

3M ESPE

Express™ Impression Material

technical product profile

Express

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Introduction

History of 3M ESPE Vinyl Polysiloxane (VPS) Impression Materials

The Express™ Impression Material System, manufactured by 3M ESPE, was the first vinyl polysiloxane automix system in the U.S. Used in the putty/wash technique, the Express™ STD Putty is easy to mix without streaking while the thixotropic Express wash materials stay on your preparation without slumping.

In 1996 3M ESPE introduced the Garant™ delivery (dispenser) system that was specifically engineered for use with Imprint™ II impression material. This new delivery (dispenser) system offered more extrusion power and allowed the dispenser to be 100% steam autoclaveable. The new delivery system consisted of the Garant Dispenser 1:1/2:1, dual port cartridge which eliminates cross-contamination of the base and catalyst, virtually eliminating plugging of the cartridge and smaller mixing tips which provides less waste of the wash materials.

Now the Express™ Light Body Regular Set, Express™ Regular Body Regular Set and Express™ Light Body Fast Set are available in this industry standard delivery system. Furthermore the new cartridge labels provide the user with information regarding working time, setting time as well as expiration dates.

Express wash impression materials now share the same delivery system as the Imprint™ line of impression materials: Imprint II™, Imprint™ II Quick Step, and Imprint™ Monophase.

Indications for Use

The Express impression materials, manufactured by 3M ESPE, are vinyl polysiloxane dental impression materials designed for making precise crown and bridge, denture impressions. The Express STD Putty, Express light body, regular set (green) and Express regular body, regular set (purple) are indicated for use in the one-step putty wash technique.

Express STD Putty and Express light body, fast set (blue) are indicated for use in the two-step putty wash technique.

Express™ Impression Material System

Includes:

Express™ STD Putty – A hand mixed putty impression material designed to be combined with Express wash materials. The putty may be used in a one-step/two viscosity or two-step/two viscosity technique. The Express Putty has 1-minute of room temperature working time and a 5-minute oral setting time. The mixing ratio is 1 scoop of base paste: 1 scoop of catalyst paste.

Express™ Light Body, Regular Set (green) – A high-flow, drip-resistant wash for use with Express Putty. Express light body impression material provides 1-minute of oral working time and a 5-minute oral setting time.

Express™ Regular Body, Regular Set (purple) – A controlled-flow, drip-resistant wash for use with Express Putty. Express regular body regular set impression material also provides 1-minute of oral working time and a 5-minute oral setting time.

Express™ Light Body, Fast Set (blue) – A high flow, drip-resistant light for use with Express Putty. Express light body impression material provides 30 seconds of oral working time and a 3.5-minute oral setting time. This product is indicated for use in the two-step/two viscosity with the Express Putty.

Garant™ Dispenser – The dispenser is designed to be used with all three Express wash materials.

Accessory Items – Garant Mixing Tip, yellow; Garant Intraoral Tips, yellow; and VPS Tray Adhesive

Chemistry

The reaction chemistry that drives modern addition-cured silicone impression materials is known as hydrosilation and was first described in the 1950's by Speier at Dow Corning (Speier, 1957). This reaction involves the addition of a siliconhydrogen bond across a carbon-carbon double bond and is catalyzed by a platinum (Pt) acid, H_2PtCl_6 (Figure 1). A key feature of this chemistry is two molecules reacting to form a third with the lack of any by-products which could cause dimensional stability problems. The utility of Speier's catalyst for high performance specialty applications was limited by a long induction period and solubility problems. These problems were overcome in the early 1970's when Karstedt at GE invented a fast-acting, soluble platinum catalyst (US Patent 3,715,334; 3,775,452; 3,814,730).

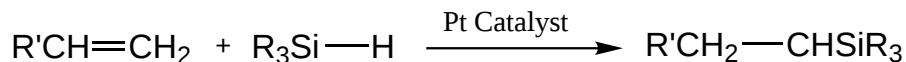


Figure 1. The Addition-cured (Hydrosilation) Reaction

There are several reactive ingredients in addition-cured impression materials including polymers, a crosslinker, and a platinum catalyst. The main component by weight is a carbon-carbon double bond (vinyl) terminated polydimethylsiloxane (vinyl polysiloxane, VPS).

