



GUIDANCE

Lithium Disilicate Glass Ceramic

UP.press/UP.CAD

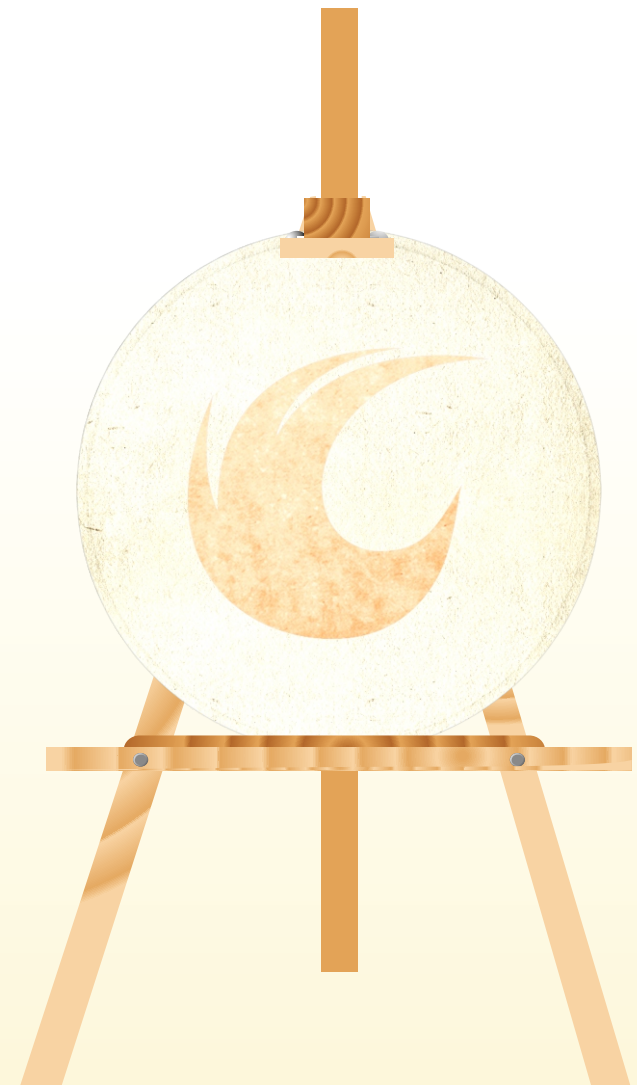
A business card for Shenzhen Upcera Dental Technology CO., Ltd. is shown, featuring a gold border and a small gold ring at the top. The card includes social media icons for YouTube, Facebook, Twitter, and LinkedIn, the company name 'UPCERA', two QR codes, and contact information.

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UPCERA

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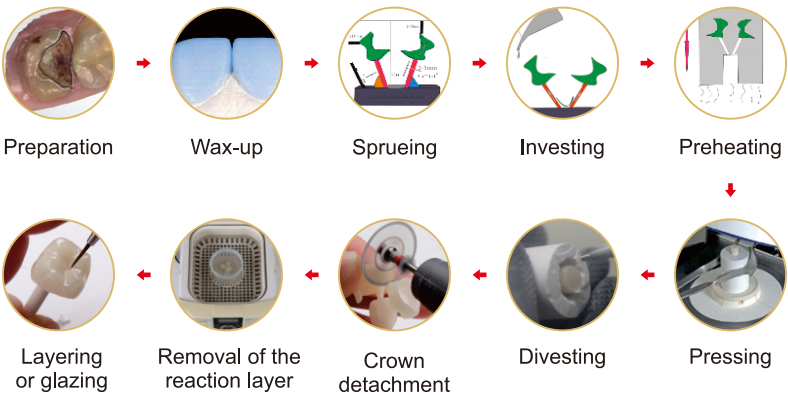
Indications

Translucency		High Translucency		Low Translucency		Medium Opacity
		UP.CAD 	UP.PRESS 	UP.CAD 	UP.PRESS 	UP.PRESS 
processing technique	Staining technique	●	●	●	●	
	Cut-back technique	●	●	●	●	
	Layering technique			●	●	●
Indications	Thin veneers	✓*	✓	✓*	✓	
	Veneers	✓	✓	✓	✓	
	Inlays	✓	✓	✓*	✓*	
	Onlays	✓	✓	✓*	✓*	
	Partial crowns	✓	✓	✓	✓	
	Anterior crowns	✓	✓	✓	✓	✓
	Posterior crowns	✓	✓	✓	✓	✓

✓* can be made but not recommended.
Each individual restoration must be carefully chosen, such as an inlay or onlay, together with the correct translucency to match the patient's teeth.
Veneer thickness for milling should be around 0.6-0.7mm, hand finishing can take this down to 0.4 – 0.5mm if required.



