

NATURAL DIAMONDS &
LABORATORY-GROWN DIAMONDS
SUMMARY OF FACTS

DE BEERS GROUP
INSTITUTE OF DIAMONDS



Pear shape natural diamond

Introduction

With consumer demand for diamond jewellery higher than ever before, particularly from young consumers, it's an exciting time to be in the diamond sector. Although the diamond industry is facing new challenges, there are also new opportunities to grow demand for natural diamonds

With socially-conscious consumerism on the rise, front-line teams need to be equipped to educate consumers about the many positive attributes and beneficial impact of diamonds, and to dispel any myths or misconceptions.

Making sure that consumers can make clear and informed choices about what they are buying is crucial if the opportunities are to be realised.

De Beers Group has a unique perspective. While our core business is in natural diamonds, we also have a laboratory-grown diamond (LGD) brand, Lightbox, so we are uniquely placed to understand that these are two entirely different products with entirely different value propositions. This booklet equips diamond professionals with the facts to communicate accurately to consumers.



Stephen Lusier - EVP De Beers Group

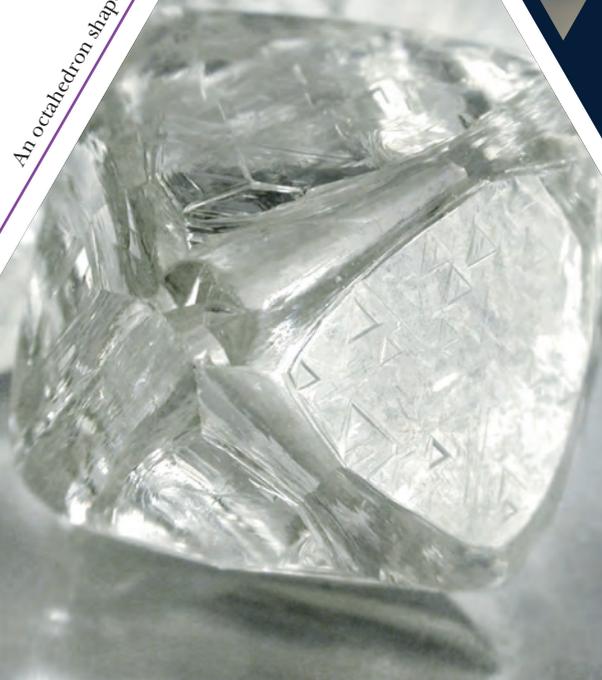
RARITY

Throughout time natural diamonds have held an enduring value for their character, rarity and uniqueness. Crafted by nature billions of years ago, natural diamonds are inherently rare and precious - an irreplaceable symbol of love and commitment

Natural Diamonds

- Natural diamonds pre-date life on earth. They are tiny time capsules, preserving glimpses of the Earth's history from up to 3.5 billion years ago
- Diamonds were formed deep within the Earth's mantle, in naturally occurring temperatures between 800°C and 1300°C
- Only 15% of kimberlite deposits ever found contain diamonds – and of these, only 1% are suitable for diamond recovery
- Larger diamonds are particularly rare. The annual recovery of plus five-carat polished diamonds would only fill one basketball
- Most of the diamonds recovered today come from kimberlite deposits discovered decades ago. Diamond supply is not increasing and the finest natural diamonds will become increasingly rare

An octahedron shaped natural rough diamond



Rows of LGD slices are used as seeds for batch growth

LGDs

- LGDs can be manufactured very quickly - a one carat LGD can be produced in as little as three to five days
- Because LGDs are mass-produced in batches, they are neither rare nor unique, so they don't possess the enduring value of natural diamonds
- Wholesale LGD prices have declined by two thirds within a year and as more LGD product becomes available and technology improves, price is expected to continue to fall like other products of technology such as flat screen TVs
- In the same way laboratory-grown rubies, sapphires and emeralds have rapidly declined in value over time to less than 10% compared with their natural counterparts, the value of LGDs is expected to follow a similar trend in the future

DETECTION

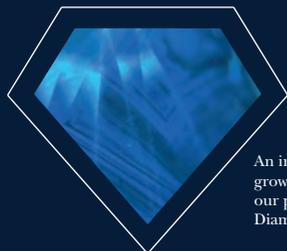
The difference between natural growth and the manufacturing process means that 100% of LGDs can be detected

Natural Diamonds

- Natural features found in diamonds act as a fingerprint, making each one unique
- After exposure to UV light, natural diamonds have a unique short-lived phosphorescence (after-glow) which cannot be replicated by LGDs
- Natural diamonds have a unique growth process resulting in an organic tree-like structure

A high quality octahedral natural rough diamond

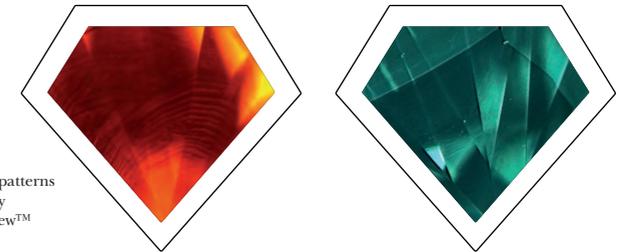
NATURAL DIAMOND



An image of natural diamond growth patterns through our proprietary instrument DiamondView™

