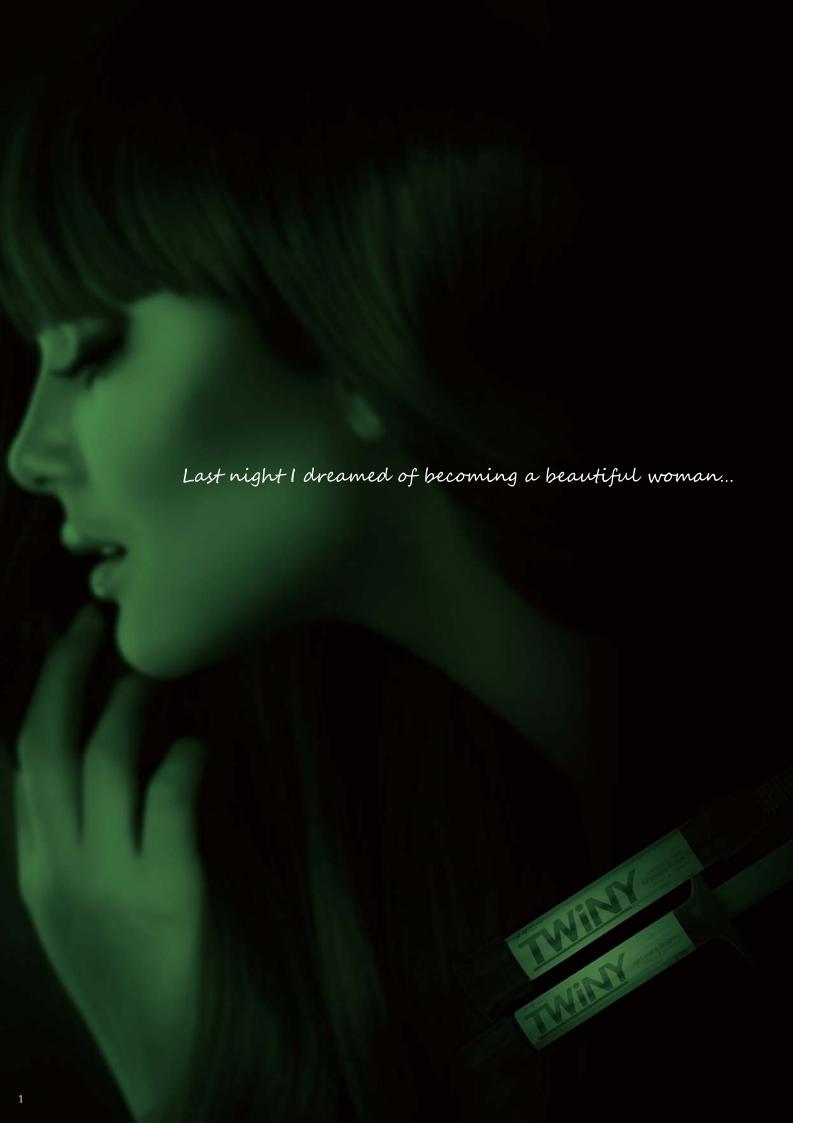
Simply Beautiful and Superb





New Material and Technology for Quality Life

~Ceramics Cluster Filler for Innovation~

TWiNY is a light and heat cured indirect composite resin developed and based on Nano-technology. By employing the newly developed specially-shaped inorganic filler, Ceramics Cluster Filler, TWiNY delivers excellent workability, high strength with excellent durability and outstanding aesthetics. TWiNY has been examined based on ISO 10993, Biological Evaluation of Medical Devices, devised by the ISO. In addition, it has been thoroughly examined through various safety tests for biocompatibility at the Department of Oral and Maxillofacial Surgery, Kochi Medical School, Kochi University, Japan.

TWiNY is a truly reliable and highly beneficial material as indirect restorative system for;

Facing Crowns,

Jacket Crowns,

Crowns and Bridges,

Implant Superstructures,

Inlays and Onlays,

Veneers,

Temporary Crowns and so on.

Index

- 3 Ceramics Cluster Technology
- 4 Test Result Data for Physical Properties
- 5 Reproducing Natural Tooth Appearance
- 6 TWiNY Flow
- 7-8 TWiNY Enamel Clear
- 9 TWiNY Basic Layering Steps
- 10 Basic Build-up Layering for Jacket Crown
- 11 Basic Build-up Layering for Inlay and Onlay
- 12 Polishing TWiNY
- 13-14 Shade Color Table
- 15-16 TWiNY Product Line-up
- 17 Yamakin Brand

2

Ceramics Cluster Technology

Over recent years, Nano-technology is becoming ever more common as fillers using resin materials become continuously smaller. However, smaller fillers are not always making better performance in terms of strength, workability, aesthetics and compatibility with opposing dentition. It was successfully developed that TWiNY, our in-house developed hybrid composite resin submicron filler primary particles, which combine to form a "Ceramics Cluster Filler" as a secondary particle with a larger surface. (Patented, Japan) TWiNY is mainly composed of Monomer, Ceramics Cluster Fillers and Spherical Nano-fillers. Ceramics Cluster Fillers, surface treated by coupling are mainly filled into the monomer matrix, and Nano-fillers are then filled into the remaining spaces. This improves mechanical properties and high stress resistance. Furthermore, ideal mixing ratio improves the workability of the hybrid composite resin.

