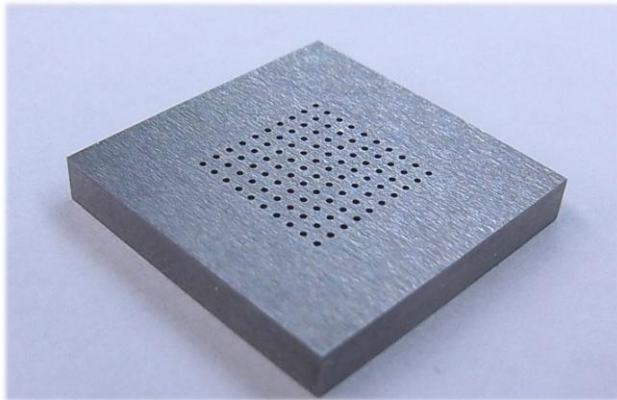


UDCMX

Single-shot Drilling to Cemented Carbide

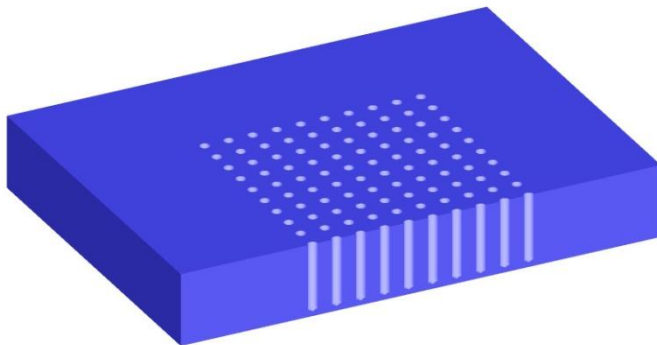
Tool: 2-flute drill UDCMX 2040-040 ($\phi 0.4 \times 4$)



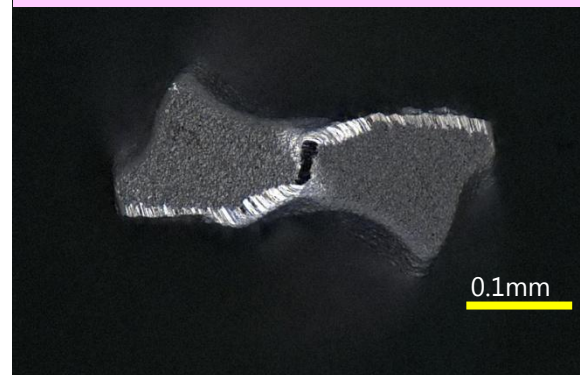
Work size: 20 x 20 x Thickness 3mm

Work material	Cemented carbide VM-40 (90HRA)
Spindle Speed	20,000 min ⁻¹
Feed Rate	5 mm/min
Peck amount	Single-shot
Coolant	Air blow (Nozzle)
Hole	Depth 2.8 mm x 100 blind holes
Hole pitch	1 mm
Cycle time	100 holes / 1 hour (36 sec / 1 hole)

Sectioned image

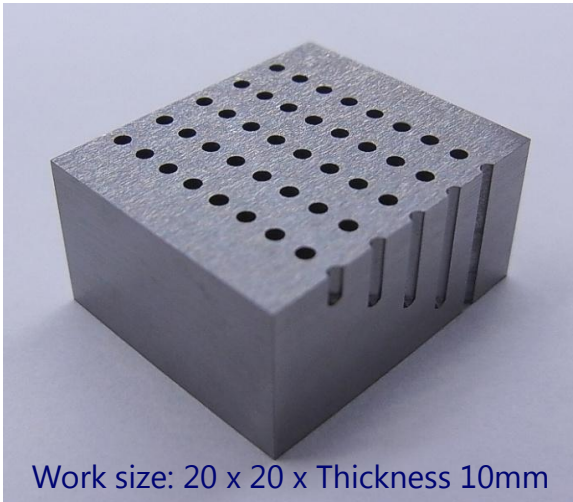


Tool after drilling 100 holes



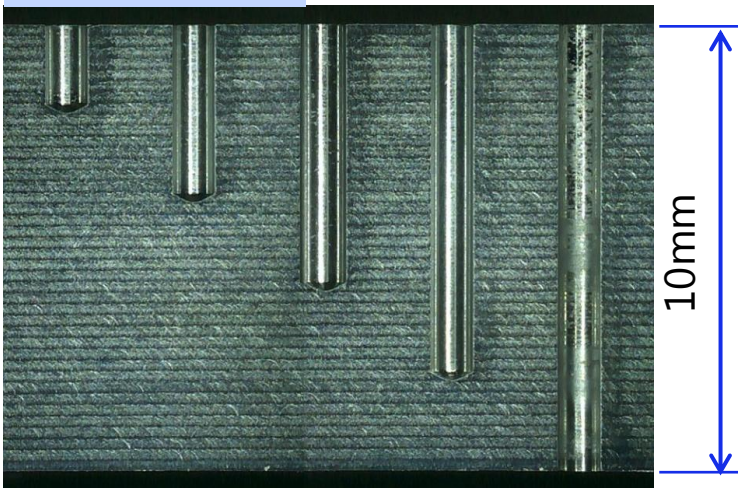
UDCMX Drilling Cemented Carbide ($\phi 1$)

