ドイツ GCT
ダイヤモンド・コーティング・センター

ダイヤモンド・コーティング（HF-CVD）のトップランナー

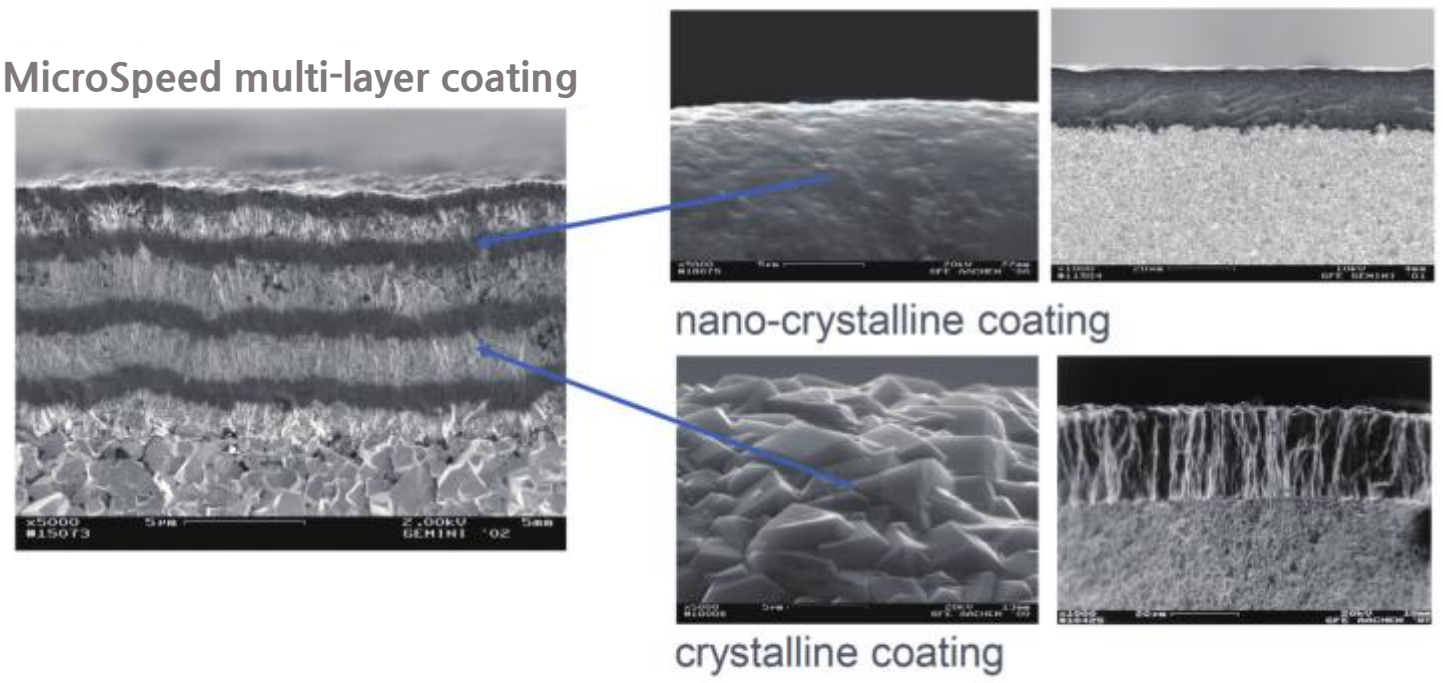
GCT MicroSpeed Multi-Layer Diamond Coating

適用分野

- ◆ 半導体装置用の各種セラミック類（Al_2O_3, AlN, SiC, Quartz…）
- ◆ 歯科用ジルコニア（ZrO_2）
- ◆ High Tg/Halogen-free PCB
- ◆ LED 照明用 Metal PCB
- ◆ 非鉄金属（Aluminum/Copper）
- ◆ CFRP, GFRP and GRP（Durostone and Roedurtherm）
- ◆ グラファイト（Graphite）

