

Model and Die Preparation at the Lab

Model Preparation

Preparation guidelines for Origin® Zirconia crowns and bridges are similar to the guidelines clinicians use for all-ceramic restorations. General preparation guidelines include the following:

- All sharp edges and line angles should be rounded.
- Avoid undercuts, 90-degree shoulders, and gutter preparations.
- Cases need to be articulated
- Section dies
- Margins need to be trim
- Do not apply die spacer or sealer
- Do not mark margins with lead pencil
- Relieve preparations or opposing before sending a case
- Preparation should follow the anatomy of the tooth, providing at least the minimum thickness required for the respective restoration (see Minimum Zirconia Thickness below). Axial and occlusal reduction of 1.0mm is considered ideal for full-contour zirconia restorations.
- A definitive finish line (i.e., shoulder with rounded internal line angles or chamfer margin) is recommended. Feathered edge preparations are acceptable for restorations.



Minimum Zirconia Thickness

| Bridges | | | | Crowns | | | | | |
|----------------------|------------------|------------------|-----------------------|----------------------|------------------|-------------------|-----------------------|----------------------|--------|
| Anterior | 3 Units | 4+ Units | Cantilever (1 pontic) | Posterior | 3 Units | 4+ Units | Cantilever (1 pontic) | Anterior / Posterior | Crowns |
| Axial | 0.7mm | 0.7mm | 0.7mm | Axial | 0.7mm | 0.7mm | 0.7mm | Axial | 0.6mm |
| Incisal / Occlusal | 0.6mm | 0.7mm | 1.0mm | Incisal / Occlusal | 0.6mm | 1.0mm | 1.0mm | Incisal / Occlusal | 0.7mm |
| Connector Dimensions | 7mm ² | 9mm ² | 12mm ² | Connector Dimensions | 9mm ² | 12mm ² | 12mm ² | | |

Unacceptable Preparations

Zirconia is a strong and versatile material. However, there are guidelines for greatest success. The guidelines listed above are **MINIMUM** thickness we recommend.

While feather edge margins can be accommodated, it is always a gamble. Any discrepancy in the impression or if the clinician has left a very slight bump, or if the technician cannot clearly see the margin when trimming, no ceramic material likes to bend. These discrepancies will cause chipping, or potentially catastrophic failure upon seating. Milling machines are very accurate but when milling a knife edge margin no zirconia can be counted on to never chip.



Undercuts must be avoided.



Sharp incisal-occlusal edges must be avoided.



The preparations need to be parallel with each other.



Any type of distortions must be avoided.

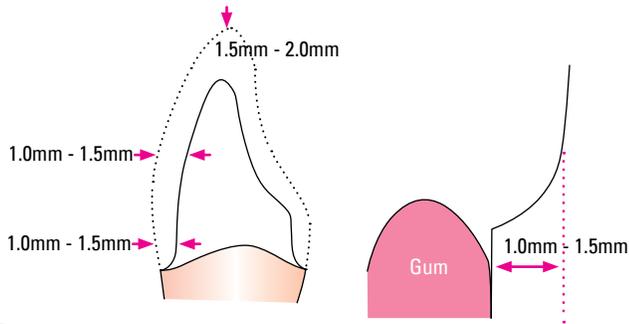
It is wise then for the clinician to utilize a modest chamfer. This additional thickness will help prevent chipping at the margin.

Occlusal thickness needs to be at least .5mm. This is a **MINIMUM FINISHED** thickness. Now I know we are all challenged to find clearance. If however, minimums are violated, long term success of the restoration is at risk. If a clinician cannot provide a minimum of .5mm then perhaps a metal restoration is called for. If occlusal reduction is required, Clinicians should use a medium fine or fine diamond. A coarse diamond will create small radiating fractures, which can grow into catastrophic failures.

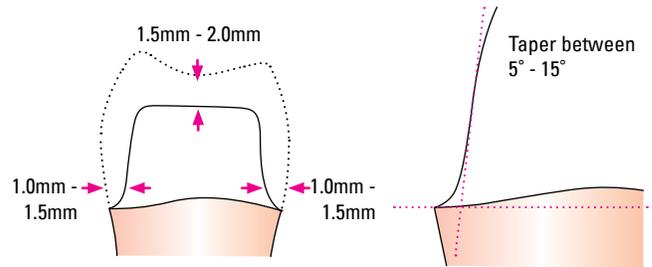
At B&D Dental Technologies we want each restoration to be a success. Please carefully consider the suggestions here to ensure fewer headaches for everyone.

Ideal Die Preparation

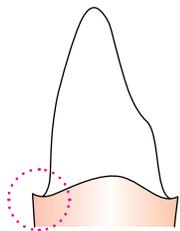
Anterior Crowns



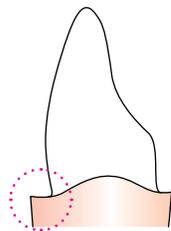
Posterior Crowns



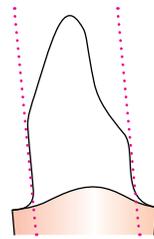
Unacceptable Preparations



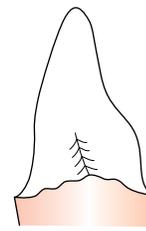
"J" Margin



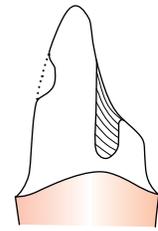
Deep Shoulder



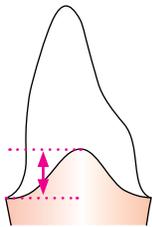
Parallel Axis



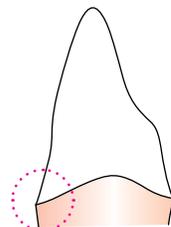
Rough Margin



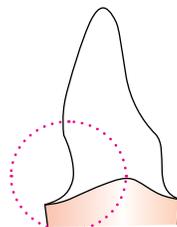
Grooves



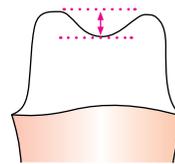
Different Height (Anterior)



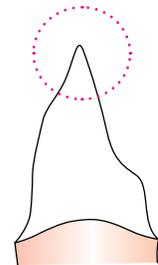
Knife Edge



Undercuts



Different Height (Posterior)



Sharp Incisal Top

