

# SUMIDIA DA1000



Super Hard Grade for Machining of Aluminium-Alloy  
Excellent Performance, High Accuracy, High Efficiency



 **SUMITOMO**

CARBIDE - CBN - DIAMOND

# SUMIDIA DA1000



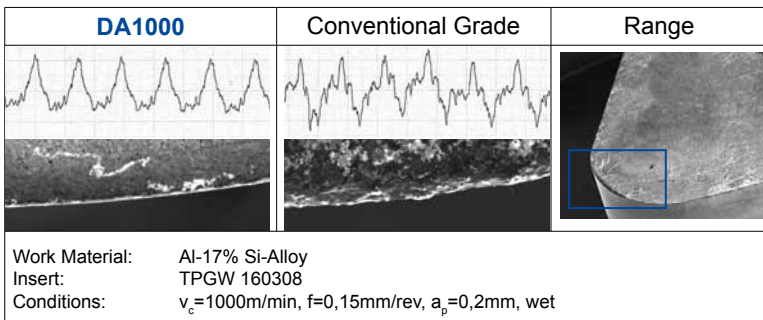
## General Features

- SumiDia DA1000 is a high density, ultra-fine grained sintered PCD with high toughness similar to that of carbide.
- Excellent micro cutting edge geometry, optimum wear and fracture resistance facilitate high performance, longer tool life and achieve high efficiency machining especially during milling of all aluminium alloys.
- Significantly improved surface roughness on machined surfaces and minimization of burr formation on workpiece.
- The NF type inserts make it even more cost effective.

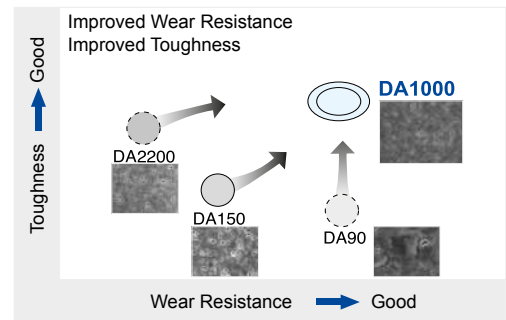
## Series - Characteristics - Application

Grade	Characteristics	Application	Grain Size (µm)	Hardness (Hv)	TRS (kg/mm <sup>2</sup> )
DA1000	High density sintered material made of ultra-fine diamond particles that demonstrates optimum wear and fracture resistance, and excellent edge sharpness.	- High-Silicon Aluminium Alloy Cutting - Rough, Interrupted and Finishing of Al-Alloy - Wood or Wooden Board Cutting - Non-Ferrous Metal Finishing (Al, Copper Alloy)	~ 0,5	110 ~ 120	≈ 2,6
DA2200	Sintered material made of ultra-fine diamond particles that demonstrates optimum wear and fracture resistance and excellent edge sharpness.	- Rough, Interrupted and Finishing of Al-Alloy - Wood or Wooden Board Cutting	0,5	90 ~ 100	≈ 2,45
DA150	Micro-grained sintered diamond grade with strong diamond-to-diamond bonding. It is suitable for the machining of non-ferrous metals and other very hard materials.	- Non-Ferrous Metal finishing (Al, Copper Alloy) - Carbide or Semi-Sintered Carbide&Ceramic Roughing - FRP, Hard Rubber & Carbon Cutting - Wooden or Inorganic Material Board Cutting	5	100 ~ 120	≈ 1,95

