

**3M ESPE**

# **Imprint™ II Garant™ Quick Step**

Heavy Body/Light Body Impression Material System

**Technical Product Profile**



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# Introduction

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

The history of 3M ESPE VPS impression material began in 1982 with the introduction of Express™ Bite Registration Putty. In 1983, the Express brand was expanded to include STD putty and light body impression materials. While putty remained hand-mixed, Express light body impression materials were introduced in a new auto-mix system developed by 3M ESPE. This auto-mix system quickly became the industry standard for VPS delivery. In 1997, 3M™ ESPE™ Imprint™ II Heavy Body/Light Body Impression Materials were developed in conjunction with the 3M™ ESPE™ Garant™ Dispenser in order to provide a heavy body impression material with an “assistant-approved” extrusion force.

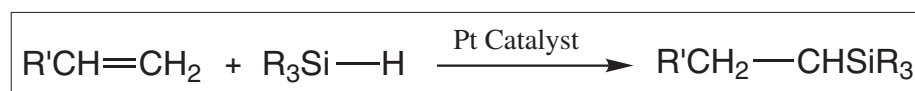
The new 3M™ ESPE™ Imprint™ II Garant™ Quick Step Heavy Body/Light Body Impression Materials were developed in order to provide a fast, rigid setting, hydrophilic dental impression material, designed for making a precise impression of an inlay, onlay, veneer, or crown. Imprint II Garant Quick Step heavy body and light body impression materials are especially formulated for use in the one-step/two viscosity technique. The customer-defined rigidity enables Imprint II Garant Quick Step impression material to be used in a dual arch impression tray. Imprint II Garant Quick Step impression material is designed for use on fast procedures where the impression tray can be seated within 40 seconds from the start of oral syringing.

While Imprint II Garant Quick Step impression material system is designed for a single unit, it can be used for up to three adjacent units. To avoid incomplete or inaccurate impressions, be careful not to exceed the oral working time.

## Chemistry

The reaction chemistry that drives modern addition-cured silicone impression materials is known as hydrosilylation and was first described in the 1950's by Speier at Dow Corning. This reaction involves the addition of a silicon-hydrogen bond across a carbon-carbon double bond and is catalyzed by a platinum (Pt) acid,  $\text{H}_2\text{PtCl}_6$  (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.

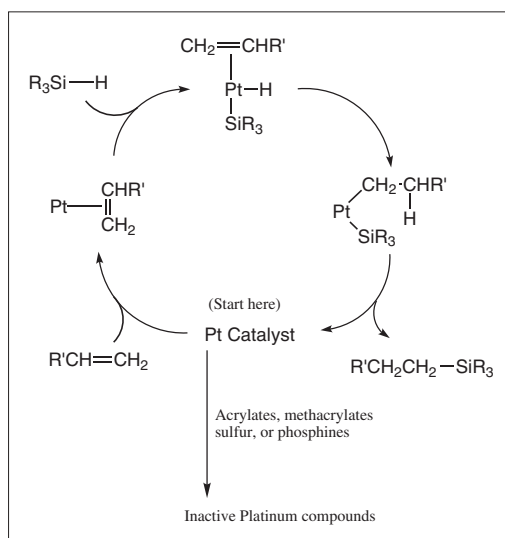
Figure 1.  
The Addition-Cured  
(Hydrosilylation) Reaction



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.

Figure 2.  
Catalytic Cycle for Platinum  
Catalyzed Hydrosilylation



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 low oxidation state 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. Contrary to common belief, published data indicates that a variety of medicaments, including ferric sulfate and aluminum sulfate, do not inhibit the set of VPS impression materials (de Carmargo, 1993).

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# Imprint™ II Garant™ Quick Step Impression Material System

## Includes:

**Imprint II Garant Quick Step Heavy Body Impression Material** - an auto-mixed, heavy body impression material specifically designed to be used in combination with Imprint II Garant Quick Step Garant regular body or light body impression material in a dual arch tray. Imprint II Garant Quick Step heavy body impression material provides 1:15 minutes of room temperature working time for tray filling and a fast 2:30 minutes of oral setting time.

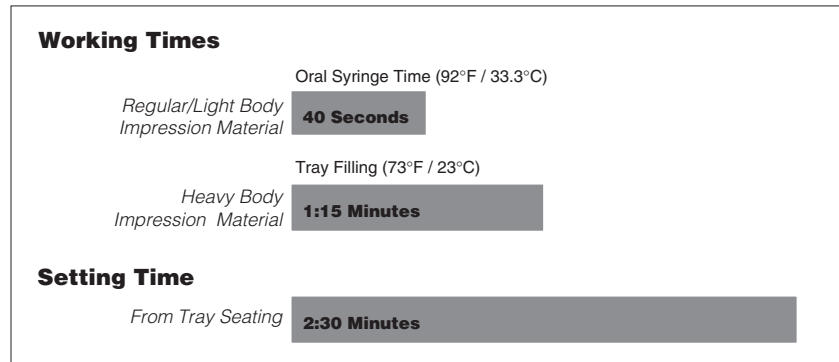
**Imprint II Garant Quick Step Regular Body Impression Material** - a controlled-flow, drip-resistant light body impression material for use with Imprint II Garant Quick Step heavy body impression material. Imprint II Garant Quick Step regular body impression material provides 40 seconds of oral working time, and a fast 2:30 minutes of oral setting time.

**Imprint II Garant Quick Step Light Body Impression Material** - a high-flow, drip-resistant light body material for use with Imprint II Garant Quick Step heavy body impression material. Imprint II Garant Quick Step light body provides 40 seconds of oral working time, and a fast 2:30 minutes of oral setting time.

**Garant Dispenser** - offers less hand fatigue.

**Accessory Items** -Garant mixing tips (green); Garant mixing tips (yellow); Garant intraoral mixing tips (yellow); and VPS tray adhesive.

Figure 3.  
Working and Setting Time  
Recommendations – Imprint  
II Garant Quick Step



## Please note:

The higher the temperature, the shorter the working time for both heavy body and light body impression materials. Conversely, lower temperatures provide longer working time (Hamilton, 1995).

