

## Troubleshooting Matrix for Advanced Cutting Tool Materials

This matrix explains the specific areas where advanced cutting tool materials perform differently from uncoated and coated carbide grades during the troubleshooting identification process.

cutting tool material	problem	solution	comments
cermets KT530M	• chipping	<ul style="list-style-type: none"> <li>• Reduce feed per insert.</li> <li>• Turn off coolant.</li> <li>• Apply hone or T-land insert.</li> </ul>	<ul style="list-style-type: none"> <li>• Excellent resistance to built-up edge.</li> <li>• Dry milling grades, do not use coolant.</li> <li>• KT530M is noted for maximum toughness and edge chipping resistance at moderate speeds and medium chip loads.</li> </ul>
	• breakage (fracture)	<ul style="list-style-type: none"> <li>• Reduce depth of cut and chip load.</li> <li>• Increase speed.</li> <li>• Apply hone or T-land insert.</li> </ul>	
sialon Kyon 1540 Kyon 2100	• depth-of-cut notch	<ul style="list-style-type: none"> <li>• Reduce hone or size of T-land edge preparation.</li> <li>• Pre-chamfer part to eliminate stress points on cutting edge of insert.</li> <li>• Vary depth of cut.</li> </ul>	<ul style="list-style-type: none"> <li>• Excellent for machining nickel-base materials over 35 HRC.</li> <li>• Available in positive rake inserts.</li> <li>• Run dry – no coolant.</li> <li>• Works well on PH stainless steels.</li> <li>• Use KY1540 at less than 2000 sfm.</li> </ul>
	• minor chipping	• Minor chipping is normal, especially on Inconel.	
	• flank wear	• Use 0.2 mm (.008 in) as indexing criterion.	
	• fracture	• Do not over-torque clamping.	
silicon nitride Kyon 3500	• flank wear	<ul style="list-style-type: none"> <li>• Reduce speed.</li> <li>• Increase feed.</li> </ul>	<ul style="list-style-type: none"> <li>• Use without coolant.</li> <li>• Will provide optimum combination of increased toughness and wear resistance in high-speed machining of cast irons.</li> <li>• Wide range of sfm (Vc).</li> <li>• Kyon 3500 is your first choice for maximum toughness and edge chipping resistance at high-speed and heavy-to moderate feeds.</li> </ul>
	• chipping	<ul style="list-style-type: none"> <li>• Change edge preparation.</li> <li>• Reduce chip load.</li> </ul>	
	• breakage	<ul style="list-style-type: none"> <li>• Reduce doc.</li> <li>• Use thicker inserts.</li> </ul>	

## Troubleshooting Matrix for Advanced Cutting Tool Materials (cont'd.)

cutting tool material	problem	solution	comments
polycrystalline diamond (tipped) KD1410 KD1415 KD1420	<ul style="list-style-type: none"> <li>chipping and breaking</li> </ul>	<ul style="list-style-type: none"> <li>Check system rigidity.</li> <li>Reduce chip load.</li> <li>Increase sfm (Vc).</li> <li>Edge prep</li> </ul>	<ul style="list-style-type: none"> <li>Excellent wear resistance for improved size control and surface finish.</li> <li>Unsurpassed tool life when machining aluminum alloys, non-ferrous and non-metallics at high sfm's (Vc).</li> <li>Can be used with coolant.</li> <li>Regrindable/resettable.</li> </ul>
diamond film coating KDF300	<ul style="list-style-type: none"> <li>burrs and finish</li> </ul>	<ul style="list-style-type: none"> <li>Use a KD1410 tipped insert in one or two pockets as a wiper insert.</li> </ul>	<ul style="list-style-type: none"> <li>Roughing to semi-finishing grade.</li> <li>Excellent tool life when machining aluminum alloys that have 12% or less silicon content.</li> <li>Multiple cutting edges versus single-edge on tipped PCD.</li> <li>Less expensive than ground, PCD-tipped KD1410.</li> </ul>
KB1340 cubic boron nitrides	<ul style="list-style-type: none"> <li>chipping and breaking</li> </ul>	<ul style="list-style-type: none"> <li>Check system rigidity.</li> <li>Additional edge preparation may be required (hone or T-land).</li> </ul>	<ul style="list-style-type: none"> <li>Use on hardened tool steels, cast irons, and some high-temperature alloys (Ni-base).</li> <li>Applications on: Ni-hards, high-chrome irons, chilled cast irons, hard alloys, and hardened tool steels (50-65 HRC).</li> <li>KD1340 tipped CBN for finishing only; one cutting edge.</li> <li>Regrindable/resettable.</li> </ul>

SOLID CARBIDE

INSERTS

FACE MILLS

90° MILLS

SLOTTING

DIE AND MOLD

CERAMIC MILLS

CLASSIC MILLS

THREAD MILLS

TECHNICAL DATA

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