

Laboratory guidelines – crown work

Smile...
first impressions
matter



Overview

incise™ frameworks are produced as part of a precision process for restorative dentistry. The system design is supported by accurate measurement technology and dental industry research.

These guidelines will help you to use the incise™ system to create world class products offering:

- Accurate fit and marginal adaptation preserves gingival health and minimises micro leakage
- A restoration that exceeds clinical strength requirements
- Excellent aesthetics achieved by using zirconia
- Greater longevity of restoration as a result of material stability and good marginal fit.

Fitting a poorly designed or manufactured crown can lead to gingival disease, secondary caries and loss of tooth vitality, fractured crowns and/or fractured porcelain, de-bonding of cement or an unsightly restoration.

We are so confident in our product that all incise™ crowns are supplied with a certificate, showing an analysis of the coping fit.



Members of Investors in people
BS EN ISO 9001:2000 approved
BS EN ISO 13485:2003 approved
Members of BDTA and DLA



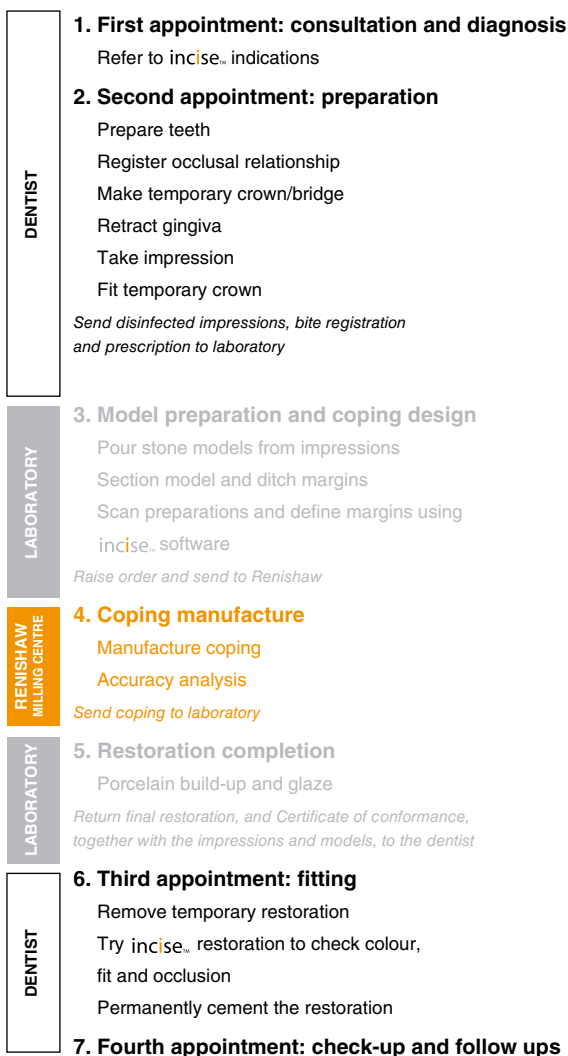
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incise[™] process overview

The incise[™] process for manufacturing restorations is unique in that it is the only CAD/CAM technology that delivers a Certificate of conformance with the manufactured coping. As such, it is important that strict procedures are followed to ensure best results. You can be confident that these procedures and recommended materials are backed up by stringent scientific evaluation. Following these guidelines will ensure that you receive the best possible framework.



Accurate model production

incise™ recommended materials:-

DIE STONE	Renishaw dental stone
WATER	De-ionised water



ALWAYS FOLLOW THE MATERIAL MANUFACTURER'S INSTRUCTIONS

The recommended values below ensure the final model is hard and durable, and meets the necessary accuracy requirements.

Guidelines for a controlled process

1 Preparing the stone

A ratio of 100 g powder to each 20 ml of de-ionised water should be used. Stone should be measured to the nearest 1 g, water to the nearest 0.5 ml. These ratios minimise the geometric deformation whilst ensuring excellent stacking and a durable master model. Larger quantities can be mixed as long as the ratios are scaled accordingly.

2 Mixing the stone

Mix thoroughly with a plastic spatula then vacuum mix for 30 seconds.