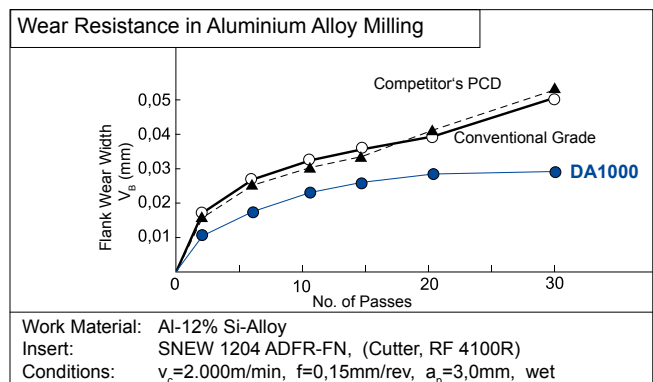
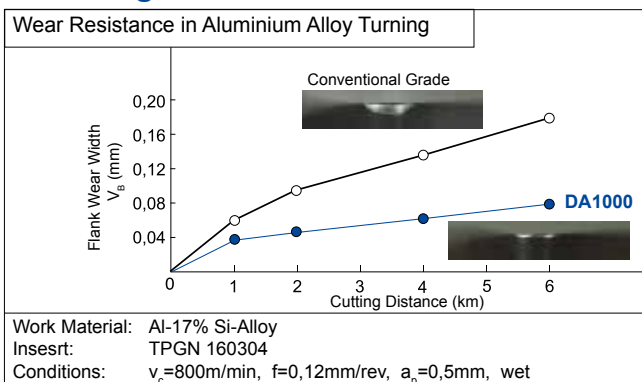
## Comparison of Cutt. Edges after Machining Al-Alloy



## Position of DA1000



## Cutting Performance



## Recommended Cutting Conditions

Conditions	Work Material	Aluminium Alloys	Copper Alloys	Reinforced Plastics	Wood or Organic Materials	Carbide	Carbon
		Aluminium Alloys	Copper Alloys	Reinforced Plastics	Wood or Organic Materials	Carbide	Carbon
Cutting Speed	v <sub>c</sub> (m/min)	~ 3.000	~ 1.000	~ 1.000	~ 4.000	10 ~ 30	100 ~ 600
Feed Rate	f (mm/rev)	~ 0,2	~ 0,2	~ 0,4	~ 0,4	~ 0,2	~ 1,0
Depth of Cut	a <sub>p</sub> (mm)	~ 3,0	~ 3,0	~ 2,0	-	~ 0,5	~ 2,0

## Application Range

### Aluminium Alloy

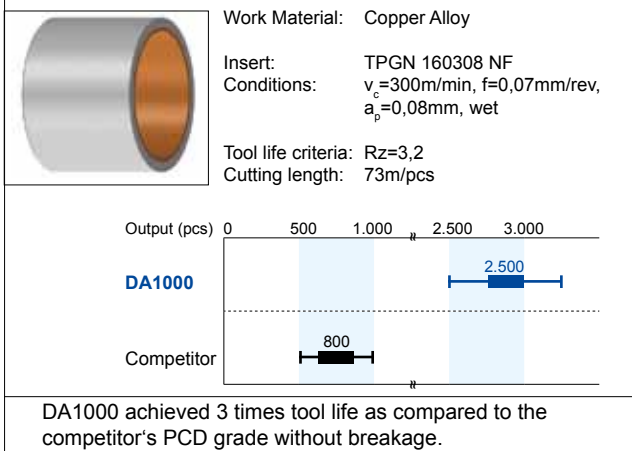
Machinability	Work Material	Turning		Milling	Example Parts
		Roughing	Finishing		
Good ↑ ↓ Difficult	Sintered Aluminium				Piston Liner
	Die Cast Aluminium (ADC12)				Transmission Case, Oil Pan, Cylinder Block, AI-Wheel
	Low Silicon (AC2B-T6, AC4C-T6)				Cylinder Head
	High Silicon (T6)				Cylinder Block

### Non-Aluminium Alloy

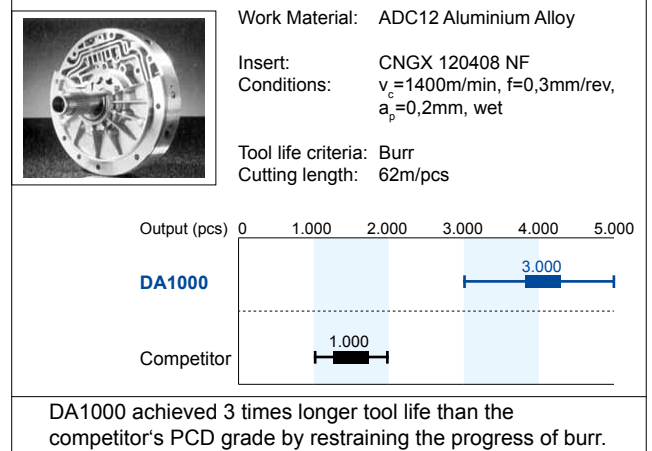
Machinability	Work Material	Turning		Milling	Example Parts
		Roughing	Finishing		
Good ↑ ↓ Difficult	Non-Ferrous Sintered Alloy				Bush
	Gunmetal Carbon				Connecting Rod
	Carbide				Roll
	Fe Combined				Cylinder Block, Bearing Cap

