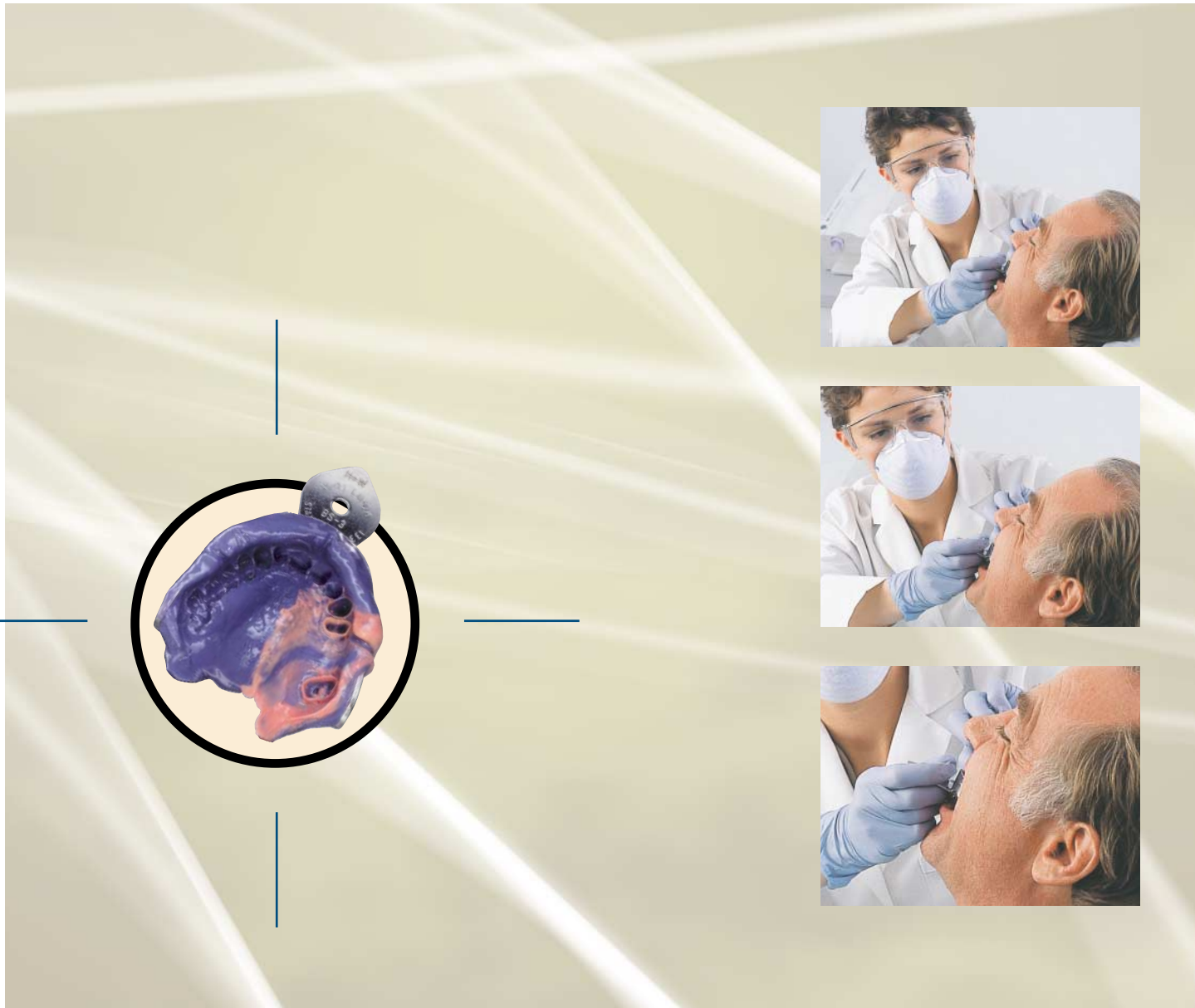


# Making Better Impressions

## A Troubleshooting Guide



This guide is part of an educational program of product-related information sources from 3M ESPE, designed to help improve technique, solve problems and help you make more informed decisions.