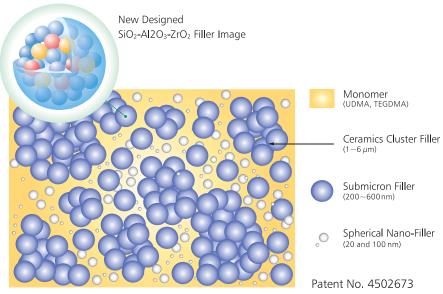
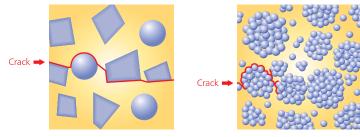


Image of TWiNY material structure

Primary particles of $200{\sim}600$ nanometers are combined to make secondary particles with various shapes. Ceramics Cluster Fillers are filled into the monomer matrix at a high density and spherical Nano-fillers are also added into remaining space.



Irregular Shaped Fillers

Ceramics Cluster Fillers

As Ceramics Cluster Fillers have an uneven surface, they work just like retention beads and combine firmly with monomers. This uneven surface also works against cracks, because it scatters stress-strain and enhances wear resistance.

Mechanical Properties Table

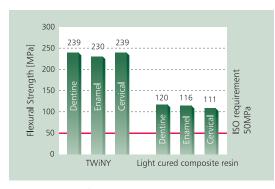
Test Method:ISO 10477

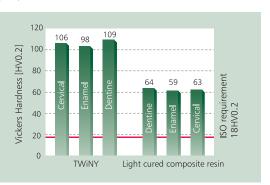
	ISO Requirement	TWINY	TWiNY Flow
Flexural Strength (MPa)	Not lower than 50 (occlusal surface, not lower than 80)	239	201
Hardness (HV0.2)	Not lower than 18	105	77
Water Sorption (μg/mm³)	Not more than 40	14	22
Solubility (µg/mm³)	Not more than 7.5	0.1	0.1

Test Result Data for Physical Properties

These tests evaluate the dental material in terms of how strong and how well it functions. All the test results achieved are far superior to the stipulated required values. This will give dental technicians and clinicians a good picture of what makes TWiNY so superior and superb.

Ceramics Cluster Technology makes it possible to achieve the highest flexural strength, and the flexibility of the material reduces the risk of fracture when high impact is applied, especially in posterior cases.

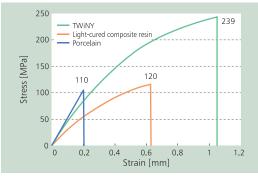


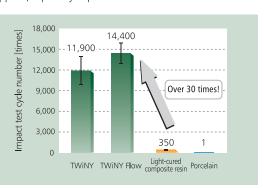


Flexural Strength

Vickers Hardness

Flexural strength is determined by maximum stress. Breaking energy, which is obtained by maximum stress and strain, is affected by strength and flexibility. Glass and ceramics are very strong materials but will break as soon as they are subjected to a critical level of stress. However, TWiNY exhibits adequate strength even under such conditions, which means that the flexibility of TWiNY reduces risks of fracture when high impact is applied, especially in posterior cases.

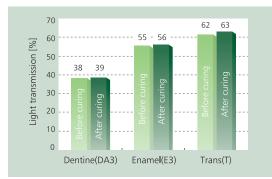


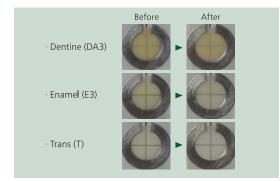


Breaking Energy (Stress-Strain Curve)

Impact Resistance

Change in light transmission before and after curing is very small, which makes it easier for technicians to layer.





Change in Light Transmission Before and After Curing (0.8 mm thickness)

Pictures of Pellets Before and After Curing (0.8 mm thick)

3

Reproducing Natural Tooth Appearance

Variety of color shades enables us reproduce natural tooth color

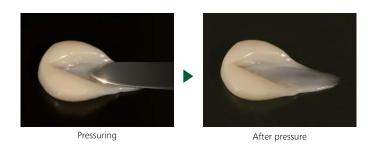
TWiNY is excellent in its physical properties; at the same time, it is highly esthetic product, enabling technicians to demonstrate their talents to full advantage. Whiter teeth are seen as desirable around the world today. Everybody seeks whiter color tone than the original natural teeth color. We have a wide range of white shade colors for aesthetic practice treatment. Gum shades are very useful for implant superstructure. Gum Shade is a characterizing item for reproducing gingival color or expressing the transparency of gingival area and discolored gum. Internal-use Gum Stain products for blood vessels and other expressions are also available.



Outstanding Workability

Optimal consistency for shape preservation of internal dentine structure

Consistency is important factor for workability of body resin and shape preservation of internal dentine structure. Especially, internal structures such as the dentine core require optimal consistency to keep form. TWiNY exhibits such good shape preservation that the dentine edges even of bridges or connected teeth can maintain shape during working. Technicians can work stress-free, as TWiNY paste does not stick to the spatula.