## Application Example

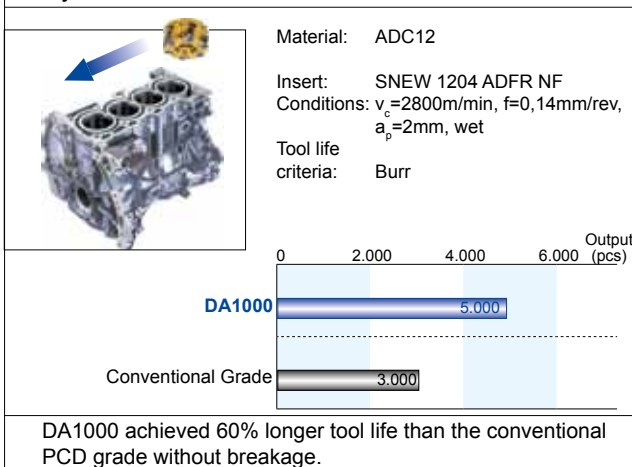
### Bush



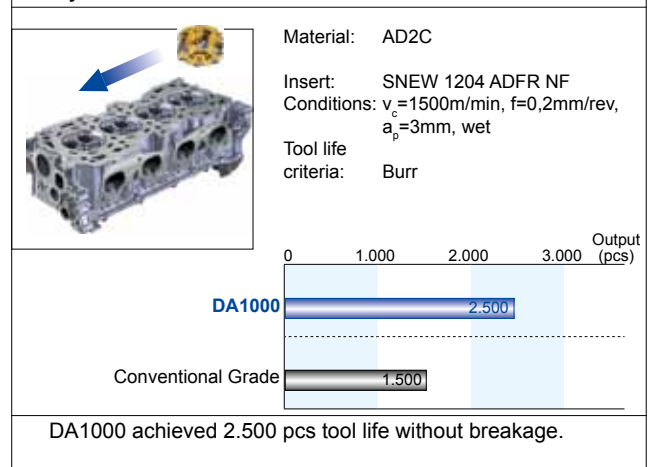
### Oil Pump Cover



### Cylinder Block

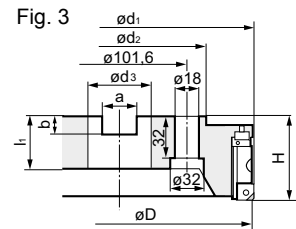
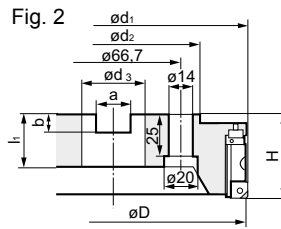
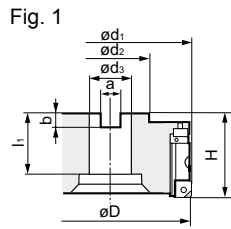


