Producing Working Models Using Resin-Fortified Die Stone

ResinRock Features:

- A blend of synthetic resin and enhanced alpha gypsum for producing models and dies of high strength and accuracy that result in smooth, dense casts with optimal surface detail
- Easy to work with: Pours easily under vibration and stacks readily
- Low setting expansion and dimensional stability make it suitable for implant and complex restorative work where precision and accuracy are crucial
- Increased resistance to abrasion over all-gypsum materials and to stand up to the rigors of porcelain shoulder fabrication

Preparation

Spray and bag the impression with an OSHA-approved cleaner/disinfectant.

- Rinse the impression with tap water
- Trim and level the impression border
- Apply utility wax to the perimeter of fragile margins to allow for additional pours without the impression tearing

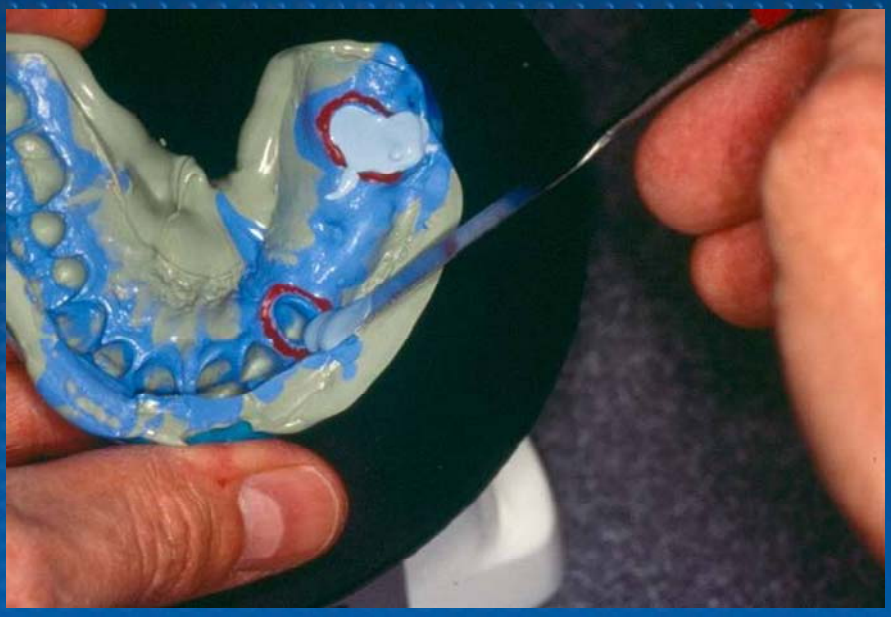
Rinse the mixing bowl and shake out excess water.
Pour measured distilled water into the bowl and add weighted powder. Use a powder/water ratio of 100 grams to 20 ml. Weigh bulk powder or use premeasured envelopes.

Hand spatulate for approximately 60 seconds or until all powder is incorporated. Do not add water if the mix initially seems too thick; as the resin dissolves, the mix will homogenize.