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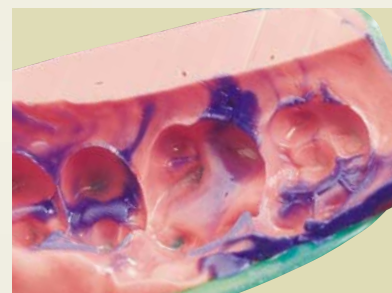
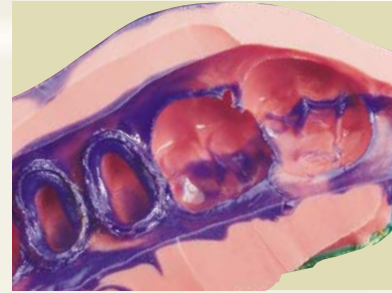
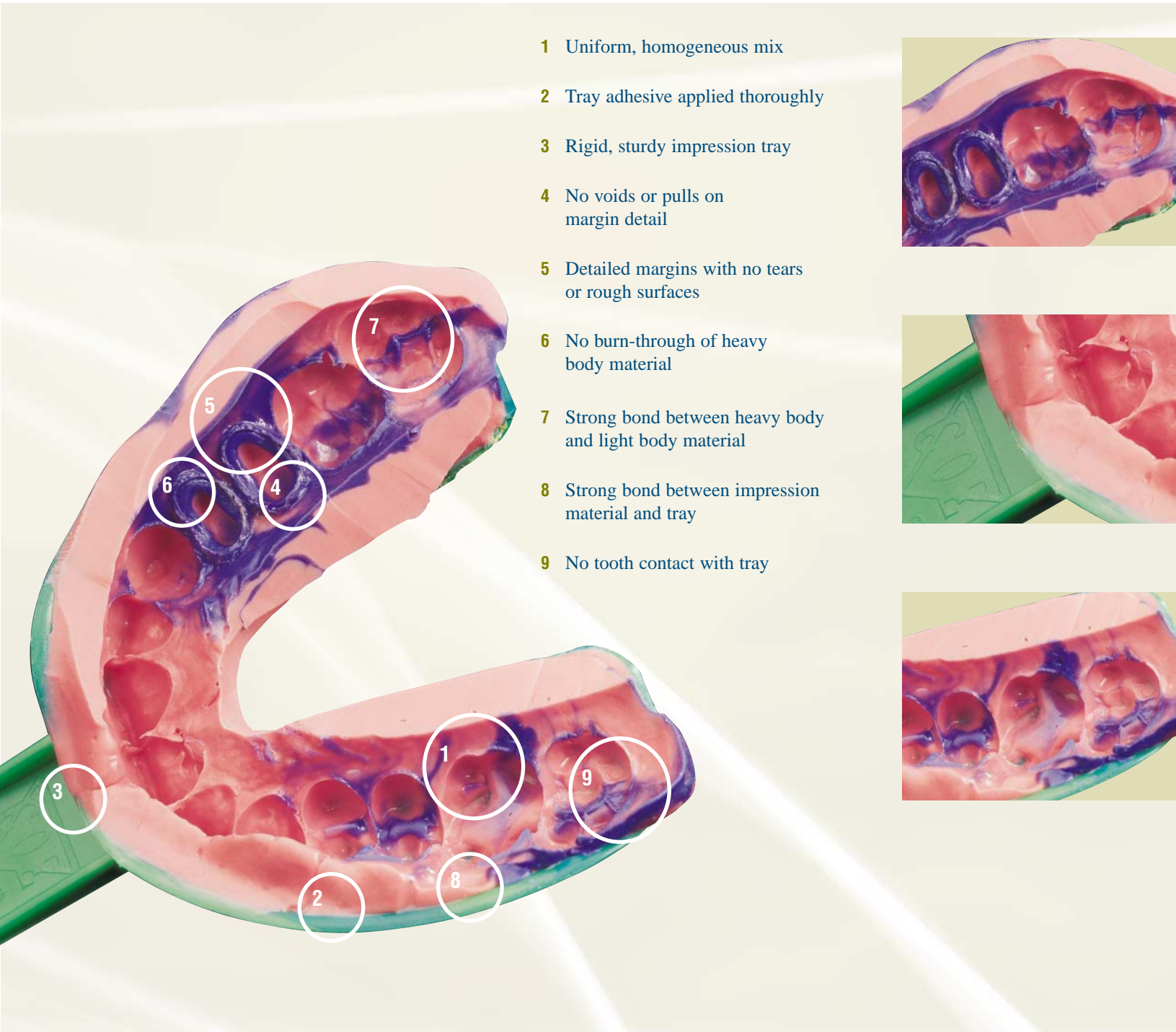
## Make Better Impressions