3 Pouring the stone

It has been demonstrated that excellent dies are produced when no surface modifiers or surfactants are used, and generous vibration is employed. Other techniques may produce accurate results but will not have been validated for the recommended materials.

4 Trimming the model

After the model has been dry trimmed, air blast the surface to remove any loose debris.

This process is critical to successful scanning.

Preparing the master model for scanning

incise™ recommended materials

MARGIN LINE MARKER

Graphite pencil

PROFESSIONAL DIE HARDENER

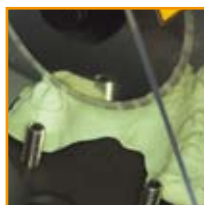
Kerr die hardener to protect the die from moist porcelain.

Super glue and other products are not recommended as die hardeners.



ALWAYS FOLLOW THE MATERIAL MANUFACTURER'S INSTRUCTIONS

Section model as appropriate.



1. Ensure that the ridge is trimmed as close to the dies as possible.



2. Carefully under-cut below the margin line to form a defining edge. A minimal under-cut is recommended to avoid chipping the margin.



3. To maintain the integrity of the margin, it is recommended that a graphite lead pencil is used to mark around the margin line.

Graphite is insoluble in die hardener and will not smear, unlike some margin marker.

In order to protect the die from moist porcelain, a die hardener should then be applied using a brush.



4. Re-assemble the trimmed and sectioned model.

It is recommended that a Pindex® model system is used with the incise™ process. Movement in the location mechanism will result in a framework that is smaller than desired. Moving dies should be supported with wax.

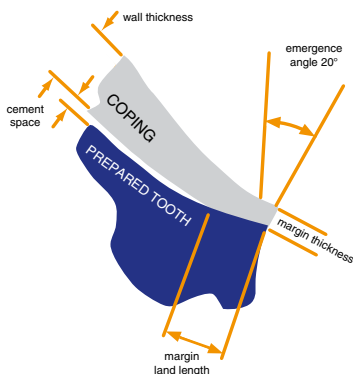
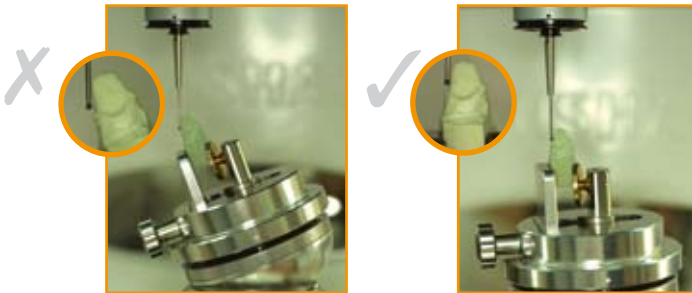
Scanning

Setting up the stone master model

The incise™ software provides step-by-step instructions to setting up the work pieces for successful scanning.

Undercuts

The model must be set up so that there are no vertical or undercut faces to be scanned.



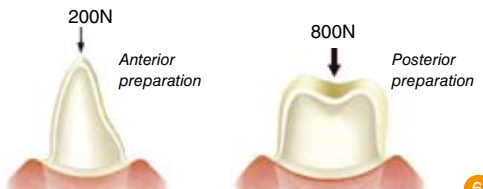
Standard incise™ copings have a margin thickness of 0.25 mm. The wall thickness and cement space can be chosen and specified in the incise™ software. For details on these specifications, please visit

www.renishaw.info/incise



If an anterior unit is selected in the incise™ software, the framework will be designed to meet the clinical requirements of an anterior restoration. The framework will NOT be suitable for a posterior restoration.

Anterior copings are thinner to meet the lower loads and more challenging aesthetic requirements of this zone. Posterior copings must be thicker so that they can withstand the higher loads encountered nearer the TMJ. The diagram below shows typical loads.



Spigot location

Before commencing scanning, you should choose the least intrusive position for spigot to be placed, from a porcelain build point of view. The chosen coping surface must be at least 3 mm high. The master model should be placed on the scanner with the chosen position on the centre line to the back of the machine, as shown in figure 5.



Once machining is complete, the coping is left attached to the material by means of a connector or 'spigot' (figure 3).