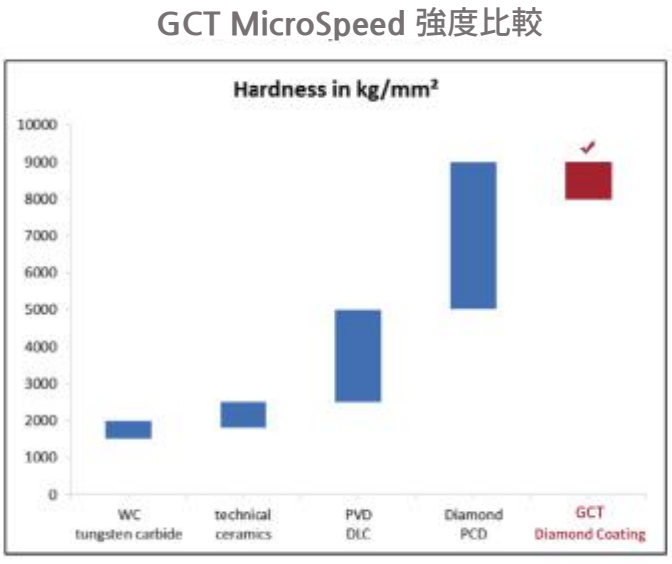
Multi-layer Diamond Coating Structure（ドイツ GCT 特許）

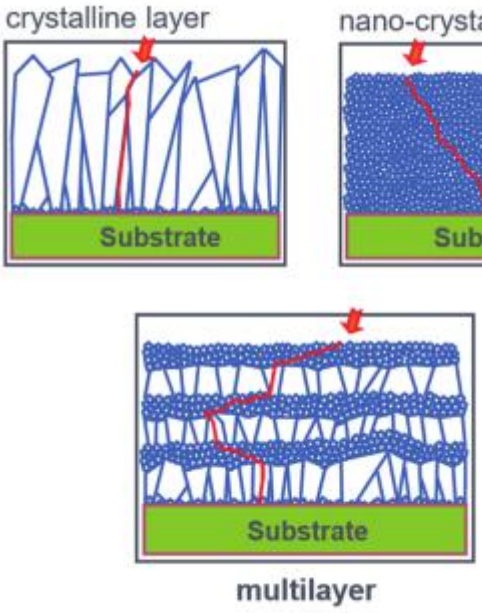
GCT Multi-layer Coating技術のポイントは Nano-crystalline coatingとCrystalline coatingを繰り返し、Natural Diamondに非常に近い強度を具現したことです。誰にも真似できないMulti-layer Technologyにより、ダイアモンド・コーティングの新世界を切り開き、これまでトップの地位を守り抜いています。



GCT MicroSpeed Diamond Coating 強度比較

Nano-crystalline coatingと crystalline coatingを繰り返し、外部の衝撃を完全に吸収する。





Job Coating Service

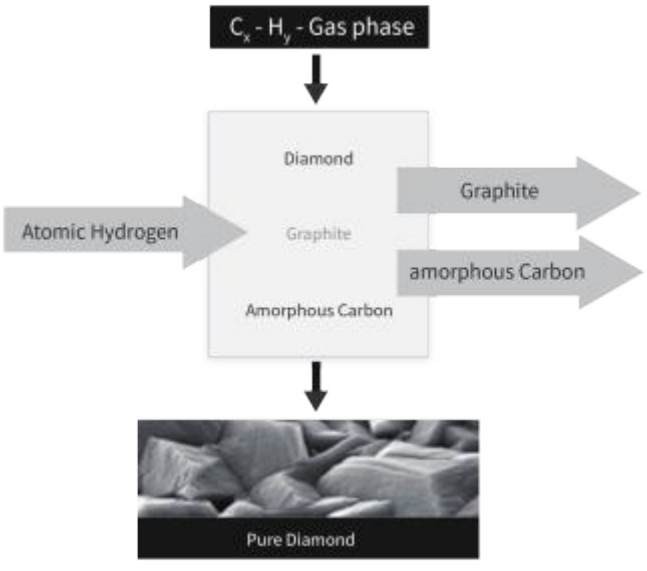
歯科/セラミック/CFRP/グラファイト用の工具に
ドイツ GCT Diamond Coating Serviceを実施します。(ø0.1 ~ ø8)

Job Coating 可能 Size (例示)

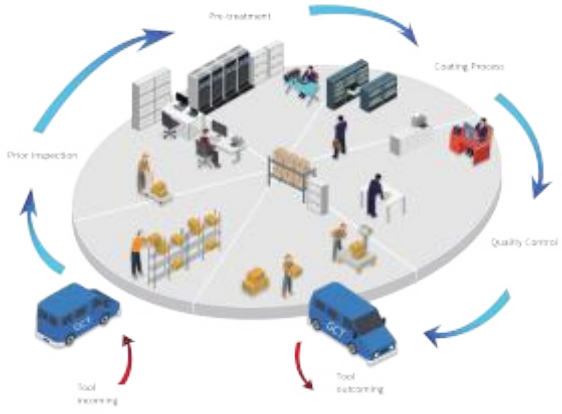
最大 shank 8Ø

ドリル、エンドミル(歯科用及び一般的な汎用工具)