A number of different compounds can be used as setting time inhibitors to help pinpoint the working and setting times, however, they all have a divinyl disiloxane structural feature in common. These inhibitors are also part of the Karstedt catalyst which has three vinyl siloxane groups bound to a neutral platinum atom. The cycle by which the Pt complex catalyzes the reaction between a silicon-hydrogen bond and a carbon-carbon double bond is shown in Figure 2.

These catalysts are very active and under the proper conditions each Pt atom can catalyze several thousand cycles per minute. This high reactivity also means the Pt catalyst is susceptible to a variety of contaminating agents including other carbon-carbon double bond containing compounds, especially acrylates and methacrylates, phosphines, and a variety of sulfur-containing compounds including some latex gloves. These compounds act as contaminants by binding strongly to the Pt atom to form catalytically inactive Pt species. The inactive species is no longer able to catalyze the silicone-hydrogen and carbon-carbon bonds and the material remains unset.

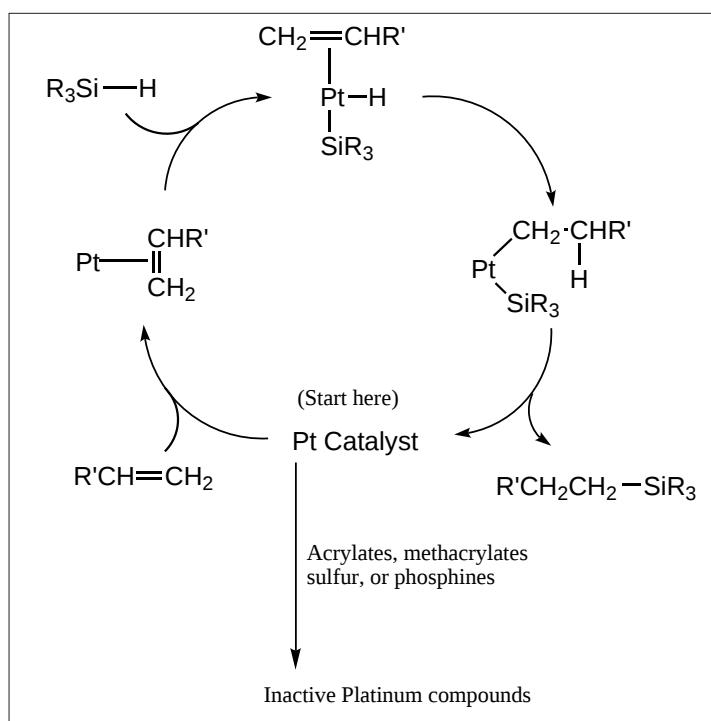
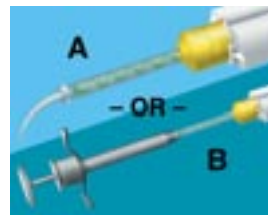
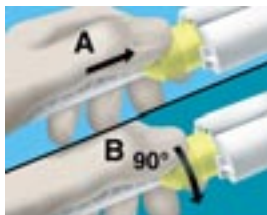
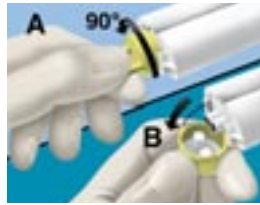


Figure 2. Catalytic cycle for platinum catalyzed hydrosilation

Technique Guide

3M ESPE *GENERAL USE*

Express™ Impression Material Systems



3M ESPE Customer Hotline 1-800-634-2249
Please refer to instructions for more detailed information
as well as precautionary and warranty information.
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Additional Technique Recommendations

1. Tray Selection: A rigid custom or stock tray is recommended to offer stability and support for the final impression.
2. The 3M™ ESPE™ Directed Flow Impression Tray may be used with the benefit of no longer using a VPS tray adhesive because of the self-retentive fleece insert.

