

July 11, 2026



Cut 8X

Growth Method	CVD
Chemical Vapor Deposition (CVD)	Highly controlled environment, allowing for precise control over growth parameters such as temperature, pressure, and gas composition.
Molecular Beam Epitaxy (MBE)	Allows for atomic-level precision in controlling the thickness and composition of the grown layers.
Pulsed Laser Deposition (PLD)	Enables the deposition of complex stoichiometries and thin films with high purity.
Sputtering	Common industrial method for depositing thin films, offering good uniformity and scalability.
Electrodeposition	Simple and cost-effective method for growing certain materials, particularly metals and metal alloys.
Hydrothermal Synthesis	Allows for the growth of nanomaterials and thin films under mild conditions, often yielding high-quality single crystals.
Sol-gel Process	Used for depositing oxide thin films and coatings, typically involving sol solutions and subsequent drying/curing steps.
Atomic Layer Deposition (ALD)	Provides exceptional conformality and precise control over film thickness at the atomic level.
Langmuir-Blodgett (LB) Technique	Enables the deposition of ultra-thin, ordered monolayers of organic molecules onto various substrates.
Spin Coating	Common method for depositing uniform thin films from liquid precursors onto flat substrates.
Dip Coating	Simple technique for depositing thin films by immersing a substrate into a solution and withdrawing it at a controlled rate.
Evaporation	Traditional method for depositing thin films from solid sources, often used for metals and oxides.
Physical Vapor Deposition (PVD)	Encompasses several techniques (e.g., sputtering, evaporation) for depositing thin films from solid targets.
Chemical Solution Deposition (CSD)	Involves the deposition of thin films from liquid precursors through various methods like spin coating or dip coating.
Layer-by-Layer (LbL) Assembly	Enables the sequential deposition of alternating layers of polyelectrolytes or other functional materials.
Self-Assembly	Natural process where components spontaneously organize into ordered structures, often used for creating nanostructures.
Bio-inspired Growth	Explores mimicking biological processes for the synthesis of novel materials and structures.
Microfluidic Synthesis	Utilizes microfluidics for precise mixing and reaction control, enabling the synthesis of complex nanomaterials.
3D Printing/Additive Manufacturing	Emerging technology for fabricating complex, three-dimensional structures layer-by-layer.
Biomineralization	Leverages biological processes involving living organisms for the synthesis of mineral-based materials.
Photodeposition	Uses light energy to initiate the deposition of thin films from a precursor solution.
Thermal Annealing	Process used to improve the crystallinity and structural quality of previously deposited thin films.
Epitaxial Growth	Refers to the growth of a new crystal phase on top of an existing crystalline substrate, maintaining lattice continuity.
Heteroepitaxy	Growing a material with a different crystal structure or composition on a foreign substrate.
Homoeptitaxy	Growing a material with the same crystal structure and composition as the substrate.
Strain Engineering	Manipulating the mechanical stress/strain state of a thin film to tune its electronic and optical properties.
Interface Engineering	Focusing on controlling the atomic and molecular structure at the interface between different materials.
Defect Engineering	Intentionally introducing specific defects (e.g., vacancies, dopants) to modify the material's properties.
Surface Functionalization	Modifying the surface chemistry of a material to enhance its compatibility or catalytic activity.
Nanostructure Fabrication	Employing various techniques (e.g., lithography, etching, self-assembly) to create well-defined nanoscale structures.
Thin Film Characterization	Using various analytical techniques (e.g., XRD, TEM, AFM, SEM) to determine the structure, composition, and properties of the grown films.
Material Property Measurement	Performing experiments to quantify the electrical, optical, thermal, and mechanical properties of the synthesized materials.
Device Fabrication	Integrating the grown thin films and nanostructures into functional devices for applications ranging from electronics to photonics.
Modeling and Simulation	Using computational tools to predict the growth behavior and resulting properties of the materials.
Characterization Techniques	X-ray Diffraction (XRD), Scanning Electron Microscopy (SEM), Atomic Force Microscopy (AFM), Transmission Electron Microscopy (TEM), Energy Dispersive X-ray Spectroscopy (EDS), Raman Spectroscopy, Photoluminescence (PL), Field-effect Transistor (FET) measurements, etc.
Applications	Optoelectronics, Nanoelectronics, Catalysis, Biomedicine, Energy Storage, Sensors, Photonics, Spintronics, Quantum Computing, etc.

