

Our approach to safety

To create "safety" and "value"

As medical sophistication advances, the level of sophistication required in production, from research and development to manufacturing and shipping, is also increasing. YAMAKIN is strengthening relationships with external organizations and implementing world-class quality management, striving to provide safety and value.



Verification of Biological Safety



YAMAKIN established the Biological Science and Safety Laboratory in the Department of Oral and Maxillofacial Surgery, Kochi Medical School, Kochi University, Japan. We have been researching and analysing the safety risks of dental materials by the evaluation of various biological safety factors such as allergenicity, carcinogenicity, influence on our descendants, and so on.

YAMAKIN's Manufacturing Environment

All manufacturing processes for the TMR series are conducted in clean rooms and controlled extremely strictly.



Clean room in the YAMAKIN Kochi factory

Unique technology reduces the burden on the patients



TMR SERIES



Manufacturer

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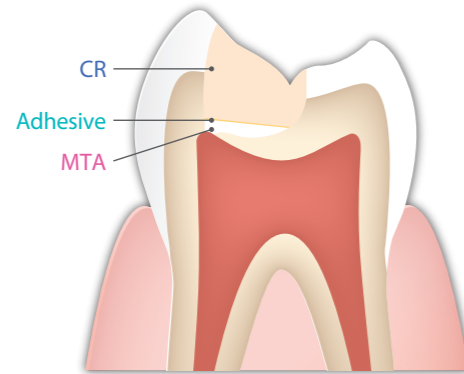
CE 0123

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Applicable from pulp capping to filling

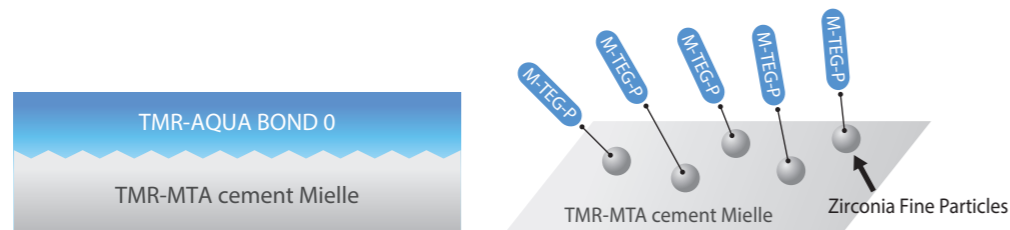
TMR SERIES

Innovation by **TMR Series**



TMR series are developed and commercialized with ideals such as “no extracting”, “minimal grinding” and “preserving teeth” based on the MI concept (minimal intervention).

TMR Series Technical Concept



Even though **TMR-MTA cement Mielle**, which will set with water, contains moisture, a compatible adherence surface can be assured, because **TMR-AQUA BOND 0**, which contains the phosphoric monomer M-TEG-P®, has amphiphilic property. Moreover, adherence is enabled even under moist conditions by the chemical interaction between zirconia, which is employed as a replacement for bismuth oxide, and the phosphate group of M-TEG-P.

Moreover, **TMR-Z Fill 10**, using YAMAKIN's filler technology, achieves both sustained fluoride release and high strength. Introduction the TMR series completes the total system from pulp capping to filling, with the long-term mission of “preserving teeth” in mind.

TMR MTA cement **Mielle**

TMR-MTA cement **Mielle**

Improved X-ray radiography by 60%

Excellent usability with quick setting

- Easy mixing
- Japan made MTA cement features various advantages such as Bismuth Free.



TMR **AQUA BOND 0**

TMR-AQUA BOND 0

Shorten the chair time.

Zero second bonding

- Stable adhesive strength in the wet condition
- Zero second demineralization reduces the burden on the patients.

Note: It suppresses lowering of adhesion caused by moisture which clinically cannot be removed.



TMR **Z Fill 10**

TMR-Z Fill10.

Achieves both sustained fluoride release property and strength.