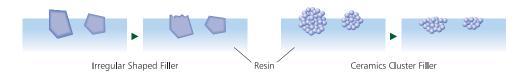


Well shape preservation

This is the shape, 15min.

Great Polishability

General irregular shaped fillers are difficult to polish because the remaining resin is softer than the fillers. So, as the dimension of filler particles gets bigger, it becomes more difficult to polish. However, TWiNY's ceramics cluster fillers are grape-like in shape, consisting of smaller fillers, which makes them easier to polish than other irregularly-shaped fillers of the same dimensions.



TWiNY Flow

TWiNY Flow is a flowable type composite resin which is not only for internal use but can also be used for the posteriors. Even though it is a flowable type, it exhibits 200MPa flexural strength and high impact resistance.

This flowable type is designed in the same color tones as basic TWiNY products. There are four basic shades for Cervical, five Effect shades for characterization and Transparent layering. There are also eight Translucent shades and seven Gum shades for color adjustment. Although TWiNY Flow has optimal flowability, the consistency is optimally set so as to avoid unnecessary dripping. As the nozzle is designed with a 0.7mm opening, it is suitable for direct application. This property makes it possible to express delicate color tones for reproducing natural tooth appearance.

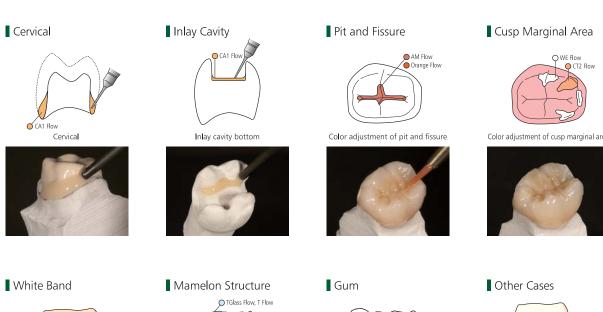


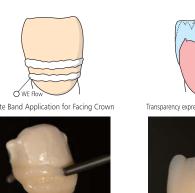


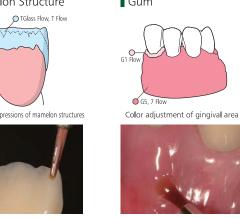
Upper: TWiNY Flow nozzle Lower: Opaque nozzle

TWiNY Flow Application Examples

TWiNY Flow is useful for the cases listed below. However, since this product was mainly designed for color tone adjustment, please use TWiNY Opaque, Dentine and Enamel for basic applications.









TWiNY Enamel Clear

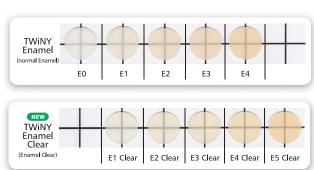
Enamel Clear and T Glass Clear, which achieve high transparency, have been added to the TWiNY lineup. A deeper color tone and sense of depth can be reproduced by making use of the way in which the product works on anteriors and posteriors.

T Glass Clear is now available in two types, Paste and Flow.

Enamel Clear

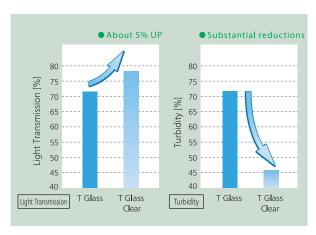
While preserving the same physical properties as normal enamel, Enamel Clear achieves an approximately 10% higher Light Transmission rate. We have expanded the range of color tones reproduced, so you are strongly encouraged to try this product out.

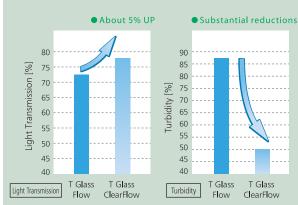




T Glass Clear

T Glass Clear achieves the highest transparency rate of all Yamakin's resin products. With T Glass Clear Flow, you can expect substantially fewer air bubbles.

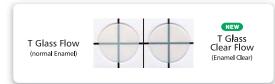




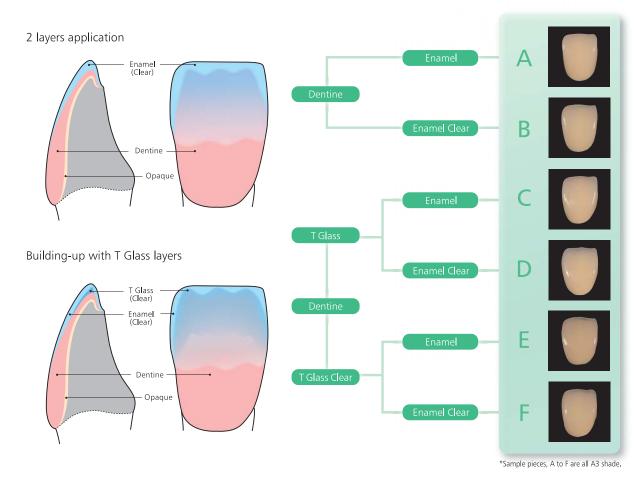
Comparison of Light Transmission Rate and Turbidity of T Glass and T Glass Clear



