

*Approved by Director: Dr. Guy Vallaro***A. Purpose:**

1. To replicate the interior surface of the bore or chamber 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. In order to facilitate the firing of test shots that are of the correct caliber for a particular firearm, it may be necessary to make a bore and/or chamber cast. Then, by measuring the cast, the correct cartridge can be selected for test firing.

**B. Responsibility:**

1. It is the examiner's responsibility to use this procedure to determine the correct caliber of a firearm or to recover a cast for comparative examinations when test firing will not produce the marks necessary for examination.

**C. Safety:**

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

**D. Procedure:**

1. Insure 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 gun oil, silicone spray, or some other similar substance such as WD 40®.
6. Two products can be used for this casting process: 1) Mikrosil®, a casting product that requires the examiner to mix two compounds together before application, and 2) Forensic Sil®, a casting product in a tube which is mixed automatically during direct application. Either product can be used at the discretion of the examiner.
7. Mix Mikrosil® following the manufacturer's instructions. If using Forensic Sil® also follow the manufacturer's instruction for applying and dispensing this material.

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8. Do not allow the casting material to flow into the breach. It will make extraction difficult.
9. 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 breach.
10. A Mikrosil® or Forensic Sil® cast has to be pushed/forced out and is not reusable. It is undesirable to let any more of the casting material than necessary go into the barrel or chamber.
11. The same steps may be used in the casting of the bore. However, in bore casting, only the last three (3) inches of the bore need to be cast.

**E. Interpret Results:**

1. The correct caliber of the firearm can be determined by measuring the mouth, base, overall length, rim (if pertinent), shoulder length of the chamber cast, or the diameter of the bore cast.

**F. Equipment:**

1. Mikrosil® casting material
2. Forensic Sil® casting material and applicator

**G. References:**

1. Manufacturer's product information sheets for Mikrosil® and Forensic Sil®
2. Laboratory safety manual
3. AFTE procedures manual

**H. Appropriate Appendices:**

1. Appendix 1 -- Worksheets