If plastic, metal and custom trays are used then a VPS Tray Adhesive should be placed on all surfaces of the tray coming in contact with impression material. It is recommended regardless of tray type (including the gauze inserts of double bite trays). Tray adhesive helps bond the impression material to the tray, minimizing the potential for distortion of the final impression. Tray adhesive is critical, especially when second or third stone model pours are required.

3. Filling Intraoral Syringing: The intraoral tip should remain submerged while syringing around the prepared tooth.
4. Intraoral Syringe Filling: When possible, fill intraoral syringes from the front while forcing the plunger backwards (see Technique Guide, page 8). “Front loading” helps to reduce the incidence of air incorporation during syringe filling.
5. Tray Seating/Passive Pressure: Seat the impression tray slowly. Trays should not come in contact with the preparation(s) or surrounding dentition. Once the tray has been seated, maintain passive pressure for the full recommended setting time.

System Information

Applications Per Cartridge

Applications per cartridge will vary depending on tray type, tray size, loading volume and impression technique. The following chart estimates applications per cartridge for full arch, quadrant and double-bite trays.

	Milliliters/ application	Application/ cartridge
Regular and Light Body Impression Materials		
Single Preparation	4	12

Disinfection

Immerse the impression in a 2% glutaraldehyde disinfectant (Impresept™), or a dual or synergized quaternary disinfectant for the period of time recommended by the manufacturer for optimum results. Remove the impression, rinse it with water and dry the impression. This disinfection procedure will not affect the impression performance.

Recommendation for Cast/Model Pouring

The model can be poured two hours after setting. Type 3 and Type 4 dental stone materials may be used. The Express™ impressions are very stable and can be poured up to two weeks later.

Garant™ Dispenser

Disinfection and Sterilization

The Express™ Garant™ Dispenser is 100% autoclaveable. It is no longer necessary to remove the plunger before disinfecting the dispenser. The dispenser is detergent safe and requires no lubrication. It may be disinfected using liquid sterilants or may be sterilized using a steam autoclave.

Caution:

Do not sterilize using dry heat or chemical vapor as damage to the dispenser may result.

Cartridge Design

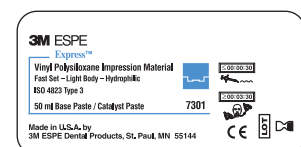
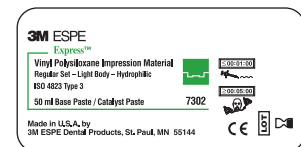
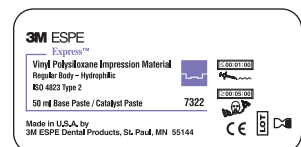
Designed in conjunction with the Garant dispenser, Express™ Regular Body Body and Light Body Impression Materials have a unique cartridge which offers:

Features	Benefits
Dual Port Mix Tip	Virtually eliminates plugging
Reuseable Cartridge Cap	Improved infection control Compact storage
Intraoral Tip	Increased length and a smaller orifice for better intraoral access
Improved Cartridge Labels	Working/setting times, expiration date and lot number communicated more clearly

Cartridge Labels

Express impression material cartridge labels were designed to clearly convey critical product information including:

- Working times for oral syringing and tray filling
- Oral setting time
- Expiration date
- Lot number
- Color coding by product:
 - Regular Body, regular set impression material - Purple
 - Light Body, regular set impression material - Green
 - Light Body, fast set impression material - Blue



Instructions for Use

The Express™ Impression Materials, manufactured by 3M ESPE, are vinyl polysiloxane impression materials designed for making precise crown and bridge, denture and bite registration impressions. The Express impression system offers the following viscosity materials and setting times:

- 7301 Low Viscosity (Light Body) Fast Set hydrophilic syringeable material for making single unit impressions in the two-step putty/wash technique.

	Oral Syringing	Oral Set Time
\	≤30 Sec*	3.5 Min.