Even the most experienced practitioner, using the best materials, can encounter difficulties when making an impression. 3M ESPE has a long history in developing and testing impression materials. The information assembled in this guide is based on that experience, and is intended to help identify common impression problems and offer solutions. It is hoped this will help you avoid costly and time consuming remakes or adjustments to crown and bridge restorations.

## Indications of a Good Impression

Making a highly accurate impression is the first and most important step in creating superior crown and bridge restorations for your patients.

- 1 Uniform, homogeneous mix
- 2 Tray adhesive applied thoroughly
- 3 Rigid, sturdy impression tray
- 4 No voids or pulls on margin detail
- 5 Detailed margins with no tears or rough surfaces
- 6 No burn-through of heavy body material
- 7 Strong bond between heavy body and light body material
- 8 Strong bond between impression material and tray
- 9 No tooth contact with tray

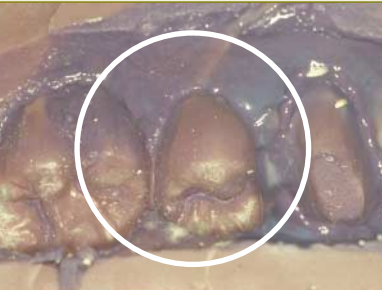


# Surface Inhibition/ Slow Set

## Visual Appearance

Impression not completely set. Tacky to the touch.

**Result** Inadequate surface detail on stone reproductions, poor fitting crowns.



Contaminated wash material



Surface inhibition

## CAUSE

## SOLUTION

### For Vinyl Polysiloxane Materials

Sulfur in latex gloves or rubber dam inhibits the setting reaction of VPS, but does not affect polyether impression material.

Wear nitrile gloves or gloves proven not to inhibit set of VPS impression materials immediately prior to making final impression.

Touching prepared teeth or surrounding tissue with latex glove.

If contamination suspected, scrub affected area with diluted hydrogen peroxide.

Rolling retraction cord with latex gloved fingers.

Wear nitrile gloves or gloves proven not to inhibit set of VPS impression materials immediately prior to making final impression.

Exposure to residues from custom temporary materials.

Do not use impressions already used to fabricate the temporary restoration.

Fabricate the temporary crown or bridge after final impression has been made.

Exposure to air inhibited methacrylates (i.e., composites, adhesives).

Remove air inhibited layer on the exposed surface with an alcohol wipe before making final impression.

*Continued*

## CAUSE

## SOLUTION

### For Polyether Materials

Exposure to epinephrine or iron III sulphate (for polyether materials).

Select retraction cords or hemostatic agents not containing these chemicals when using polyether impressioning materials.

Retraction solutions not removed sufficiently.

Carefully remove the retraction solution with water spray.

3M™ ESPE™ Permadyne™ Garant™ 2:1 Impression Material stored at a too low temperature (<12°C, 54°F) and is damaged.

Store material at room temperature.

