

# SUMIDIA DA1000



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



 **SUMITOMO**

CARBIDE - CBN - DIAMOND

# SUMIDIA DA1000



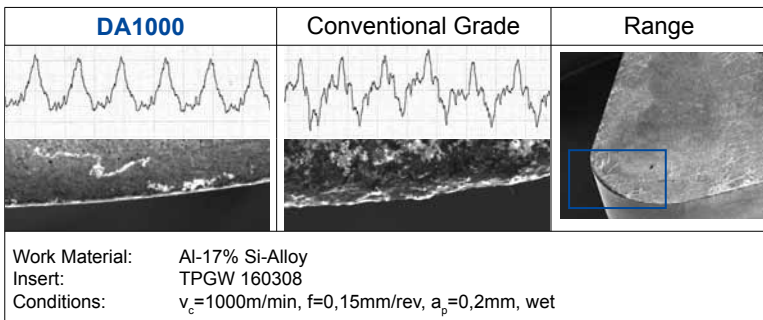
## General Features

- 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.

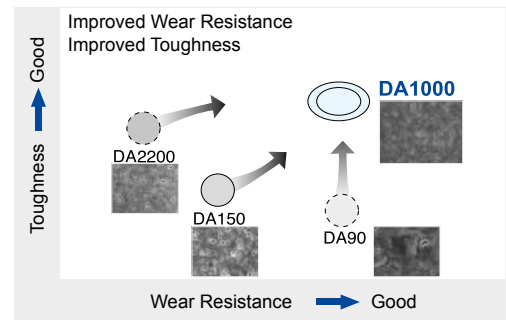
## Series - Characteristics - Application

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

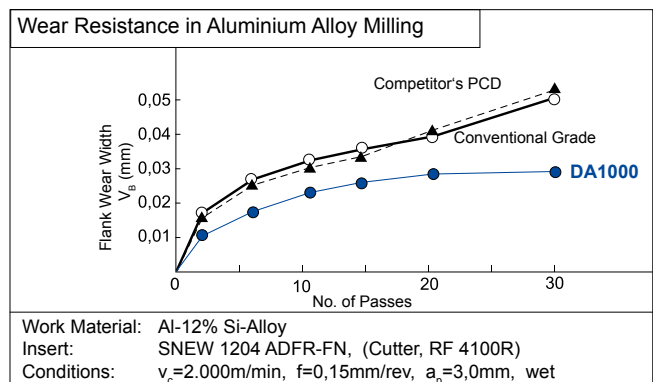
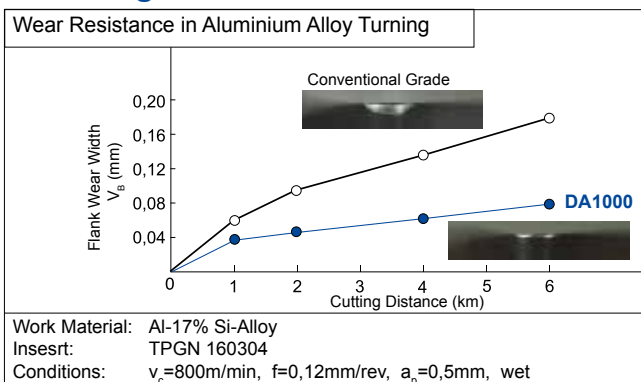
## Comparison of Cutt. Edges after Machining Al-Alloy



## Position of DA1000



## Cutting Performance



## Recommended Cutting Conditions

Conditions	Work Material	Aluminium Alloys	Copper Alloys	Reinforced Plastics	Wood or Organic Materials	Carbide	Carbon
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

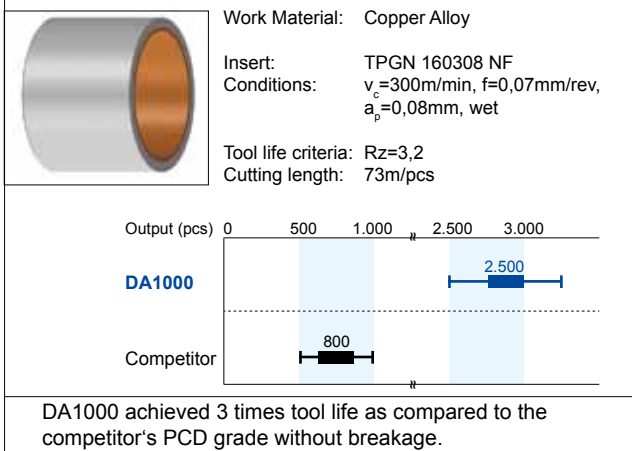
Machinability	Work Material	Turning		Milling	Example Parts
		Roughing	Finishing		
Good ↑ ↓ Difficult	Sintered Aluminium				Piston Liner
	Die Cast Aluminium (ADC12)				Transmission Case, Oil Pan, Cylinder Block, AI-Wheel
	Low Silicon (AC2B-T6, AC4C-T6)				Cylinder Head
	High Silicon (T6)				Cylinder Block