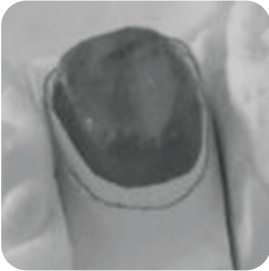
Procedures



Production process

Step 1 Preparation

Clinicians can collect the patient's data using an intra-oral scanner, or create a model in milling wax from a silicone impression.
Brush the prep with spacer according to the restoration type.
For partial crowns, veneers, single crowns as well as bridge reconstructions, the spacer is applied in two layers to within 0.5mm to 1 mm of the preparation margin.
For inlays and onlays, the spacer is applied in up to 3 layers and right to the preparation margin.



Step 2 Wax-up

Using CAD/ CAM technology, download the preparation data and create the design required, or use a hand carved wax crown.

For copings, where strength is needed for layering, the frame should make up at least 50% of the total thickness of the restoration.

The regular thickness of the restoration (depending on the indication) is derived as follows:

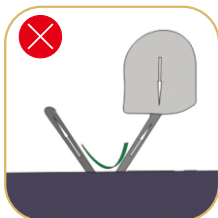
Overall thickness of the restoration(mm)	0.8	1	1.2	1.5	1.8	2	2.5	3
Minimum framework thickness (mm)	0.4	0.5	0.6	0.8	1	1.1	1.3	1.6
Maximum layer thickness of the veneer with ***(mm)	0.4	0.5	0.6	0.7	0.8	0.9	1.2	1.2



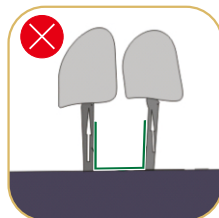
When designing the wax pattern for the cut-back technique, the basic shape of the restoration should be retained without extreme mamelon shapes or any points and sharp edges. Take care to retain the original thickness of the restoration. Occlusal and marginal contacts should be allowed for from the start.

Step 3 Sprueing

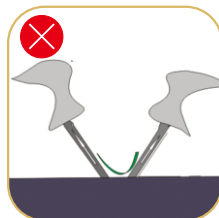
After completing the wax-up, it can be contoured using organic waxes and then sprued onto the investment ring base.



Incorrect:
The sprue and wax-up are not in the same direction



Incorrect:
Although the sprue and wax-up are in the same direction, they have been placed vertically



Incorrect:
The crown should be fit surface upwards, see below

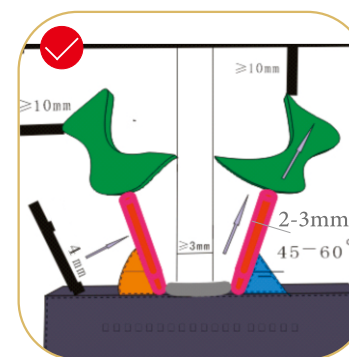
prueing comprehensive schematic

Always attach the sprues in the direction of flow of the ceramic and at the thickest part of wax-up so that a smooth flow of the viscous ceramic during pressing is achieved.

The maximum length (wax objects + sprue) of 16 mm must not be exceeded. The length of the sprue is around 4mm and diameter should be 2mm-3mm, meanwhile leave a gap between the sprues.

The sprues should be angled at 45-60 degrees to the ring base.

The distance between each wax-up should be at least 3mm.



The correct three-dimensional map

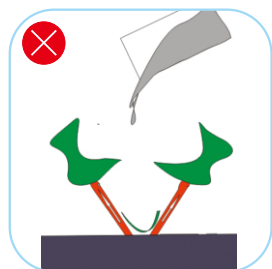
Step 4 Investing

Some investment materials and the Investing method

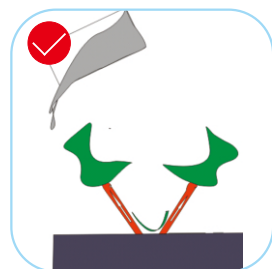
Name	The IPS PressVEST Speed investment	Bellavest SH	GALAXY II Universal investment
Storage Temperature	18-23°C	5°C-35°C	22°C-23°C
Working Temperature	18-23°C	20°C	22°C
Mixing Ratio	100g : 27ml 200g : 54ml	100g : 25ml 200g : 50ml	100g : 23ml 60g : 14ml
Concentration	60-70%	60-70%	60-70%
Mixing Time	Manual Mixing 15s Vacuum mixing 2.5min	Manual Mixing 30s Vacuum mixing 60 Vacuum still 30s	Manual Mixing 15s Vacuum mixing 60s
Firing Time	30-45min	20-30min	15min
Firing Temperatures	850°C Incubated 45-60min	900°C Incubated 30min以上	843°C Incubated 30-60min

The investment liquid pouring process:

When investing investment materials, pour slowly around the edge of the Silicone ring, which prevents any movement of the wax-up objects.