Comparison of Light Transmission Rate and Turbidity of T GlassFlow and T Glass ClearFlow

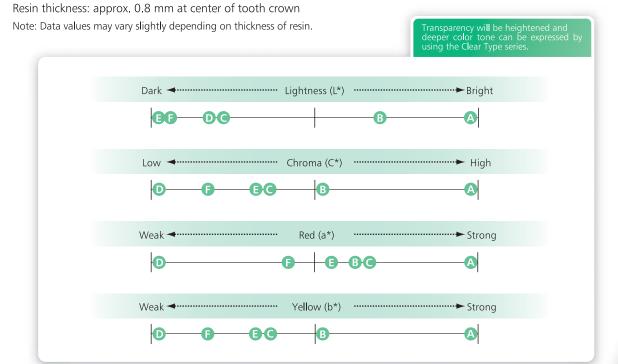


How to Build-up Enamel and T Glass Clear

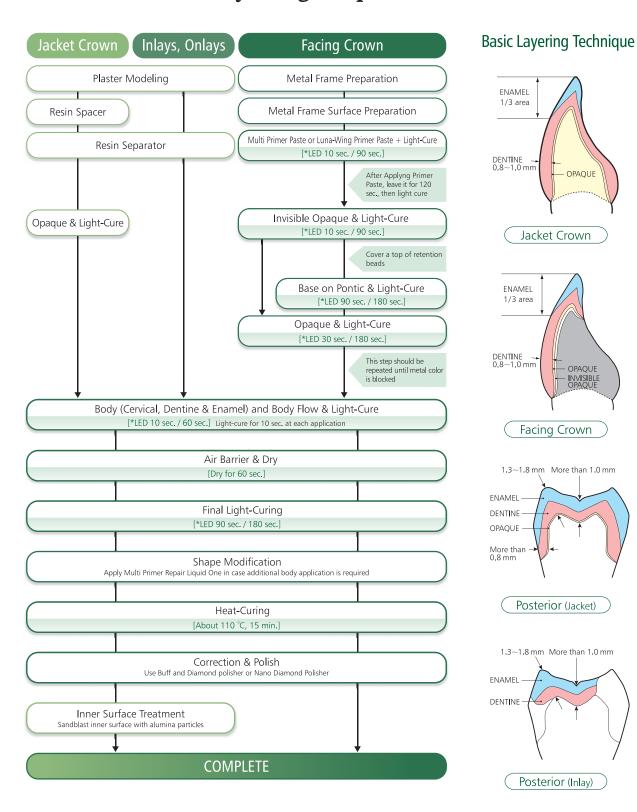


L*a*b* Color System

Colorimetry was measured for facing crowns A to F; the data is presented below.



TWiNY Basic Layering Steps



Curing Time for Luna-Wing and TWiNY

-		-	
		LED CURE Master	Other General Light Curing Machines
Invisible Opaque		10 sec.	90 sec.
Opaque		30 sec.	180 sec.
Body & Body Flow (Dentine, Enamel, etc)	Base	90 sec.	180 sec.
	Others	10 sec.	60 sec.
Stain		10 sec.	60 sec.
Final Light Curing		90 500	180 sec

For shorter working time LED CURE Moster

*YAMAKIN

LED light cure apparatus



Basic Build-up Layering for Jacket Crown

*Explanation of Light Cure Time shown below: 180(*30) sec. means that 180 seconds for general light curing machine and 30 seconds for LED CURE Master.

1. Resin Spacer Application

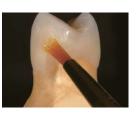
Make a plaster model in accordance with normal practice.

Apply TWiNY Resin Spacer on surface. except margin area, and dry.



10. Additional Layering Preparation after Corrections to Shape

In cases where additional layering after correcting the shape is needed, apply Multi Primer Repair Liquid One thinly with a brush on grained corrected surface and leave it for about 60 sec. to dry.



2. Resin Separator Application

For easier removal of jacket crown mould, apply TWiNY Resin Separator thinly on margin area, and dry.



11. Additional Build-up Layering

Apply body resin such as Dentine or Enamel correspondingly and light cure. Apply TWiNY Air Barrier on the additional layering area, then light cure for about 180(*90) sec. as a final curing. Again correct and adjust the shape to finish.



3. Opaque Application and Light Curing

Apply Opaque with a flat brush and light cure for about 180(*30) sec. If metal color is still seen, repeat this step until the metal color is completely concealed.



12. Heat Curing

Remove the jacket crown from the plaster model and heat cure it at about 110°C for about 15 minutes using a heat curing machine.



4. Cervical (Opaque Dentine) Application and Light Curing

Apply Cervical or Opaque Dentine starting from the neck to the central area and applying progressively thinner, taking subsequent color gradation into consideration. Light cure for about



13. Finishing

Remove any scars with paper cone and silicone point to make the surface smooth.



5. Dentine Application and Light Curing

Apply Dentine to form the required dentine core shape and light cure for about 60(*10) sec.

Using Body Resin Flow makes it easier to layer cervical area and cavity bottom.