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## A Summary of Imprint™ II Garant™ Quick Step Impression Material

Features	Benefits
Heavy Body/Light Body System	<ul style="list-style-type: none"><li>• Faster and easier</li><li>• Fully auto-mixed, eliminates contamination concerns of hand-mixing</li></ul>
Fast oral setting time	<ul style="list-style-type: none"><li>• Less chair time</li><li>• Patient comfort</li><li>• Increased productivity</li></ul>
Rigid Heavy Body impression material	<ul style="list-style-type: none"><li>• Use with dual arch tray</li><li>• Accurate impressions</li><li>• No drip</li><li>• Patient comfort</li></ul>
Regular Body impression material	<ul style="list-style-type: none"><li>• Controlled flow</li><li>• Drip resistant</li></ul>
Light Body impression material	<ul style="list-style-type: none"><li>• High flow</li><li>• Drip resistant</li></ul>
Hydrophilic heavy body and light body impression materials	<ul style="list-style-type: none"><li>• Better stone cast (Chai et al., 1991)</li></ul>
No Taste or Odor	<ul style="list-style-type: none"><li>• Patient comfort</li></ul>

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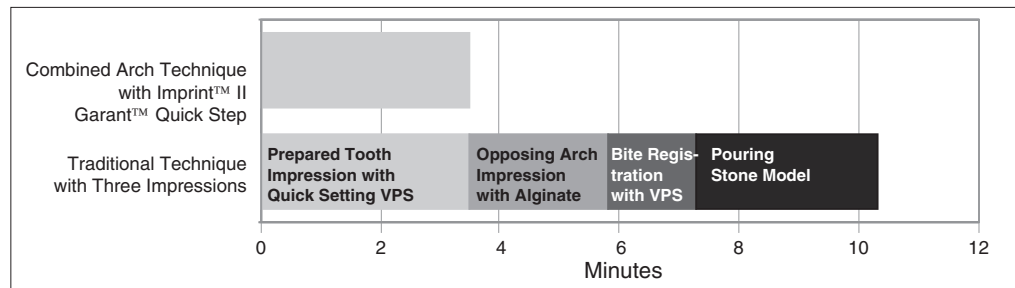
### Imprint II Garant Quick Step Impression Material Used with Dual Arch Trays

The dual arch technique has been used effectively for almost three decades. The technique helps to reduce chairtime, operating costs, and the possibility of error (Wilson and Werrin, 1983). It has been proven that “both metal and plastic dual arch impression trays provided casts at least as accurate as acrylic resin custom trays. In no dimension were the custom acrylic resin trays, the traditional standard, more accurate than the dual arch trays” (Davis and Schwartz, 1991). Furthermore, the “casts derived from the second pour of dual arch impressions, using both metal and plastic trays, are at least as accurate as those made from the second pour of complete arch custom tray impressions” (Davis and Schwartz, 1992).

The rigidity and accuracy of the Imprint II Garant Quick Step heavy body impression material enables the dentist to make impressions with dual arch trays. In one step, a dentist can make an impression of the prepared tooth and opposing dentition and register the interocclusal relationship (Wilson and Werrin, 1983). The benefits are ease of use, time savings, material savings, patient comfort and less occlusal adjustment. In an evaluation of 200 dentists, half of which were users of dual arch trays, 82% were satisfied or very satisfied with Imprint II Garant Quick Step impression material. The combination of Imprint II Garant Quick Step impression material in a one-step/two viscosity technique with a dual arch impression tray provides an efficient method to make impressions of single units. The end results are increased productivity and happy patients.



Figure 4.  
Time Savings Using Imprint™ II Garant™ Quick Step with Dual Arch Tray



## Recommendations For Proper Use With Dual Arch Impression Trays

### Patient Consideration (Kaplowitz, 1996)

- Patient has intact dentition
- Opposing teeth have intact occlusal surfaces
- Patient should be able to close completely into centric occlusion without interference

### Tray Selection

- Tray fits passively
- Tray does not impinge on any teeth or anatomical structures
- Crossbar of tray does not interfere with achieving complete occlusion
- Tray captures adjacent teeth and opposing teeth
- Do not use for 3 or more teeth

### Orienting Tray

- Practice inserting the tray into the exact position
- Have patient practice biting down completely into the tray
- Establish repeatable orientation of the teeth
- Identify contact areas or distinguishing features

### Impression Material

- Need enough impression material to accommodate 2-3 mm wall height

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## Important Information

- Bleed each cartridge before use.
- Seat the impression in the mouth within 1:15 minutes of tray filling and within 40 seconds from the start of oral syringing to avoid incomplete or inaccurate impressions.
- Imprint™ II Garant™ Quick Step Impression Material is ideally suited for a single unit preparation.
- DO NOT syringe more than three adjacent preparations.
- Imprint II Garant Quick Step impression material cartridges are compatible with the 3M ESPE Garant Dispenser.
- Failure to block-out undercuts may make tray removal difficult or cause extraction of natural teeth or prosthesis.
- Avoid contact with chemicals known to inhibit the set of VPS materials such as sulphur found in latex rubber, acrylate and methacrylate residues.
- To avoid inhibition caused by temporary materials, the final impressions should be made before fabricating the provisional crown or bridge.
- Imprint II Garant Quick Step heavy body impression material is not suitable for use as a monophase/single phase, or light body impression material.
- **Tray Selection:** Place the impression tray into the patient's mouth and verify that the patient bites into centric occlusion when using a dual arch tray, does not bite onto the tray, and that no other obstructions are observed.
- **Tray Adhesive:** The tray adhesive should be placed on all surfaces of the tray, including the gauze of dual arch trays that come in contact with impression material.
- **Tray Filling/Intraoral Syringing:** To avoid air incorporation during tray filling, the mix tip should remain submerged in Imprint II Garant Quick Step heavy body impression material. It is important to use enough impression material so that the heavy body impression material flows over the prepared tooth, abutments, and into the buccal mucosal or anterior mucosal folds. The intra-oral tip should also remain submerged while light body impression material is syringed around the prepared tooth.
- **Intra-oral Syringe Filling:** When possible, fill intra-oral syringes from the front while forcing the plunger backwards. "Front loading" helps to reduce the incidence of air incorporation during syringe filling.
- **Tray Seating/Passive Pressure:** Seat the impression tray slowly. Trays should not come in contact with the preparation(s) or surrounding dentition. When a dual arch tray has been seated, instruct the patient to bite down. Verify that the patient has closed into centric occlusion.