Pouring like this is not recommended



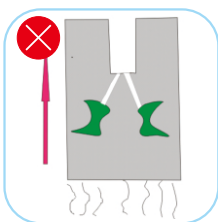
Right (Pour slowly along the Silicone ring wall)

Remarks:

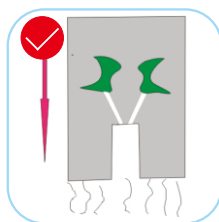
1. Before investing, make sure the mixing pot is clean and dried to achieve reliable powder-liquid ratios.
2. In summer, temperatures indoor can be higher than ideal. We recommend keeping investing liquids cool in the fridge until needed, to increase the working time.
3. Please follow the manufacturer's instructions strictly when measuring out powder to liquid ratios, in order to achieve the correct expansion rates at high temperatures.
4. Vacuum mixing is recommended at a speed of around 350rpm, and a stirring time of 30 to 60secs.
5. The mold should be left untouched for 25-30 minutes, so that the investment material is completely set and solid. Any movement or premature removal of the silicone ring before the investment material is fully set would likely produce internal micro cracks, resulting in mold breakage during the die-casting process.
6. Always use professional dust masks and dust extractors, as investment materials contain quartz and cristobalite and may be harmful to the lungs and cause respiratory issues (silicosis and lung damage).

Step 5 Preheating

After the correct setting time of the investment material has passed, remove the ring gauge and ring base with a turning movement, carefully pushing the investment ring out of the silicone ring, remove rough spots on the bottom surface of the investment ring. Tip the investment ring with the opening facing down.



Incorrect:
Investment ring with the
opening facing down



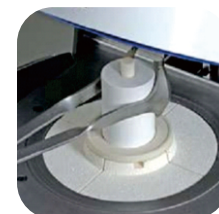
Correct

Tip:
Perform preheating in accordance
with the user instructions provided
by the manufacturer of the
investment material. Failure to do
so may result in distortions.

Step 6 Pressing

Remove the investment ring from the preheating furnace immediately after completion of the preheating cycle.

Put the Up.press ingot and alumina support bar into the hot investment ring and place the Up.press ingot and alumina support bar in the centre of the press furnace within 30 seconds.



Recommended pressing procedures are as follows:

Up.press item	Investment Ring system	B °C	t °C/min	T °C	H min	E µm/min
LT MO	100g	700	60	913	15	300
HT	100g	700	60	910	15	250

Note: If the furnace comes with a fixed die-casting process, follow that program.

Step 7 Divesting

After cooling to room temperature, mark the length of the alumina plunger on the cooled investment ring and then separate the investment ring from the pressed object.

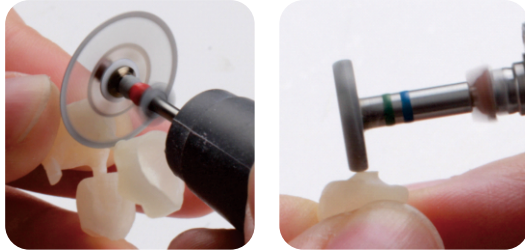
Method 1, Rough divesting is carried out with 100-120µm alumina polishing beads at 3-4 bar pressure until the pressed object appears, divesting can then be completed with the polishing beads but at max 2bars pressure.

Method 2, Remove the main bulk of the investment around the pressed objects using gypsum pliers. Then the final divesting is carried out with polishing beads at a maximum pressure of 2bars.



Step 8 Crown detachment

Cut off the sprue using a suitable separating disk, with low speed and light pressure. Smooth over the attachment point of the sprue. Check the occlusion and contacts and make adjustments as necessary. To clean the outside of the restoration, briefly blast with type 100 μm Al_2O_3 at 2-3 bar (15 psi) pressure and clean with the steam cleaner.