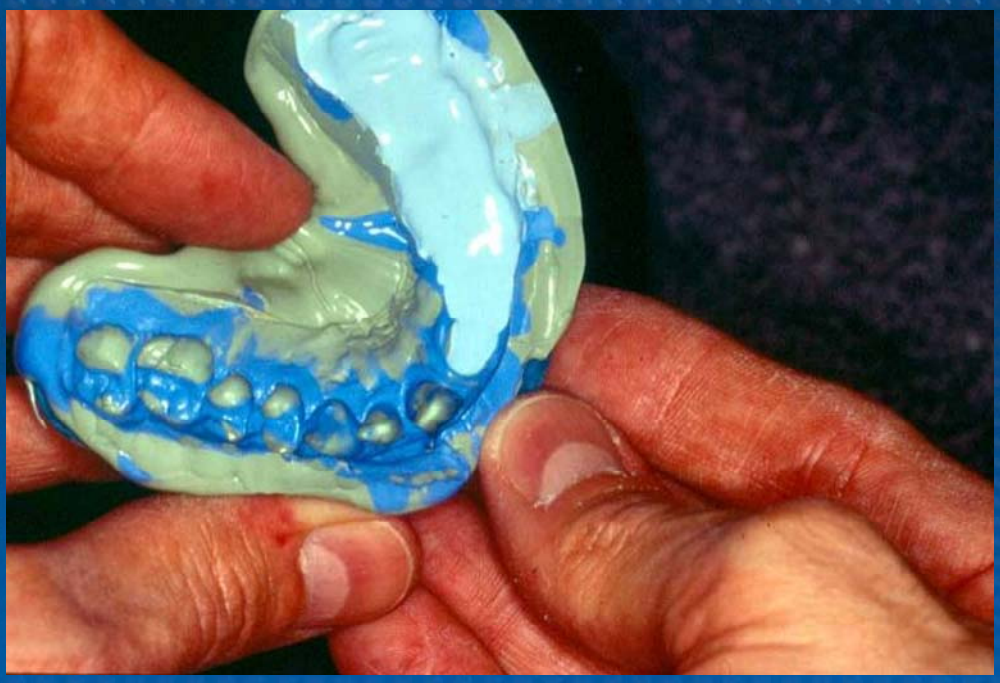
Mechanically spatulate under vacuum for an additional 20-30 seconds.

Break vacuum slowly, remove excess mixture from paddles, and prepare for impression pour-up.

Pour-up



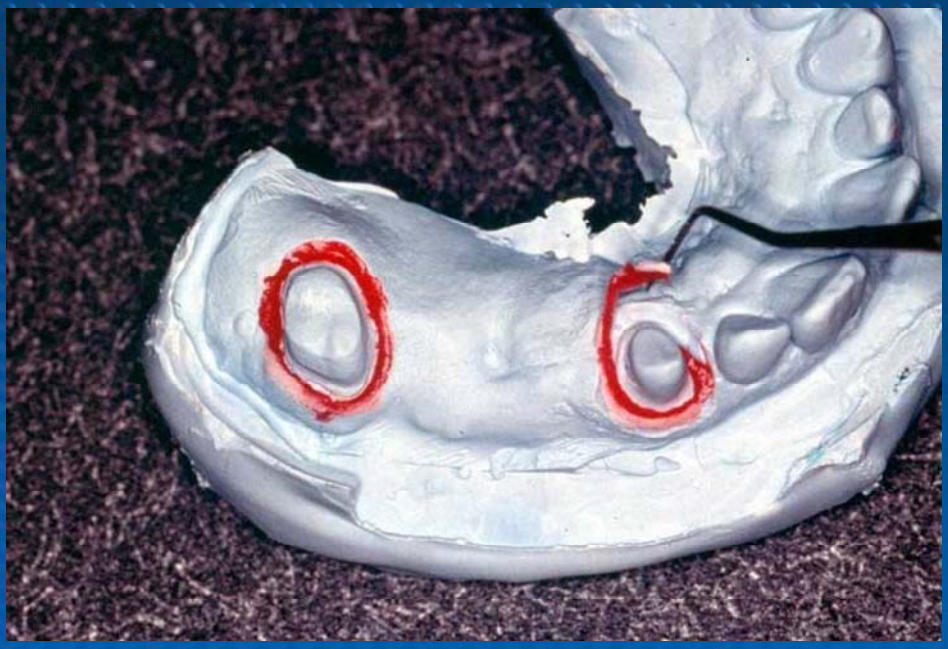
Using a small instrument, start at the preparations and slowly flow die stone into the impression.



Once the critical preparation and marginal areas are filled, flow the material around the occlusion.

