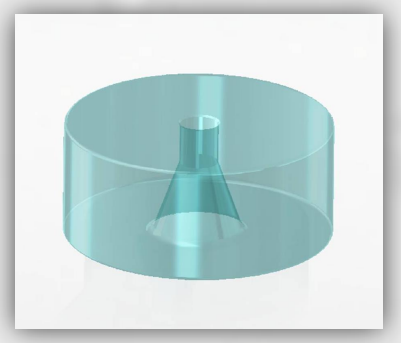
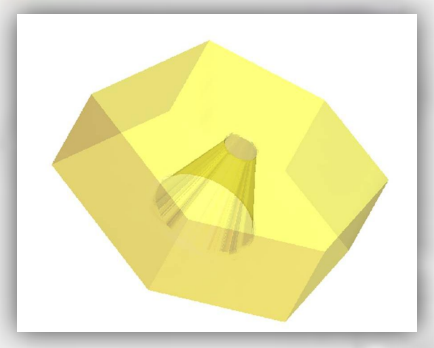
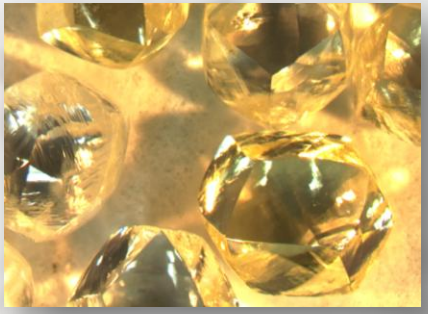


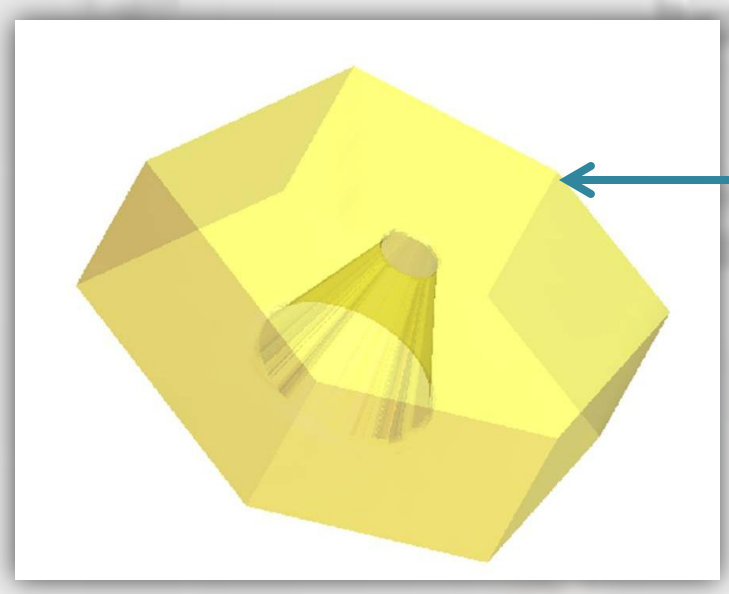
How to Determine an Effective Waterjet Orifice

Analysis of the DTI Diamond as compared with other typical industrial diamond products