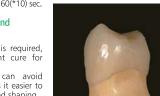


Polish for glazing by using brush or fabric buff with C&B Diamond Polisher or C&B Nano Diamond Polisher.



6. Enamel Application and Light Curing

Apply Enamel to form the required crown shape and light cure for about 60(*10) sec.



7. Translucent Application and

In cases where Translucent is required, apply Translucent and light cure for about 60(*10) sec.
Using Body Resin Flow can avoid

entrapping of air and makes it easier to create delicate color tones and shaping.



15. Internal Treatment to Finish

Finally, sand-blast (about 0.1 ~ 0.2 MPa) the inside of the jacket crown using alumina powder (about 50 µm), then use steam cleaner or ultrasonic cleaner to wash, and then dry.



8. Final Light Curing

Light Curing

After final layering, apply TWiNY Resin Air Barrier as thinly as possible to avoid immature curing and leave it for about 60 sec. to dry. Then light cure it for about 180(*90) sec. as a final light curing. If Air Barrier is applied thickly, it is difficult to dry. The brush used to apply Air Barrier should be washed with water after use.



16. Completion



9. Corrections to Shape

Correct the shape using a carborundum or diamond point.



Basic Build-up Layering for Inlay and Onlay

1. Preparation for Layering

Make a plaster model in accordance with

If there are under-cut spaces in the cavity, block them out using TWiNY Resin Spacer.



8. Additional Layering Preparation after Corrections to Shape

In cases where additional lavering afte correcting the shape is needed, apply Multi Primer Repair Liquid One thinly with a brush on grained corrected surface and leave it for about 60 sec. to dry. Apply body resin such as Dentine or Enamel correspondingly and light cure. Apply TWINY Air Barrier on the additional layering area, then light cure for about 180(*90) sec. as a final curing. Again correct and adjust the shape to



2. Resin Separator Application

Apply C&B Resin Separator in the cavity



9. Heat Curing

Remove Inlay or Onlay from the plaster model and heat cure it at about 110°C for about 15 minutes using a heat curing



3. Dentine Application and Light Curing

Apply Dentine from the cavity bottom and light cure for about 60(*10) sec. In case the abutment color is required to be concealed. or light goes through unnecessarily, apply Opaque or Opaque Dentine at the bottom

of the cavity.
Using Body Resin Flow makes it easier



Remove any scars with paper cone and silicone point to make the surface smooth. In cases where color tone adjustment is required, use Stain or Effect.

* If Stain is used, Translucent or T Glass should be used to cover Stain area.



4. Cervical Translucent* Application and Light Curing

Apply Cervical Translucent* at the occlusal surface of the cavity and light cure for about 60(*10) sec.

* CT1, CT2, CT3 and CT4



11. Glazing

Polish for glazing by using brush or fabric buff with C&B Diamond Polisher or C&B Nano Diamond Polisher



5. Enamel Application and Light Curing

Apply Enamel to form the required crown shape and light cure for about 60(*10) sec. Using Body Resin Flow can avoid entrapping of air and makes it easier to create delicate color tones and shaping.



12. Internal Treatment to Finish

Finally, sand-blast (about 0.1 \sim 0.2 Mpa) the inside of the jacket crown using alumina powder (about 50 um), then use steam cleaner or ultrasonic cleaner to wash, and



6. Final Light Curing

After final layering, apply TWiNY Resin Air Barrier as thinly as possible to avoid immature curing and leave it for about 60 sec. to dry. Then light cure it for about 180(*90) sec. as a final light curing. If Air Barrier is applied thickly, it is difficult to dry. The brush used for Air Barrier should be washed with water.



13. Completion



7. Corrections to Shape

Correct the shape using a carborundum or



Polishing TWiNY

Movie Clip of Polishing TWiNY

http://www.yamakin-global.com/support/twiny.html

Diamond Polishers

•C&B Diamond Polisher

C&B Diamond Polisher is excellent in polishability. It removes scars and can shorten polishing time. In cases where Diamond Polisher is used with high pressure and high rotating speed, the surface of the restoration will not be shiny. Rotation Speed Rate is lower than 10,000 rpm.

•C&B Nano Diamond Polisher

C&B Nano Diamond Polisher contains a larger quantity of fine diamond particles than C&B Diamond Polisher and provide high-precision polishing. This material is recommended to use at final polishing. In cases where Diamond Polisher is used with high pressure and high rotating speed, the surface of the restoration may be burned. Rotation Speed Rate is lower than 20,000 rpm.

Steps for Polishing TWiNY and TWiNY Flow

Use C&B Diamond Polisher

Use C&B Nano Diamond Polisher

Correct the shape using a carborundum point, diamond point or fissure bur.

Remove any scars with a paper cone.

Polish with a silicone point to make the surface smooth.

Polish with a lathe.

Apply very small portion of C&B Diamond Polisher on a Robinson brush and polish.

Rotating Speed is lower than 10,000 rpm.

on a Robinson brush and polish. Rotating Speed is lower than 20,000 rpm.

Apply very small portion of C&B Nano Diamond Polisher

Apply very small portion of C&B Diamond Polisher on a buff or a felt wheel and polish for glazing. Rotating Speed is lower than 10,000 rpm.

