A. Purpose:

To replicate the interior surface of the chamber or bore of a firearm. Occasionally, firearms are received for which the caliber may not be known, or may be different than is designated on the firearm and in the literature. It may also be necessary to evaluate the bore for subclass characteristics. Creating casts of the chamber and/or the bore may facilitate this process.

B. Responsibility:

Forensic Science Examiners assigned to the Firearms Unit.

C. Safety:

Proper caution must be exercised and the use of personal protective devices should be considered by the examiner, such as gloves, clothing and eyewear when performing this procedure.

D. Procedure:

1. Ensure that the firearm is unloaded.
2. Open the action and remove the bolt or bolt assembly.
3. Check the bore to make sure it is clear.
4. Push a cleaning patch in the barrel from the muzzle end until it is ½ inch to ¼ inch from the beginning of the chamber.
5. Lubricate the chamber with WD 40®, gun oil, silicone spray, or other similar substance.
6. Prepare the casting material as per the manufacturer's instructions.
7. Fill the chamber with the casting material. Do not allow it to flow into the breech.
8. When the casting material is set, gently tap it with the end of a cleaning rod to loosen the cast from the chamber and remove it from the breech.
9. The same steps may be used in the casting of the bore. The entire length of the bore does not need to be filled with casting material; a few inches from the end are sufficient.

E. Equipment:

1. Casting material

F. References:

1. Casting material manufacturer's instructions

G. Quality Control:

When a chemical/reagent is utilized for the first time, the examiner opening/preparing the chemical or reagent will ensure that the container is properly labeled as to its contents, its safety information (NFPA or GHS) and the ability of the performance of the chemical/reagent). The examiner will also place the date opened/prepared and his/her initials on the container. Most chemicals/reagents are purchased as packaged kits. Per GL-21 General Laboratory Equipment, chemicals/reagents are considered "equipment" as they can influence the correct performance of laboratory activities (i.e. creating test impressions or enhancement).

The very first control test impression developed with a newly opened or prepared casting material will demonstrate the ability of the performance of that lot of chemical/reagent. A log will be kept of this control test impression. The log will include the chemical/reagent name, the date opened/prepared, the lot number, the initials of the analyst who opened/tested it, if the control test impression was acceptable and the manufacturer's expiration date, if there is one. This information will be logged on the Reagent Log form (QR-FA-19) . Once the chemical/reagent has been found to be acceptable, a colored dot will be initialed and dated and "OK" or "OK for use" will be written on it. This dot will be taped to the chemical/reagent bottle and will signify the chemical/reagent is okay to use. Before any chemical/reagent is used, every analyst should check for this sticker. If it is not present, the above stated procedure must be followed.

The quality control procedure for the casting material will be to apply a small amount of this casting material to a cartridge casing. It is preferable if the cartridge case has a Glock-type or other similar distinct firing pin impression. If the cast once removed replicates the markings on the head stamp of the cartridge case, the result is considered acceptable. The quality control check will conducted once on the initial opening of the casting material. If at any point, the casting material appears to have hardened, the quality control should be repeated or a new tube should be opened and tested.