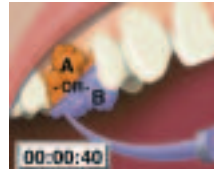
# Technique Guide

**3M ESPE**

ONE-STEP/TWO VISCOSITY TECHNIQUE

## Imprint™ II Quick Step Garant™ Heavy Body/Light Body Impression Material System

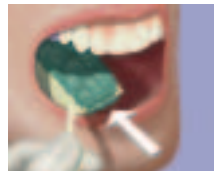
Syringe light body impression material around the clean, dry tooth preparation(s) using either 3M™ ESPE™ Imprint™ II Quick Step Garant™ Light Body (A) or 3M™ ESPE™ Imprint™ II Quick Step Garant™ Regular Body (B). **Intraoral Working Time: 40 seconds**



Fill the tray with Imprint II Quick Step Garant heavy body impression material while the light body material is being syringed on the preparation.



Slowly seat the tray in the mouth. **The tray must be seated within 40 seconds of the start of oral syringing and within 1:15 minutes of the start of tray filling.**



Have patient bite down into centric occlusion. **Oral Setting Time: 2:30 minutes**



Remove the impression, rinse, dry and disinfect. The stone model may be poured after 2 hours.



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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# Properties

## Imprint™ II Garant™ Quick Step Heavy Body Impression Material

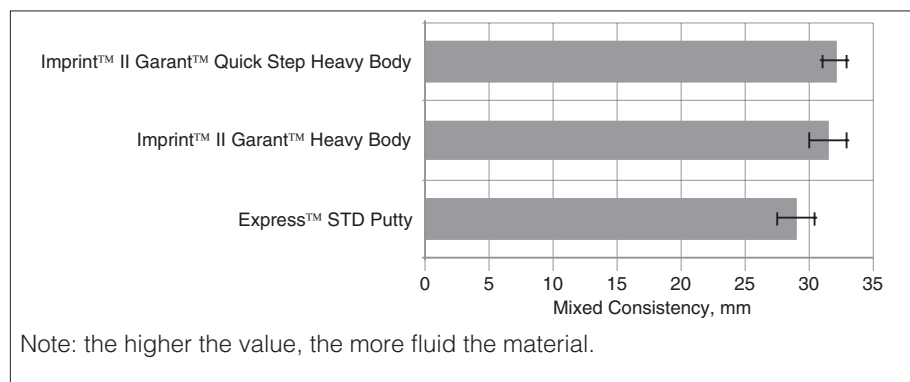
Imprint II Garant Quick Step heavy body impression material handling properties differ from all other heavy body impression materials on the market today and continues a 3M ESPE tradition of developing materials with superior handling properties. The most distinct difference lies in the dramatically reduced extrusion force compared to competitive materials (see Figure 11). Nevertheless, even with the low extrusion force, the mixed consistency of 32 mm places it solidly within the category of ISO Type 1, Heavy Bodied, unlike some competitive heavy body impression materials which are classified as ISO Type 2, Medium Bodied. The combination of a high mixed consistency and low extrusion force is an example of a rheological property known as “shear thinning,” high flow under pressure and low flow under gravity. For Imprint II Garant Quick Step heavy body impression material, the result is an easy to extrude material which does not drip or slump and yet provides firm resistance when seating the tray. Imprint II Garant Quick Step heavy body impression material, in addition to its close “cousin,” Imprint II Garant heavy body impression material, achieves this special handling properties from a combination of mineral and synthetic fillers.

3M ESPE tests all impression materials in accordance with ISO Standard 4823:2000-12-15 for Dental Elastomeric Impression Materials. ISO (International Organization for Standardization) is a worldwide federation of national standards bodies.

### Mixed Consistency (ISO 4823:9.2)

Mixed consistency refers to a material’s ability to flow. The higher the measurement in millimeters, the more fluid the material. The mixed consistency test is performed by dispensing 0.5 milliliters of impression material onto the center of a glass plate. A second glass plate is then placed on top of the first, followed by the addition of a 1,500 gram weight. The weight is placed on the glass 30 seconds from the start of impression material mix. After a period of 5 seconds the weight is removed, and the impression material is allowed to polymerize fully. The diameter of the polymerized disc is then measured in millimeters. Imprint II Garant Quick Step heavy body impression material has a no drip, no slump mixed consistency.

Figure 6.  
Mixed Consistency,  
3M ESPE Impression  
Materials



### Detail Reproduction (ISO 4823:9.4)

A number of impression material chemistries are currently available to the dental industry including alginate, rubber base, hydrocolloid, polyether, condensation and addition cured silicones. Of all of the chemistries mentioned, addition silicones (otherwise known as VPS impression materials) are widely recognized as the most accurate in reproducing fine detail.

Detail reproduction is measured using a stainless steel mold and ruled test block. The test block is tooled with lines 20, 50 and 75 microns in width. The impression material is extruded into the mold and the mold is covered with a sheet of polyethylene followed by a rigid, flat, metal plate. Force is applied to seat the plate firmly against the mold. The assembly is then transferred to a water bath at  $35 \pm 2^\circ\text{C}$ . The assembly remains in the water bath for the full recommended impression material set time plus an additional three minutes. The mold and test block are then separated. The impression is inspected under low-angle illumination using  $6\times$  magnification. The detail reproduction of a 50-micron line is considered satisfactory for heavy body impression materials if the line is reproduced in the impression for a distance of 25 mm in three (of three) specimens.