Step 9 Removal of the reaction layer



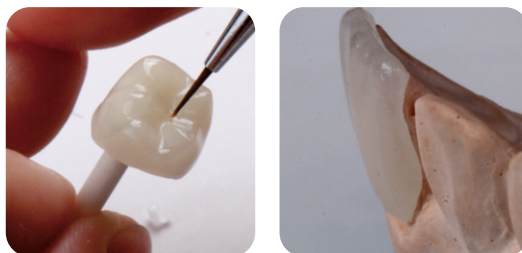
Place the casting into an etching solution and clean for at least 10 minutes using an ultrasonic cleaner. After removing the casting, rinse with clean water, dry, and then sandblast using 80 μm -100 μm alumina at 1bar-2bar pressure, to remove the reaction layer.

Step 10 Layering or glazing

Please refer to the manufacturer's instructions for using porcelain powders, pastes and glaze firing procedures

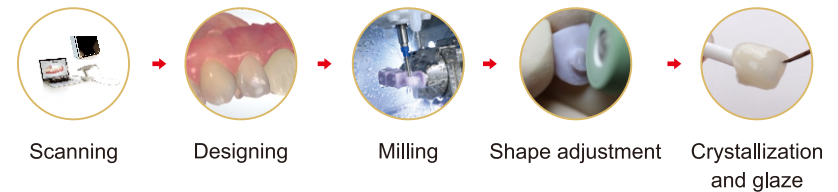
Note:

Only use low temperature porcelains for the build-up and low temperature glazes or pastes for glazing.



Dental Lithium Disilicate Glass Ceramic (CAD/CAM)

Procedures



Step 1 Shape adjustment

To cut down the restoration: Use the right trimming tool to separate the UP.CAD restorations from the material support pin. If an unsuitable tool is used, fracture and fissures may occur, especially near the margin.

Fit check: Place the restoration on the model, or directly into the mouth. Carefully assess the fit and adjust if necessary, ensuring reasonable sealing capability and confirming that the occlusal and proximal contacts of the restoration are correct.



Attention

- After detachment, the restoration should be polished before sintering.
- Use the appropriate polishing tools, and ensure that the restoration is polished under low speed and with a light force.
- Polish the restoration in one direction only, and at low speed. Avoid localised heating by not polishing for too long in one area. This may cause fissures or cracks.
- The minimum thickness of restoration must be within the prescribed scope of the material mentioned earlier in these instructions.

Step 2 Crystallization and glaze

A porcelain furnace is used to crystallize the restoration to its final state. Depending on the final aesthetic requirements of the restoration, an appropriate heating program should be chosen. Crystallization and glazing are achieved in two steps, displayed in the two charts below depending on the type of restoration.

Sintering program for crystallization only or crystallization together with glazing, Program 1 or program 2 is available.

One-step process

crystallization only or crystallization together with glazing						
Starting temp /°C	Dry time /mm:ss	Temp increasing rate/°C	Holding temp /°C	Holding time /min	Vacuum start /°C	Vacuum finished /°C
400	00:30	40	840	07:00	550	840

Two-step process

crystallization only or crystallization together with glazing						
Starting temp /°C	Dry time /mm:ss	Temp increasing rate/°C	Holding temp /°C	Holding time /min	Vacuum start /°C	Vacuum finished /°C
400	06:00	90/30*	820/840	00:10/07:00	550/820	820/840

Glazing process

Glazing process						
Starting temp /°C	Dry time /mm:ss	Temp increasing rate/°C	Holding temp /°C	Holding time /min	Vacuum start /°C	Vacuum finished /°C
400	00:30	40	840	03:00	550	840

Note

* Two step process temp increasing program is recommended, the data before “/” belongs to the first process, after “/” belongs to the second. Such as the temp increase rate “60/30”, the first process rate is 90°C/min, the second process rate is 30°C/min



If the veneer, inlay, onlay was made by coloring process, then crystallization and glazing together sintering program is recommended.



The glazing paste should be brushed evenly, the glaze must not be too thick, especially the occlusal surface. Avoid thin areas, ensure the surface of the restoration is bright enough after sintering.

Tips

- 1 Crystallization sintering program can be chosen automatically according to the glazing furnace. Adjust the program according to the manufacturers' instructions.
- 2 Clean the restoration completely before double crystallization, we recommend using an ultrasonic cleaner followed by drying with an oil free and dry air.
- 3 The restoration needs to be placed on pyrocotton or be supported with typical sintering material during crystallization
- 4 Only low temp glazing paste is recommended, the temp should be less than 840°C.