Tool: 2-flute drill UDCMX 2100-100 ($\phi 1 \times 10$)

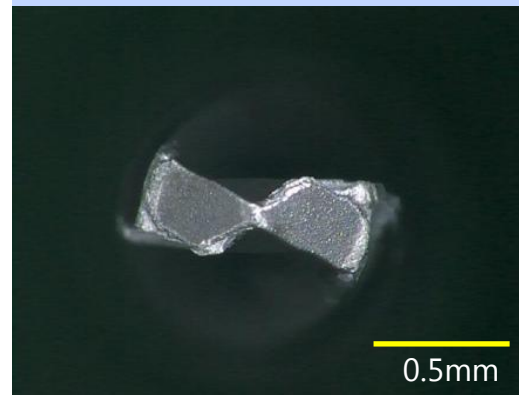


Work material	Cemented carbide VM-40 (90HRA)
Spindle Speed	20,000 min ⁻¹
Feed Rate	7.5 mm/min
Peck amount	0.1 mm
Hole	Depth: 2, 4, 6, 8 mm and through hole (Drilled 5 holes on each depth with single tool. Total 25 holes.)
Coolant	Air blow (Nozzle)
Cycle time	25 holes / about 43 min 50 holes / about 1 hr 26 min

Cross section



Tool after drilling 25 holes



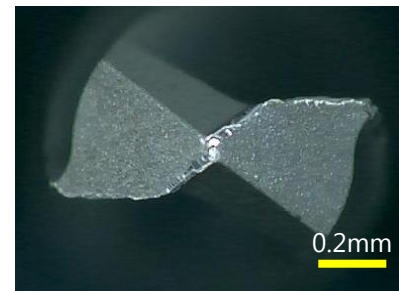
UDCMX Drilling on Cemented Carbide ($\phi 1.0$ Long Flute)

Tool: 2-flute drill UDCMX $\phi 1$ x 22 (Special)



Work size: 20 x 10 x t 20 mm

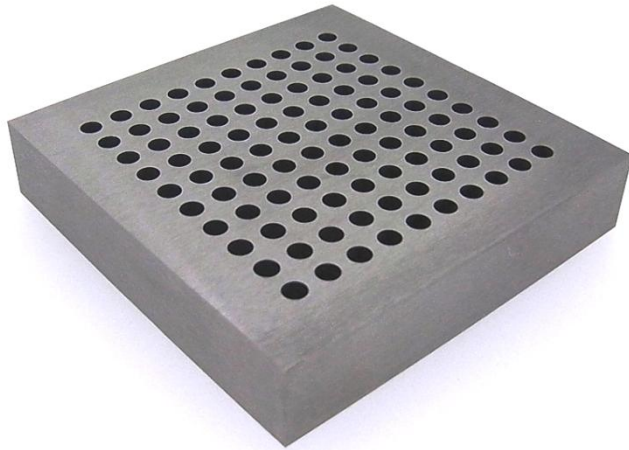
Work material	Cemented carbide VM-40 (90HRA)
Spindle Speed	5,000 min ⁻¹
Feed Rate	7.5 mm/min
Peck amount	0.2 mm
Coolant	Air blow (Nozzle)
Hole	Depth 20 mm x 20 through holes
Cycle time	1 hr 38 min / 20 holes (5 min / 1 hole)



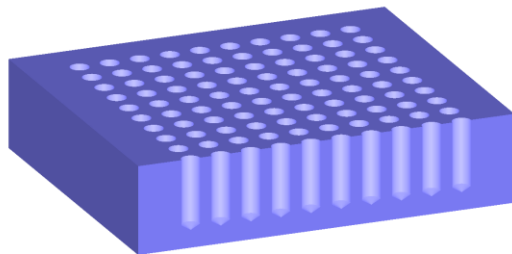
Tool after drilling 20 holes

UDCMX Drilling Cemented Carbide ($\phi 2.5$)

Tool: 2-flute drill UDCMX 2250-100 ($\phi 2.5 \times 10$)