- YAMAKIN's unique filler technology enables the both high strength and sustained fluoride release



TMR MTA cement Mielle

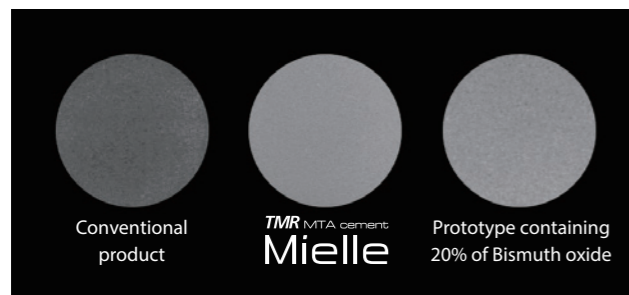
TMR-MTA cement Mielle Controlled medical device - Dental pulp capping material

Excellent usability with quick setting
“MTA cement” made in Japan through
industry-academia collaboration

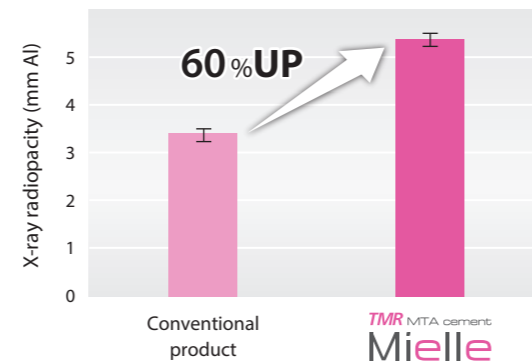


1 MTA cement with improved X-ray radiopacity

By increasing and optimizing the amount of zirconia, x-ray contrast or radiographic is improved by 60% compared to our previous product, making it easier to observe by x-ray and CT.



The percentage of calcium silicate (76vol%), which is the main ingredient, remains unchanged from the previous product. The percentage of alkaline and calcium ions releasing amount are also same. So, the basic performance of MTA cement, is maintained.



2 Bismuth Free

Zirconia is used as a radiographic agent for various biological cases, such as in dental materials and joint prosthesis.

Zirconia is a chemically stable substance so change of color is unlikely to happen.

	Exposure time of LED irradiator			
	0 second	10 seconds	30 seconds	90 seconds
White TMR MTA cement Mielle				
Light Ivory				
Prototype containing 20% of Bismuth oxide				

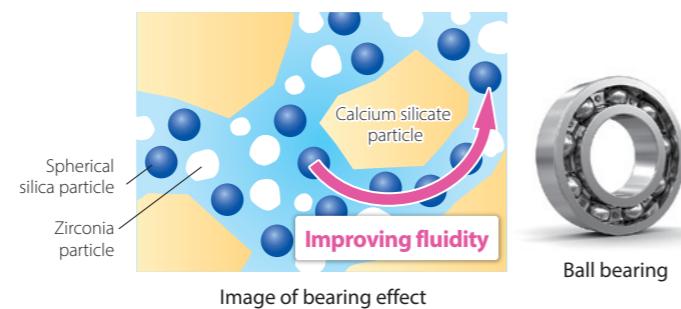
Note: Verified under oxygen insulated condition by glycerin.

3 Easy to Mix with a Small Amount of Water

At the moment the cement comes into contact with water, it is absorbed and becomes cement mud.

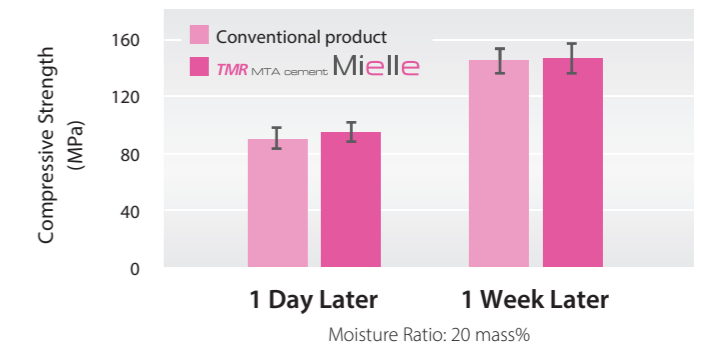
The bearing effect of the spherical silica particles improves the product's fluidity. This enables you to make an even paste easily with a small amount of water in a short time.

Although we have increased the number of zirconia particles to improve the X-ray contrast, since the particles are the round shape, easy operation remains.



4 High Compressive Strength

Since it sets quickly, the product achieves high compressive strength (about 90 MPa) from one day after application. The compressive strength reaches about 140 MPa after a week, matching the compressive strength of glass ionomer cement.



