

Manufacturing Technique of an Impression Compound Applicator Gun

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ABSTRACT

Objective: To describe a practical way of applying impression compound in stick form using a safe electrical instrument. **Material and Methods:** Impression compound is a thermoplastic, rigid, reversible molding material in dentistry that requires a temperature of 55–60 °C for plasticization. Take a hot-glue gun for 7 mm tubes, which is the same dimension as the stick of impression compound. The gun nozzle has to be enlarged with a drilling machine and a drill to work to a suitable diameter with the impression compound according to the operator's preference. A temperature controller needs to be installed to release the compound in a consistency and temperature suitable for use. If the dentist wants to know the exact temperature of 55–60 °C, they can use an infrared thermometer to measure the position of the regulator on the gun's nozzle. **Conclusion:** Impression compound continues to be widely used for specific procedures, including impressions in severely resorbed ridges and maxillofacial prostheses, which can benefit from the manufacture of the device described.

Keywords: Dental Impression Materials; Dentures; Dental Prosthesis; Maxillofacial Prosthesis.

■ Introduction

Impression compound is a low-fusion (i.e., Type I) thermoplastic, rigid, reversible molding material. Impression compound requires a temperature of 55–60 °C for plasticization, is available in stick form, and can be used for registers, peripheral molding in removable prosthesis, the stabilization of absolute isolation, and the assembly of models in semi-adjustable articulators [1]. Many dentists consider impression compound the best material available for those purposes but struggle to determine the proper temperature and consistency achieved by heating for adequate work, making the method difficult to perform. As a result, a more effective method of working with impression compounds that also allows molding a larger segment is needed [2].

Manipulating low-fusion impression compound in stick form is difficult for dentists because the material requires uniform plasticization and an adequate temperature to be shaped. Since its introduction in dentistry, impression compounds have been treated using alcohol lamps or blowtorches, which involve temperature control and material consistency, not to mention a significant risk of accidents.

The method described herein is a safe, fast, practical way of applying impression compound in stick form using a safe electrical instrument to apply the compound in an appropriate consistency, temperature, and the correct amount as indicated by the applicator trigger.

■ Technique

Step-by-step technique:

- 1) Take a hot-glue gun for 7 mm tubes, which is the same dimension as the stick of impression compound;
- 2) The gun nozzle has to be enlarged with a drilling machine (GSR 1000 Smart, Bosch Btrasil, Campinas, SP, Brazil) and a drill (Vonder 5344412000, Grupo OVD, Jundiaí, SP, Brazil) to work to a suitable diameter with the impression compound according to the operator's preference. For our use, we enlarged the nozzle to a diameter of 5 mm;
- 3) Because the temperature generated by the hot-glue gun far exceeds the 60 °C needed to plasticize the impression compound, a temperature controller needs to be installed to release the compound in a consistency and temperature suitable for use. To that end, a universal dimmer potentiometer bivolt (Qd34, Qualitronix Tecnologia Ltda., Santa Rita do Sapucaí, MG, Brazil) was selected, a device that works for any device voltage or region (i.e., 110V–240V);
- 4) The device (Qd34, Qualitronix Tecnologia Ltda., Santa Rita do Sapucaí, MG, Brazil) has two wires, and the installation is performed on the electrical wires of the hot-glue gun. The gun has two wires connected to the socket, either of which can be connected to the potentiometer. The selected wire needs to be cut, and each end of the cut wire needs to be soldered to one of the wires of the potentiometer device such that a series connection is achieved [3]. In that way, the device can control the energy sent to the gun and the temperature;
- 5) All connections made need to be covered with electrical tape;
- 6) The device needs to be fixed with super glue on the side of the gun;
- 7) With the gun plugged in, the temperature controller must be turned clockwise to turn the gun on and control the temperature (Figure 1). The dentist can adjust the temperature according to their experience and the desired consistency for the compound (Figure 2);
- 8) If the dentist wants to know the exact temperature of 55–60 °C, they can use an infrared thermometer to measure the position of the regulator on the gun's nozzle. Doing so gives the exact plasticizing temperature of the compound and makes a mark in red so that it is always adjusted in that position.

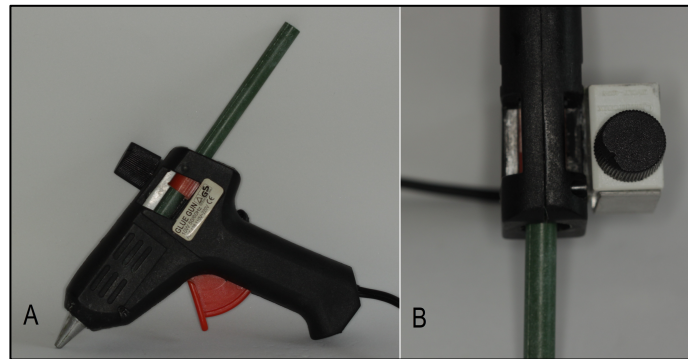


Figure 1. A) Impression compound applicator gun. B) Detailed view of the temperature controller.



Figure 2. Impression compound applied with proper consistency.

■ Conclusion

Despite technological advances in dentistry, impression compound continues to be indicated for specific procedures, including impressions in severely resorbed ridges and maxillofacial prostheses, which can benefit from manufacturing the impression compound applicator gun described here. Some devices, including water baths, hinder working with the material, especially on the edge of trays or are not as practical for clinical use. The mentioned device can be subjected to the same hygiene and disinfection as other impression material dispensers, allowing its safe and appropriate clinical use.

■ Authors' Contributions

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All authors declare that they contributed to a critical review of intellectual content and approval of the final version to be published.

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None.

■ Conflict of Interest

The authors declare no conflicts of interest.

■ Data Availability

The data used to support the findings of this study can be made available upon request to the corresponding author.

■ References

- [1] Gupta R, Brizuela M. Dental Impression Materials. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2022.
- [2] Lipkin LS. An alternative method of border molding. *J Prosthet Dent* 1988; 60(3):399. [https://doi.org/10.1016/0022-3913\(88\)90293-4](https://doi.org/10.1016/0022-3913(88)90293-4)
- [3] Qualitronix. Manual Qd34. Dimmer Universal. Available from: <https://www.qualitronix.com.br/images/anexos/8ff63a340b1081b405ad2b0ef110a97b.pdf> [Accessed on March 23, 2024]. [In Portuguese].