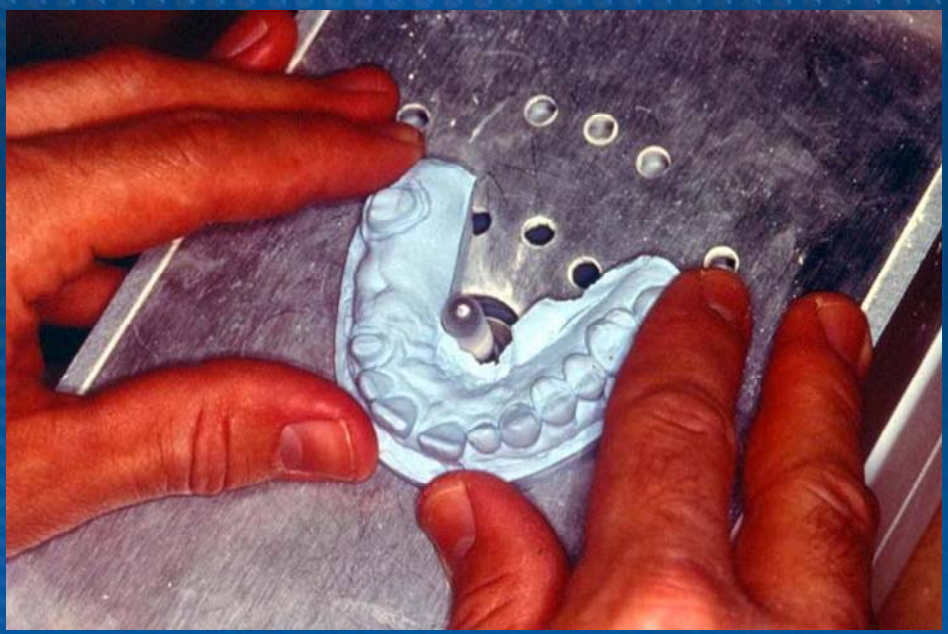
Stack up the die stone to provide adequate height for pinning.

Cast Preparation

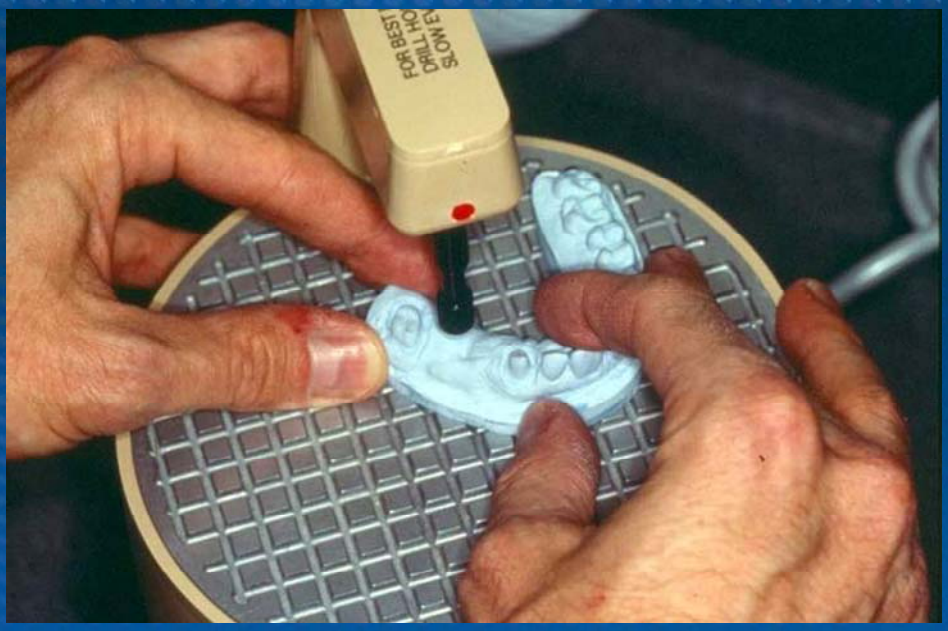


Remove wax from the cast and repeat previous steps if a solid or secondary cast is desired.