Apply very small portion of C&B Nano Diamond Polisher on a buff or a felt wheel and polish for glazing. Rotating Speed is lower than 20,000 rpm.

Without C&B Diamond Polisher, polish with a cloth buff or cotton buff to finish.

Rotating Speed is lower than 10,000 rpm.

Without C& B Nano Diamond Polisher, polish with a cloth buff or cotton buff to finish. Rotating Speed is lower than 20,000 rpm.

Completion

Wash and Clean with ultrasonic cleaner or steamer

Diamond Polisher	Abrasive Particle Size of diamond (μm)	Rotation Speed Rate (rpm)
C&B Diamond Polisher	1 ~ 2	Lower than 10,000 rpm.
C&B Nano Diamond Polisher	0.5 or sma ll er	Lower than 20,000 rpm.



Related Products

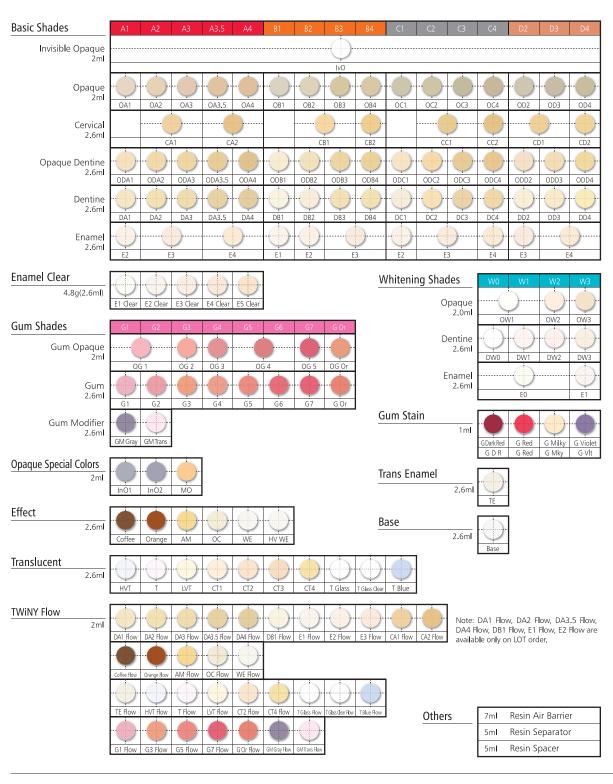


C&B Diamond Polisher



C&B Nano Diamond 5 g

Shade Color Table





13



[Basic Shades]

Invisible Opaque
Invisible Opaque is low-flowable opaque resin that flows into the undercut of retention beads to enhance physical bonding strength between metal and resin.

Opaque
Opaque resin for metal surface control.

Opaque Dentine

Body resin to prevent percolation of opaque color when there is extremely thin space for build-up, and to express further color depth. Apply thinly under Dentine layer when there is 0.5 mm thickness.

Cervical

Body resin for natural color expression around cervical area.

Dentine

Body resin to express dentine.

Enamel

Body resin to express enamel.

[Special Opaque Colors]

Opaque resin for natural color expression. Use on incisal or cervical area when reflection of Opaque color is strong.

InO1 InO2	Incisal Opaque	In01 (gray), In02 (gray, purple) Primer color to give artificial translucency to connector of connected teeth and anterior incisal edge (when there is metal close to incisal edge).
МО	Margin Opaque	Orange and beige color to emphasize cervical color.

[Whitening Shades]

Opaque and Dentine to express whiter color tones than the basic shade, A1.

OW1	Whitening Opaque	Whitest Opaque in the lineup.
OW2		White Opaque next to OW1.
OW3		White Opaque between OW2 and OA1.
DW0	Whitening Dentine	Whitest Dentine in the lineup.
DW1		White Dentine next to DW0.
DW2		White Dentine next to DW1,
DW3		White Dentine between DW2 and DA1.

[Gum Shades]

Characterizing Opaque and Body resin to reproduce gum or express discolored gum,

OG1		To express light pink gum.
OG2		To express orange pink gum.
OG3	Cum Oncour	To express normal orange pink gum.
OG4	Gum Opaque	To express dark orange pink gum.
OG5		To express dark red gum.
OG Or		To express orange gum,
G1		Light pink gum color to express gum.
G2	Gum	Dark pink gum color to express gum.
G3		Light orange pink gum color to express gum.
G4		Normal gum color to express gum.
G5		Orange pink gum color to express gum.
G6		Dark orange pink gum color to express gum.
G7		Dark red gum color to express gum.
G Or		Orange gum color to express gum.
GM Gray	Gum Modifier	To express melanin pigment.
GM Trans		To express transparency on the surface of gum.

[Gum Stain]

Characterizing paste to express discolored teeth. Expresses effective color tone by thin layer application. Apply with a round brush after the light cure of opaque or body resin, and light cure for about 60 sec.

As internal stain, certainly layer body resin after the light cure.

* Cannot be used as external stain on surface.

G Dark Red	Gum Dark Red	To express blood vessels.
G Red	Gum Red	To accent redness of gum.
G Mi l ky	Gum Milky	To reproduce dental alveoli and white bands,
G Violet	Gum Violet	To express melanin pigment.

