68% Nitric Acid Solution (HNO_3)

Standard Operating Procedure

Revision Date 6/24/2022

Idaho State University Environmental Health and Safety

Potential Safety Hazards

Corrosivity – Contact with nitric acid can cause severe skin burns and eye damage.

Reactivity – Nitric acid is a strong oxidizer and can ignite organic material. Nitric acid is also a strong acid and will react violently with strong bases. Nitric acid solutions are aqueous and will react violently with water reactive materials such as alkali metals.

Safe Work Practices

Inventory Management

- Minimize the amount of nitric acid stored in a laboratory.
- Utilize a less dangerous product than nitric acid if possible.

Engineering Controls

- Handle nitric acid in an exhausted enclosure, such as a chemical fume hood to prevent inhalation exposure.
- Utilize splash guards when possible to prevent dermal exposure.

Personal Protective Equipment (PPE)

- Wear acid resistant gloves when working with nitric acid.
- Protect the eyes and face with safety glasses, goggles, and/or a face shield.
- Wear a lab coat over long pants and closed toed shoes.
- Utilize an acid resistant apron when pouring significant quantities of nitric acid.

Handling and Storage Practices

- Ensure an adequate stock of an acid neutralizer, such as sodium bicarbonate, is immediately available before working with nitric acid.
- Keep nitric acid separated from incompatible materials including organic chemicals, strong bases, and violently water materials.

Chemical Hygiene

- Keep nitric acid containers closed as much as possible to prevent spillage.
- Change gloves frequently, even if they do not appear to be contaminated.
- Wash hands each time after removing gloves.
- Prohibit all food and beverages in labs to minimize the risk of ingestion.

Preparedness for a Nitric Acid Incident

Nitric Acid Exposure

- Immediately flush the affected area with water for 20 minutes while removing potentially contaminated clothing.
- For significant exposure to nitric acid, seek prompt medical attention at a hospital emergency room and ensure the emergency responders are aware the incident is a nitric acid exposure.

Spill Response

- Take appropriate measures to prevent nitric acid exposure including restricting area access and wearing appropriate PPE when cleaning the spill.
- Neutralize spilled liquid with specialized acid neutralizer or a standard acid neutralizing material like sodium bicarbonate.
- Ensure there is no liquid remaining before collecting the spill response material for disposal via Environmental Health & Safety (EHS) and returning the area to normal use.

Unneeded Material

- Manage unneeded nitric acid solutions as chemical waste and dispose via EHS (https://www.isu.edu/ehs/).