



SUMIDIA COAT Drill SDC Type



General Features

SUMIDIA Coated SDC type drills for Carbon Fiber Reinforced Plastic (CFRP) employ the proprietary multi-step point angle. Combined with a diamond coating, this technology improves the quality of machined surfaces and extends tool life.

Series

Cat. No.	Diameter Range (mm)	Point angle (L/D)	Drilling Depth (L/D)
MDS□□□□□ SDC3 Type	ø2.0 to ø4.0	90°	Up to 3
	ø4.851 to ø10.0	130°	

Characteristics · 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 Finish [Prevents Delamination And Burrs]

	SDC Type	Comp. A Drill	Comp. B Drill	Comp. C Drill
Entrance				
Exit				

Tool: SUMIDIA Coated Drill SDC Type ø6.375, ø6.35, ø6.5
 Work Material: CFRP
 Cutting Conditions: $n=6,000\text{min}^{-1}$ $f=0.1\text{mm/rev}$ $H=28\text{mm}$ (Through) Dry

Tool Life Comparison

Effects of SUMIDIA Coat

SDC Type (After Drilling 600 Holes)	Comp. A (After Drilling 50 Holes)
No Delamination Low Flank Wear	More Delamination From Cutting Edge To Flank

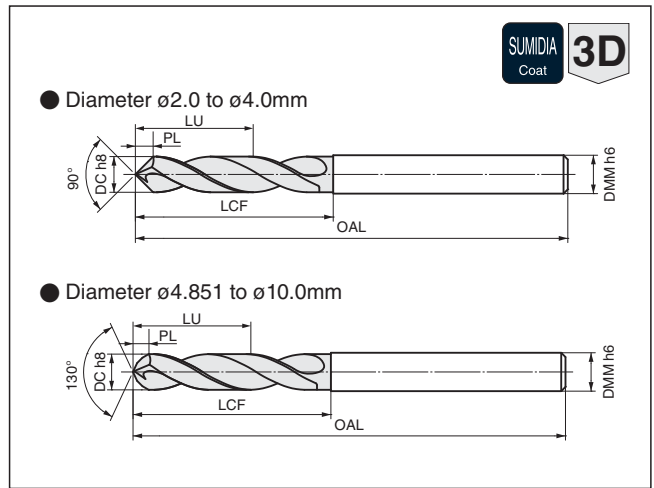
Stable diamond layer adhesion prevents delamination.
 Excellent wear resistance enables high-quality drilling with long tool life.

SDC Type	Comp. A Diamond Coated Drill	Carbide Drill

Tool: SUMIDIA Coated Drill ø6.375, ø6.35, ø6.5
 Work Material: CFRP
 Cutting Conditions: $n=6,000\text{min}^{-1}$ $f=0.075\text{mm/rev}$ $H=15\text{mm}$ (Through) Dry

External Coolant Supply

Carbon Steel	Alloy Steel	Tempered Steel	Hardened Steel	Stainless Steel	TI Alloy	Heat-resistant Steels	Cast Iron	Ductile Cast Iron	Aluminum Alloy	Copper Alloy	Composite CFRP
Up to 0.28%	From 0.28%	Steel	Up to 65HRC	From 45HRC					○		◎



Body Diameter ø2.0 to ø10.0mm

Diameter DC (mm)	Hole Depth (L/D)	Stock	Cat. No.	Dimensions (mm)				Shank DMM (mm)
				Effective Length LU	Flute Length LCF	Total length OAL	Tip PL	
2.0	3	●	MDS 02000SDC3	12.0	13.5	50.0	1.0	2.0
2.489	3	●	02489SDC3	14.4	16.2	50.2	1.2	2.489
3.0	3	●	03000SDC3	17.0	19.0	50.5	1.5	3.0
3.300	3	●	MDS 03300SDC3	18.6	21.7	61.7	1.7	3.300
4.0	3	●	04000SDC3	22.0	24.5	62.0	2.0	4.0
4.851	3	●	MDS 04851SDC3	24.9	28.6	77.1	1.1	4.851
5.0	3	●	05000SDC3	25.7	28.7	77.2	1.2	5.0
5.6	3	●	MDS 05600SDC3	28.5	31.3	82.3	1.3	5.6
6.0	3	●	06000SDC3	30.4	31.4	82.4	1.4	6.0
6.375	3	●	MDS 06375SDC3	32.2	34.0	84.5	1.5	6.375
7.0	3	●	07000SDC3	35.1	36.6	84.6	1.6	7.0
7.938	3	●	MDS 07938SDC3	39.6	41.9	91.9	1.9	7.938
8.0	3	●	08000SDC3	39.9	41.9	91.9	1.9	8.0
9.0	3	●	MDS 09000SDC3	44.6	47.1	100.1	2.1	9.0
9.550	3	●	MDS 09550SDC3	47.2	52.2	107.2	2.2	9.550
10.0	3	●	10000SDC3	49.3	52.3	107.3	2.3	10.0

Grade: DCX20

Recommended Cutting Conditions (v_c : Cutting Speed m/min f : Feed Rate mm/rev)

Drill Diameter DC (mm)	Conditions	CFRP Only (Dry Machining)	Stacked Plates of CFRP and Aluminum Alloys (Dry Machining)
		Up to ø6.0	v_c 80 - 120 - 150 f 0.05 - 0.08 - 0.10
Up to ø12.0	v_c	80 - 100 - 120	40 - 60 - 80
	f	0.05 - 0.08 - 0.10	0.05 - 0.05 - 0.10

Min. - Optimum - Max.

