factors of the Mined Diamond chain which is why Lab-grown diamonds cost 30-40% cheaper than mined despite being 100% diamond.

There are two types of lab-grown diamonds – CVD and HPHT. India particularly specializes and leads in the CVD (Chemical Vapor Decomposition) technology that is certified as the purest type of diamonds (Type IIa), the world-famous **Koh-i-Noor** is a Type IIa diamond. Whereas, China produces lab-grown HPHT (High Pressure High Temperature) diamonds not resulting in the purest type of diamonds (Not classified as Type IIa).

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Industry experts said around five years ago there were a handful of lab diamond growers which now have gone up tremendously in the last two – three years due to a recession in the natural diamond industry. This has meant growing competition between lab diamond and mined diamond companies. Today, it costs \$300 to \$500 per carat to produce a **CVD lab-grown diamond, compared with \$4,000 per carat in 2008.**

Megan Markel most googled individual in 2018 one of the most recognized women on the planet today was featured in vogue in Harper's Bazaar wearing lab-grown earrings.

With the largest population of Millennials in the world, India is perceived to become the largest market for lab-grown diamonds in the future. The Government has permitted 100 percent Foreign Direct Investment (FDI) in the sector under the automatic route. Further, as per Union Budget 2019-20, the GST rate has been reduced from 18 percent to 5 percent.

2019, particularly, was the year for lab-grown diamonds. India, alone, witnessed a sharp rise in lab-grown diamond exports worth \$443 million which were up by 102% yoy. Even at the start of 2020, lab-grown diamond exports in India were up by 60% yoy, while natural diamond exports were down by 41% yoy.

In fact, CVD diamonds above 1 carat saw a 29% price rise in the last quarter of 2019 driven by significant demand and limited supply.

Gemological Institute of America predicts the total annual sales of laboratory diamonds will be well over \$100 billion in the not too distant future, from about \$20 billion today. This segment of the diamond is growing at a current annual growth rate of 15% to 20%.

Post Bharat Diamond Bourse's decision to allow the trading of lab-grown diamonds, many midstream manufacturers of natural diamonds in India are likely to enter the business of lab-grown diamonds. Bourse stopped trading in these gems some five years ago.

Contact us

Palak Agarwal **+91 84607 49299** | **Vikram Kasat** **+91 93727 92797**

Can CVD be the next play?

Indian lab-grown diamonds are attracting buyers from new markets such as Germany, Italy, and Australia, growing their reach beyond the US, as the economic uncertainty caused by Covid-19 and the recent global slowdown has made natural diamond unaffordable for most of the global markets. India too witnessed growth in lab-grown diamonds after the pandemic. The US had always been a market but now many European countries have started buying lab-grown diamonds. A major shift in consumer consumption patterns is a great contributor to the rise in demand for CVD diamonds. The US has seen the biggest shift in consumers with a recent survey suggesting that 70% of Millennials would consider buying a lab-grown diamond, India is also rapidly joining the trend.

The lab-grown diamonds are not just restricted to be used in jewelry but also in other applications, from abrasives to medical, scientific, and computational uses. For now, when most of the jewelry market still uses mined diamonds, the bread and butter for the lab-grown diamond depend on the alternative uses. These diamonds have high applications in the automotive industry as they have a lower coefficient of friction than metal. **A thin coating of diamond has also been shown to reduce friction in moving mechanical parts, from windmills to cars. Nissan reported a reduction in friction between engine parts of approximately 40% when using a diamond film. In contrast with lab diamonds, mined diamonds do not have the purity required for many of these applications.**

For orthopedic medical devices, the durability and biological inertness of diamonds make them ideal for joint replacement. The lab diamond spinal disk replacements are already under trial.

In the future, we will also see diamond replacing silicon in electronic and computer processors. According to studies, diamond-based computers are more efficient than silicon in handling high frequency and high voltage.

According to experts, lab-grown diamonds can improve the human condition as the future diamond-based devices will reduce our carbon footprint by 10% or more. **CVD Diamonds are not just flawless but they do not bear the burden of mining and save 109 gallons of water and 1,750 tonnes of earth per carat. Landmass and water being the most precious and stretched resources today.**

Many natural diamond manufacturers have shifted to lab-grown manufacturing post-Covid. Reason being that the rough diamond prices have appreciated by 15% in the local market and the demand for natural diamonds has decreased. Lab Grown diamonds are purchased mostly for gifting purposes and are expected to cover 50% of the market share of mined diamonds by 2024-25. Decreasing profit from a worldwide dip in demand for real diamonds has forced many diamantaires to secretly deal in the lab-grown diamonds.