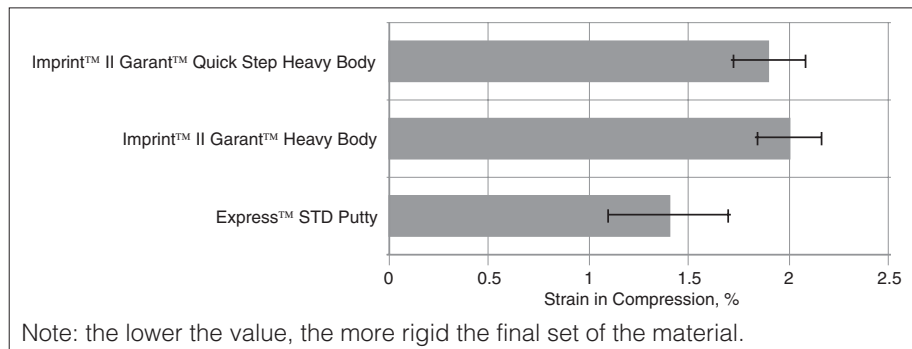
Three different standards exist for detail reproduction as outlined in ISO 4823. At a minimum, heavy body impression materials are required to reproduce a line 50 microns in width. As a point of reference, 40 microns corresponds to the average width of a human hair. The ISO specification for light body impression materials is more rigorous. The light body impression materials must have the ability to reproduce a 20 micron line. Imprint II Garant Quick Step heavy body impression material, while only required by ISO to reproduce a 50 micron line, passed the 20 micron test for detail reproduction.

While providing excellent detail reproduction, Imprint II Garant Quick Step heavy body impression material is not suitable for use as a monophasic or syringeable light body impression material because of its high viscosity.

### Strain in Compression (ISO 4823:9.8)

Strain in compression is a measure of the rigidity of an impression material, expressed in percent. The lower the value, the more rigid the final set. A rigid material by definition is less flexible, and therefore more difficult to deform once polymerized. Because Imprint II Garant Quick Step heavy body impression material is only slightly less rigid than putty, it has the ability to offer both support for the tray and flexibility at mouth removal.

Figure 7.  
Strain in Compression,  
3M ESPE Impression  
Materials



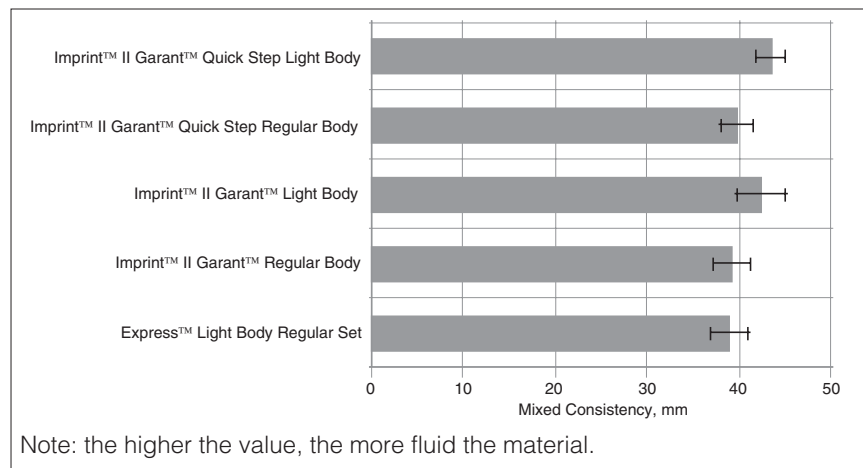
## Imprint™ II Garant™ Quick Step Regular and Light Body Impression Materials

The high flow, drip resistant characteristics of Imprint II Garant Quick Step light body impression materials derive from a special combination of mineral and synthetic fillers. Because they are drip resistant, Imprint II Garant Quick Step light body impression materials are often described as thixotropic. Thixotropic materials have high flow under pressure, but low flow under gravity.

### Mixed Consistency (ISO 4823:9.2)

While both are considered thixotropic, Imprint II Quick Step regular body and light body impression materials have distinct mixed consistencies. Imprint II Garant Quick Step regular body impression material is a controlled-flow, drip resistant light body material with a mixed consistency similar to that of Imprint II regular body impression material. Imprint II Garant Quick Step light body impression material is a high-flow, drip-resistant light body material with a mixed consistency similar to that of Imprint II light body impression material. Imprint II Garant Quick Step light body impression material represents the most fluid impression material offered by 3M ESPE.

Figure 8.  
Mixed Consistency, 3M  
ESPE Impression Materials



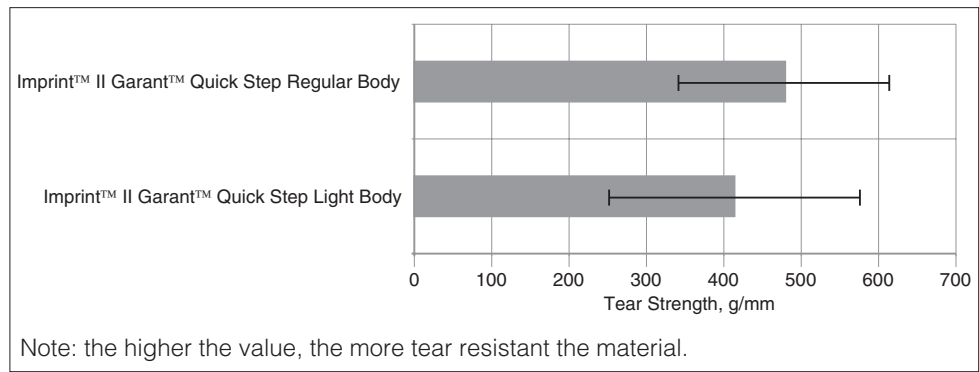
### Drip Resistance

Imprint II Garant Quick Step light body impression material has a high flow characteristic, but is drip resistant. In a 3M ESPE field evaluation, 150 dentists made five impressions each. Eighty percent of the dentists agreed that the light body impression material did not drip.

