



# CVD Turning and Milling Tools

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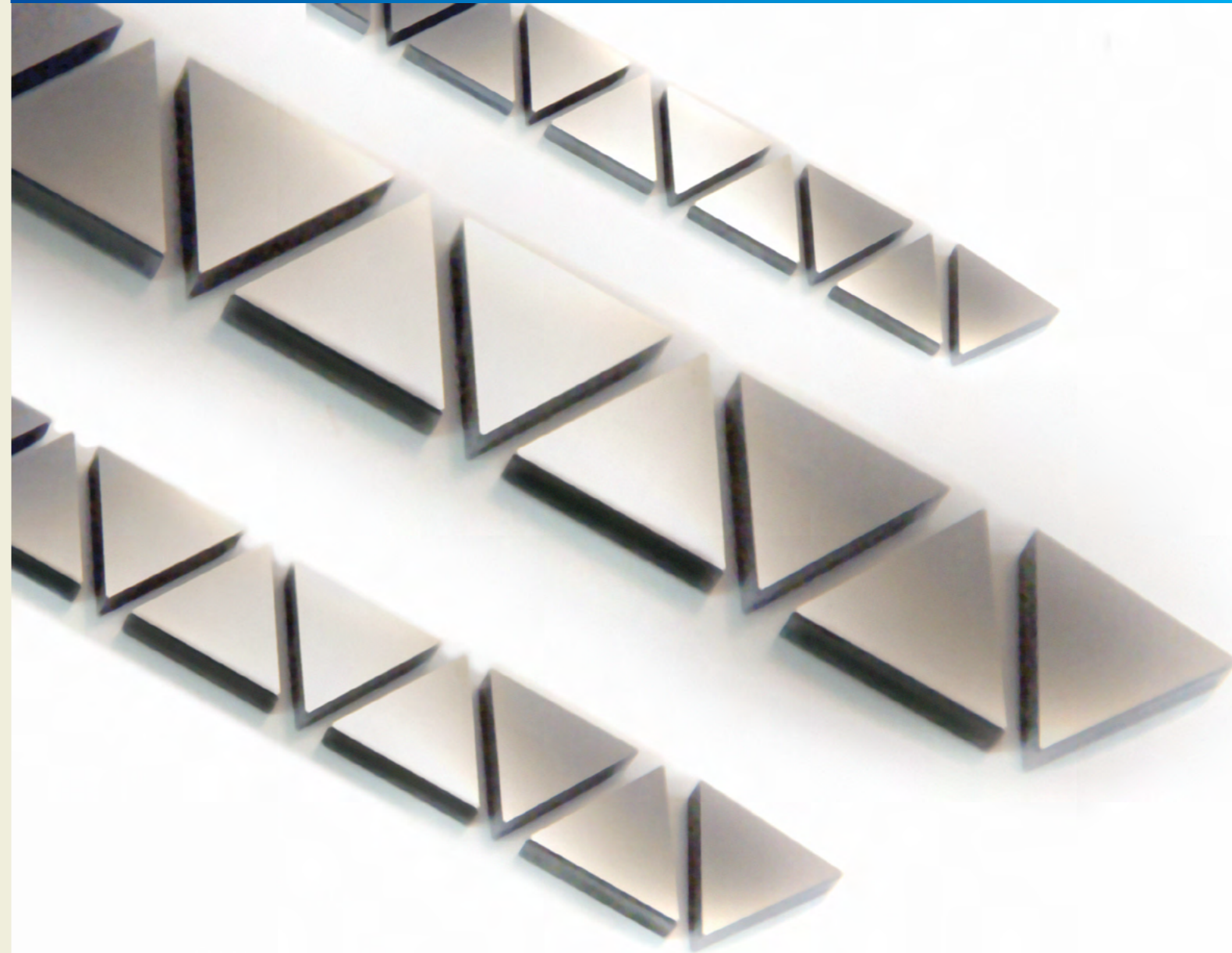
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Chemical vapor deposition (CVD) is a chemical process used to produce high-purity, high-performance solid materials.

It can be used to produce a polycrystalline synthetic diamond by creating the circumstances necessary for carbon atoms in a gas to settle on a substrate in crystalline form.

CVD production of diamonds has received a great deal of attention in the materials sciences because it allows many new applications of diamonds that had previously been considered too difficult to make economically.

CVD is generally recommended for machining non-ferrous materials where high abrasion resistance is required. It is very well suited to machine materials such as:

## MATERIALS

- Aluminium
- Copper
- Brass
- Bronze alloys
- Metal matrix composites
- Graphite
- Reinforced plastics
- Carbon fibre-based materials
- Sintered and pre-sintered tungsten carbide
- Plastics and rubber

## PROPERTIES

- 100% pure diamond - no binding phase
- Polycrystalline CVD diamond is grown, not sintered
- About 60° harder than PCD (-90GPa)
- Better heat conductivity than PCD ( $2 \times 10^3 \text{ W/m/}^\circ\text{K}$ )
- Very fine crystal structure. At cutting edge  $< 1 \mu\text{m}$
- High resistance against chemical wear

Surface quality as well as the tool life of CVD will exceed those of PCD. For example on AlSi and Al-bronze alloys the CVD has a 1,5 to 2 times longer tool life than PCD. On graphite it has even a tool life up to 3 times better combined with a better surface quality.

Comparing sharpness of cutting edge, CVD is positioned between PCD and Single Crystal Diamond.

Contour is able to manufacture CVD tools with a new technology, which gives a much sharper cutting edge than the traditional edge preparation. The sharper cutting edge of Contour CVD tools is a distinct advantage over PCD tools and traditional ground on CVD tools.

In CVD diamond nearly any shape of tool can be manufactured. Parabolic forms, multiple radii, multiple profiles, etc.

Contour develops and manufactures CVD turning tools and CVD milling tools.