### Non-Aluminium Alloy

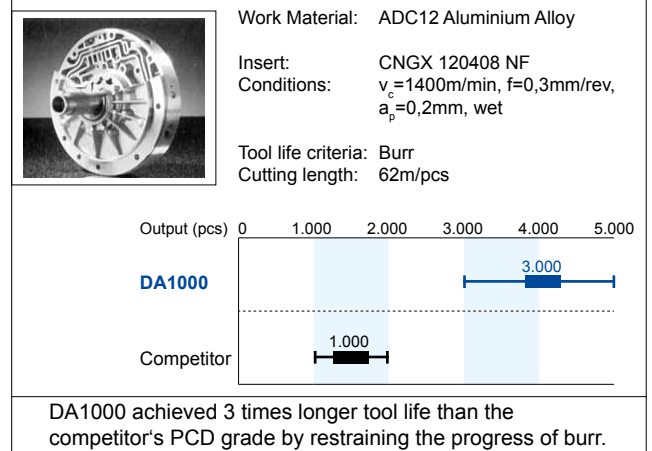
Machinability	Work Material	Turning		Milling	Example Parts
		Roughing	Finishing		
Good ↑ ↓ Difficult	Non-Ferrous Sintered Alloy				Bush
	Gunmetal Carbon				Connecting Rod
	Carbide				Roll
	Fe Combined				Cylinder Block, Bearing Cap

## Application Example

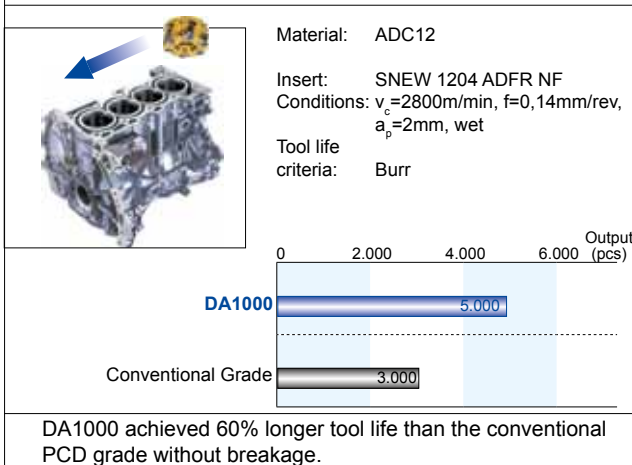
### Bush



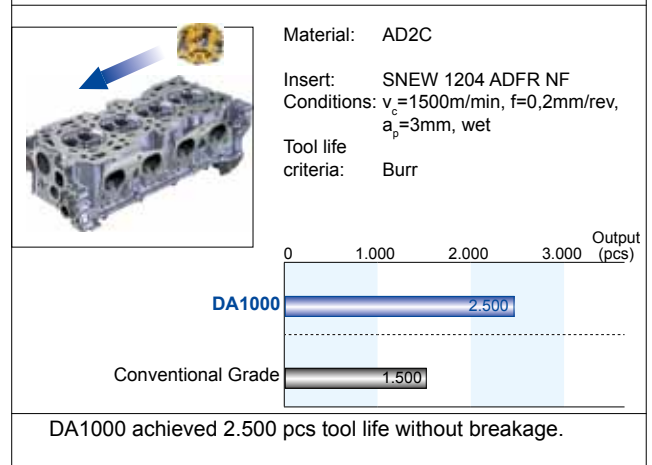
### Oil Pump Cover



### Cylinder Block

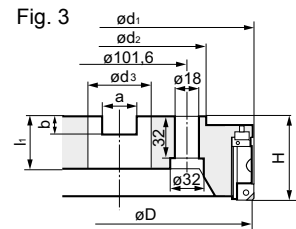
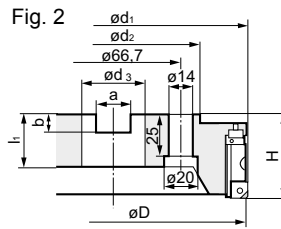
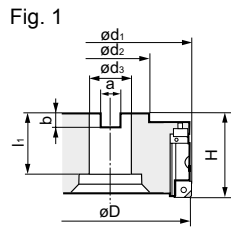