[Enamel Clear]

Enamel to express higher translucency than usual Enamel.

[Trans Enamel]

To express transparency or translucency between Translucent and Enamel.

[Translucent]

Body resin to express translucency.

HVT	High Value Translucent	Translucent with high brightness
Т	Translucent	Normal translucent
LVT	Low Value Translucent	Translucent with low brightness
CT1	Cervical Translucent	Light orange and pink translucent for gum color, For cervical area expression,
CT2		Light orange and pinkish translucent for cervical area.
CT3		Orange translucent for cervical area.
CT4		Yellowish translucent for cervical area.
T Glass	Translucent Glass	The second highest transparency of TWiNY Line-up.
T Glass Clear	Translucent Glass Clear	Translucent with highest transparency in the lineup.
T Blue	Translucent Blue	Blue Translucent for incisal edge.

[Effect]

Characterizing Body resin to express discolored teeth.

HV WE	Hight Value White Enamel	Enamel Color with higher intensity (whiter) than WE.
WE	White Enamel	Enamel color with high intensity. To express proximal surface and white bands. Whiter than E0 and not as transparent as Enamel E0.
AM	Amber	To express orangish translucent (amber color).
oc	Occlusal	Very light orange color for occlusal area of molars.
Coffee	Coffee	To accent brown color like coffee.
Orange	Orange	To accent orange color.

Body resin as base to fill pontic part of bridge, etc.

Translucent color with deep light-cure depth designed only for pontic part.

It cannot be used on facing part.

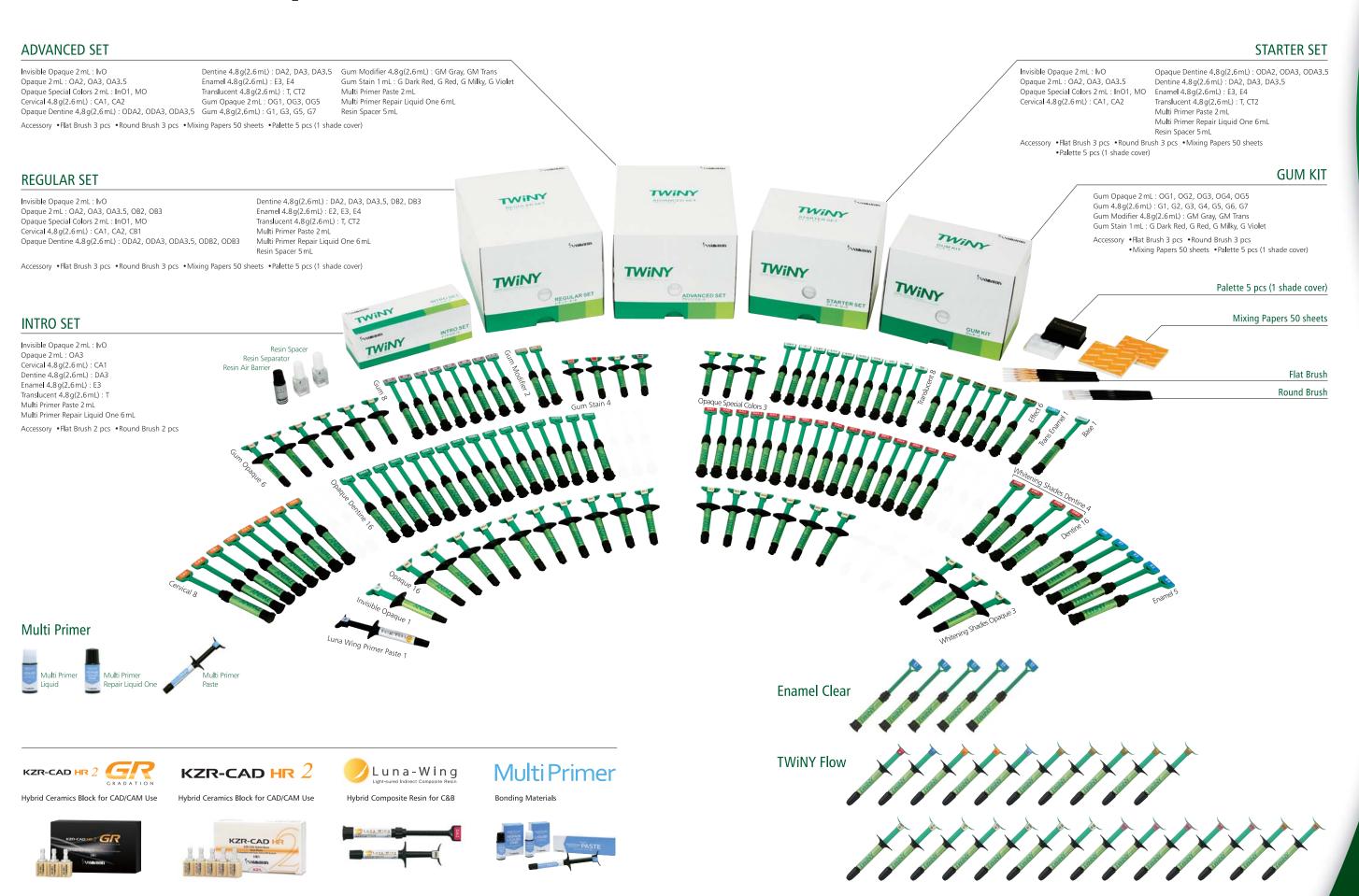
[TWiNY Flow]

TW/INY Flow is useful for cases such as applying to cervical area and cavity bottoms, the color expression of pits and fissures, building up Enamel ridges, adjusting color tones of gingival area, repairing air bubbles, pouring in pontic area, etc.