Impressions exposed to direct sunlight or stored at a temperature too high.

Store the impression at room temperature in a dark place.

Wetting agent too aggressive.

Clean polyether impressions with water and dry. Wetting agents are not necessary.

### For VPS and PE Materials

Expired impression material.

Check expiration date of impression material.

Inadequate mix.

Ensure mixing instructions are followed and materials have a streak-free appearance.

Bleed 50ml cartridge before applying mix tip to ensure even dispensing.



Die stone with impression material residue



## Lack of Impression Detail

### Visual Appearance

Muted detail reproduction and inadequate margins.

**Result** Crowns may be too tight or small and extensive occlusal adjustments may be required.



Inadequate retraction

### CAUSE

Blood/saliva contamination around prep.

Inadequate retraction of sulcus around prep.

Exceeding the working time of the impression material.

### SOLUTION

Rinse and dry prep area just prior to making impression.

Good retraction technique with proper moisture control and proper tissue retraction.

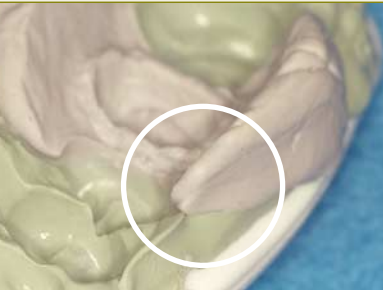
Follow manufacturer's working time specifications.

## Delamination

### Visual Appearance

Heavy body and light body materials not blending, or adhering together.

**Result** Indirect restoration will not seat properly.



Poor bond between heavy body/light body materials

### CAUSE

Exceeding the working time of the impression material.

Contamination of pre-set heavy body material in two-step technique.

### SOLUTION

Follow manufacturer's working time specifications.

Ensure VPS impression material does not come into contact with latex gloves.

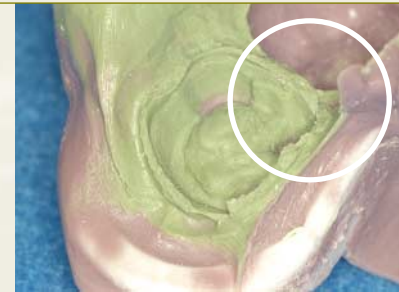
Ensure impression material does not come into contact with methacrylate residue from acrylate temporary materials.

## Voids on Margin

### Visual Appearance

Voids on margin or around prepared teeth.

**Result** The fit and function of the final restoration may be compromised.



Poor retraction and syringing technique

### CAUSE

Air incorporated in intraoral syringe or while filling impression tray.

### SOLUTION

Front load syringe by inserting mix tip directly into intraoral syringe and keep mix tip immersed in heavy body material while filling the tray.

Improper syringe technique.

Keep syringe tip immersed in wash material to avoid entrapping air.

Blood saliva contamination around prep.

Good retraction technique. Rinse and dry prep area.

Poor retraction around prep.

Good retraction technique. Consider two-cord retraction to displace tissue and control fluids.

Retraction cord not left in place adequate amount of time so that no blood or saliva are present.

Good retraction technique, leave cord in sulcus until no blood or saliva are present before syringing the light body impression material. Consider two-cord retraction.

### CAUSE

Poor retraction technique.

### SOLUTION

Improve retraction and where appropriate use two-cord technique.

Surface inhibition.

For VPS, avoid contamination from sulphur or methacrylate. For Polyether, avoid epinephrine or iron III sulphate because setting time could be compromised.

Slow setting material.

Follow manufacturer's setting time recommendation.

Check expiration date of material.

Early removal from mouth.

Follow manufacturer's setting time recommendation.

## Tearing at the Margin

### Visual Appearance

Tearing visible on the margin of the preparation.

**Result** Short crown margins and/or open margins.



Marginal tear

# Inadequate Capture of Margins

**Visual Appearance**  
Incomplete margin.

**Result** Short crown margins and/or open margins.



Void caused by syringe technique



Air bubble on margin

## CAUSE

## SOLUTION

Inadequate coverage of marginal area with light body impression material.

