June 2016
www.taegutec.com
10 YEARS
1/8

NEW PRODUCT NEWS

CFRP

new

New Solutions for Composite Materials Machining

TaeguTec
Member IMC Group

KEY POINT

With the increasing application of composite materials in the market, TaeguTec is pleased to supply new PCD milling inserts, diamond coated solid carbide end mills and drills for effective machining of composite materials.

In recent years, the demand for strong, light weight materials from industries ranging from aerospace, motorsport to power generation, has led to the development and implementation of composite materials.

Composites, such as CFRP (Carbon Fiber Reinforced Plastic) are 70 percent lighter than steel and 40 percent less than aluminum alloy. For aerospace, in particular, CFRP is very popular because the reduced weight means higher fuel efficiency.

In various industrial fields such as automotive, wind power energy and recreation industries, the advantages of using composite materials are better effectiveness due to lighter weight and superior stability over their conventional counterparts.

These new tooling solutions satisfy the unique cutting conditions of difficult materials as they have been designed to combine the specific grade, required geometry and high technology diamond coating for processing composite materials.

Features

PCD type indexable inserts

- Specially designed PCD inserts that prevent surface delamination of composite materials

Diamond coated solid carbide end mills

RRFE type

- Splitter router
- Eliminates delamination
- Low cutting force and less vibration
- High productivity for roughing applications

RCFE type

- Multi flute router
- Eliminates delamination
- Low cutting force and less vibration
- High productivity for roughing applications

RCOM type
- Left & Right hand helix type
- Eliminates delamination
- For finishing applications

RDCF type
- Eliminates delamination and splintering
- For finishing applications
- Low helix type

Diamond coated solid carbide drills
- Eliminates delamination during through hole machining

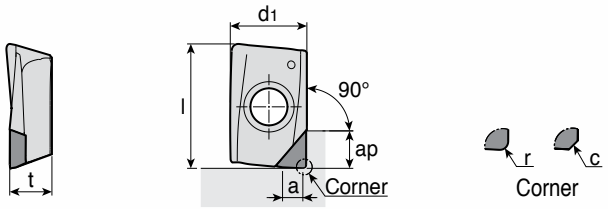
New grades
TD830
- Ultra-fine diamond grit size PCD grade
- Excellent wear resistance, edge strength and edge quality
- Excellent abrasion resistance and good thermal stability

TTD610
- Advanced nano diamond coating provides longer tool life and stability of machining
- Excellent abrasive wear resistance (Hardness: over Hv 8000)
- Highest thermal conductivity, impact resistance and processing stability

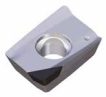
APCT

CHASEMILL

Insert



Size	Dimension (mm)						
	l	d1	t	ap	a	r	c
12...	13.3	8.2	4.5	3.5	2	0.4	-
12...C	13.3	8.2	4.5	3.5	2.1	-	0.25

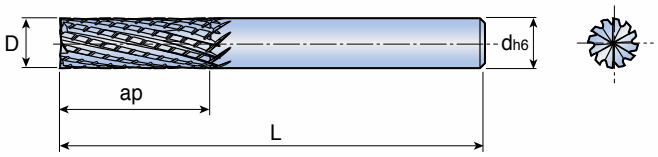
Insert	Designation	Recommended machining conditions		Grade
		Feed (mm/tooth)	ap (mm)	TD830
	**APCT 120404R-PCD35**	0.05-0.30	0.2-3.0	●
	1204C025-PCD35	0.05-0.30	0.2-3.0	●

● : Standard items

RRFE

DIAMILL

Roughing for composite materials



H·A 15°

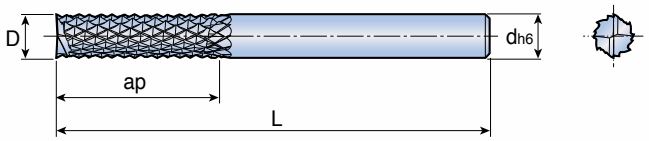
D	Tolerance
4 ≤ D ≤ 12	-0.02 - -0.08

Designation		Feed (mm/tooth)	Dimension (mm)					Grade
			⌀	D	L	ap	d	TTD610
RRFE	040	0.01-0.02	6	4	50	12	4	●
	060	0.01-0.02	8	6	65	18	6	●
	080	0.01-0.03	10	8	75	24	8	●
	100	0.02-0.04	12	10	85	30	10	●
	120	0.02-0.05	12	12	100	36	12	●

● : Standard items

RCFE

Roughing for composite materials



H·A 28°

D	Tolerance
4 ≤ D ≤ 12	-0.02 - -0.08

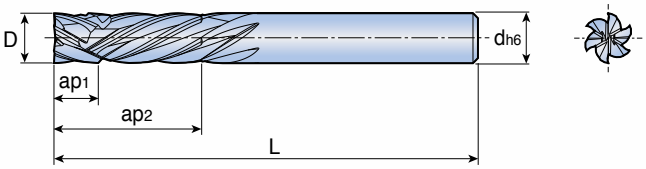
Designation		Feed (mm/rev)	Dimension (mm)				Grade
			D	L	ap	d	TTD610
RCFE	040	0.03-0.06	4	50	12	4	●
	060	0.07-0.15	6	65	18	6	●
	080	0.10-0.20	8	75	24	8	●
	100	0.15-0.30	10	85	30	10	●
	120	0.20-0.40	12	100	36	12	●