Images of LGD growth patterns through our proprietary instrument DiamondView™

LABORATORY-GROWN DIAMONDS



LGDs

- 100% of LGDs can be detected
- LGDs are manufactured using heavy industrial equipment and repeatable formulas, leaving identifiable inclusions or growth patterns
- Metals used in certain growth processes sometimes leave identifying inclusions inside LGDs
- LGDs have very distinct growth patterns which enable them to be detected

A Polished LGD being examined

JEWELLERY

Natural Diamonds

- Pre-date life on Earth
- Are inherently rare, precious and valuable
- Endure in value over time
- Treasured for a lifetime and passed onto future generations
- For significant moments in life, where marking the moment with something precious is important
- Are the ultimate symbol of love, commitment, achievement and self expression

De Beers Jewellers diamond ring

Lightbox LGD Jewellery

LGDs

- LGDs are a new and distinct value proposition. They are not inherently precious, have no rarity value and can be mass-produced in a matter of days
- Because LGDs are not inherently rare and relatively inexpensive to produce, they are suited to the low price non precious jewellery segment
- With their combination of sparkle and colour, they provide something novel and accessible in the low-price fashion jewellery category
- Ideal for travel or a beach holiday, where if you lose your jewellery it doesn't matter as much because it can be inexpensively replaced and doesn't carry the same emotional significance as a natural diamond
- The very same LGD that is used in jewellery can be used in many cutting-edge technologies - from today's finest audio systems to tomorrow's quantum computers

ENVIRONMENTAL IMPACT

We not only minimise our environmental impact when recovering natural diamonds, but also undertake a wide variety of conservation work. From investment in biodiversity to carbon capture, the responsible approach to diamond recovery underpins a positive environmental legacy for future generations

Natural Diamonds

- De Beers Group invests in the environments of our diamond-producing countries, dedicating six hectares of land for biodiversity and wildlife protection programmes for every hectare impacted for diamond recovery. The Diamond Route is a network of 200,000 hectares of conservation land sitting across southern Africa
- The elephant conservation programme at our Venetia Limpopo Nature Reserve in South Africa has been so successful that the number of elephants now exceeds the park's carrying capacity. We are therefore moving 200 elephants more than 1,000 miles to Mozambique, where there is a need for re-population
- Greenhouse gas emissions for natural diamonds are, on average, significantly less than for LGDs
- De Beers Group is running a ground-breaking, multimillion dollar research programme focused on using kimberlite rock to capture carbon dioxide from the atmosphere and establish a carbon-neutral mine
- 83% of the water used for diamond mining by De Beers Group and the other companies in the Diamond Producers Association is recycled

Young elephant in the De Beers Group Venetia Limpopo Nature Reserve South Africa



An LGD being quality-checked

LGDs

- While Lightbox does not make “green claims”, LGD producers often claim their products are environmentally friendly without offering any evidence. Many LGD producers have been warned by regulators for issuing unqualified statements
- The production of LGDs is very energy-intensive, requiring the creation of temperatures hotter than the Sun
- While the Lightbox production is one of the more energy efficient, more than two-thirds of LGD supply are manufactured in China, Singapore or India and have a significantly larger carbon footprint
- On average the carbon footprint of synthesising a one carat LGD is significantly higher than recovering a one carat natural diamond
- LGD factories are also dependent on mined material, requiring more than a dozen mined materials and gases

LEGACY

Building the future

From creating employment for local communities to providing healthcare and education funding, diamonds inspire and empower communities.

The natural diamond industry generates \$16 billion in net socioeconomic and environmental benefits, 60% of which are retained locally, benefiting communities directly and indirectly and is of critical importance to the communities where diamonds are found.

The De Beers Group sponsored Renaissance Secondary School

De Beers Group employees from the Venetia mine in South Africa

- A study of the companies that make up the Diamond Producers Association (DPA) – which includes De Beers Group – showed that local workers of DPA companies are among those paid an average of 66% over the national minimum wage - and almost five times more than their respective country's living wage
- Established in 2003, the Best Practice Principles were developed by De Beers Group to promote ethical business conduct across the diamond pipeline. They cover over 353,000 people across the diamond industry
- As part of our three-year partnership with UN Women, De Beers Group became a HeForShe Thematic Champion in September 2017. This has led to three key commitments:
 1. to invest \$3 million in programmes that support women and girls in our diamond producing countries
 2. to achieve parity in our management appointment rate by 2020
 3. to be a positive force for gender equality through our brands

An ethical diamond industry - today and into the future

Together with our government partners, De Beers Group has helped to develop the diamond industry and ensure it operates ethically and responsibly. Looking forward, we have the opportunity to shape its evolution for the future.

An employee looking at rough diamond through loupe

Employees at Jwaneng diamond mine, Botswana

Increasing confidence across the industry

Working in partnership with companies like De Beers Group can help build further confidence across the diamond supply chain through our products and services. You can find out more about our industry-leading diamond testing products, courses and grading services in the De Beers Group Products and Services Explained booklet.

An employee examining a polished diamond using a microscope

To find out more visit

debeersgroup.com

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