THIS & THAT

NATURAL DIAMONDS VS.
LAB-GROWN DIAMONDS

NATURAL DIAMONDS

Natural diamonds built the industry, and you can genuinely say they are timeless: they formed 1.0 to 3.5 billion years ago. This fact and their unrivaled cultural symbolism — "a diamond is forever" — support their long-standing appeal. They are divided into Type I and Type II based on their impurities.

TYPE I

Type I diamonds contain nitrogen and comprise 98% of natural diamonds. This category is further subdivided (according to the arrangement — isolated or clustered — of the nitrogen atoms) into two types: Type 1a and Type 1b. Type 1a diamonds are the most plentiful, and their color varies from near-colorless to light yellow. The nitrogen atoms in type 1a diamonds are in clusters. By contrast, Type 1b diamonds have isolated nitrogen atoms. These diamonds are rare and often bright canary yellow.

TYPE II

Type II diamonds have no measurable level of nitrogen and comprise only 2% of natural diamonds. We base further subdivisions on the presence or absence of boron: Type IIa and Type IIb. Type IIa diamonds have no measurable nitrogen or boron traces. They are usually colorless but also come in light shades of brown. Many of the world's famous, large, historical diamonds — the Cullinan and the Koh-i-Noor — are type IIa. Type IIb diamonds conduct electricity and exhibit beautiful blue or blue-gray shades due to the presence of boron. The Hope Diamond is the most famous type IIb natural diamond.

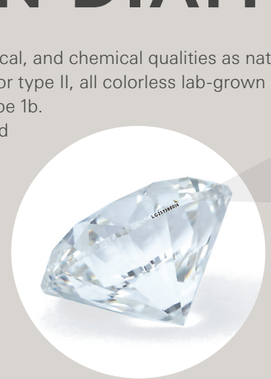
WHAT ABOUT DIAMOND SIMULANTS?

Diamond simulants resemble a diamond's appearance but can be made of any substance, natural or synthetic; therefore they differ in physical and optical properties that a trained eye can detect. Consumers choose them to save money, because they like the stone, or because the stone has personal significance. Popular simulants include created moissanite and cubic zirconia, as well as natural gems such as white sapphire and white topaz. Most importantly, simulants are not lab-grown diamonds.

Need to be sure of your inventory? Get your tester at *Stuller.com/Testers*.

LAB-GROWN DIAMONDS

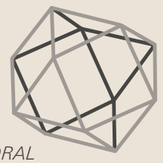
Lab-grown diamonds exhibit the same optical, physical, and chemical qualities as natural diamonds. Unlike natural diamonds, which can be either type I or type II, all colorless lab-grown diamonds are type II. Fancy yellow lab-grown diamonds are type 1b.
In a study of 1,000 consumers ages 21–40 conducted by MVI Marketing, 55% said they'd consider buying a lab-grown diamond, 21% weren't sure, and only 24% said no — but overall, 56% wanted more information. Your knowledge gives you the opportunity to build trust by sharing what lab-grown diamonds are, their authenticity as diamonds, the advanced measures used to separate them from natural diamonds, and the two processes in which they are grown.



FACT:
Stuller's lab-grown diamonds are housed in a separate area from our natural diamonds and are inscribed with a unique number on the girdle that identifies it as being lab grown.

HIGH-PRESSURE HIGH-TEMPERATURE (HPHT)

The HPHT process grows diamonds using diamond presses, machines that mimic the extreme conditions that form natural diamonds within Earth's upper mantle: intense pressure (725,000 PSI and intense heat (2,300–2,900 degrees Fahrenheit). This process dates back to 1955. By the 1970s, General Electric started commercially producing HPHT lab-grown diamonds. In the following years, GE and other companies grew larger sizes of non-gem-quality diamonds strictly for industrial use. Since then, HPHT technology has come a long way. Just as importantly, they can grow up to 15.32 carats.



FACT:
HPHT diamonds are grown in this CUBO-OCTAHEDRAL structure, but CVD diamonds are grown in a tabular structure.

CHEMICAL VAPOR DEPOSITION (CVD)

The CVD process grows diamonds in an entirely different way than the HPHT process. CVD starts with a natural diamond slice or seed placed in a chamber and exposed to less extreme temperatures (approximately 1,200-2,200 degrees Fahrenheit) and lower pressure (15 PSI). Gas is injected into the chamber and combined with high heat. The electrons separate and form plasma gas. The freed carbon then "rains down" on the seed, growing new diamond crystals. Typically, this process produces brown or gray diamonds, which are turned colorless through the HPHT annealing process.