### Cylinder Head



# SUMIDIA DA1000

## High Speed Finishing of Aluminium Alloy



## Body

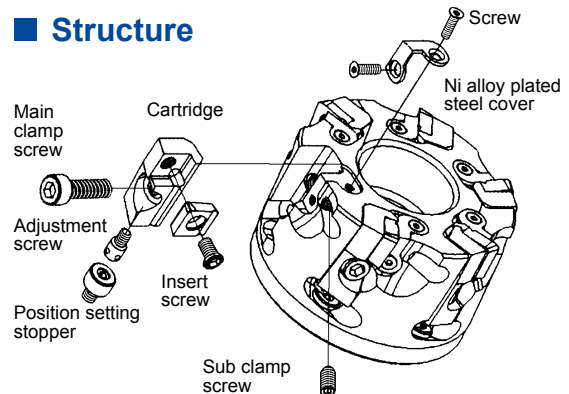
Type	Cat. No.	Stock	Dimensions (mm)				Mounting				Number of Teeth	Max. Depth of Cut	Weight (kg)	Fig.
			$\phi D$	$\phi d_1$	$\phi d_2$	H	$\phi d_3$	a	b	$l_1$				
RF 4000	RF 4080 R-S	●	80	82	60	50	27	12,4	7,0	29	6	3,0	0,7	1
	RF4100 R-S	●	100	102	75	50	32	14,4	8,5	29	6		1,0	
	RF 4125 R-S	●	125	127	75	63	40	16,4	9,5	29	8		1,6	
	RF4160 R-S	○	160	162	100	63	40	16,4	9,5	29	10	2,6	2	
	RF 4200 R-S		200	202	130	63	60	25,7	14,0	38	12	3,6	3	
	RF 4250 R-S		250	252	130	63	60	25,7	14,0	38	16	6,0		
RF 4315 R-S		315	317	240	80	60	25,7	14,0	40	18	11,0			

Remarks: PCD blades and inserts are not included.

## Insert for Roughing and Finishing

Shape	Cat. No.	Grade	Stock
	SDET 1204 ZDFR	H1	●
	SNEW 1204 ADFR-NF	DA1000 DA2200	○ □
	SNEW 1204 ADFR-W-NF	DA1000 DA2200	○ □

## Structure



## „Sumidia“ Blade

PCD grade	Cat. No.	Stock
DA2200		
	RFB	○
	RFBW	○

## Cartridge

Shape	Cat. No.	Stock
	RFR	●
	RFF	●

## Cutting Insert Selection

### For easy assembling

PCD Blade: RFB  
PCD Blade: RFB (Wiper type)

### For finishing

Cartridge: RFF  
PCD-Blade: SNEW 1204 ADFR-NF (standard type)  
SNEW 1204 ADFR-W-NF (wiper-type)  
Grade: DA2200

### For roughing

Cartridge: RFR  
Uncoated carbide insert  
SDET 1204 ZDFR, grade: H1

## Dummy Blade

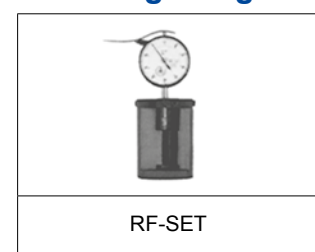
Shape	Cat. No.	Stock
	RFD	○

- Euro stock
- Japan stock
- Delivery on request

## Spare Parts

Cover	Position setting stopper	Main clamp screw	Sub clamp screw	Cover clamp screw	Adjustment screw	Insert clamp screw	Hex wrench	Torque wrench
RFC	RFS	BX0620	BTD0510	FBUP2-A0-8	RFJ	BFTX0509N	TH015 TH025 TH050	TTX20

## Setting Gauge



Dial-gauge is not included.

# SUMIDIA

## DA1000

### ■ Inserts, Neg.-Pos. Type

Shape	Cat. No.	Dimension (mm)				
		ød (IC)	S	Hole Size	Nose Radius	ℓ
	NF-CNMX120402 ●	12,7	4,76	5,16	0,2	5,7
	120404 ●				0,4	5,7
	120408 ●				0,8	5,6
	120412 ○				1,2	5,4
	NF-DNMX150402 ○	12,7	4,76	5,16	0,2	6,4
	150404 ○				0,4	6,2
	150408 ○				0,8	5,8
	150412 ○				1,2	5,4
	NF-TNMX160402 ○	9,525	4,76	3,81	0,2	3,7
	160404 ○				0,4	3,6
	160408 ○				0,8	3,3
	NF-VNMX160402 ○	9,525	4,76	3,81	0,2	6,9
	160404 ○				0,4	6,4
	160408 ●				0,8	5,6
	160412 ○				1,2	4,7