5 Quick Setting

Since it can be mixed with a small amount of water, the product sets quickly so that initial setting is completed in 15 to 30 minutes. Also, it sets sufficiently without any need to replenish the moisture with a moistened cotton pellet after application. If the paste gets dry and difficult to handle, the viscosity of the paste can be adjusted by adding moisture.

Moisture Ratio (Powder : Water)	State of Paste	Handling Time	Initial Setting Time
20% (0.2g : 0.05g)	Standard	About 3 min.	15-30 min.
25% (0.2g : 0.07g)	Soft	About 6 min.	30-40 min.
30% (0.2g : 0.09g)	Very Soft	About 9 min.	40-60 min.

Note 1: As indicated in the above chart, the initial setting time will be longer if the paste is softer. Remove excess moisture with a dry cotton pellet etc. after application.
Note 2: Note that in cases where the moisture ratio becomes 35% or more, remarkably the initial setting will become slow and the compressive strength will decrease.

6 Biocompatibility

New formation of dentine is confirmed, with odontoblast-like cells arrayed in a fence-like formation 1 week after direct pulp capping with TMR-MTA cement Mielle.

More details!



Video Clip
How to use TMR-MTA cement Mielle

Video clip for instructions on how to use MTA cement can be found on the web site.



Report
TMR-MTA cement Mielle Product report

TMR AQUA BOND 0

TMR-AQUA BOND 0

Controlled medical device - Dental Adhesive for Enamel and Dentine (Dental adhesive for ceramics) (Dental adhesive for metal)

Shorten the chair time.
Zero second bonding

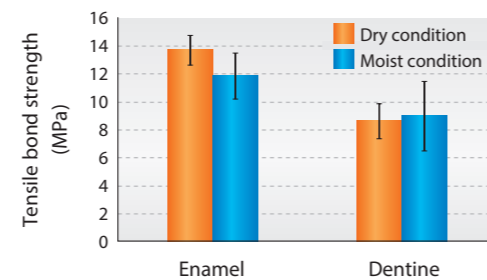


1 Advanced Adhesion and Speed



Moisture is necessary for demineralization and permeation of tooth substance in adhesion, but excess moisture is known to adversely affect adhesion. AQUA BOND 0 achieves consistent adhesion without sensitivity to moisture conditions, i.e., in both dry and moist conditions, with user-friendly application protocols due to the effects of one of the adhesive components, M-TEG-P.

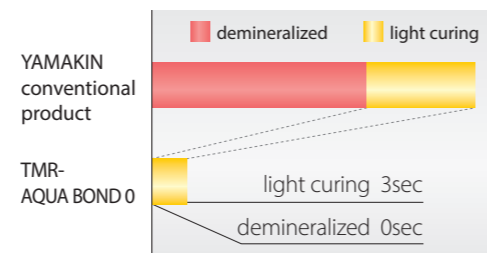
An adhesive which prevents reduction of bonding strength caused by moisture (which cannot be removed clinically) has been developed.



2 No Waiting Time for Demineralization (Tooth is demineralized quickly after application.)

One liquid, one step. A simplified adhesion step is employed. As time for demineralization is unnecessary, the burden on patients can be reduced.

AQUA BOND 0 can be used for various applications, such as children or elderly people, because of the shortened time required for operation in oral cavity.

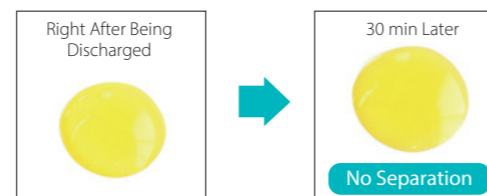


In case of using a LED light whose light intensity is 2,400mw/cm².

3 No Separation After Taken Out

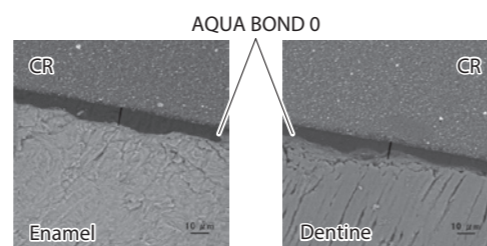


With precise control of ingredient blending and M-TEG-P, even after about 30 minutes under light-shielding conditions, there is no phase separation between lipophilic monomers and water; therefore, this enables the effective ingredients for adhesion to be applied uniformly.