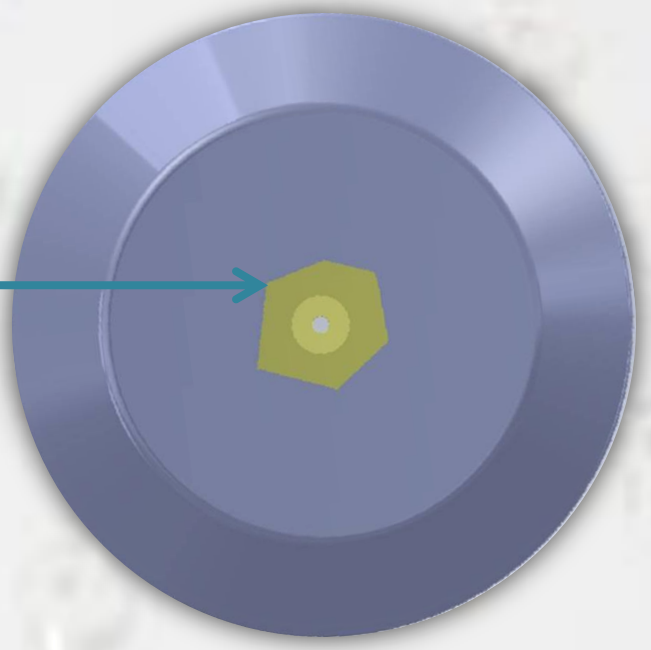


Typical Industrial Diamond Product

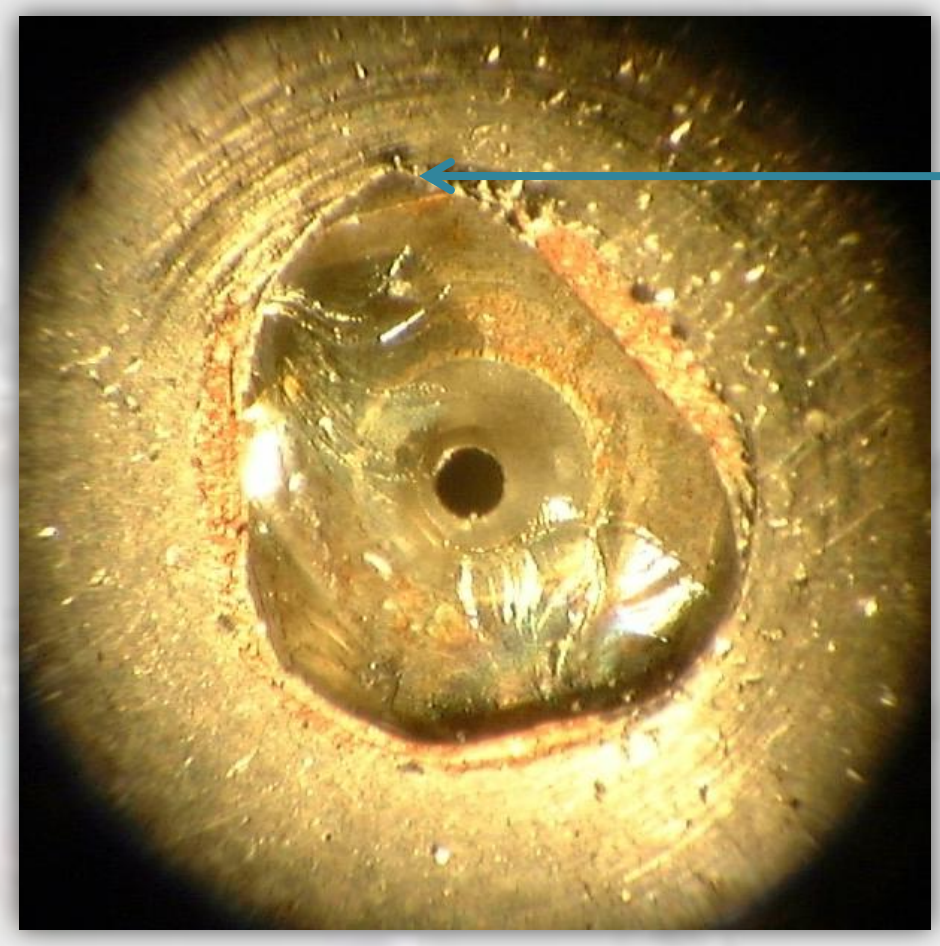


Typical diamond orifice products often contain sharp edges that result in localized increases in stress at each sharp corner, otherwise known as stress risers.