Diamond Coating's Basic process diagram



Job Coating Service Process



Single flute end mill and GCT MicroSpeed diamond coating

Applications / Advantages:

- Routing of inner and outer contours of IMS made copper, hybrid setup with RO3003, Glass-Teflon laminates as e.g. Taconic TLC-32
- Very good edge and surface quality
- Very high dimensional accuracy and process capability
- Feed rate increases by factor 3-4, tool life increases up to 12 times

Type 1312

Type 1318

MicroSpeed diamond coating - Made by GCT in Germany

Ø (mm)	Type 1312 Flute length (mm)		Type 1318 Flute length (mm)
1.6	4.0	-	-
1.8	4.0	-	-
2.0	4.0	6.0	5.0
2.4	-	6.0	-
3.0	-	6.0	5.0

Further diameters and flute lengths on request.

Type 1312:
- right hand cutting, right twisted (up cut)
- flat end cut
- shank Ø 3.175mm
- overall length 38.10mm
- tolerances according to GCT router specification
- made of solid carbide

Type 1318:
- right hand cutting, right twisted (up cut)
- shank Ø 6.0mm
- overall length 40.0mm
- tolerances according to GCT router specification
- made of solid carbide

▣ 他のモデルはホームページをご参照下さい。

Type 1590/1596：countersink(5刃)

End mill with two flutes and GCT MicroSpeed diamond coating

Applications / Advantages:

- Routing of inner and outer contours as well as for depaneling of IMS made of aluminium and copper
- Ideally suited for depth routing of IMS, aluminium and copper, laminate with ceramic fillers
- Very high dimensional accuracy and process capability
- Feed rate increases by factor 3-4, tool life increases up to 12 times
- no pre-drilling required with Type 1328

MicroSpeed diamond coating - Made by GCT in Germany

Ø (mm)	Flute length (mm)	
0.3	-	2.0
0.4	-	2.0
0.5	-	2.0
0.6	-	2.0*
0.8	-	2.0*
0.9	-	2.0*
1.0	-	3.0*
1.2	-	3.0*
1.3	-	3.0
1.4	-	3.0*
1.5	3.0*	5.0*
1.6	-	5.0*
1.8	-	5.0*
1.9	-	5.0*
2.0	4.0*	6.0*
2.1	-	6.0
2.4	4.0	6.0*
2.5	-	6.0*
3.0	4.0*	6.0*

Further diameters and flute lengths on request.

Type 1322:
- right hand cutting, right twisted (up cut)
- flat end cut
- shank Ø 3.175mm
- overall length 38.10mm
- tolerances according to GCT router specification
- made of solid carbide

Type 1328:
- * available ex stock
- centre cutting

Type 1368:
- right hand cutting, left twisted (down cut)
- further data as per type 1328
- not available in all Ø

Drill in undercut design and GCT MicroSpeed diamond coating

Applications / Advantages:

- Ideally suitable for drilling glass, quartz, technical ceramics such as Al_2O_3, AlN, ZrO_2, SiC und silicon
- Very high process capability due to application-specific design and thicker diamond coating

MicroSpeed diamond coating - Made by GCT in Germany

(mm)	Flute length (mm)	
0.10	1.8	-
0.15	2.0	-
0.18	2.5	-
0.20	1.5	3.0
0.25	3.0	-
0.30	5.5	-
0.35	5.5	-
0.40	5.5	-
0.45	7.0	11.5
0.48	5.5	-
0.50	7.0	12.5
0.52	7.0	-
0.55	7.0	-
0.60	7.0	-
0.65	7.0	-
0.70	7.0	-
0.80	7.0	12.0
0.90	7.0	12.0
1.00	7.0	12.0
1.10	7.0	12.0
1.20	7.0	12.0
1.30	7.0	12.0
1.40	7.0	12.0
1.50	7.0	12.0

Further diameters and flute lengths on request.

