

function — *of beauty*

Standard Operating Procedure

Dilution of 99% Isopropyl Alcohol Solution to 70% Isopropyl Alcohol Solution

Function of Beauty

FUNCTION, INC

5570 Snyderstown Rd. Paxinos, PA 17824

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Alcohol Solution**

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1.0 Purpose

- 1.1. For occasions where it becomes necessary to dilute a 99% solution of isopropyl alcohol to a 70% solution suitable for individual use for surface sanitation from point of use spray bottles, this SOP will outline the procedure to safely accomplish this task.
- 1.2. This SOP applies to all employees, contractors, and vendors performing this operation at any Function of Beauty location.

2.0 Dilution Formula

- 2.1. Simply adding more distilled water to a 99% solution is not sufficient to appropriately and safely lower the overall concentration of a volume of isopropyl alcohol to 70%.
- 2.2. The following formula will be used whenever dilution is required:
- 2.3.
$$\begin{aligned} 100\text{ml } 99.8\% \text{ IPA} &= 99.8\text{ml} \\ X\text{ml } 70\% \text{ IPA} &= 70\text{ml} \\ &= \frac{70\text{ml} \times 100\text{ml}}{99.8} \\ &= 70.14\text{ml} \end{aligned}$$

70.14ml of 99.8% IPA + 29.86ml of Distilled Water = 100ml of 70% IPA
- 2.4. Another way to express this equation can be:
70ml 99.8% IPA + 30ml Distilled Water = 100ml 70% IPA

3.0 Limitations and Restrictions

- 3.1. Concentrations of IPA that are over 70% by volume may not be dispensed for use in surface decontamination or any other application where IPA is exposed to open air, except in any application for which IPA at over 70% has been approved for use.

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3.2. These instructions and calculations contained in this SOP are only for reducing the concentration of 99%IPA to 70%IPA.

3.2.1. This SOP does not apply for any other initial concentration and will result in an inappropriate dilution percentage and may result in unforeseen hazards and / or the end product not being an effective disinfectant.

3.2.2. Consult the EHS Department for starting concentrations other than 99%.

4.0 Safety Precautions and Personal Protective Equipment

4.1. IPA is extremely flammable in both it's liquid and gaseous forms. The following safety precautions will be followed at a minimum to decrease the risk of fire and other hazards related to the handling of IPA:

4.1.1. All containers for IPA will be appropriately grounded to an electrically adequate Earth ground to prevent the discharge of static electricity.

4.1.1.1. All employees working to dilute IPA as related in this SOP will utilize a grounding wrist band, connected to the IPA container(s) path to Earth ground to further reduce the likelihood of static discharge. [Click here for an example of this device.](#)

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4.1.2. The following minimum personal protective equipment is required for all employees engaged in the dilution of IPA:

4.1.2.1. Full face shield

4.1.2.2. Nitrile gloves

4.1.2.3. Full body apron resistant to solvents

4.1.2.4. Impact rated safety eyewear.

4.1.3. Locations for the dilution of IPA should be carefully chosen to minimize all hazards.

4.1.3.1. These can include, but are not limited to:

4.1.3.1.1. Impacts with equipment (both powered and unpowered)

4.1.3.1.2. Proximity to electrical outlets, overhead light, and other potential sources of ignition

4.1.3.1.3. Falling object hazards such as, stock falling from high racks or shelves

4.1.3.1.4. Any other foreseeable potential hazards

4.1.3.2. Miscellaneous Precautions

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- 4.1.3.2.1. The location should be posted with “Danger Flammable Materials” signs at all points of entry and / or no less than 50 ft for where this work is being performed.
- 4.1.3.2.2. Smoking will not be permitted within 100 ft of where this work will be performed (to include opened windows, doors, vents, etc.)
- 4.1.3.2.3. Personnel not directly involved in this activity must remain outside of 50 ft from where the work will be performed.
- 4.1.3.2.4. Cellular phones, 2-way radios, and other electronics may not be used inside of 50 ft from this work area.

5.0 Document Review and Approval

- 5.1. **Date Devised:** 09-29-21
- 5.2. **Reviewed Date:** 12-21
- 5.3. **Date Approved:** 12-21
- 5.4. **Approved By:** Ed Noter, Director, EHS