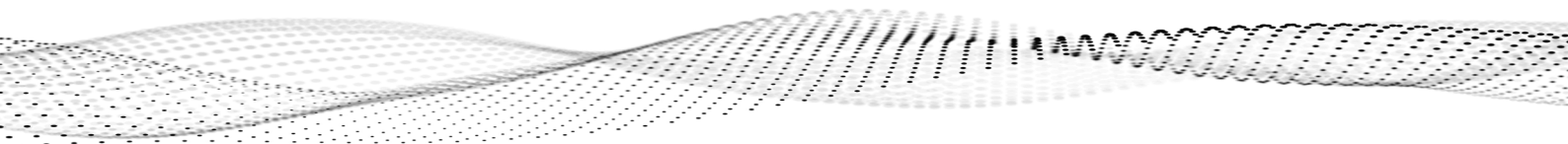




The sound of brilliance

With a million speaker domes supplied worldwide,
we are a leader in synthetic diamond solutions





World leaders, pioneering diamond

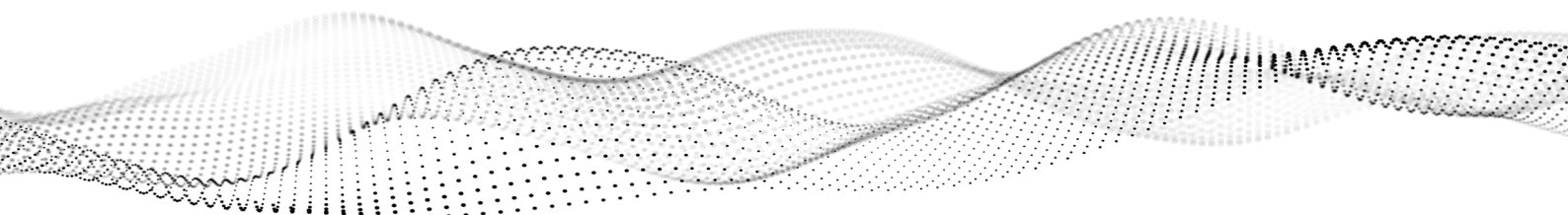
Exceptional listening experiences and superior sound systems are built on the foundation of innovative materials.

With over 70 years of expertise in advance materials R&D and manufacturing, Element Six have pioneered the development of a world-first synthetic diamond speaker dome for high-end acoustics, which received the UK Queen's Award for Enterprise in Innovation.

This award-winning solution has allowed E6 to enhance the consumer's audio experience in the domestic and automotive markets, and beyond.

With a network of global manufacturing facilities and scale capabilities, including one of the world's largest Chemical Vapor Deposition (CVD) factories in Oregon, as well as our wide portfolio of patented technology, **Element Six is a leader in synthetic diamond solutions for acoustics applications.**

With a track record of developing novel, award-winning solutions, including domes thinner than a human hair, and the capabilities to deliver them in scale and globally, Element Six is the go-to, trusted partner for new and existing customers seeking to elevate their device performance through the unparalleled advantages provided by synthetic diamond solutions.



Why diamond?

1. Extreme stiffness

Synthetic diamond is an extremely rigid material with high Young's modulus, meaning it exhibits minimal deformation or flexing when subjected to vibrations. This rigidity allows for precise and accurate sound reproduction, as it minimises unwanted resonance and distortion in the speaker dome.

2. Low density

Thanks to their intrinsic low density, synthetic diamond tweeter domes are exceptionally low weight, making them an ideal choice for audio applications where minimising moving mass is crucial. The low mass of diamond domes enables faster response times, ensuring quick and accurate sound reproduction, especially in high-frequency ranges.

3. High thermal conductivity

Diamond has the highest thermal conductivity of any known material, allowing for efficient dissipation of heat generated during high-power audio reproduction. This property helps prevent thermal distortion and maintains consistent performance even under demanding conditions, ensuring accurate sound reproduction over extended periods.

4. Wide frequency response

Due to its exceptional rigidity and low mass, synthetic diamond domes exhibit excellent piston-like behaviour, enabling them to accurately reproduce sound across a wide frequency range. Diamond diaphragms can effectively transmit high-frequency signals without distortion, resulting in clearer and more detailed audio reproduction.

5. Durability and longevity

Diamond is renowned for its exceptional hardness and durability, making it highly resistant to wear, deformation, and damage from environmental factors. This longevity ensures consistent performance over time, allowing audio systems with diamond dome speakers to maintain their exceptional sound quality for extended periods.



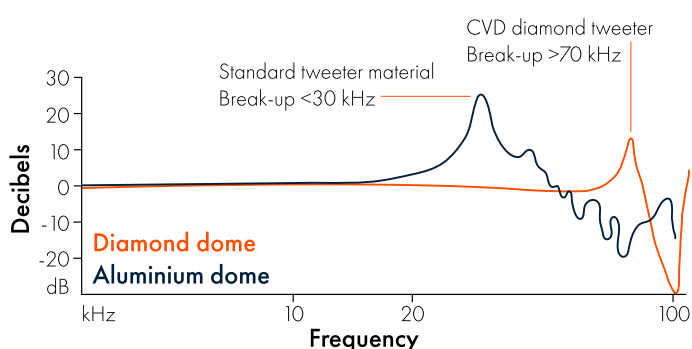
6. Customised solutions

E6's patented conformal CVD process enables us to make bespoke shapes around each customer's needs. Precise control of our synthesis processes and our world-class manufacturing capabilities enable us to volume deliver world-leading solutions with unique and tailored properties.

7. Unique aesthetics

Nothing says 'luxury' as a diamond does. The use of synthetic diamond in speaker domes provides an unparalleled appeal, adding value, luxury, and sophistication to any high-end audio system.

Simulated acoustic frequency response



The frequency at which the dome begins to break up (distortion) is proportional to $\sqrt{E/\rho}$ where E is Young's Modulus and ρ is density. As shown in the graph, synthetic diamond domes, in this instance having radius of curvature of 20 mm, offer the best FoM against competing solutions. Their geometry can be tailored to specific applications, delivering the best possible performance at every listening experience.



Element Six (E6), part of the De Beers Group, designs, develops and produces synthetic diamond and tungsten carbide advanced material solutions, operating worldwide with primary manufacturing facilities in Germany, Ireland, South Africa, the UK and US.

E6 solutions are used in applications such as cutting, grinding, drilling, shearing and polishing, while the extreme properties of synthetic diamond beyond hardness are opening up new applications in a wide array of industries such as optics, power transmission, water treatment, semiconductors, acoustics and sensors.

Innovation is in Element Six's DNA. Thanks to its global presence and capabilities, in 2012 E6 was awarded the UK Queen's Award for Enterprise in Innovation for the development of its pioneering synthetic diamond tweeter dome.

A unique combination of scale manufacturing, patented technology and industry leadership, make Element Six the customer's choice when it comes to diamond material solutions for the acoustics, consumer electronics and automotive industries.

Are you looking for the ultimate symphony of diamond innovation?

Contact us today:
e6marketing@e6.com

e6.com | e6cvd.com

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