



SUMIDIA Coated Drills

SDC Type



General Features

SUMIDIA Coated SDC type drills for Carbon Fibre Reinforced Plastic (CFRP) employ Sumitomo Electric Hardmetal's proprietary multi-step point angle.

Combined with a diamond coating, this technology improves the quality of machined surfaces and extends tool life.

Characteristics and Applications

- Excellent drilled-hole quality
 - Sharp cutting edge shape reduces delamination of fibre layers and burrs.
 - Continuously changing point angle disperses load placed on cutting edge and prevents breakage.
- Long tool life
 - Use of high-strength diamond coating with excellent adhesion delivers high quality and long tool life.

Performance

Comparison of Machined Surface Finish				
Excellent Machined Face Quality (Prevents Delamination And Burrs)				
	SDC	Concurrent A	Concurrent B	Concurrent C
Hole Entrance				
Hole Exit				
Tool:	SUMIDIA coated drill SDC type, $\phi D=6,375$			
Work Material:	Competitor A B C's drill $\phi D=6,35$ & $\phi D=6,5$			
Cutting Conditions:	CFRP $n = 6.000\text{rpm}$, $f=0,1\text{mm/rev}$, $d_{oc}=28\text{mm}$ (Through) Dry			

Tool Life Comparison	
Effects of Diamond Coating	
SDC type (After drilling 600 holes)	Competitor's product (After drilling 50 holes)
No delamination Low flank wear	More delamination from cutting edge to flank

Stable diamond layer adhesion prevents delamination.

Excellent wear resistance enables high-quality drilling with long tool life.

SDC						
Competitor A's Diamond Coated Drill						
Carbide Drill						
	0	100	200	300	400	500
Hole	600					
Tool:	SUMIDIA coated drill SDC type, $\phi D=6,375$					
Work Material:	Competitor A B C's drill $\phi D=6,35$ & $\phi D=6,5$					
Cutting Conditions:	CFRP $n = 6.000\text{rpm}$, $f=0,1\text{mm/rev}$, $d_{oc}=28\text{mm}$ (Through) Dry					

Series

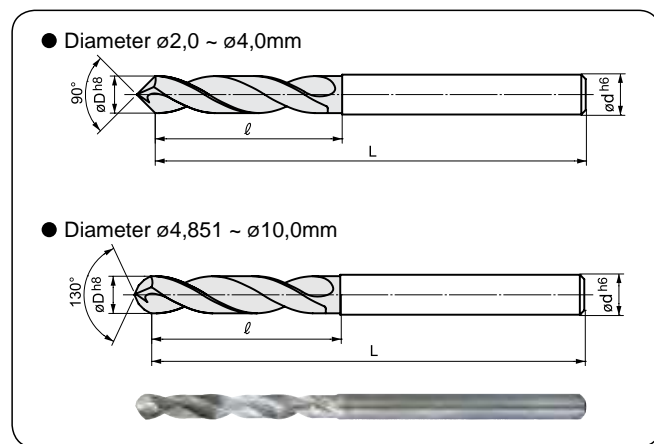
Type	Diameter Range (mm)	Point angle	Hole Depth (L/d)
MDS□□□□SDC3	$\phi 2,0 \sim \phi 4,0$	90°	~ 3
	$\phi 4,851 \sim \phi 10,0$	130°	

DCX20
Grade

SUMI-DIA
Coating

Structural Steel	Carbon Steel	Alloy Steel	Pre-hardened Steel	Tempered Die Steel	Hardened Steel	Stainless Steel	Ti Alloy / Heat Resistant Alloy	Cast Iron	Al Alloy	Cu Alloy	CFRP *
					45-55 HRC	55-60 HRC	60-65 HRC				

* CFRP (Carbon Fibre Reinforced Plastic)



● Diameter $\phi 2,0 \sim 10,0\text{mm}$

Dimensions		Cat. No.	Stock	3D Type	
ϕD (mm)	ϕd (mm)			L	ℓ
2,0	3,0	MDS 02000SDC3	□	49	12,5
2,489		02489SDC3	□		15,0
3,0		03000SDC3	□		17,5
3,3	3,3	MDS 03300SDC3	□	60	20,0
4,0	4,0	04000SDC3	□		22,5
4,851	4,851	MDS 04851SDC3	□	76	27,5
5,0	5,0	05000SDC3	□		30,0
5,6	5,6	MDS 05600SDC3	□	81	32,5
6,0	6,0	06000SDC3	□		35,0
6,375	6,375	MDS 06375SDC3	□	83	32,5
7,0	7,0	07000SDC3	□		35,0
7,938	7,938	MDS 07938SDC3	□	90	40,0
8,0	8,0	08000SDC3	□		45,0
9,0	9,0	MDS 09000SDC3	□	105	45,0
9,550	9,550	MDS 09550SDC3	□		50,0
10,0	10,0	10000SDC3	□		50,0

Recommended Cutting Conditions

ϕD	Cond.	Work	CFRP Only (Dry Machining)		Stacked Plates of CFRP, Aluminium Alloys (Dry Machining)	
			v_c	f	v_c	f
~ $\phi 6,0$			80 - 120 - 150	0,05 - 0,08 - 0,10	40 - 60 - 80	0,05 - 0,05 - 0,10
~ $\phi 10,0$			80 - 100 - 120	0,05 - 0,08 - 0,10	40 - 60 - 80	0,05 - 0,05 - 0,10

(v_c : Cutting Speed (m/min), f: Feed rate (mm/rev), Min - Optimum - Max)