

Cutting tools: material and geometry



Milling tool from the EHWA catalogue

From workpiece material to the cutting edge

EHWA cutting tool catalogues connect cutting materials, tool geometries and manufacturing processes. They cover turning, boring, grooving and parting, milling, and rotary tools. Selection starts with the workpiece material, its condition and the surface to be produced.

PCD means polycrystalline diamond, called PKD in German. PCBN means polycrystalline cubic boron nitride. SCD is single-crystal diamond. These cutting materials have different application fields and are not selected solely from a shared hardness scale.

Cutting materials and documented applications

Cutting material	Applications named in the catalogue	Design considerations
PCD	Aluminium and copper alloys, composites and selected non-metallic materials	Surface finish, wear and grain structure
PCBN	Hardened steel, cast iron and other suitable ferrous materials	Grade, interruption and cutting edge design
CVD diamond	Suitable non-ferrous and non-metallic materials	Diamond design and machining task
SCD / single-crystal diamond	Precise surfaces and edges on suitable materials	Cutting edge geometry and crystal orientation

Geometry and the tool solution

The complete catalogue includes inserts, holders, boring and milling tools, and tools for fine finishing. Cutting material grade and insert shape only form a complete solution when combined with clearance angle, radius, mounting and process. PCBN documentation also distinguishes continuous cuts and different degrees of interruption.

The benefits described include high surface quality, wear resistance, dimensional accuracy and cost-effective stock removal. Tool design assesses these objectives together. Higher removal performance is useful only when the required component quality and cutting edge life are achieved in the process.

The supplementary Cutting QR flyer shows specific automotive applications, including PCBN for heat-treated constant-velocity joint components. It adds product examples to the complete catalogue without replacing its full insert and holder tables.

Catalogue example: PCD grades

The German and English complete catalogues give the following grade characteristics on PDF page 14:

Grade	Grain size	Diamond content
EP20	0.5 µm	85 vol.%
EP58	20-25 µm	94 vol.%

The source describes EP20 in relation to fine surfaces and sharp edges, and EP58 in relation to wear resistance. This does not imply a general grade recommendation for every aluminium component. Workpiece material, chip formation, cutting edge and process must match the selection.

Your technical enquiry

Send a drawing, material designation, machine and mounting details, and the intended result. For existing processes, the current tool specification, machining data and a description of the wear pattern help. Mention the topic and relevant catalogue page. We discuss the tool design and next steps with you.

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- [Submit a technical enquiry](#)

Sources and complete catalogues

- [Cutting Tools - German complete catalogue](#), PDF pages 12, 14, 16; contents 5; [HQ source](#).
- [Cutting Tools - English complete catalogue](#), PDF pages 12, 14, 16; contents 5; [HQ source](#).
- [Cutting QR - PCBN for constant-velocity joints](#), PDF pages 4-5; [HQ source](#).

This thematic overview is a compact introduction to these applications. The linked original catalogues contain further designs, tables and technical information.