The spigot is ground off to leave a 'pip' where the material remains slightly thicker than the rest of the coping (figure 4).

Die scanning and margin line generation

When set-up is complete, follow the on-screen step-by-step instructions to scan the die and then generate the margin line. Figure 6 shows the margin line generation.



figure 5



figure 6

Transferring the scan data

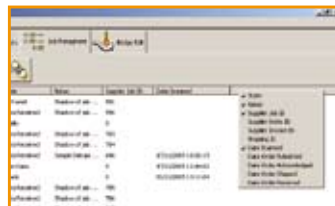


Job Number	Name	Status	Date Scanned
101	Production	2009	20/07/2006 10:00:00
102	DataReceived	1000	20/07/2006 10:00:00
103	DataReceived	1000	20/07/2006 10:00:00
104	Production	1000	20/07/2006 10:00:00
105	Production	1000	20/07/2006 10:00:00
106	Production	1000	20/07/2006 10:00:00
107	Production	1000	20/07/2006 10:00:00
108	Production	1000	20/07/2006 10:00:00
109	Production	1000	20/07/2006 10:00:00
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111	Production	1000	20/07/2006 10:00:00
112	Production	1000	20/07/2006 10:00:00
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124	Production	1000	20/07/2006 10:00:00
125	Production	1000	20/07/2006 10:00:00
126	Production	1000	20/07/2006 10:00:00
127	Production	1000	20/07/2006 10:00:00
128	Production	1000	20/07/2006 10:00:00
129	Production	1000	20/07/2006 10:00:00
130	Production	1000	20/07/2006 10:00:00

After scanning, the data files appear in the job management system. They can then be sent electronically to Renishaw's milling centre by following the on-screen instructions.



The 'properties' option allows you to add individual notes to a job. To access the properties section, highlight a job line and either right click and choose properties, or simply select the properties icon from the main screen.



With the job management system, you can select what information you wish to display on your jobs. To access these options, right click on the empty grey box on the menu bar.



Porcelain work

incise™ recommended materials:-

To prevent cracking, it is necessary to select a porcelain with a coefficient of thermal expansion (CTE or TEK) matched to the zirconia core.

The porcelain used must have a CTE of $(9.8 \pm 0.5) \times 10^{-6} \text{ K}^{-1}$

The following systems have been tested by Renishaw show adequate bond strength to incise™ zirconia:

- NobelRondo™
- 3M ESPE Lava™
- GC initial

incise™ recommended tools:-

- Edenta CeraGloss HP (Part no. 301HP) diameter 25 mm x 2 mm thick
- Edenta SuperMax (Part no. 9007.220HP) 22 mm x 2.5 mm thick
- Edenta 'Keramik Tool Set' (Part no. 900.410SO)
- Grit blasting – 50 µm alumina at 5 bar air pressure



ALWAYS FOLLOW THE MATERIAL MANUFACTURER'S INSTRUCTIONS

Bridge framework preparation

The supplied copings have already been grit blasted in a controlled environment. If modification of a framework is necessary, the above tools should be used at high speed using light pressure and water is desired. Modified frameworks should be grit blasted again using the information above.

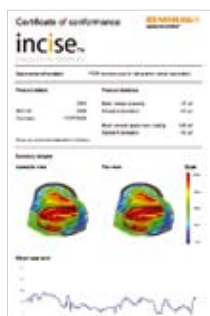
Do NOT sterilise the restoration using steam.

This may have long-term implications on the strength of the material.

Certificate of conformance

incise™ bridges are accompanied by a Certificate of conformance. Error values are generated by computer-aided analysis, with the internal face of the bridge aligned and compared to the scanned preparation. The certificate illustrates the cement space and margin gap on a 3D colour coded image. This certificate will be sent to you with the framework.

It is recommended that the Certificate of conformance is sent on to the dentist with the finished restoration.



Additional information



Product returns

In the unlikely event that it is necessary for a prosthesis to be returned to Renishaw, it must be appropriately sterilised, and this must be clearly indicated on the primary (external) packaging.

Please refer to BS EN 980:2003, Graphical symbols for use in the labelling of medical devices, for recommended labelling symbols.



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