- 7302 Low Viscosity (Light Body) Regular Set hydrophilic syringeable material for multiple-unit impressions.

Oral Syringing	Oral Set Time
≤60 Sec*	5.0 Min.

- 7322 Medium Viscosity (Regular Body) Regular Set hydrophilic syringeable material for multiple-unit impressions.

Oral Syringing	Oral Set Time
≤60 Sec*	5.0 Min.

- 7312 STD Firmer Set Putty for use as a tray material.

Putty Seating	Oral Set Time
Time ≤60 Sec**	5.0 Min.

* After 15 seconds intraoral syringe filling time

** After 30 seconds putty mixing time

	Total Working Time	Mouth Removal Time
7301 Fast Set	@23°C (73°F) = 60 sec.	3.5 min.
Low Viscosity	@37°C (95°F) = 30 sec.	3.5 min.
7302 Regular Set	@23°C (73°F) = 90 sec.	5.0 min.
Low Viscosity	@37°C (95°F) = 60 sec.	5.0 min.
7322 Regular Set	@23°C (73°F) = 90 sec.	5.0 min.
Medium Viscosity	@37°C (95°F) = 60 sec.	5.0 min.
7312 STD Putty	@23°C (73°F) = 90 sec.	5.0 min.

Once oral syringing begins, the tray **MUST BE SEATED** within 30 seconds for 7301 and within 60 seconds for 7302 and 7322. Once mixing is completed, the putty **MUST BE SEATED** within 60 seconds.

Regardless of the amount of working time used, once the tray is seated, the 7301H requires a 3.5 minute set time and the 7302, 7322, and 7312 require a 5.0 minute set time.

The automix system simultaneously mixes and delivers the Express syringeable material directly from the cartridge.

Loading and Operation of Dispenser

1. Place the Express™ Light Body Regular Set, Express™ Regular Body Regular Set or Express™ Light Body Fast Set Impression Material into the Garant™ Dispenser. Close the cartridge retainer on the top of the dispenser.
2. Dispense a small amount of impression material until both the base and catalyst emerge uniformly, then attach a yellow mix tip to the cartridge.
3. For intraoral use of Express light body impression material, regular body, and light body fast set, attach a yellow intraoral tip to the yellow mix tip. **(Note: Use moderate pressure and push the blunt end of the intraoral tip into the mix tip. A click will be heard when the intraoral tip is locked into position).** Alternatively, dispense the Express light body, regular body or light body fast set impression material into an intraoral syringe.

Impression Procedures

Express Simultaneous Putty/Wash Technique

Recommended Materials: 7312 Putty and 7302 or 7322 syringeable.

1. Select or prepare a rigid tray of sufficient size and wall height to accommodate 2-3mm thickness of impression material surrounding the teeth.
2. Brush a thin coat of VPS Tray Adhesive, manufactured by 3M ESPE, on the tray and allow to air dry (minimum of 5 minutes). Prepare the teeth, isolate and place retraction cord(s).
3. Dispense the syringeable viscosity material directly into an intraoral syringe of your choice. Alternatively, a 3M ESPE intraoral tip can be attached to the mixing tip for direct syringing. **(Note: Use moderate pressure and push the blunt end of the intraoral tip into the mix tip. A click will be heard when the intraoral tip is locked into position).**
4. Measure equal volumes of putty base and catalyst.
5. Simultaneous to removal of retraction cords and injection* of syringeable material around the clean, dry tooth preparations, the assistant should mix** the base and catalyst with fingertips until a homogeneous color is achieved (30 seconds). The mixed putty is then placed into the adhesive coated tray. Make a large dimple-shaped indentation (approximately the size of three teeth) in the putty where the preparation site will be impressed. Fill the indentation with the syringeable material.

* Syringe with a stirring motion, keeping the tip immersed to avoid trapping air and ensuring adherence to and complete coverage of the prepared surfaces.