### Cylinder Head



# SUMIDIA DA1000

## High Speed Finishing of Aluminium Alloy



## Body

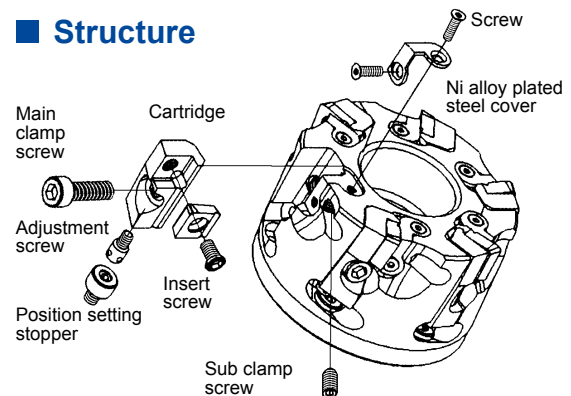
Type	Cat. No.	Stock	Dimensions (mm)				Mounting				Number of Teeth	Max. Depth of Cut	Weight (kg)	Fig.
			$\phi D$	$\phi d_1$	$\phi d_2$	H	$\phi d_3$	a	b	$l_1$				
RF 4000	RF 4080 R-S	●	80	82	60	50	27	12,4	7,0	29	6	3,0	0,7	1
	RF4100 R-S	●	100	102	75	50	32	14,4	8,5	29	6		1,0	
	RF 4125 R-S	●	125	127	75	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

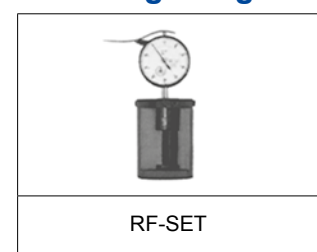
Shape	Cat. No.	Stock
	RFD	○

- 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



## Inserts, Positive Type

Shape	Cat. No.	Dimension (mm)					
		ød (IC)	S	Hole Size	Nose Radius	ℓ	
	NF-TPGW160302	○	9,525	3,18	4,4	0,2	3,1
	160304	○				0,4	2,9
	160308	○				0,8	2,7
	NF-TPGW160401	○	9,525	4,76	4,4	0,1	3,1
	160402	●				0,2	3,0
	160404	●				0,4	2,9
	160408	●				0,8	2,7
	NF-VCMT110301	●	6,35	3,18	2,8	0,1	3,5
	110302	●				0,2	3,4
	110304	●				0,4	3,0
	NF-VCMT160404	●	9,525	4,76	4,4	0,4	6,5
	160408	●				0,8	5,6
	160412	●				1,2	4,6
	NF-WBMT060101L	○	3,97	1,59	2,2	0,1	1,8
	060102L	●				0,2	1,8
	060104L	●				0,4	1,7

- Euro stock
- Japan stock

## Inserts for Milling

Shape	Cat. No.	Dimension (mm)					Applicable Cutter
		ød (IC)	T	Hole Size	ℓ		
	NF-SDC 42R	○	12,7	3,18	-	3,0	APG
	NF-SDKN 42M	○	12,7	3,18	-	3,0	FPG FPE
	NF-SECW13T3AGTN-N	○	12,7	3,97	-	2,1	WGC
	NF-SNEW09T3ADTR	○	9,525	3,96	4,4	6	SRF
	09T3ADTR-R	○					
	09T3ADTR-U	○					
	NF-SNEW1204ADFR	●	12,7	4,76	5,5	4,7	RF
	1204ADTFR-W	●					
	NF-TEEN22R	○	6,35	3,18	-	3,0	CHG CHE
	32R	○	9,525	3,18	-		
	43R	○	12,7	4,76	-		
	NF-XEEW13T3AGFR-W	○	13,4	3,97	4,4	2,5	WGC



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