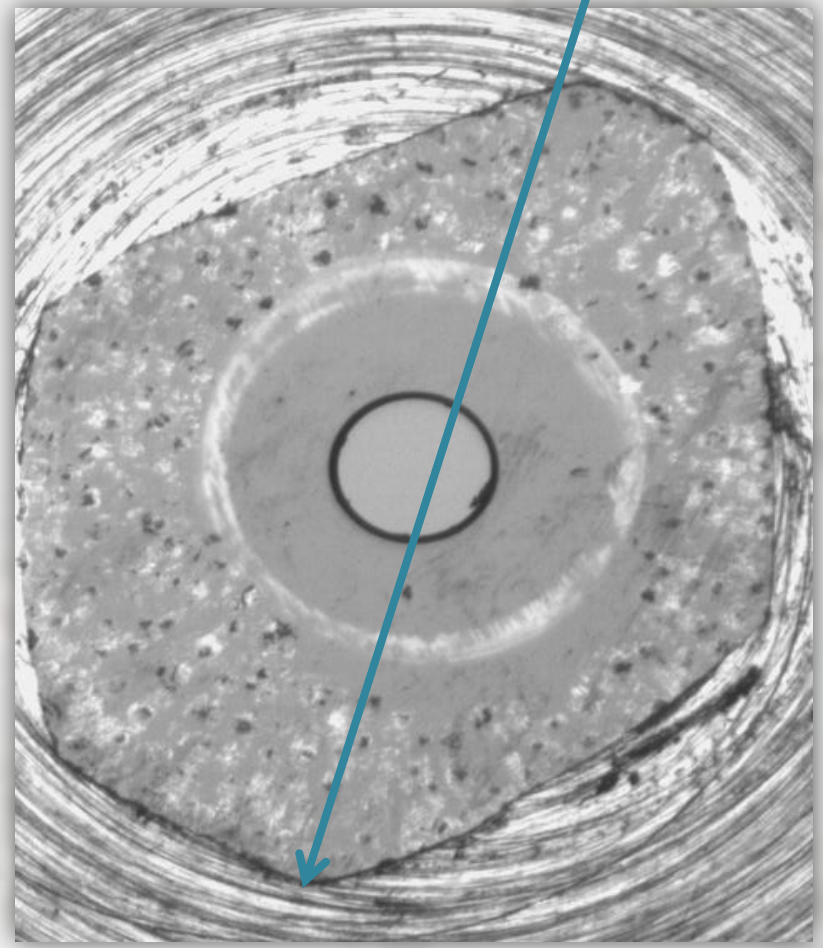
Stress risers lead to material failure when concentrated stress exceeds the material's theoretical cohesive strength.



Typical Industrial Diamond Product

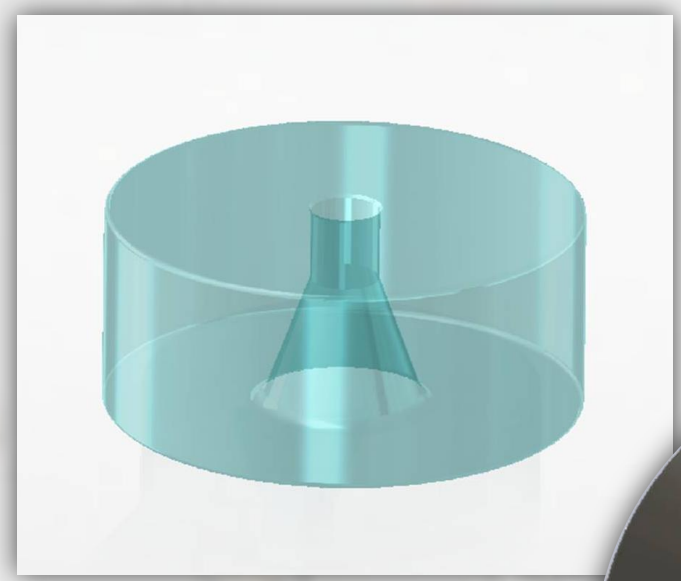


Stress Risers



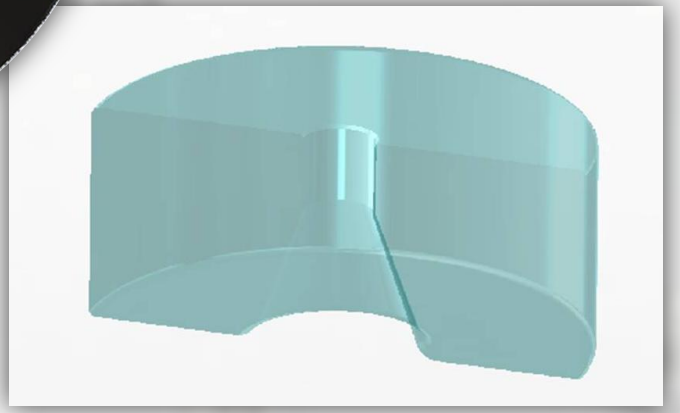
Because fatigue cracks always start at stress risers, removing such defects will increase a material's fatigue strength.