### Tear Strength

Tear strength is the measure of the resistance of an impression material to tearing in grams/mm. The higher the value, the more tear resistant the material. This test is performed on an Instron (Model 1123), and is used as an indicator of the structural integrity of an impression material.

Figure 9.  
Tear Strength, 3M ESPE  
Impression Materials



#### Detail Reproduction (ISO 4823:9.4)

Light body impression materials must provide excellent detail reproduction because they are intended to replicate, in fine detail, the margin of the prepared tooth. Both Imprint II Garant Quick Step regular body and light body impression materials passed the ISO:4823 test for detail reproduction and are able, at a minimum, to reproduce a 20 micron line.

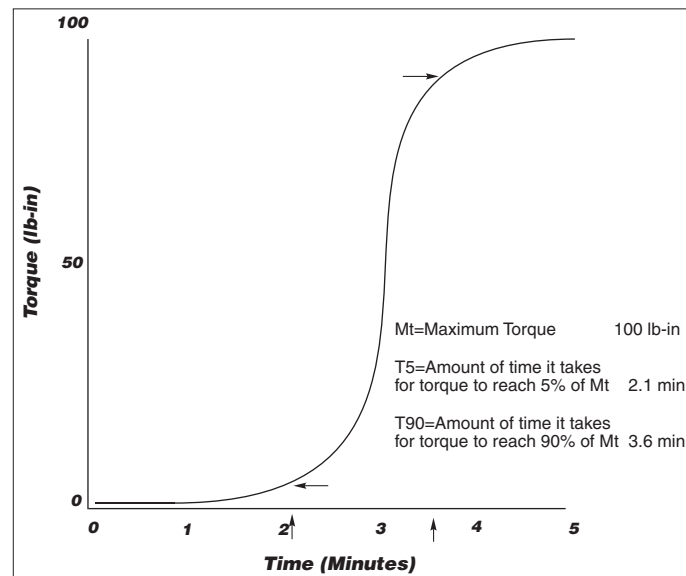
# System Information

## Determining the Working/Setting Times

An oscillating disc rheometer measures changes in the rheology of an impression material and is used by 3M ESPE in determining clinical timing recommendations for impression materials. Freshly mixed impression material is placed between two discs, one fixed and one which rotates back and forth. The rotating disc is attached to a transducer which measures the amount of force required to rotate the disc. As the material cures more force is required for rotation. The force required to displace the material is plotted as a function of time. The rheometer gives three very important pieces of information. First is the maximum torque, which is a measure of the final set rigidity. Second is a value called T5, the amount of time it takes to reach 5% of the maximum torque. T5 is correlated to the impression material working time. And finally, a value called T90, the amount of time it takes for the torque to reach 90% of the maximum. T90 is correlated to the impression material setting time.

Another important consideration in determining working and setting times is the fact that the heat of the mouth affects the VPS polymerization reaction rate. In order to generate an accurate estimate of oral working and setting times, rheometer tests are run at 92°F (33.3°C) which simulates the temperature found in the mouth. Rheometer testing is reported to offer “a means of monitoring the working time and setting time of elastomeric impression materials which is based upon readily identifiable and clinically relevant changes in the elastic properties of the setting material.” Room temperature working times are listed at 73°F (23°C) and are an important reference for tray and syringe filling.

Figure 10.  
Oral Working/Setting Time  
Rheometer Curve,  
3M™ ESPE™ Imprint™ II  
Garant™ Quick Step





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## 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 dual arch anterior, quadrant and posterior with sides impression trays.

	ml/ Application	Applications/ Cartridge
<i>Imprint II Garant Quick Step heavy body impression material</i>		
Temrex® Bite Relator™ 2000 (Standard Length)	14	3
Premier® Triple Tray® (posterior with sides)	14	3
Professional Dental Supply Corp. Exacta Tray (anterior)	23	2
Neo Sultan, Neo Tray™ (quadrant)	23	2
<i>Imprint II Garant Quick Step light body impression materials (Regular Body and Light Body)</i>		
Single Preparation	4	12

## Disinfection

Impressions made using Imprint II Garant Quick Step impression material may be disinfected using any liquid disinfectant. VPS impression materials have been shown to be dimensionally stable after 60 minutes in 2% acidic glutaraldehyde.

## Recommendations for Cast/Model Pouring

Impressions made using Imprint II Garant Quick Step impression material may be poured 2 hours following disinfection. Because the heavy body and light body impression materials are hydrophilic, surfactants are not required. If surfactants are used, it is important to blow dry the impression thoroughly to ensure that no puddles or pools of liquid are present when the dye stone is poured.

## 3M™ ESPE™ Garant™ Dispenser

When compared to hand spatulated or hand mix impression materials, auto-mix systems offer many recognized benefits including:

- Ease of use, less mess, less waste
- A consistent, bubble-free mix
- No degloving necessary
- Intra-oral delivery directly from the auto-mix tip

Heavy body putty materials historically have been mixed by hand due to their consistency. Generally speaking, the more viscous a material, the more difficult it is to extrude from an auto-mix cartridge. While sometimes difficult to mix, viscous heavy body impression materials are considered desirable because of their ability to provide resistance and stability at tray seating with a rigid final set. Because of its

unique chemistry, Imprint™ II Garant™ Quick Step heavy body impression material offers easy extrusion with a very high consistency.