[Luna-Wing Primer Paste]

Primer Paste is a bonding primer material for non-precious alloys. It cannot be used on gold alloys.

TWiNY Product Line-up



15

Committed to being a top reliable brand manufacturer of dental materials

YAMAKIN is committed to providing safe, reliable and high-quality products for customer's full satisfaction. In order to achieve this commitment, we have adopted the following rigorous criteria:

Quality Management System for Global Standard Compliance

We were audited and approved by the designated third party TÜV SÜD, Germany, in order to obtain ISO 13485 (Quality Management System of Medical Devices) certification. We have realized an advanced high-level quality management system as a manufacturer of Controlled Medical Devices.



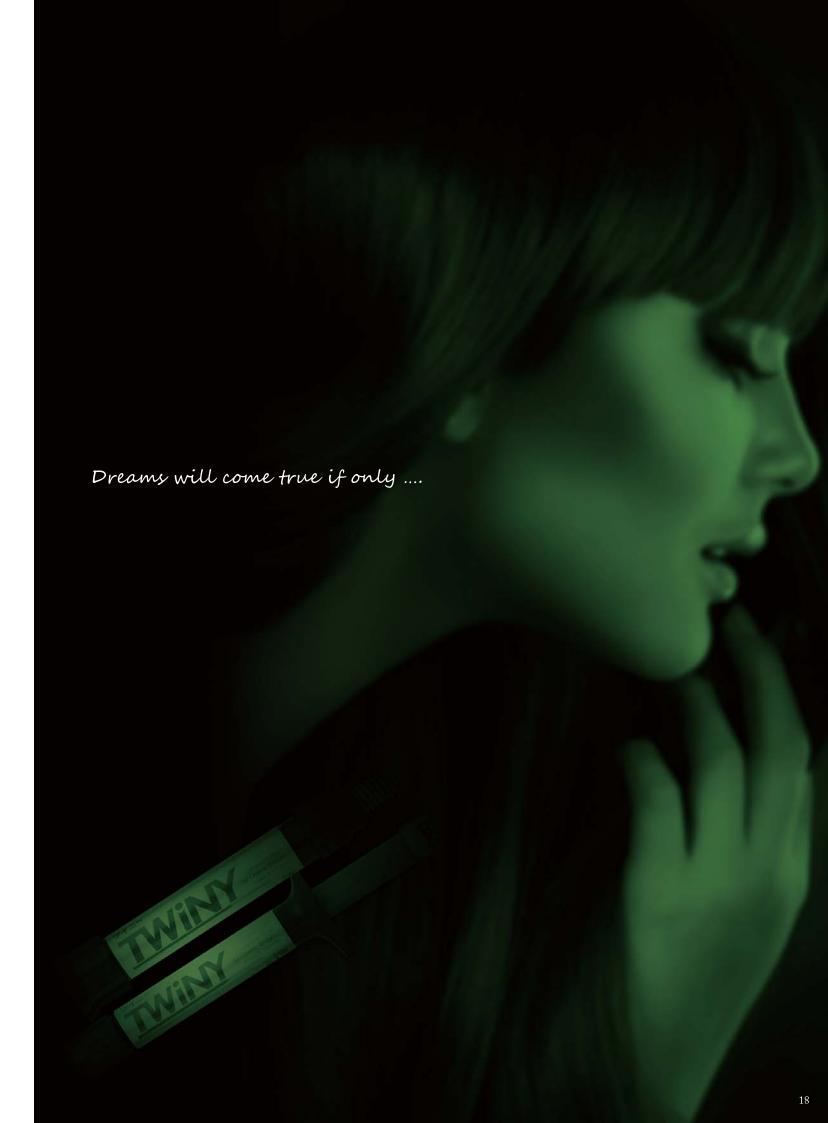
Strict Hygienic Control

From research and development to production, YAMAKIN has established a consolidated management system. Especially, resin products are manufactured under strict hygienic control so as to avoid any dust contamination.

Monitoring of Safety Information

Regarding safety information from the production management stage through to safety management post-marketing surveillance:

In order to judge quality standards objectively, we set up an independent sales monitoring system, under a marketing supervisor-general. We have assigned a quality assurance manager to the system, who is responsible for Good Quality Practice; and we have also assigned a safety management supervisor, who is responsible for Good Vigilance Practice. We monitor all information reported to us from clinical practices.



YAMAKIN CO., LTD. 1090-3 Otani, Kamibun, Kagami-cho, Konan-shi, Kochi, 781-5451 Japan

http://www.yamakin-global.com