Dealers also say their margin in lab-grown diamonds is 28% higher than in their mined business, and jewelry manufacturers indicated they're making 40% to 50% more than mined for heavier diamond total weight jewelry.

DeBeers is the most experienced producer of lab-grown diamonds, having invested millions in research and technology for many decades, and is now actively promoting Lightbox direct to consumers while it invests another \$94 million to construct a new, state-of-the-art production facility in Oregon.

Price is coming down rapidly because lightbox can sell for much lower.

Earlier everybody was scared that if lab grown diamonds are brought into stores then revenue will go down but statistical data shows not of one two or twenty stores but a few hundred stores show that same - store sale was over double and if marketing is done properly today an ultra created diamond beats the average unit retail in the same store that has mined diamonds forever.

However, the lab-created diamond doesn't retain any value. It can't be resold to a jeweler and it won't garner more than a few dollars on a site like eBay. On the other hand, the natural diamond can be resold for at least 50% of the original price - but potentially much more.

Contact us

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Surat: The Diamond City

It is estimated that nine out of 10 diamonds in the world are polished in Surat. Although the world is still waking up to lab-grown diamonds, in terms of polishing, Surat has taken rapid strides in the last 2-3 years.

At present, 25-30% of diamond polishing units in Surat service lab-grown diamonds, with around 15% of units dealing only in the lab-created commodity. According to Dinesh Navadia, regional chairman for Gujarat, GJEPC, of the roughly 7,000-8,000 diamond polishing units in Surat, the share of lab-grown diamond polishing used to be in single digits till 2019.

According to GJEPC data, polished lab-grown diamonds witnessed a growth of 105.58% to Rs 2,499.95 crore (\$325.45 million) in April and May, as against Rs 1,216.06 crore (\$164.52 million) in April and May 2021.

On the one hand, historically, natural diamonds have continually faced supply crunch and are a depleting resource as hardly any new mines are coming up. On the other hand, rising prices coupled with the recent Russia-Ukraine war have impacted almost 30% of natural rough diamonds supply this year. Hence, more are taking up lab-grown diamond polishing. But there are still some years to go till the industry reduces its dependency on natural diamonds.

Lead in production

And it's not just polishing, Surat has already begun taking the lead globally in terms of producing diamonds in laboratories, according to industry experts. Industry sources estimate that there are currently less than 10 growers in India with a combined capacity of 3,000 CVD reactors with each reactor carrying a capacity of churning out 175 carats per month, which is minuscule compared to the demand. The current market size of lab-grown diamonds stands at just \$1.3-1.5 billion and is set to grow to \$2-3 billion in 2022-23.

Meanwhile, the industry and the government are working on a policy to help boost investment in HPHT technology, in which China is currently the world leader. It is believed that the government is looking at offering subsidies similar to the technology upgradation fund scheme (TUFs) offered in the textile sector for setting up new CVD and HPHT machines.

According to Nimesh Mehta, founder and managing director Go Green Diamonds, one of the early bonafide lab diamond producers in India, it costs roughly Rs 1-1.50 crore to set up a diamond laboratory. Lab-grown diamonds tend to be priced anywhere between one-third and one-tenth of the price of natural diamonds. Theoretically, if a carat of natural diamond is worth \$10,000, then the same carat of lab-grown diamond would be priced at \$1,000. Also, barring the average 8-10 months it takes from ordering parts to starting production, the precious commodity can be grown in 21-45 days, unlike natural diamonds, which have longer gestation.

He added that natural diamonds are always in short supply and controlled by miners. Due to limited availability and shortage of rough diamonds, units in Surat were always struggling and facing unemployment issues too. But with lab-grown diamond supply growing steadily, Surat has enough polishing units and will welcome as many polishing orders as they can get. Thanks to its early mover advantage, Surat already enjoys a 70% share in lab-grown diamond supply. But other countries, led by China, are also preparing to scale up production.

Exports of polished lab-grown diamonds from India jumped about 70% in the April-July period to \$622.7 million, while those of cut and polished mined diamonds fell around 3% to \$8.2 billion during the same period, GJEPC data showed.

Some of the global data shows that in a few short years, lab-grown diamonds have gone on to account for \$5.9 billion (£4.7 billion), or 7-8%, of the global market. In 2018, only three years prior, they only represented 1.5% of diamond sales by specialty retailers in the US. That's 500% growth in four years. So it's visible that Lab grown diamonds can be the next big thing in the industry and mined diamonds might shrink more but an another angle to look at the industry is that the demand for mined diamonds are going to stay forever and the invention of lab-grown diamonds have increased the customer reach to the millennials (which forms a large portion) expanding the industry to a different level as a whole!

Share your feedback at

palakagarwal@plindia.com or  +91 84607 49299

vikramkasat@plindia.com or  +91 93727 92797