Imprint II Garant Quick Step Heavy Body/Light Body impression materials can be used with the Garant Dispenser. Listed below are two important features:

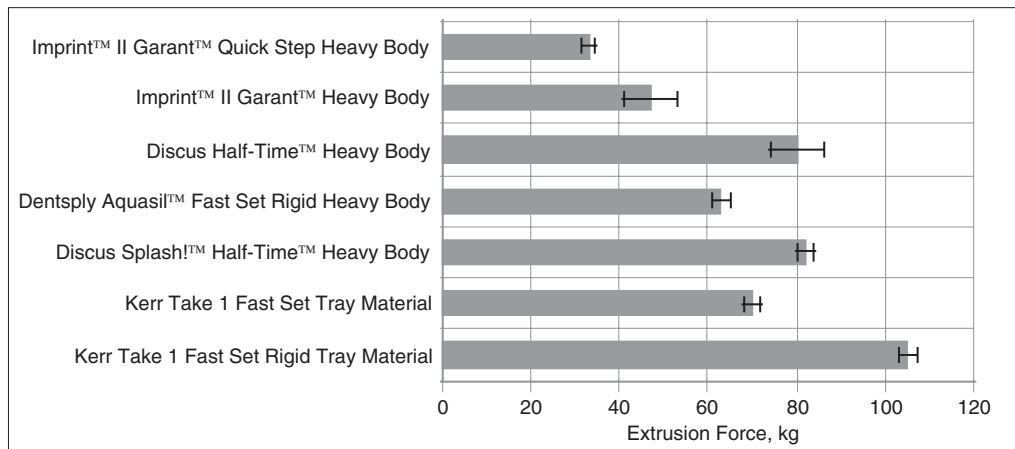
Features	Benefits
More Extrusion Power	Less hand fatigue
100% Steam Autoclave	Simplified and improved infection control

### Extrusion Force

Auto-mixed impression material systems offer many benefits including ease of use, consistent mix, and no degloving. A previous Imprint II study on acceptable extrusion force proved that when the extrusion force of a tray material is above 80 kg, the assistant acceptability drops dramatically. While a very thick heavy body impression material may be desirable, the extrusion force should not be so high that dispensing it becomes difficult. Imprint II Garant Quick Step heavy body impression material has an extrusion force of approximately 33 kg, well within the range that assistants find acceptable.

Although many impression materials use the Garant dispenser, the extrusion force of different impression materials vary considerably. Imprint II Garant Quick Step heavy body impression material has the lowest extrusion force compared to Aquasil™ Fast Set Rigid Heavy Body and Discus Half-Time™ Heavy Body, Kerr Take 1 Fast Set Tray Material, Discus Splash!™ Heavy Body.

Figure 11.  
Heavy Body Impression  
Material Extrusion Force



### Sterilization

The Garant dispenser is 100% steam 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

Imprint II Quick Step heavy body and light body impression materials use the Garant dispenser. The cartridge offers:

Features	Benefits
Dual Port Mix Tip	<ul style="list-style-type: none"> <li>• Virtually eliminates plugging</li> </ul>
Reuseable Cartridge Cap	<ul style="list-style-type: none"> <li>• Improved infection control</li> <li>• Compact storage</li> </ul>
Intraoral Tip	<ul style="list-style-type: none"> <li>• Increased length and a smaller orifice for better intra-oral access</li> </ul>
Cartridge Labels	<ul style="list-style-type: none"> <li>• Working/setting times, expiration date and lot number communicated more clearly</li> </ul>

## Cartridge Labels

Imprint II Garant Quick Step Impression Material cartridge labels were designed to convey critical product information clearly including:

- Working times for oral syringing and tray filling
- Oral setting time
- Expiration date
- Lot number
- Color coding by product



# Competitive Test Summary

## Comparison Table – Heavy Body Impression Materials

	Mixed Consistency mm	Strain in Compression %**	Working Time @73°F, mins**	Setting Time minutes**	Material Extrusion Force, kg
Imprint II Garant Quick Step	32.9	1.9	1:15	2:30	33
Imprint II Garant	31.5	2.0	2.0	4:00	45
Discus Dental Half-Time	33.3	3.5	1:00	2:15	80
Dentsply Aquasil Fast Set Rigid	33.2	1-2	1:30	3:00***	63
Discus Dental Splash!	33.1	2.4	1:00	2:15	82
Jeneric Pentron Correct Quick	31.2	3.2*	1:00	2:15	74****
Kerr Take 1 Fast Set	28.8	4.3	1:15	2:30	70
Kerr Take 1 Fast Set Rigid	25.5	3.8	1:30	2:30	105

\* Measured Value

\*\* Values recorded from manufacturers' instructions

\*\*\* Minimum Removal Time

\*\*\*\*Not measured in HP hardware

## Comparison Table – Light Body Impression Materials

	Mixed Consistency mm	Tear Strength g/mm	Oral Working Time seconds**	Setting Time minutes**
Imprint II Garant Quick Step Light Body	43.4	420	40	2:30
Imprint II Garant Quick Step Regular Body	39.7	480	40	2:30
Imprint II Light Body	42.4	520	60	4:00
Imprint II Regular Body	39.2	460	60	4:00
Discus Half-Time Lite Body	40.9	530	n/a	2:15
Dentsply Aquasil Fast Set LV	39.8	540	n/a	3:00***
Discus Splash! Half-Time	41.3	460	n/a	2:15
Jeneric Pentron Correct Quick	36.3	320	n/a	2:15
Kerr Take-1 Fast Set Wash	45.1	410	n/a	2:30

\*\* Values recorded from manufacturers' instructions

\*\*\* Minimum removal time

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## Questions and Answers

### ***Are Imprint II Garant Quick Step, Express and Imprint Impression Materials compatible with Imprint II Garant Impression Material?***

The chemistry of Imprint II Garant Quick Step impression material is compatible with other 3M ESPE VPS impression materials, but the technique is not. Imprint II Garant Quick Step heavy body and light body impression materials were formulated to provide a coordinated 2:30 minute oral set. The working/setting times of other 3M ESPE products do not correspond to those of Imprint II Garant Quick Step impression material. The pour times of 3M products are different. Lastly, Express and Imprint cartridges are not compatible with the Garant dispenser.

### ***Are other brands of VPS impression material compatible with Imprint II Garant Quick Step impression material?***

Due to differences in requirements for working, setting and pour times, 3M ESPE does not recommend the use of Imprint II Garant Quick Step impression material with other brands of impression material.

### ***What is the shelf life of Imprint II Garant Quick Step impression material?***

Shelf life at room temperature (70-75°F or 21-24°C) is 24 months. The expiration date of the product may be found on the outer box or on the cartridge label.