4 Improves Bonding Strength of Composite

Filling minute roughnesses on the tooth surface caused by milling and creating smooth surface bonding layers enables the composite to adhere tightly. Furthermore, it enables a bonding layer (5 to 10 μm) that is as thin as possible and as uniform as possible, it fully demonstrates the physical strength of the composite.



5 Adheres to Various Materials

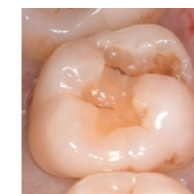


Thanks to M-TEG-P and other adhesive components, TMR-AQUA BOND 0 can bond a wide range of materials from tooth structure to zirconia, titanium and precious metals during CR treatment and intraoral repair. It also can adhere to porcelain, CAD/CAM produce crowns, and resin materials containing inorganic fillers during intraoral repair with using Multi Primer LIQUID as pretreatment.

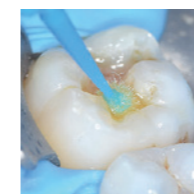
	The substances in the table can be used							
	Tooth substance	Zirconia	Titanium	Gold alloy	Silver alloy	Gold-silver-palladium alloy (including inorganic material)	Resin (including inorganic material)	Porcelain material
TMR-AQUA BOND 0	○	○	○	○	○	○	—	—
Multi Primer LIQUID + TMR-AQUA BOND 0	—	—	—	—	—	—	○	○

[Clinical case for using AQUA BOND 0 and Z Fill 10.]

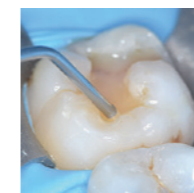
Restoration of cavity (Photos provided by: YAMAKITA DENTAL OFFICE (Kochi, Japan))



1 Forming a Cavity
Form a cavity in accordance with normal practice. AQUA BOND 0 achieves consistent adhesion even in a moist condition.



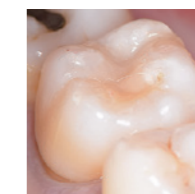
2 Applying AQUA BOND 0
Apply AQUA BOND 0 to the whole surface of the cavity. Air drying can be performed immediately after applying. Light cure for 3 sec. with a LED light whose light intensity is 2,400 mw/cm².



3 Filling with Z Fill 10. Flow
Fill the cavity with the Flow type which has appropriate flowability. Many shades in the line-up enables the dental technician's image to be reproduced aesthetically. Light cure for 4 sec. with a LED light whose light intensity is 2,400 mw/cm².



4 Filling with Z Fill 10. Universal
As the Universal type has good formability, delicate repair work is possible. The A5 shade will be useful when there is less grinding. Light cure for 4 sec. with a LED light whose light intensity is 2,400 mw/cm².



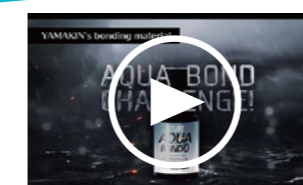
5 After the Treatment
Z Fill 10. has both sustained fluoride release and strength, along with the aesthetic advantage of being like a natural tooth. This will improve the patient's QOL.

YAMAKIN's Technology
M-TEG-P Technology
Exhibits both hydrophilicity and lipophilicity

The adhesive component M-TEG-P has an amphiphilic spacer base. Therefore, consistent adhesion and uniformity are achieved, even under moist conditions.

M-TEG-P is a registered trademark of YAMAKIN CO., LTD.

More details!



Video Clip
AQUA BOND CHALLENGE
Check it out the video clip showing the high adhesive strength of AQUA BOND 0.



Report
TMR-AQUA BOND 0 Product report
An adhesive that has realized rapid treatment under moist conditions.

Achieves Both Sustained Fluoride Release Property and Strength

TMR Z Fill 10.

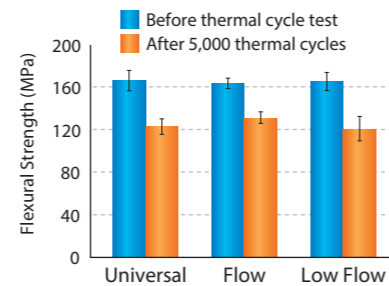
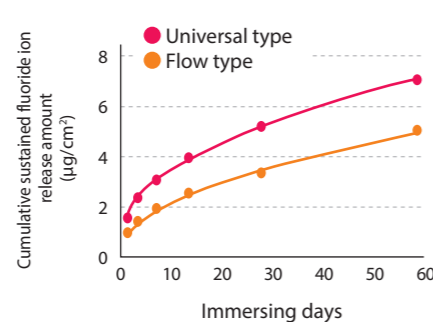
TMR-Z Fill10.