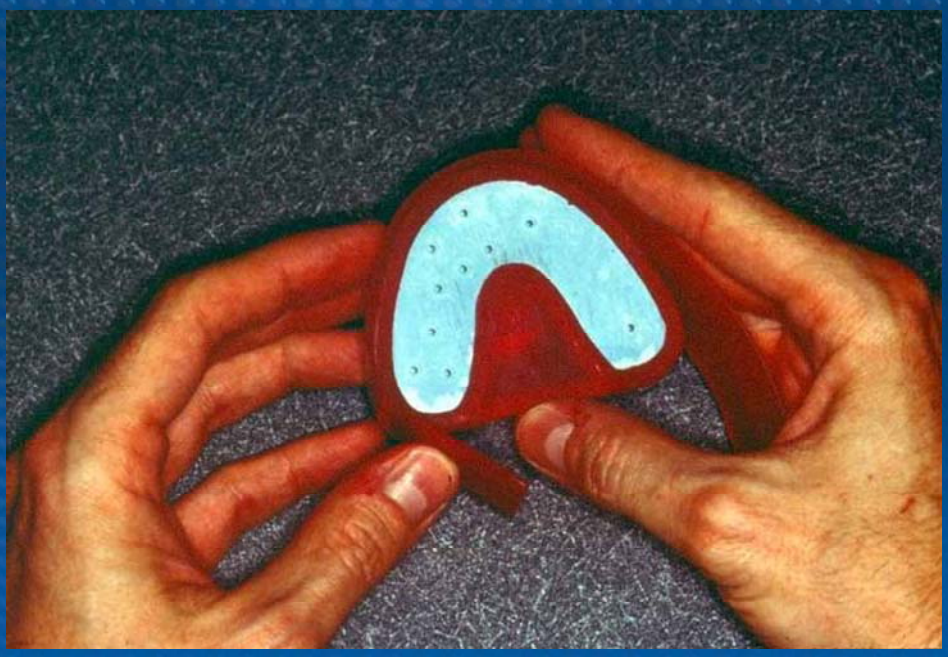
Level and reduce the height of the cast. Rough trim all accessible areas on the model trimmer.



Remove excess stone from the palatal area. Shape and refine cast outline. No bevel is necessary for the bead and box technique.

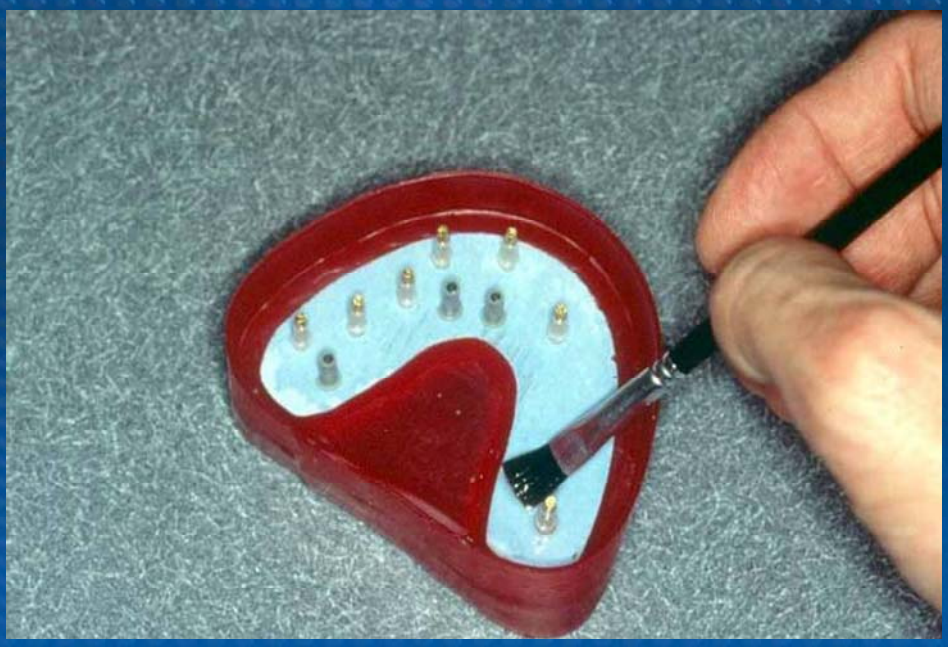


Carefully align and drill cast to receive a minimum of two dowel pins per removable section. Place a pin on the buccal and lingual aspect on working dies. *Note:* A drill pinning machine will parallel all dowel holes and increase the accuracy of the working model.