DTI Diamond

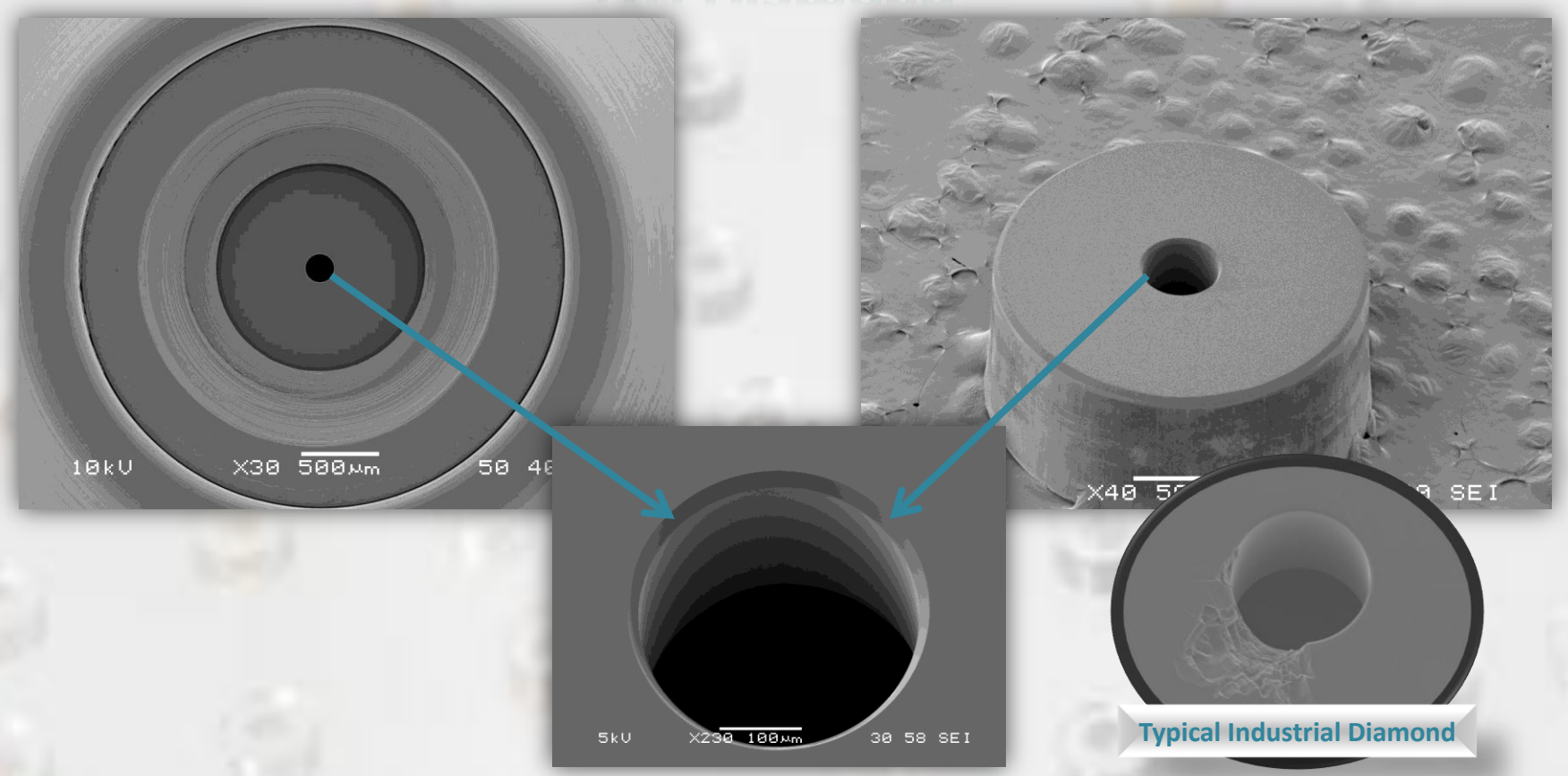


DTI diamonds are designed to minimize stress concentrations and prevent premature material fatigue.

Each diamond goes through a unique cutting process to eliminate all sharp edges, or stress risers, therefore increasing fatigue strength and preventing any chipping or cracking.