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Ultimate Diamond Cut Grade



P Poor **F** Fair **G** Good **VG** Very Good **EX** Excellent

Technical drawing of a diamond showing its proportions and measurements:

- Top width: 8.21mm
- Top width (excluding bezel): 4.78mm 58%
- Top width (excluding bezel) angle: 34.0°
- Left side height: 0.32mm 3.9%
- Left side height: 5.08mm 61.9%
- Left side angle: 40.6°
- Right side height: 1.14mm 14.0%
- Right side height: 3.62mm 44.0%
- Bottom width: 0.03mm 0.3%

DIAMOND SHAPES



CARAT WEIGHT SIZES

Carat Weight	2.50	2.00	1.50	1.00	0.75	0.50
Approx. Size						
Diameter	8.60mm	8.00mm	7.30mm	6.40mm	5.80mm	5.10mm

DIAMOND CLARITY GRADING SCALE

FL	IF	VVS1	VVS2	VS1	VS2	S11	S12	I1	I2	I3
FLAWLESS - INTERNALLY FL.		VERY VERY SLIGHTLY INCLUDED		VERY SLIGHTLY INCLUDED		SLIGHTLY INCLUDED		INCLUDED/PIQUE		

DIAMOND COLOR GRADING SCALE



D - Z DIAMOND COLOR GRADING SCALE

DIAMOND FLUORESCENCE GRADING SCALE



DIAMOND POLISH & SYMMETRY GRADING SCALE

EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
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BRILLIANT CUT DIAGRAM



BUY WITH
CONFIDENCE

GCAL BY SARINE™
4Cs GRADING GUARANTEE

The GCAL by Sarine™ philosophy is simple: we believe consumers should feel confident about their lab grown diamond purchase, in the same way we believe experts should be accountable and stand behind their work.

This is why your lab grown diamond is protected by a zero tolerance, money-backed grading guarantee. You should know that the GCAL by Sarine™ 4Cs Grading Certificate is the only 4Cs grading certificate in the world that comes with a guarantee that ensures the accuracy of the certified lab grown diamonds' weight and quality grades. If the carat weight or any of the cut, color, or clarity grades provided in this GCAL by Sarine™ 4Cs Grading Certificate is lower than the weight or quality grade of your certified lab grown diamond, GCAL by Sarine™ will reimburse you the difference between what you paid for the lab grown diamond and the current fair value of an equivalent lab grown diamond in the market in which it was purchased, pursuant to the newly established grades. Kindly see additional details, including the limitations of the guarantee, at [GCALUSA.com](https://www.gcalusa.com).

MISSION STATEMENT

To provide the most accurate and consistent gemological grading, with uncompromising integrity and unparalleled customer service.

GEMPRINT®

Having a traceable, unique “fingerprint” of your lab grown diamond adds future protection to your investment, as well as peace of mind. GCAL by Sarine™ records the distinctive Gemprint of every diamond we certify. This patented technology for positive identification is recognized worldwide as forensic evidence and identification. Register your lab grown diamond at [GEMPRINT.com](https://www.gemprint.com)

CERTIFICATE VERIFICATION

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GUARANTEED
CERTIFICATE



LAB GROWN

Independently Graded and Guaranteed by GCAL by Sarine™



8X® is the highest achievement in precision diamond cutting. The GCAL 8X Ultimate Diamond Cut Grading System encompasses all aspects of diamond CUT quality assessment. Your lab Grown diamond has achieved grades of Excellent in all eight aspects of CUT quality assessment. As a result, this lab grown diamond is recognized for its extraordinary brilliance and beauty.

PHYSICAL EXCELLENCE

The first three of the 8X grading factors analyze the exactness of the physical surface, the facet shapes, as well as the angles. This includes the Polish, External Symmetry and Proportions.

Decades of meticulous mathematical calculations have determined the narrow proportion ranges required to produce superior cut diamonds. Each shape has been studied individually to find the most aesthetically pleasing parameters. Some of the factors considered are listed below.

To view the proportions specifications for each shape, please visit our website [GCALUSA.COM](https://www.gcalusa.com)

Table %	Lower Girdle Facet Length
Depth %	Star Length
Crown Angle/Height	Girdle Thickness
Pavilion Angle/Height	Culet Size

LIGHT PERFORMANCE EXCELLENCE

The next three of the 8X grading factors are Brilliance, Fire and Scintillation, which analyze the light handling ability of your lab grown diamond. The combination of these factors is the essence of what makes any diamond visibly shine, dance and sparkle from across a room. Fire and Scintillation are graded while the diamond is in motion and interacting with light. View the Fire and Scintillation videos of this lab grown diamond at [GCALUSA.com](https://www.gcalusa.com) or by scanning the QR code on this certificate.

OPTICAL EXCELLENCE

The last two 8X grading factors consider optical excellence. These factors scrutinize the craftsmanship, the precise alignment of the crown and pavilion facets, the shape outline, and the length to width ratio, ensuring the lab grown diamond achieves aesthetic perfection.

Grading scales for each of the 8X grading factors can be viewed at [GCALUSA.com](https://www.gcalusa.com)