Good retraction technique.

Fluids such as blood or saliva present within the sulcus.

Maintain a clean and dry field.

Keep syringe tip immersed while syringing.

Gently stir while syringing.

Tearing of margin.

Good retraction technique.

Check manufacturer's instructions for working and setting times.

Exceeding the working time of the material.

Follow the manufacturer's working time specification.



## Inadequate Mix

**Visual Appearance**  
Non-homogeneous mix.

**Result** Slow setting  
impression material.

### CAUSE

Improper ratio of catalyst to base.

### SOLUTION

Bleed cartridge prior to attaching mix tip.

Mix tip not attached correctly.

Use manufacturer's recommended mix tip.

Air in the 50ml cartridge.

Bleed cartridge to ensure equal catalyst/  
base expulsion.



"Streaky" inadequate mix

## Facial-Lingual Pulls

**Visual Appearance**  
V-shaped void, trough-like.

**Result** Failure to capture  
complete and accurate dentition.

### CAUSE

Improper tray seating.

### SOLUTION

Seat tray slowly.

Follow manufacturer's working time.

Improper syringe technique.

Use proper syringe technique.

Too little material.

Use more material.



Lingual pulls

## Improper Tray Seating

### Visual Appearance

Burn-through of light body impression material.  
Impression tray exposed.

**Result** Crowns are too tight, too small, or rock when seated. Tight fitting crowns.



Contact with impression tray

### CAUSE

Prepared teeth contacting the sides or bottom of impression tray.

### SOLUTION

Avoid contact of teeth with any surface of the tray.

Test various tray sizes to ensure proper size.

Tooth contact with the pre-set tray material when using the two-step technique.

Relieve the heavy body impression material to ensure a 2–3mm space.

Tray seated too quickly or forcefully.

Slowly position tray into patient's mouth.

Tray movement or rocking during the impression.

Use passive pressure to immobilize the tray for the recommended set time.

Weaker plastic trays can allow deflection of the tray which may rebound upon removal.

Use a stiffer, more rigid stock tray.

## Poor Bond of Impression Material to the Tray

### Visual Appearance

Impression pulling away from the sides/bottom of tray.

**Result** Crown(s) may not seat fully, or require excessive occlusal adjustment.



Separation of material from tray

### CAUSE

No tray adhesive used.

### SOLUTION

Use appropriate tray adhesive.

Incompatible tray adhesive used.

Use appropriate tray adhesive.

Inadequate drying time for tray adhesive.

Follow manufacturer's instructions for application and drying time.

## Stone Model Discrepancies

### Visual Appearance

Voids on margin, powdery cusp tips or incisal edges on prepared tooth.

**Result** Incomplete seating of indirect restorations.

### CAUSE

Small voids due to hydrogen gas evolution from the polymerization of VPS materials.

Tooth contact with impression tray or gauze of double bite tray causes water to leach out of the tray, dehydrating the stone.

Large voids present due to poor model pouring technique.

### SOLUTION

Follow manufacturer's instructions for pouring.

Avoid tooth contact with any surface of the impression tray.

Follow manufacturer's instructions for pouring.

Use a surfactant for a VPS impression.



Stone model with hydrogen evolution voids



Stone model with powdery cusp tips



## A Leader in the Dental Industry

You can trust 3M ESPE as an educational resource. This guide is part of our ongoing efforts that add value to the products and materials you use in your practice on a daily basis. Of the more than 2,000 quality products 3M ESPE manufactures and markets to the dental industry, we offer a full line of impression materials, as well as products to meet your restorative, crown and bridge, preventive, infection control, and cosmetic dentistry needs.

For more information, call the 3M ESPE Technical Hotline, **1-800-634-2249** or visit our Web site, [www.3MESPE.com](http://www.3MESPE.com).

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