DTI Diamond



Typical Industrial Diamond

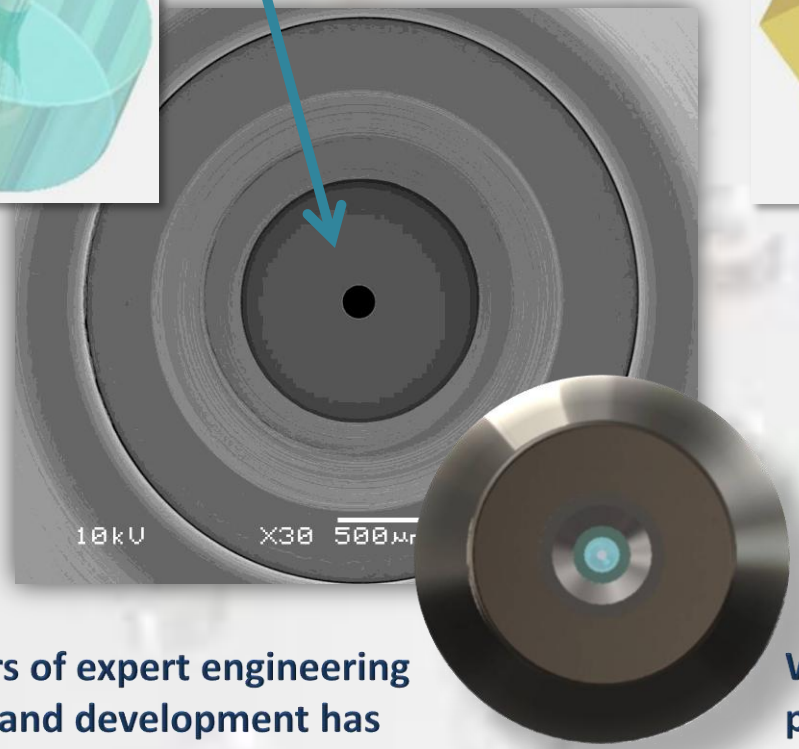
In addition to the diamond's outside geometry that eliminates stress concentrations, DTI diamonds incorporate an inlet flare at the center of each diamond.

This inlet flare allows an even distribution of force over the area of the diamond, additionally eliminating geometric discontinuities and again increasing fatigue strength.

Without an inlet flare, material can experience a local increase in the intensity of a stress field, allowing the above occurrence of chipping or cracking.

DTI Diamond

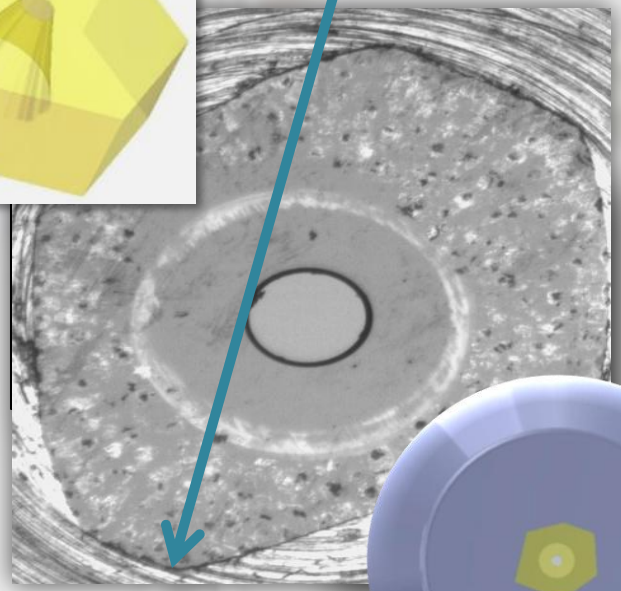
Elimination of Directional Discontinuities



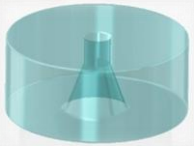
30 years of expert engineering design and development has made the DTI Diamond the most efficient and effective diamond orifice in the industry.

Typical Industrial Diamond Product

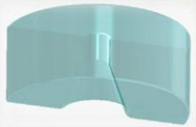
Stress Risers



When put to the test in high pressure, hostile environments, unlike any other diamond product, the DTI Diamond always maintains its material integrity yielding longer life, better cut quality and the least down time.



Conclusions



- While diamond has proven to be the longest lasting orifice material in the industry, the common misconception is that all diamond products are of equal quality.

- Typical industrial diamond products contain stress risers.

- Stress risers lead to premature material failure when concentrated stress exceeds the material's theoretical coherent strength.

- Removing geometric discontinuities is the only way to ensure the elimination of material failure due to cracking or chipping.

- To further ensure increased fatigue strength and eliminate stress risers, an inlet flare must be integrated at the center of each diamond to provide an even distribution of force over the area of the diamond.

- The only diamond orifice in the industry that has been expertly engineered to adhere to the above diamond efficiency standards is the DTI Diamond.

- To guarantee that your orifice will operate as effectively as possible ask for a DTI Diamond and see the difference yourself.