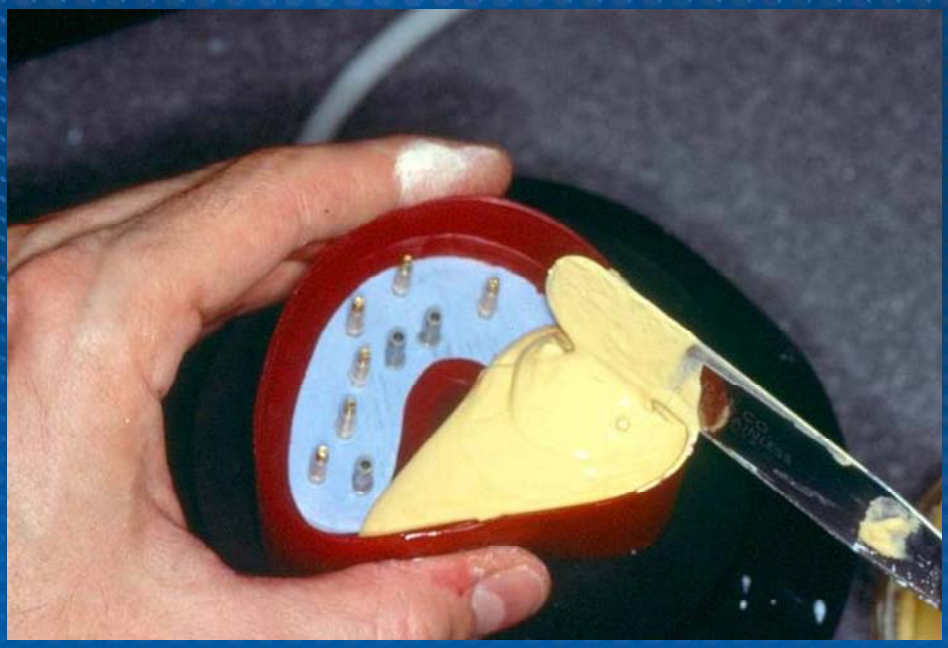


Bead and box the cast. An acceptable alternative technique inverts the pinned cast in a base former.

Cement dowel pins and place retention sleeves.



Apply a quality separator.



- Mix stone under vacuum
- Carefully pour stone around dowel pins, and fill boxed cast
- Allow to set 15 to 20 minutes

Die Fabrication

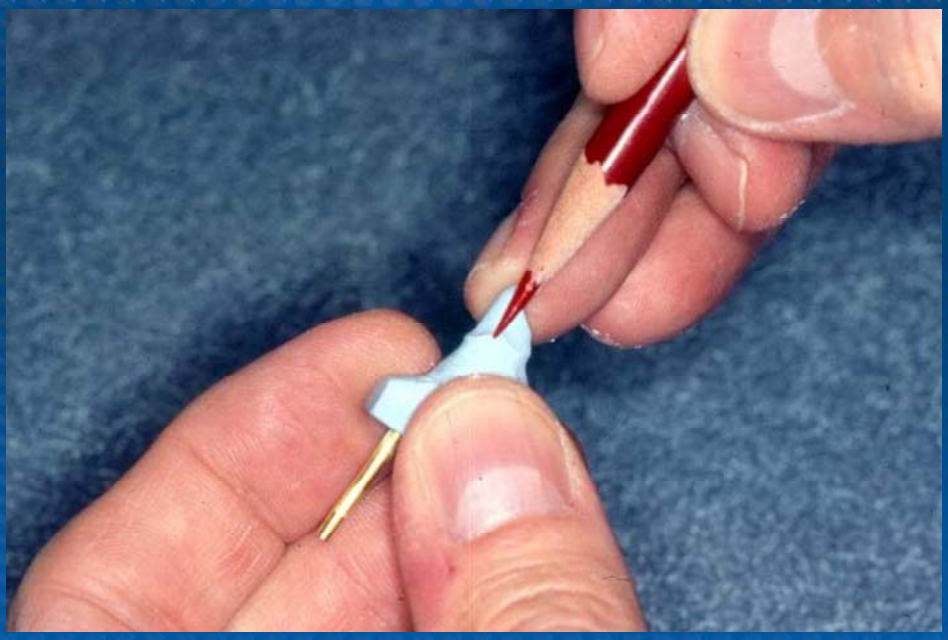
Use a dowel pin bur to provide access for die removal.