**Caution: Certain gloves will inhibit the setting of putty. Test gloves to confirm proper setting times. Wear vinyl gloves or use vinyl overliners. Then, remove gloves and thoroughly wash and dry hands to remove sources of potential contamination (e.g., glove residues and hand lotions).

6. Slowly seat the tray with unset mixed putty in the mouth over the unset syringeable material on the preparation. **NOTE: The tray must be seated within 60 seconds after oral syringing has begun with the low viscosity regular set and medium viscosity and within 60 seconds after completion of mixing the putty.**
7. Immobilize the tray in the mouth without applying excessive pressure on the tray until the materials are completely set - five minutes.
8. Apply downward pressure along the periphery of the tray to release the impression seal and remove the tray.

9. Visually inspect impression for evidence of defects or tears. Thoroughly examine and explore the sulcus of prepared teeth, as well as surrounding dentition for impression material remnants.
10. Immediately rinse the impression under water and blow dry.
11. Immerse the impression in a 2% glutaraldehyde disinfectant (Impresept™), or a dual or synergized quaternary disinfectant for the period of time recommended by the manufacturer for optimum results. Remove the impression, rinse it with water and dry the impression. This disinfection procedure will not affect the impression performance.
12. The model can be poured two hours after setting. Type 3 and Type 4 dental stone materials may be used. The Express impressions are very stable and can be poured up to two weeks later.
13. Impressions should be shipped in packaging designed to prevent distortion and contamination.

Two Step Putty/Wash Technique

Recommended Materials: 7312 Putty and 7301, 7302, or 7322 syringeable

Step 1. Tray Preparation/Preliminary Putty Impression

1. Select or prepare a rigid tray of sufficient size and wall height to accommodate 2-3 mm thickness of impression material surrounding the teeth.
2. Brush a thin coat of VPS tray adhesive on the tray and allow to air dry (minimum of five minutes).
3. Remove equal volumes of base and catalyst from the jars and mix the two materials with fingertips until a homogeneous color is achieved (approximately 30 seconds).^{*} The mixed putty is then placed into the adhesive coated tray.

^{*} Caution: Certain gloves will inhibit the setting of putty when mixed. Test gloves to confirm proper setting times. Wear vinyl gloves or use vinyl overliners. Then, remove gloves and thoroughly wash and dry hands to remove sources of potential contamination (e.g., glove residues and hand lotions).

4. Place a plastic spacer over the mixed putty and seat the tray into the mouth. Maneuver the tray in the mouth to create a 2-3 mm space for the syringeable material. Note: The tray must be seated within 60 seconds after completion of putty mixing. Once seated, the tray can be left in the mouth until fully set (five minutes) and then remove. To save time, the tray can be removed prior to complete set and allow the putty to bench-set for a minimum of 10 minutes.
5. Remove the spacers. Rinse and dry the putty impression. If 2 mm space is not available throughout the impression, remove excess set putty with a bur or sharp knife until adequate space is achieved. Make sure putty is clean and dry.
6. Prepare the teeth, isolate and place retraction cord(s).

Step 2. Final Impression

7. Dispense syringeable material into the set putty impression in the tray. Fill the entire arch using a stirring motion and keeping the tip immersed in the material to avoid trapping air.
Note: If the time between removing the putty impression from the mouth and the start of syringing is longer than 30 minutes, the surface of the putty should be roughened with a stiff brush or bur before proceeding to insure adequate bonding with syringeable material.