### ***Will latex gloves inhibit the set of Imprint II Garant Quick Step impression material?***

Avoid contact with chemicals known to inhibit the set of vinyl polysiloxane impression materials such as sulphur found in latex rubber, acrylate and methacrylate residues. If contamination from latex gloves is suspected, scrub the area with an aqueous solution of hydrogen peroxide before making the impression (Browning et al., 1994). Vinyl gloves are recommended for use with VPS impression materials. If acrylate and methacrylate residues are present, clean the affected tooth surface with isopropyl alcohol before making the impression.

To avoid inhibition caused by custom temporary materials, the final impression should be made before fabricating the provisional crown or bridge.

### ***How does heat affect the working time of Imprint II Garant Quick Step impression material?***

Heat is known to increase the polymerization rate of VPS impression materials. The amount of working time will decrease as the room temperature increases. Also, if the impression material has been stored in a warm environment (temperatures above 73°F or 23°C) working time may be decreased.

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***Will hemostatic agents inhibit the set of Imprint II Garant Quick Step impression material?***

Hemostatic agents are not believed to inhibit the set of VPS impression material. However, when wearing latex gloves it is possible to transfer sulfur from the gloves to either the retraction cord, teeth or soft tissues causing site specific inhibition (de Camargo et al, 1993).

***Is it possible to prepare adhesive coated trays in advance? How long in advance is considered acceptable?***

Adhesive should be applied to an impression tray not more than 24 hours in advance of making the impression (Cho et al, 1995).

***Occasionally, when I am trying to attach a new mix tip, I cannot push the tip flush with the impression material cartridge. What's wrong?***

It is not possible to attach a mix tip to the cartridge if the ports which separate the catalyst and base are not in alignment. If the mix tip cannot be pushed flush with the cartridge, rotate the collar of the tip 90°. This rotation will ensure that the separated mix tip ports are in alignment with the ports on the impression material cartridge.

***Is tray adhesive needed on the gauze of a dual arch tray?***

Yes. The tray adhesive should be placed on all surfaces of a dual arch tray, including the gauze, that come in contact with impression material.

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# Imprint™ II Garant™ Quick Step Impression Material System

## Introductory Kit Contents (Item #9570)

No.	Product	Item #
2	Imprint II Garant Quick Step Heavy Body Cartridge, 50 ml	9571
1	Imprint II Garant Quick Step Light Body Cartridge, 50 ml	9578
1	Imprint II Garant Quick Step Regular Body Cartridge, 50 ml	9579
10	Garant Mixing Tips, green	71450
10	Garant Mixing Tips, yellow	71452
10	Garant Intraoral Tips, yellow	71462
2	Garant Dispenser	77580
1	VPS Tray Adhesive, bottle	7307
1	Instructions	
1	Technique Guide	

## Introductory Kit Contents (Item #9570S without Garant Dispenser)

This kit contains the above contents without the 2 dispensers (#77580)

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# Instructions for Use

## Imprint™ II Garant™ Quick Step Vinyl Polysiloxane HeavyBody/Light Body Impression Material

### Product Description

Imprint II Garant Quick Step Heavy Body/Light Body Impression Material, manufactured by 3M ESPE, is a fast, rigid setting, hydrophilic dental impression material designed for making a precise impression of an inlay, onlay, veneer, or crown. Imprint II Garant Quick Step heavy body and light body impression materials are formulated for use in a one-step/two viscosity impression technique. Imprint II Garant Quick Step heavy body is to be used in combination with Imprint II Garant Quick Step Regular Body or Light Body impression material, manufactured by 3M ESPE. The Imprint II Garant Quick Step heavy body impression material has 1:15 minutes of room temperature working time with an oral setting time of 2:30 minutes. The Imprint II Garant Quick Step regular and light body impression materials have 40 seconds of oral working time, and an oral setting time of 2:30 minutes.

For other impression material needs, Imprint II Garant Heavy Body/Light Body impression material with 1 minute of oral working time, and a 4 minute setting time may be used for most indications. If a monophasic impression material is desired, Imprint™ II Garant™ Monophasic Impression Material, manufactured by 3M ESPE, is available with 1 minute of oral working time, and a 4 minute setting time.

### Indication for Use

Imprint II Garant Quick Step impression material has 40 seconds of oral syringe time, and it is designed for use in fast procedures where the impression tray can be seated within 40 seconds from the start of oral syringing. This material is designed for a single unit, but can be used in some cases for up to three adjacent units. Do not syringe more than three adjacent units. To avoid incomplete or inaccurate impressions, be careful not to exceed the 40 seconds of oral working time.

Due to the rigidity and short working time of the impression materials, the following trays are recommended.

Dual Arch - Metal, and Disposable impression trays

- Anterior
- Quadrant
- Posterior with sides

### IMPORTANT: PLEASE NOTE:

1. Imprint II Garant Quick Step impression material is ideally suited for a single unit preparation. To avoid incomplete or inaccurate impressions, be careful not to exceed the 40 seconds of oral working time.
2. Do not syringe more than three adjacent preparations.

3. Bleed both the heavy body impression material and light body impression materials before each use.
4. As with any rigid-setting impression material, it may be necessary to block-out undercuts or areas where gingival recession exists to prevent the material from “locking” onto tooth structure. Failure to block-out may make tray removal difficult, or cause extraction of natural teeth, or prosthesis.
5. Avoid surface contact with chemicals known to inhibit the set of vinyl polysiloxane impression materials (e.g. acrylic and methacrylate residues, sulphur found in latex rubber, and sulfur compounds). If acrylic and methacrylate residues are present, clean the affected tooth surface with isopropyl alcohol before making the impression. To avoid inhibition caused by custom temporary materials, the final impression should be made before fabricating the provisional crown or bridge.
6. If contamination from sulfur is suspected, rinse the area with an aqueous solution of hydrogen peroxide before making the impression.
7. Once the tray is seated in the mouth, Imprint II Garant Quick Step impression material requires 2:30 minutes of oral setting time. It is not necessary to add any unused working time to the oral setting time.
8. The stone model may be poured 24 hours after disinfecting the impression. Imprint II Garant Quick Step impression material is very stable. A stone model may be poured up to two weeks after the impression has been made.
9. Imprint II Garant Quick Step heavy body impression material is not suitable for use as a monophasic/single phase, or light body impression material.