Controlled medical device -Resin-based Dental Restorative Material



1 Achieves Both Sustained Fluoride Release Property and Strength C.C.F.

Using this filler technology, not only is long-term sustained fluoride release achieved but also high strength and durability. It has fluorine recharge characteristics, taking in fluorine contained in toothpaste and mouthwash and releasing it.



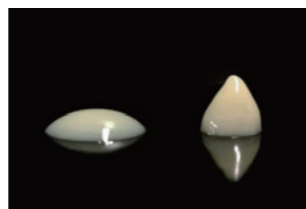
Note: ISO 4049:2009, Dentistry—Polymer-based restorative materials.

2 Outstanding Usability C.C.F.

Universal is easily releasable from a spatula, but its viscosity allows it to stretch smoothly. In addition, as Flow and Low Flow have appropriate flowability, it is easy to fill or place them as desired.



Formability of Universal



Flowability of Flow (Left)
Low Flow (Right)

More details!



Video Clip
TMR-Z Fill 10.
CHAMELEON EFFECT

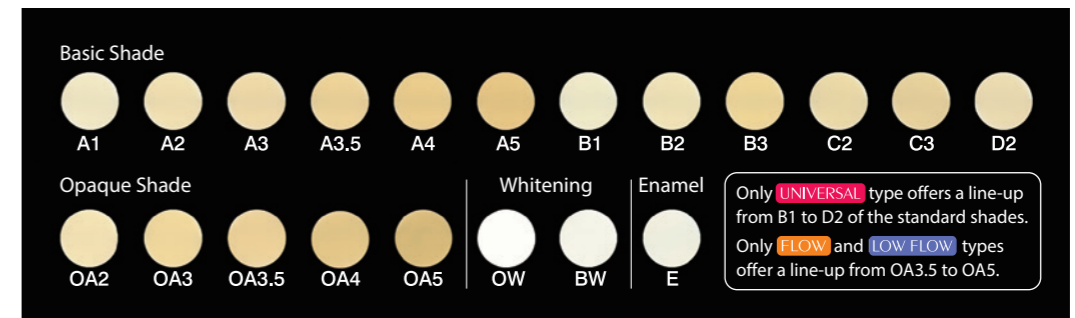


Report
TMR-Z Fill 10.
Product report

Composite Resin: In Pursuit of Sustained Fluoride Release, High Strength and Operability



3 Comprehensive Shade Line-Up



In combination with the filler technology, excellent light scattering property was achieved while maintaining the same transmittance as our conventional products.

A "chameleon effect" can be expected from this characteristic since the light scatters so that the surrounding colors become more natural. Furthermore, A5 and OA5 shades have been added to the line-up for Z Fill 10., and good aesthetics can be obtained even in cervical areas in elderly people or where the milling amount was small.

Shade line-up

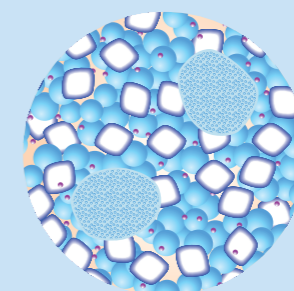
Product name	Category	A1	A2	A3	A3.5	A4	A5	B1	B2	B3	C2	C3	D2	Others	QTY of shade	Contents
Z Fill 10. Universal	Dentine	●	●	●	●	●	●	●	●	●	●	●	●	BW, E, OW	17	3.8g (2mL)
	Opaque		●	●												
Z Fill 10. Flow	Dentine	●	●	●	●	●	●							BW, E, OW	14	2.6g (1.5mL)
	Opaque		●	●	●	●	●									
Z Fill 10. Low Flow	Dentine	●	●	●	●	●	●							BW, E, OW	14	2.6g (1.5mL)
	Opaque		●	●	●	●	●									

BW: Bleaching White E: Enamel OW: Opaque White

YAMAKIN's Technology

Ceramics Cluster Filler

Ceramics cluster filler (C.C.F.) is YAMAKIN's original technology. C.C.F. consists of three kinds of filler whose uneven surfaces are intertwined together. By this "anchoring effect", it exhibits high strength. Moreover, the combination of the sustained fluoride release property and high strength, which is difficult to achieve in general by adding sustained fluoride release filler.