### ■ Inserts, Positive Type

Shape	Cat. No.	Dimension (mm)				
		ød (IC)	S	Hole Size	Nose Radius	ℓ
	NF-CCMT060201 ●	6,35	2,38	2,8	0,1	2,8
	060202 ●				0,2	2,8
	060204 ●				0,4	2,8
	NF-CCMT09T301 ●	9,525	3,97	4,4	0,1	2,8
	09T302 ●				0,2	2,8
	09T304 ●				0,4	2,8
	09T308 ●				0,8	2,7
	NF-CPMT090302 ○	9,525	3,18	4,4	0,2	2,8
	090304 ○				0,4	2,8
	090308 ●				0,8	2,7
	NF-DCMT070201 ●	6,35	2,38	2,8	0,1	3,0
	070202 ●				0,2	3,0
	070204 ●				0,4	2,8
	NF-DCMT11T301 ●	9,525	3,97	4,4	0,1	3,0
	11T302 ●				0,2	3,0
	11T304 ●				0,4	2,8
	11T308 ●				0,8	2,4
	NF-SCMT070201 ○	7,94	2,38	3,4	0,1	3,0
	070202 ○				0,2	3,0
	070204 ○				0,4	3,0
	NF-SEGN090302 ○	9,525	3,18	-	0,2	4,8
	120302 ○	12,7			0,2	4,8
	NF-SPGN090304 ○	9,525	3,18	-	0,4	4,8
	090308 ○				0,8	4,8
	NF-SPGN120304 ○	12,7	3,18	-	0,4	4,8
	120308 ○				0,8	4,8
	NF-TBNG060102 ●	3,97	1,59	-	0,2	2,1
	060104 ●				0,4	2,0

### ■ Inserts, Positive Type

Shape	Cat. No.	Dimension (mm)				
		ød (IC)	S	Hole Size	Nose Radius	ℓ
	NF-TBGW060102 ●	3,97	1,59	2,2	0,2	2,3
	060104 ●				0,4	2,2
	NF-TCMT090202 ●	5,56	2,38	2,5	0,2	2,9
	090204 ●				0,4	2,8
	NF-TCMT110201 ●	6,35	2,38	2,8	0,1	3,0
	110202 ●				0,2	2,9
	110204 ●				0,4	2,8
	NF-TEGN110202 ○	6,35	2,38	-	0,2	3,1
	110204 ○				0,4	2,9
	NF-TEGN110302 ○	6,35	3,18	-	0,2	3,1
	110304 ○				0,4	2,9
	110308 ○				0,8	2,7
	NF-TEGN160302 ○	9,525	3,18	-	0,2	3,0
	160304 ○				0,4	2,9
	NF-TEGN110304P ○	6,35	3,18	-	0,4	10,4
	110308P ○				0,8	9,8
	NF-TEGN160304P ○	6,35	3,18	-	0,4	15,9
	NF-TPGN090202 ○	5,56	2,38	-	0,2	3,1
	090204 ○				0,4	3,0
	090208 ○				0,8	2,7
	NF-TPGN110302 ○	6,35	3,18	-	0,2	3,0
	110304 ●				0,4	2,9
	110308 ●				0,8	2,7
	NF-TPGN160302 ●	9,525	3,18	-	0,2	3,0
	160304 ●				0,4	2,9
	160308 ●				0,8	2,7
	NF-TPGN110304P ○	6,35	3,18	-	0,4	10,4
	110308P ○				0,8	9,8
	NF-TPGN160304P ●	9,525	3,18	-	0,4	15,9
	NF-TPGW080201 ○	4,76	2,38	2,4	0,1	3,1
	080202 ●				0,2	3,0
	080204 ●				0,4	2,9
	NF-TPGW090202 ○	5,56	2,38	2,8	0,2	3,1
	090204 ○				0,4	2,9
	NF-TPGW110201 ○	6,35	2,38	2,8	0,1	3,1
	110202 ●				0,2	3,0
	110204 ●				0,4	2,9
	NF-TPGW110301 ○	6,35	3,18	3,4	0,1	3,1
	110302 ●				0,2	3,0
	110304 ●				0,4	2,9
	110308 ●				0,8	2,7

● Euro stock

○ Japan stock

