Green Solutions Group
Best for Every Body™

EMBALMING PROTOCOL
SURGICAL TRAINING FLUID

Surgical Training Kit includes:

- 3-16 oz (about 473.18 ml) Pre-Injection Fluid (PIF)
- 1-16 oz (about 473.18 ml) Anatomical Embalming Fluid (AEF)
- 4-gallons of Surgical Training Fluid (STF)

Introduction

Embalming a surgical training donor is a 4-step process as described herein. A preserved donor will last 8-10 weeks for surgical training procedures. Selection of the donor is critical. It is recommended the donor weight not exceed 150 pounds. Ideally, the donor should have a BMI under 27 with no pathologies that would limit distribution and diffusion of the fluid, and no damage to the anatomical structures for surgical training. This step is important as cadavers prepared using GreenMBalm® Surgical Training Fluid (STF) can be repurposed for additional surgical training sessions.

Best Practices

- Prior to embalming, the body must thaw to be at room temperature for 8 – 12 hours. This is achieved by removing the donor from the cooler and allowing it to slowly thaw and/or warm to room temperature. Once this is achieved, thoroughly wash the donor. This includes hands, feet, mouth, and genital area. Many issues can arise from external contamination present on the body before embalming. A complete wash can prevent issues during the holding period.
- The body may be embalmed from the access point of choice. This is commonly either the carotid or the femoral arteries.
- Drainage must be taken. The ideal avenue for drainage is the internal jugular vein on the right side. Make a small incision in carotid artery. The size of the canula to be used depends on the size of the vessel, ligature size, etc., and is at the embalmer's preference.

The following protocol for a non-toxic surgical training embalming is designed for an optimal result using the GreenMBalm® STF.

Step 1

Before injecting the GreenMBalm® STF, application of the GreenMBalm® Pre-injection Fluid (PIF) will break up clots and condition the vessels for embalming. Application is 48 oz (about 1.42 L) added to 3 gallons of deionized water (11.36Liters). You can also add a small amount (3 ounces (about 88.72 ml) of red dye into the pre-injection mixture if desired. Inject 2-gallons (7.57L) into a closed drainage system, use low flow, and above moderate pressure. Massage limbs to ensure fluid gets to the fingers and toes and look for vascular distention. Allow 45-minutes for the PIF to condition the vascular system.

Step 2

Preservation of the brain. Use the 16 ounces (473.18 ml) of GreenMBalm ready-to-use Anatomical Embalming Fluid (AEF) included in the kit to preserve the brain. Using an 18-20-gauge needle of three inches (2.54 cm) or longer, inject 8 ounces (236.59 ml) of this fluid into the inner canthus of each eye.

Step 3

After 45 minutes, open the closed system and inject the remaining 1-gallon (3.78L) into the body. You will notice during drainage the removal of coagulated blood from the body. As the draining blood becomes clearer, you will then close the system by ligating or clamping the jugular vein.

Step 4

Proceed with the embalming process by injecting 4-gallons (15.14L) of the GreenMBalm® ready-to-use STF fluid. Upon completion of the embalming process, allow the donor to sit for 1 week.

Signs of Preservation

The viscosity of the STF is such that it will penetrate the tissues much faster than standard embalming but will not give the same “tell-tale” signs of completion that you get with formaldehyde. Rather than looking for firming of tissues, look for fullness of tissues. The size of the body will increase throughout injection, leading to a feeling of fullness in the tissues. This will be the main indicator that you are getting proper distribution and diffusion of the STF.

Vascular Recharge

This is a method whereby the circulatory system is charged. A porcine blood solution is used to make the surgical experience more realistic. To accomplish the recharge, keep the embalming cannulas secured in the carotid artery (or artery of your choice). You will want to re-open the jugular vein and insert a drainage tube. The drain tube should be connected to a drainage hose, which should empty into a container of your choice for waste removal after the session. Introduce 3-gallons of porcine blood solution into the embalming machine. Set the pressure to about 20 PSI and set flow to med-low or about 15-20 oz/min (600 ml/min) (you may increase flow to proper vascular distention) and then set flow to the pulse setting. Keep drain tube closed until the vasculature has distended and open drain tube to allow the release of some vascular pressure as needed. You may keep the machine going or turn it on only during the procedures.