### Clinical Timing Recommendations

#### Imprint II Garant Quick Step Heavy Body Impression Material (Green)

Tray Filling	Oral Set Time
1:15 minutes	2:30 Minutes

#### Imprint II Garant Quick Step Regular Body Impression Material (Purple)

Intraoral Syringe Time	Oral Set Time
40 seconds	2:30 Minutes

#### Imprint II Garant Quick Step Light Body Impression Material (Orange)

	Intraoral Syringe Time	Oral Set Time
	40 seconds	2:30 Minutes
	Total Working Time	Approximate Removal Time from Mouth
Heavy Body Impression Material	@ 23°C (73°F) ≤ 1:15 minutes	2:30 Minutes
Regular & Light Body Impression Materials	@ 33.3°C (92°F) ≤40 seconds	2:30 Minutes

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## One-Step/Two Viscosity Impression Technique

Recommended Materials: Imprint II Garant Quick Step Heavy Body Impression Material in combination with Imprint II Garant Quick Step Regular Body or Light Body Impression Materials

Bleed both the Imprint II Garant Quick Step heavy body impression material and Imprint II Garant Quick Step light body impression material before each use. This action will reduce the occurrence of plugging.

1. Select or prepare a rigid tray of sufficient size and wall height to accommodate a 2-3 mm thickness of impression material surrounding the tooth.
2. Place the impression tray into the patient's mouth, and verify that the patient bites into centric occlusion, does not bite onto the tray, and that no other obstructions are observed.
3. Brush a thin coat of 3M ESPE VPS Tray Adhesive on all surfaces of the tray that will come into contact with the impression material. Allow the tray adhesive to air-dry a minimum of 5 minutes.
4. Prepare and isolate the tooth. Place retraction cord(s).
5. Syringe both sides of the adhesive-coated tray with Imprint II Garant Quick Step heavy body impression material while keeping the tip immersed in the dispensed impression material to avoid entrapping air.

Over-fill the impression tray so that the Imprint II Garant Quick Step heavy body tray impression material flows over the prepared tooth, abutments, and into the buccal mucosal or anterior mucosal folds.

The maximum tray filling time is 1:15 minutes for Imprint II Garant Quick Step heavy body impression material.

6. Remove the retraction cord(s).
7. Syringe Imprint II Garant Quick Step regular body or light body impression material around the prepared tooth with an intraoral syringe. Syringe the light body impression material with a stirring motion, and keep the tip immersed in the light body impression material to avoid entrapping air, and to ensure complete coverage of the prepared surfaces.

OR

Syringe Imprint II Garant Quick Step regular body or light body impression material from the cartridge by attaching a Garant Intraoral Tip to the Garant yellow mixing tip. Use moderate pressure and push the blunt end of the Garant intraoral tip into the mix tip. A click will be heard when the intraoral tip is locked into position.

8. Carefully seat the tray to avoid contact of the prepared tooth with the tray.

Note: The tray must be seated within 40 seconds from the start of syringing the light body impression material

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9. Instruct the patient to bite down. Verify that the patient has bitten down into centric occlusion. Oral setting time is 2:30 minutes after the tray is inserted into the mouth.
  10. Apply downward pressure along the periphery of the tray to break the seal of the impression, and remove the impression from the mouth.
  11. Visually inspect the impression for evidence of defects or tears. Examine and explore the sulcus of the prepared tooth and surrounding dentition, and remove any residual impression material.
  12. Immediately rinse the impression with water. Place the impression into any liquid disinfectant for recommended disinfecting time. Rinse the impression in water and blow dry.
  13. The stone model may be poured 120 minutes after disinfecting the impression. Impressions made using Imprint II Garant Quick Step impression material are very stable. A stone model may be poured up to two weeks after the impression has been taken.
  14. Impressions should be shipped in packaging designed to prevent distortion and contamination.

#### **Storage and Use**

- The system is designed to be used at room temperature of approximately 21-24°C (70-75° F)
- Shelf life at room temperature (see above) is 24 months. See outer package for expiration date.
- Impressions made with Imprint II Garant Quick Step impression material should be stored dry at room temperature (see above). Do not store in water or excessive humidity.
- Avoid storage conditions which are below 5° C (41° F) and 20% relative humidity, or higher than 27° C (81° F) and 80% relative humidity. Storage under these conditions may adversely affect the quality and performance of Imprint II Garant Quick Step impression material.
- Impressions made with Imprint II Garant Quick Step impression material may be silver plated or copper plated.
- Using materials that have been cooled by refrigeration may extend Imprint II Garant Quick Step impression material working time. Oral set times may be greater than the recommended 2:30 minutes, if materials are refrigerated before use.

#### **Regulatory Specification Data**

- International Standard ISO 4823
- Chemical Nature: Vinyl Polysiloxane
- Recovery from Deformation: > 99.0%
- Linear Dimensional Change: 24 Hrs. < 0.9%

- Strain in Compression:
  - Heavy Body Impression Material 1.65 – 2.27%
  - Regular Body Impression Material 3.35 – 4.03%
  - Light Body Impression Material 4.15- 4.67%
- Recommended Gypsum Pour Time:
  - Minimum: 120 minutes
  - Maximum: Up to 2 weeks
- Metalizing Bath: Ag, Cu

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**International Standard ISO 4823:**

	Heavy Body	Regular Body	Light Body
	Impression Material	Impression Material	Impression Material
Mix Consistency	Type 1 Heavy Body	Type 3 Low-Light Body	Type 3 Low-Light Body
Mix Time @ 73°F	Auto-Mix	Auto-Mix	Auto-Mix
Total Working Time @ 73°F	1:15 min.	1:15 min.	1:15 min.
Min Oral Setting Time @ 92°F	2:30 min.	2:30 min.	2:30 min.

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.

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