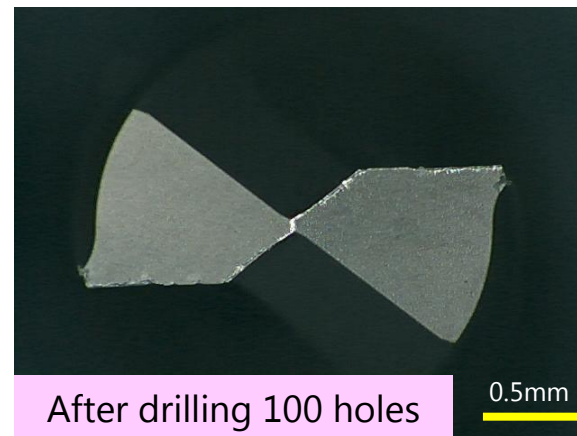


Work size: 50 x 50 x t 10mm



Sectioned image

Work material	Cemented carbide VM-40 (90HRA)
Spindle Speed	2,000 min ⁻¹
Feed Rate	5 mm/min
Peck amount	0.5 mm
Coolant	Air blow (Nozzle)
Hole	Depth 8 mm x 100 blind holes
Hole pitch	4 mm
Cycle time	3 hr 23 min / 100 holes (2 min 2 sec / 1 hole)

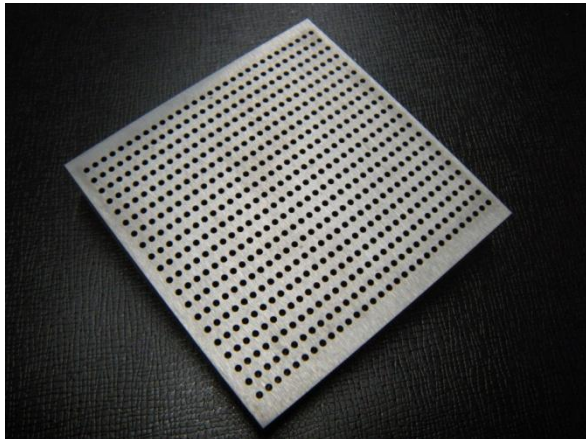


After drilling 100 holes

0.5mm

UDCMX Cemented Carbide 600 Holes Drilling ($\phi 1$)

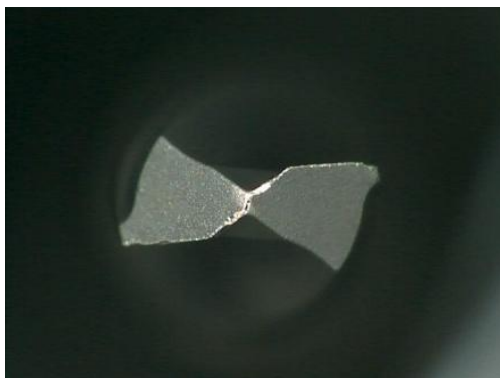
Tool : 2-flute drill UDCMX 2100-100 ($\phi 1$ x Flute length 10mm)
Work material : Cemented carbide VM-40 (90HRA)



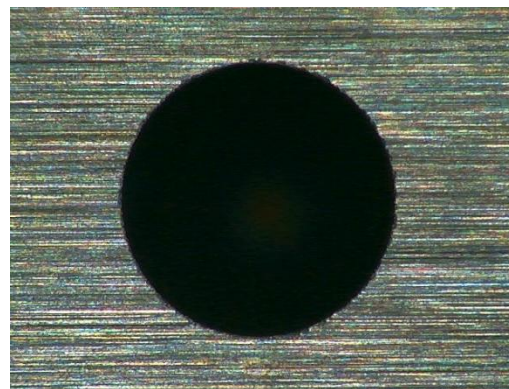
Work size: 50 x 50 x t 10 mm

Drilling detail	Single-shot drilling (200hole/tool)
Spindle Speed	5,000 min ⁻¹
Feed Rate	7.5 mm/min
Step	Single-shot drilling
Coolant	Air blow (Nozzle)
Hole	Depth 8 mm x 600 blind holes
Hole pitch	X 2.3 mm, Y 1.6 mm
Cycle time	11 hr 40 min / 600 holes (1min 10 sec / hole)

Used 3 tools for 600 holes

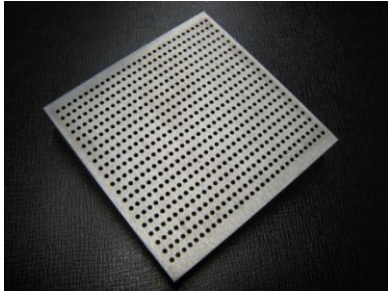


Tool after 200 holes



200th hole

UDCMX Cemented Carbide 600 Holes Drilling ($\phi 1$)