Saw cast into removable die sections. Raise the pinned cast to enhance access and to protect base from saw marks.

Bulk-trim dies with an arbor band, if necessary. Carefully refine dies with a carbide bur. Overditching will weaken fragile margins.

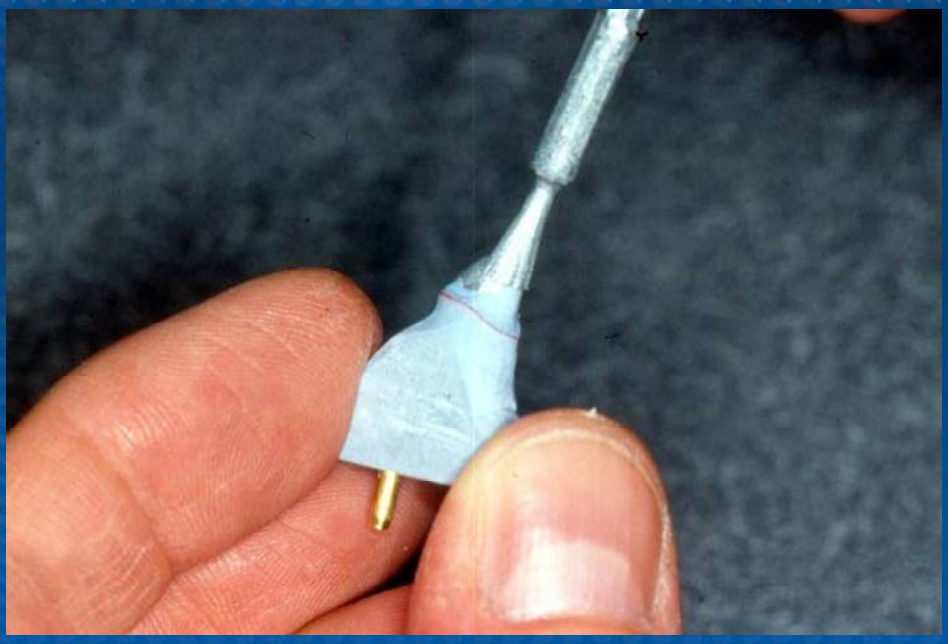
Cast ready for mounting.

Mount working casts using appropriate occlusal indexes. This step should be accomplished before die spacer and undercut blockout are applied. Inexpensive and sculptable vinyl spackling is suitable as a blockout for preparation undercut because it hardens when the die is sealed.



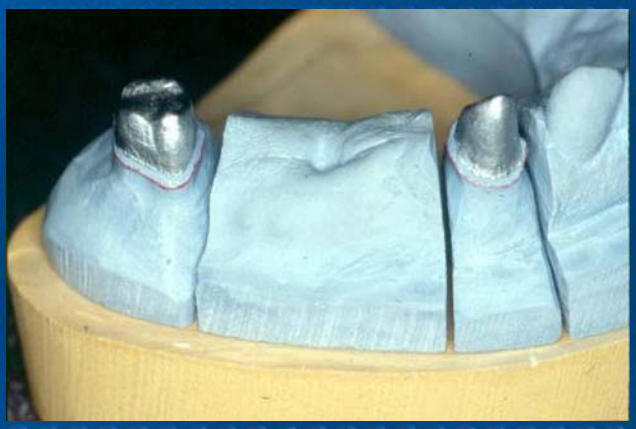
Mark the margins with a non-lead, color-contrasting pencil.

Apply a high-quality, low-viscosity die sealer such as Whip Mix’s PDQ Die Hardener.



Apply a quality die spacer to permit appropriate cement thickness.

Model is finished and ready for laboratory procedures.



ResinRock Physical Properties:

Water/Powder Ratio	20ml/100g
Working Time	5-7 minutes
Setting Time	10-12 minutes
Setting Expansion	0.08%
Compressive Strength, Wet (2 hours)	7,000 psi (48 MPa)
Compressive Strength, Dry (24 hours)	11,000 psi (76 MPa)