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Drilling

Solid

Special

Indexable

Reamer

Brazed

Others

DAL / DDL Type

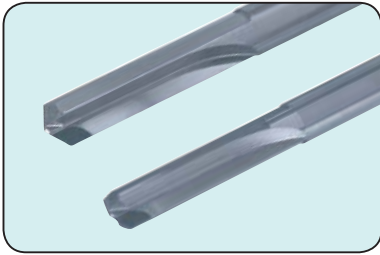
DAL Type



DDL Type



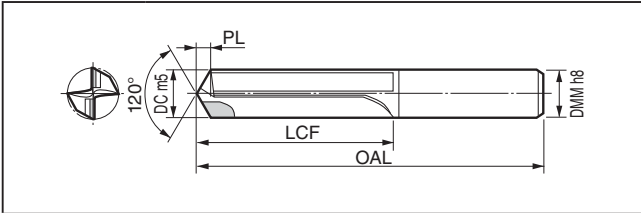
Carbon Steel	Alloy Steel	Tempered Steel	Hardened Steel	Stainless Steel	Ti Alloy	Heat-resistant Steels	Cast Iron	Ductile Cast Iron	Aluminum Alloy	Copper Alloy	Composite CFRP	PCD	3D
Up to 0.28%	From 0.28%		Up to 45HRC	From 46HRC									



From General to High Precision Drilling of Aluminum Alloys!

- High precision DAL type is able to produce holes of IT Class of 7 to 8.
- General DDL type is able to produce holes of IT class of 11 to 12, mainly for drilling of pre-tap holes.

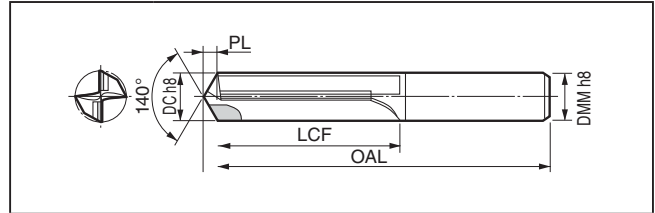
■ DAL Type



Grade	SUMIDIA	P Steel	M Stainless Steel		
Application	High Speed/Light	K Cast Iron	N Non-Ferrous Metal		
	General Purpose	S Exotic Alloy	H Hardened Steel		
	Roughing				
Cat. No.	DA2200	Diameter (Shank Diameter) DC(DMM)	Flute Length LCF	Total length OAL	Tip PL
DAL 0500H to 0600H		$\phi 5 < DC \leq \phi 6$	31.6	81.6	1.6
0601H to 0700H		$\phi 6 < DC \leq \phi 7$	36.9	91.9	1.9
0701H to 0800H		$\phi 7 < DC \leq \phi 8$	37.2	92.2	2.2
0801H to 0900H		$\phi 8 < DC \leq \phi 9$	42.5	102.5	2.5
0901H to 1000H		$\phi 9 < DC \leq \phi 10$	42.8	102.8	2.8
1001H to 1100H		$\phi 10 < DC \leq \phi 11$	53.1	113.1	3.1
1101H to 1200H		$\phi 11 < DC \leq \phi 12$	53.4	113.4	3.4

Note: Ordering number for (ex.) $\phi 6.05$ mm drill is DAL0605H.

■ DDL Type



Grade	SUMIDIA	P Steel	M Stainless Steel		
Application	High Speed/Light	K Cast Iron	N Non-Ferrous Metal		
	General Purpose	S Exotic Alloy	H Hardened Steel		
	Roughing				
Cat. No.	DA2200	Diameter (Shank Diameter) DC(DMM)	Flute Length LCF	Total length OAL	Tip PL
DDL 050V to 060V		$\phi 5 \leq DC \leq \phi 6$	31.5	81.0	1.0
061V to 070V		$\phi 6 < DC \leq \phi 7$	36.2	91.2	1.2
071V to 080V		$\phi 7 < DC \leq \phi 8$	36.4	91.4	1.4
081V to 090V		$\phi 8 < DC \leq \phi 9$	41.6	101.6	1.6
091V to 100V		$\phi 9 < DC \leq \phi 10$	41.7	101.7	1.7
101V to 110V		$\phi 10 < DC \leq \phi 11$	51.9	111.9	1.9
111V to 120V		$\phi 11 < DC \leq \phi 12$	52.1	112.1	2.1

Note: Ordering number for (ex.) $\phi 10.5$ mm drill is DDL105V.

■ Recommended Cutting Conditions

v_c : Cutting Speed (m/min) f : Feed Rate (mm/rev)

Diameter DC (mm)	Conditions	DAL Type	DDL Type	Depth	Oil
Up to $\phi 8.0$	v_c	80 - 100 - 150	150 - 200 - 250	L/D=Below 3	Emulsion
	f	0.05 - 0.1 - 0.15	0.1 - 0.15 - 0.25		
Up to $\phi 12.0$	v_c	80 - 100 - 150	150 - 200 - 250		
	f	0.08 - 0.13 - 0.2	0.15 - 0.2 - 0.3		

Min. - Optimum - Max.

■ Important Notes

- Select a high rigidity machine and high precision holder for high precision DAL type.
- Enough coolant to drilled hole.

Solid

Special

Indexable

Reamer

Brazed

Others