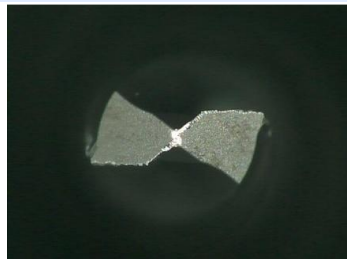


**Tool : 2-flute drill UDCMX 2100-100
($\phi 1$ x Flute length 10mm)**

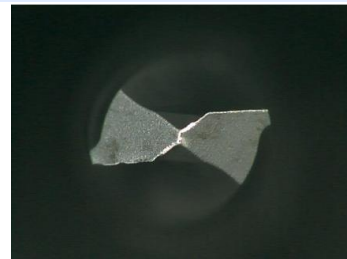
Work material : Cemented carbide VM-40 (90HRA)

Work size:
50 x 50 x t 10 mm

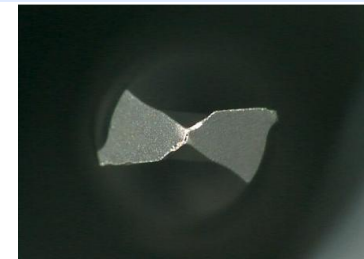
Drilling detail	Step drilling (100 holes / tool)	Single-shot drilling (100 holes / tool)	Single-shot drilling (200 holes / tool)
Spindle Speed (min^{-1})	5,000		
Feed Rate (mm/min)	7.5		
Peck amount (mm)	0.1	Single-shot	
Coolant	Air blow (Nozzle)		
Hole	Depth 8 mm x 600 blind holes		
Hole pitch	X 2.3 mm, Y 1.6 mm		
Cycle time	31 hr 10 min / 600 holes (3 min 7 sec / hole)	11 hr 40 min / 600 holes (1 min 10 sec / hole)	11hr 40min / 600 holes (1 min 10 sec / hole)
Qtys of used tool / 600 holes	6	6	3



Tool after 100 holes



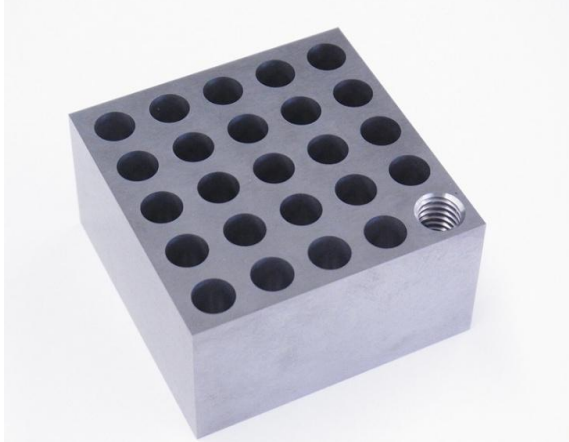
Tool after 100 holes



Tool after 200 holes

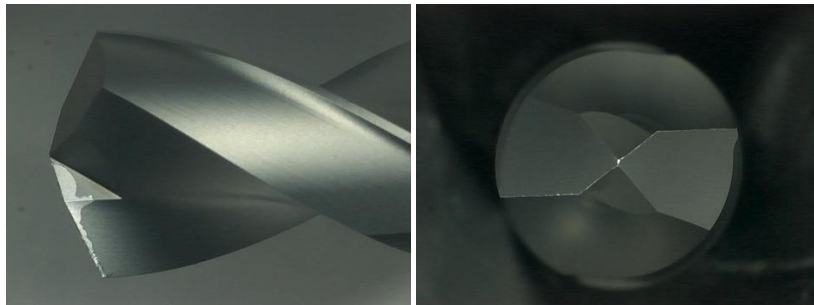
UDCMX Drilling Cemented Carbide

Drilling + Threading on Cemented Carbide UDCMX ($\phi 6.8$ x flute length 25mm) 25 holes + UDCT (M8) 1 hole



Work material:
Cemented carbide
VM-40 (90 HRA)

Work size:
50 x 50 x 25 mm



• **More tool life left after drilling 25 holes with UDCMX 6.8mm.**

• **MRV=17,000 mm³ within 1 hour**

Conditions		
Process	Single-shot drilling	Threading
Tool geometry	2-Flute Drill	2-Flute Thread Mill
Series / Size	UDCMX $\phi 6.8 \times 25$	UDCT M8xL24 (P1.25)
n (min ⁻¹)	4,000	3,500
Vf (mm/min)	12	20
Overhang L. (mm)	35	30
Coolant	Nozzle air blow	
Hole	Blind hole 20 mm depth x 25 holes	17.5 mm depth x 1 hole
Cycle time / hole	1 min 56 sec	5 min 36 sec