- Ceramics Cluster Filler (1~20µm)
- Spherical Nano-Filler (SiO₂: 20nm)
- Sustained Fluoride Release Filler (Glass: Approx. 700 nm)
- Organic and inorganic composite filler (3~5µm)

Note: more minute glass fillers than for C.C.F were used in Flow and Low Flow to give excellent flow control.

◀ Image of Z Fill 10. (Universal)



ものづくり日本大賞
優秀賞

The concept of having both a sustained fluoride release property and high strength was first commercialized in HR blocks for CAD/CAM crowns: KZR-CAD HR BLOCK 2. Members of the development project were awarded the "Excellence Prize" for the product in the technological development category of the "Seventh Monodzukuri Nippon Grand Awards" by The Ministry of Economy, Trade and Industry (METI).

TMR Z Fill 10.

Direct Composite Resin

Controlled medical device - Resin-based Dental Restorative Material



Single Package TMR-Z Fill 10. Universal 3.8g (2mL)

TMR-Z Fill 10. Flow 2.6g (1.5mL)
Accessory. Needle Tip: 10 pcs.

TMR-Z Fill 10. Low Flow 2.6g (1.5mL)
Accessory. Needle Tip: 10 pcs.

Set Package Standard Pack (each 1 of A1, A2, A3, E)

- Universal A1x1, A2x1, A3x1, Enamelx1
- Flow
- Low Flow

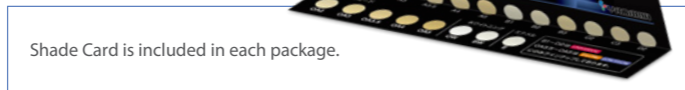
2 pcs Pack (each 1 of A2, A3)

- Universal A2x1, A3x1
- Flow
- Low Flow

3 pcs of Same Shade Pack (Each 3pcs.of A2, A3, A3.5)

- Universal A2x3
- Flow A3x3
- Low Flow A3.5x3

Accessory Needle Tip: 20 pcs.



Shade Card is included in each package.

TMR AQUA BOND 0

Dental Adhesive

Controlled medical device

- Dental Adhesive for Enamel and Dentine (Dental adhesive for ceramics) (Dental adhesive for metal)

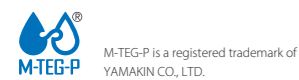


Single Package TMR-AQUA BOND 0 (5 mL)

Set Package TMR-AQUA BOND 0 Set
• TMR-AQUA BOND 0 (5 mL) : 1 pc.
• Disposable Applicator Brush: 50 pcs.
• Disposable Plate : 25 pcs.

Set Package 2 pcs Pack of TMR-AQUA BOND 0
• TMR-AQUA BOND 0 (5 mL) : 2 pcs.

Accessory Disposable Applicator Brush: 50 pcs.
Disposable Plate: 50 pcs.



M-TEG-P is a registered trademark of YAMAKIN CO., LTD.

Packages and containers are subject to change without prior notice.

TMR MTA cement Mielle

Dental Pulp Capping Material

Controlled medical device - Dental pulp capping material



Single Package TMR-MTA cement Mielle (White, Light Ivory)
• Microtube Type (0.2g) : 3 pcs.

TMR-MTA cement Mielle (White, Light Ivory)
• Glass Container / Bottle Type (3g)
• Accessory: Spoon (1 pc.)

TMR-MTA cement Mielle (White, Light Ivory)
• Glass Container / Bottle Type (10g)
• Accessory: Spoon (1 pc.)



MultiPrimer LIQUID

Bonding Material

Controlled medical device - Bonding material for dental metal (dental ceramics, dental resin)

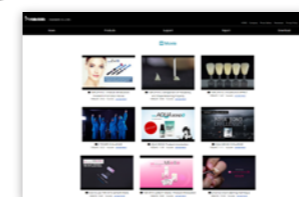


For intraoral repair of restorations
(metal, ceramics and resin)

For Repairing hybrid resin or porcelain prosthesis apply Multi Primer first, then use TMR-AQUA BOND 0 and TMR-Z Fill 10.

Single Package Multi Primer LIQUID (7mL)

More details!



Video clips



YAMAKIN CO., LTD.