● : Standard items

RCOM

DIAMILL

4-6 flute finishing for composite materials



4-6 H·A 30°

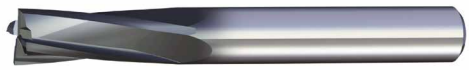
D	Tolerance
6 ≤ D ≤ 12	-0.02 - -0.04

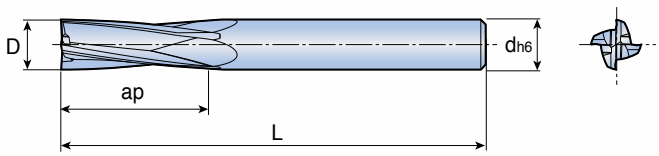
Designation		Feed (mm/tooth)	Dimension (mm)						Grade
			⌀	D	L	ap1	ap2	d	TTD610
RCOM	4060	0.02-0.04	4	6	65	3	18	6	●
	4080	0.02-0.05	4	8	75	4	24	8	●
	6100	0.03-0.06	6	10	85	5	30	10	●
	6120	0.04-0.08	6	12	100	6	36	12	●

● : Standard items

RDCF 4

4 flute finishing for composite materials





4 H·A 10°

D	Tolerance
4 ≤ D ≤ 12	-0.02 - -0.04

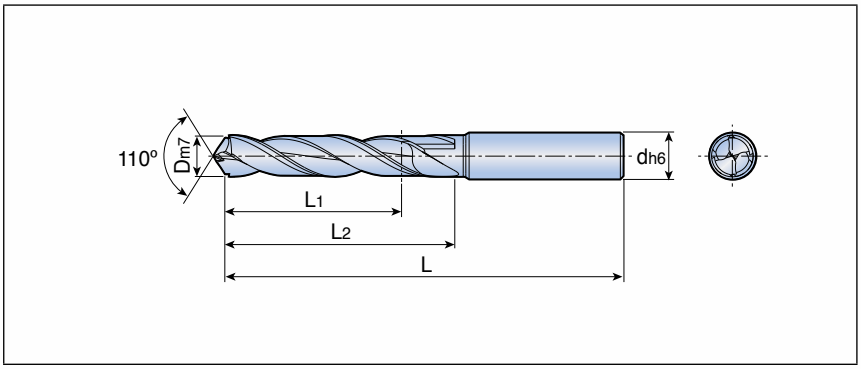
Designation		Feed (mm/tooth)	Dimension (mm)				Grade
			D	L	ap	d	TTD610
RDCF	4040	0.01-0.03	4	50	12	4	●
	4060	0.02-0.04	6	65	18	6	●
	4080	0.03-0.05	8	75	24	8	●
	4100	0.04-0.06	10	85	30	10	●
	4120	0.04-0.08	12	100	36	12	●

● : Standard items

CDF

H-DRILL

Solid carbide drill for composite materials



Designation		Dimension (mm)						Grade
		D (Metric)	D (Inch)	d	L	L_1	L_2	TTD610
CDF	030-027-06	3	-	6	72	27	33	●
	040-027-06	4	-	6	72	27	34	●
	0476-034-06	4.76	3/16	6	80	34	42	●
	050-034-06	5	-	6	80	34	42	●
	060-034-06	6	-	6	80	34	42	●
	0635-040-08	6.35	-	8	88	40	50	●
	070-040-08	7	-	8	88	40	50	●
	0794-040-08	7.94	5/16	8	88	40	50	●
	080-040-08	8	-	8	88	40	50	●
	090-045-10	9	-	10	99	45	57	●
	0952-045-10	9.52	3/8	10	99	45	57	●
	100-045-10	10	-	10	99	45	57	●
	110-052-12	11	-	12	114	52	67	●
	1111-052-12	11.11	7/16	12	114	52	67	●
	120-052-12	12	-	12	114	52	67	●
	127-055-14	12.7	1/2	14	119	55	72	●

● : Standard items

Recommended Cutting Conditions

Machining data for composite materials and plastics

CHASEMILL

Material	Cutting speed Vc(m/min)	Feed(mm/tooth)	ap(mm)
CFRP	100-1000	0.10-0.20	0.2-3.0
GFRP	100-800	0.05-0.20	0.2-3.0
Plastics	100-1500	0.10-0.40	0.2-3.0

Machining data for composite materials

DIAMILL

Material		Cutting speed Vc(m/min)							
		RRFE		RCFE		RCOM		RDCF	
		Shouldering	Slotting	Shouldering	Slotting	Shouldering	Slotting	Shouldering	Slotting
CFRP	CFRP	100-300	50-120	100-300	50-120	50-200	50-120	100-300	50-120
	Honeycomb	150-250	100-200	150-250	100-200	-	-	-	-
GFRP	GFRP	50-150	30-70	50-150	30-70	50-100	30-70	50-150	30-70
	Honeycomb	150-250	100-200	150-250	100-200	-	-	-	-

Machining data for composite materials

H-DRILL

Material	Tensile strength (N/mm^2)	Hardness HB	Cutting speed Vc(m/min)	Feed (mm/rev) vs. drill diameter			
				Ø3.0 - Ø6.0	Ø6.1- Ø8.0	Ø8.1- Ø10.0	Ø10.1- Ø12.7
CFRP	420	125	50-150	0.02-0.07	0.03-0.08	0.03-0.08	0.04-0.10
GFRP	650	190	40-120	0.02-0.07	0.03-0.08	0.03-0.08	0.04-0.10