8. Remove the retraction cord(s) and inject the syringeable material around the clean, dry tooth preparation. **Syringe with a stirring motion, keeping the tip immersed to avoid trapping air and ensuring adherence to and complete coverage of the prepared surface.**
9. Reseat the tray, being careful to avoid contact of teeth with putty. **NOTE: The tray must be seated within 60 seconds after oral syringing has begun with the low viscosity regular set and medium viscosity, 30 seconds with the low viscosity fast set.** Immobilize the tray in the mouth without applying excessive pressure on the tray until the materials are completely set - **five minutes for low viscosity regular set and medium viscosity and 3.5 minutes for low viscosity fast set.**
10. Once set, apply downward pressure along the periphery of the tray to release the impression seal and remove the tray.
11. Visually inspect impression for evidence of defects or tears. Thoroughly examine and explore the sulcus of prepared teeth, as well as surrounding dentition for impression material remnants.
12. Immediately rinse the impression under water and blow dry.
13. Immerse the impression in a 2% glutaraldehyde disinfectant (Impresept™), or a dual or synergized quaternary disinfectant for the period of time recommended by the manufacturer for optimum results. Remove the impression, rinse it with water and dry the impression. This disinfection procedure will not affect the impression performance
14. The model can be poured two hours after setting. Type 3 and Type 4 dental stone materials may be used. The Express™ impressions are very stable and can be poured up to two weeks later.
15. Impressions should be shipped in packaging designed to prevent distortion and contamination.

Storage and Use

1. Shelf life at room temperature for 7312 putty is 24 months. Shelf life at room temperature for 7301, 7302, and 7322 syringeable materials and the 7307 tray adhesive is 36 months. See outer package for expiry date.
2. The system is designed to be used at room temperature of approximately 21 - 24° C or 70 - 75° F.
3. Express™ impressions should be stored at dry room temperatures. Do not store in water or excessive humidity.
4. Avoid contaminating the putty or surface contacts with chemicals that could contaminate and inhibit the set (e.g. acrylic and methacrylate residues, latex rubber, and sulphur compounds).
5. Express impressions can be silver-plated or copper-plated.
6. Express materials cannot be mixed with or bonded to condensation-type silicones.
7. Disassemble the Garant™ Dispenser and sterilize the dispenser handle and plunger separately at up to 135° C/275° F or with commercial cleaning agents containing no strong organic solvents, such as alcohols. Do not use disinfectants.

Regulatory Specification Data:

- ANSI/ADA Specification #19
- International Standard ISO 4823
- Chemical Nature: Vinyl Polysiloxane
- Maximum Compression Set: <1.0%
- Recovery From Deformation: >99.0%
- Maximum Dimensional Change: 24 Hrs. < 0.3%; 336 Hrs. (2 weeks) <0.3%
- Strain in Compression: Putty: 1.0 - 3.0%; Syringeable: 2.0 - 6.0%
- Recommended Gypsum Pour Time: 2 Hours - 2 Weeks
- Metalizing Bath: AG, Cu

	7301	7302	7322	7312
ANSI/ADA #19	Type 1	Type 1	Type 1	Type 1
	Low Viscosity	Low Viscosity	Medium Viscosity	Very High Viscosity
ISO 4823	Type 3 Light Body	Type 3 Light Body	Type 2 Regular Body	Type 0 Putty

	Mixing Time @73°F	Total Working Time @72°F	Minimal Oral Set Time @88°F	Setting* Time
7301				
ANSI/ADA Spec #19	—	1.0 min.	3.5 min.	n/a
ISO 4823: 1992 (E)	—	60 sec	n/a	240 sec
7302				
ANSI/ADA Spec #19	—	2.0 min.	5.0 min.	n/a
ISO 4823	—	90 sec	n/a	330 sec
7322				
ANSI/ADA Spec #19	—	2.0 min.	5.0 min.	n/a
ISO 4823	—	90 sec	n/a	330 sec
7312				
ANSI/ADA Spec #19	30 sec	2.0 min.	5.0 min.	n/a
ISO 4823	30 sec	90 sec	n/a	330 sec

This information provided for regulatory testing purposes only.

No person is authorized to provide any information which deviates from the information provided in this instruction sheet.

Warranty

3M ESPE warrants this product will be free from defects in material and manufacture. 3M ESPE MAKES NO OTHER WARRANTIES INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. User is responsible for determining the suitability of the product for user's application. If this product is defective within the warranty period, your exclusive remedy and 3M ESPE's sole obligation shall be repair or replacement of the 3M ESPE product.