Type 1625:
- thicker diamond coating and application-specific design
- for extremely high wear requirements
- right hand cutting, right twisted
- shank Ø 3.175mm
- overall length 38.10mm
- tolerances according to GCT drill specification
- made of solid carbide

▣ 他のモデルはホームページをご参照下さい。

- Type 1638/1640 : undercut drill
- Type 190X/1940 : thread mill
- Type 1835 : straight type drill
- Type 1534 : inverse type drill

Router with square chip breaker and GCT MicroSpeed diamond coating

Applications / Advantages:

- Routing of inner and outer contours in halogen free and high Tg material ≥ 150°C and for depaneling, also with copper on outer layers
- Optimized chip removal and higher bending strength
- Very high dimensional accuracy and process capability due to polished radius at the shank conus

MicroSpeed diamond coating - Made by GCT in Germany

Ø (mm)	Flute length (mm)	
0.8	5.2	-
0.9	5.2	-
1.0	5.2	6.5 / 7.5
1.1	6.5	-
1.2	7.0	-
1.4	7.0	-
1.5	7.5	8.5
1.6	7.5	8.5
1.8	9.0	-
2.0	9.0	-
2.4	9.0	-
2.5	9.0	-
3.0	-	10.0

Further diameters and flute lengths on request.

Type 1704:
- right hand cutting, right twisted (up cut)
- drill point cut
- shank Ø 3.175mm
- overall length 38.10mm
- polished radius at shank conus
- square chip breaker
- tolerances according to GCT router specification
- made of solid carbide

▣ 他のモデルはホームページをご参照下さい。

- Type 1700/1760 : extra fine spiral cut(chip-braker)
- Type 1750/1250 : CFRP, GRP thicker diamond coating
- Type 1200 : diamond cut
- Type 138x : chamfering cutter

Application recommendations for GCT Diamond Coated Drills

Tools and applications (XXX ⇒ most suitable)						
Router type	**Description**	**FR4**	**Halogen-free materials laminates with fillers and Tg ≤ 185°C**	**Laminates with ceramic fillers and Tg ≥ 200°C**	**IMS and nonferrous metals**	**Technical ceramics**
1640	Drill in undercut design with optimized point geometry *DIAMOND COATED*	X	XX	**XXX**	XX	X
1638	Drill in undercut design with high helix angle *DIAMOND COATED*	X	XX	**XXX**	**XXX**	XX
1835	Straight type drill with high helix angle *DIAMOND COATED*	X	XX	**XXX**	**XXX**	XX
1534	Inverse diameter drill with tapered diameter and thinned web *DIAMOND COATED*	X	XX	**XXX**	**XXX**	XX
1625	Drill in undercut and application-specific design ***THICKER** DIAMOND COATING*	-	-	-	-	**XXX**

General recommendations:
⇒ Follow the "**GCT check list**" for machining PCB's and the "**GCT parameter recommendations**"
⇒ Consider "**Specification GCT drills**"
⇒ Use diamond coated drills without contact drilling function

Application recommendations for GCT Diamond Coated Routers

Tools and applications (XXX ⇒ most suitable)							
Router type	**Description**	**FR4**	**Halogen-free materials**	**Laminates with fillers and Tg ≤ 185°C**	**Laminates with ceramic fillers and Tg ≥ 200°C**	**IMS and nonferrous metals**	**Depaneling**
1700 1704 1760	extra fine spiral cut *DIAMOND COATED*	XX	**XXX**	**XXX**	XX	-	**XXX**
1750	extra fine spiral cut ***THICKER** DIAMOND COATING*	-	X	XX	**XXX**	-	X
1200 1204	diamond cut *DIAMOND COATED*	X	XX	XX	XX	-	XX
1250	diamond cut ***THICKER** DIAMOND COATING*	-	-	XX	XX	-	-
1322 1328	2 flute end mill *DIAMOND COATED*	X	X	XX	XX	**XXX** (for aluminium)	**XXX** (on IMS)
1312 1318	single flute end mill *DIAMOND COATED*	X	X	XX	XX	**XXX** (for copper)	**XXX** (on IMS)
1940	thread mill *DIAMOND COATED*	-	-	X	X	**XXX**	-
138x	Chamfering cutter *DIAMOND COATED*	XX	XX	**XXX**	**XXX**	**XXX**	-
5422	2 flute end mill *CC ALUSPEED® COATED*	-	-	-	-	X	X (on IMS)

General recommendations:
⇒ Reduce chip load to 60% if routing **inner contours, radii** and **depth routing**
⇒ Reduce chip load to 80% for **metals**
⇒ Use type 5422 for **depth routing with electrical contact**; reduce chip load to 30%

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we are diamond

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