

GreenMBalm™ Anatomical Embalming Protocol

Embalming a GreenMBalm™ donor is remarkably like embalming a standard anatomical donor, using the super-saturation method of embalming. The following protocol is designed for an optimal result with the GreenMBalm™ fluid to ensure saturation of the tissues. It is recommended to use GreenMBalm™ Pre-Injection Fluid to flush coagulated blood from the vascular system prior to beginning the embalming process.

1. As with any anatomical embalming, selection of the donor is critical. The donor weight is not as important as the BMI. A donor that is 200 lb. could be in excellent shape or terrible shape depending on the BMI. 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 study.
2. Preparation of the solution: For every 50 lb. of body weight, you should prepare 2.5 gallons of solution (1.25 gallons of GreenMBalm™ mixed with 1.25 gallons of water) for injection. While this may seem high, this is standard for utilizing the super-saturation method of embalming. The GreenMBalm™ solution should be mixed at a 1:1 ratio with water (deionized and distilled water works best, but tap water will work), which results in preservation like that of a 4% formaldehyde solution, or a 2% formaldehyde solution with phenol.
3. When proceeding with the embalming procedure, a single-point injection method is preferred. The viscosity of the GreenMBalm™ fluid 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.
4. Ensure that you inject the body, as well as the head of the donor. You will want to inject enough into the head to create a decent amount of swelling to ensure that the tissues of the brain are properly preserved. Inject the embalming fluid upwards into the head to achieve good brain preservation. I often find it beneficial to drain through the superior sagittal sinus rather than the jugular vein, to increase fluid flow to the head. This is achieved by drilling a small hole into the sinus. Use a drill bit that is rated for metal, and clear hair and tissue from the drilling area to ensure that the bit does not get tangled while you are working.
5. Upon completion of the embalming procedure, do not treat the cavity, and allow the donor to sit for at least 24-48 hours (about 2 days) prior to use for dissection. Optimal is around 1-2 weeks, if possible. The longer the donor is allowed to cure, the better the preservation will be.
6. While the donor is curing, it is quite common to have a collection of fluid in the bag. If the bag begins to leak, simply aspirate the bag until dry. If the bag is not leaking, I recommend leaving the fluid in the bag to allow for additional absorption.
7. In caring for the donor once you begin to utilize them for dissection, ensure that areas that are not being worked on, and the entire body when not in use, are covered in a shroud/sheet that is moist with GreenMBalm™ fluid. Green Solutions Group, LLC has a nontoxic holding solution for facilities that immerse preserved cadavers in vats. The typical wetting solutions that are used in many anatomical labs are not needed or recommended with GreenMBalm™. GreenMBalm™ fluid contains emollient factors, which retain tissue moisture in a far superior manner than standard anatomical embalming. If your donor does begin to dry out, use GreenMBalm™ nontoxic embalming solution and generously apply. If the drying is extreme (for example, someone forgot to cover the body or close the bag overnight), it is most beneficial to allow the donor to sit for a few days under a well moistened shroud (1:1 ratio GreenMBalm™ with water) to allow the tissues to reconstitute. Ensure that the shroud is moistened daily.
8. The results you see will be different than standard formaldehyde embalmed donors. You will see a considerable increase in the pliability of the tissues, as well as retained tissue coloration. Seeing red muscles, and properly colored organs does not mean that they are not preserved. It is simply one of the benefits of the GreenMBalm™ solution.

As you utilize the GreenMBalm™ donors, you will find that the increased pliability of the tissues allows for complicated dissections of small blood vessels, neurological structures, and other small anatomical structures, to become far easier. The adipose tissues and connective tissues separate from structures much easier than standard formaldehyde embalming and working with the deep tissues becomes far easier due to the lack of formaldehyde vapor.

If you have questions, comments, or concerns about the application of this product, please feel free to contact me via the resources below.

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