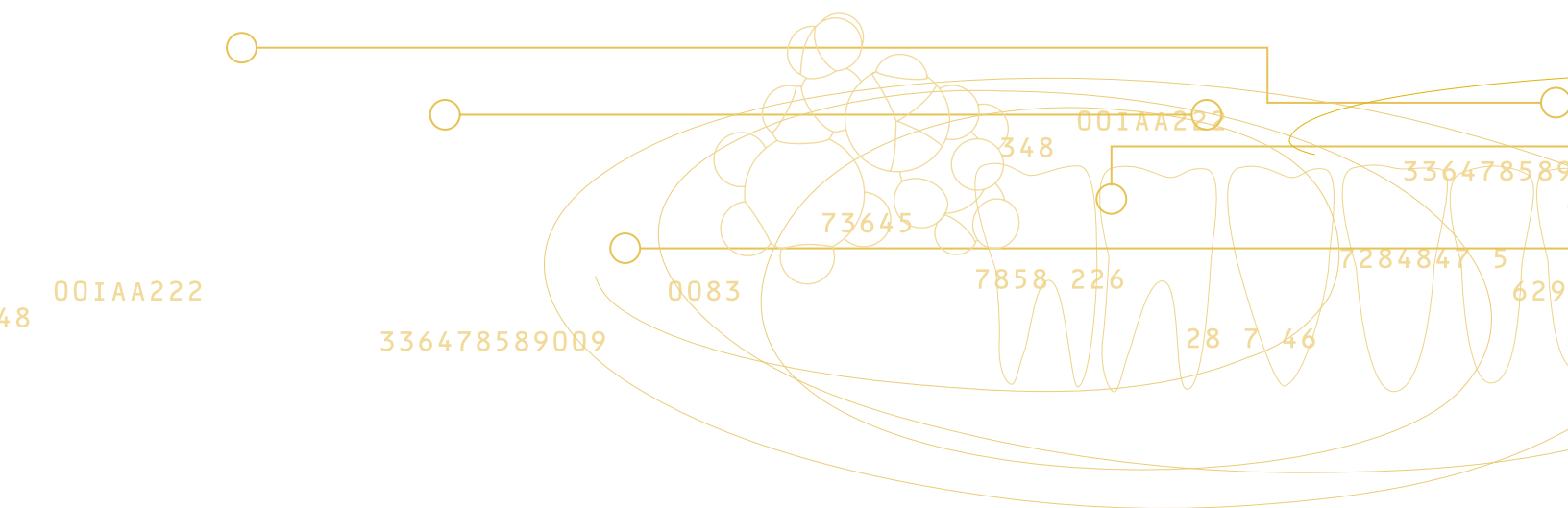
Limitation of Liability

Except where prohibited by law, 3M ESPE will not be liable for any loss or damage arising from this product, whether direct, indirect, special, incidental or consequential, regardless of the theory asserted, including warranty, contract, negligence or strict liability.

Tips and Tricks

The following tips and tricks are intended to help solve problems which may arise and to avoid potential errors.

Problem	Remedy
Difficulties arising from jaw formation (large undercuts) resulting in tears in the impression material.	Block out the tray with wax (so the material cannot run off via the shortest route but instead flows to the problem area) and insert it slowly into the mouth.
Inadequate adhesion of the material to the tray (e.g. in the case of large undercuts separation can occur when removing the tray).	Use an adhesive (e.g. VPS Tray Adhesive) and trays with retention (e.g. Rim Lock). Use 3M™ ESPE™ Directed Flow Impression Tray.
Die stone material does not flow onto	Use a wetting agent and blow it off the surface properly with compressed air.
Surface of the impression is smeared.	Finish or isolate fresh composite fillings or core build-ups.
Material does not set on the surface.	Use nitrile or vinyl gloves instead of latex gloves. Latex gloves contain sulfur which inhibits the setting of the impression.
Material does not bond with other impression materials.	Express impression materials are not compatible with C-silicone, alginate or poly ether.
There are voids on the model.	With model casting, the waiting time is 2 hours.



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