General
07_02_02.003
Dates Active: April 12th, 2018 - Present
Author: Victoria Wickham

Plastic Cleaning for Trace Element Analysis

1 INTRODUCTION

This procedure is used to clean all plastics (plastic containers (HDPE, LDPE), centrifuge tubes, and pipette tips) associated with ICP-MS, but can be used for all plastics in the lab. Total cleaning should take no less than two hours.

2 SCOPE AND APPLICATION

2.1 OVERVIEW

2.1.1 Soak plastics in hot hydrochloric acid (HCl) followed by a soak in hot distilled deionized water to ensure cleanliness.

3 REQUIRED TRAINING

3.1.1 07_02_11 Laboratory Waste Disposal and Management

4 EQUIPMENT AND MATERIALS

4.1 APPARATUS AND MATERIALS

4.1.1 Hot plate with ability to reach at least 80° C.
4.1.2 4 L Beaker
4.1.3 Watch glass cover

4.2 REAGENTS

4.2.1 50% HCL (2X or second stage; see comments section). Can be made by adding 50% by volume of distilled deionized water to ~2 liters of 2X (second stage) HCl.

5 SAFETY PRECAUTIONS

5.1 SAFETY PRECAUTIONS

5.1.1 Use gloves and safety glasses or goggles when handling acids.

5.2 WASTE DISPOSAL

5.2.1 ALL acid solutions must be neutralized with sodium bicarbonate before being disposed of in the sink in Room 205. Do not allow any un-neutralized acid solution to drain into any sink in the building.
5.2.2 Check the Sewer Disposal List in Room 203 for the list of substances that can be disposed of down the sanitary sewer system.

6 SOLUTIONS AND REAGENTS

7 STANDARD SOLUTIONS

8 PROTOCOL

8.1.1 Used pipette tips should be discarded. Plastic containers and centrifuge tubes that have been cleaned by Gen-Sample Bottle Cleaning-005, pipette tips from the box, and centrifuge tubes from the bag can be placed directly into the beaker, caps first, then containers with open side up.
8.1.2 Fill beaker to just over the plastics with 2X (second stage; see comments section) 50% HCl. Cover with watch glass.
8.1.3 Leach in 2X (second stage) 50% HCl at >80° C for >2 hours on a hot plate.
8.1.4 Decant HCl into HCl container and rinse 4 L beaker with distilled deionized water.
8.1.5 Fill beaker to just over the plastic containers with distilled deionized water. Cover with watch glass.
8.1.6 Leach in distilled deionized water at >80° C for >2 hours on a hot plate.
8.1.7 Decant water and rinse 4 L beaker with distilled deionized water.
8.1.8 Dry on drying tray in ICP-MS room.

9 DATA REDUCTION AND STATISTICS

10 QUALITY ASSURANCE

It is the responsibility of all laboratory personnel to read and understand this and all other necessary SOPs. Any questions should be discussed with the Laboratory Director. All laboratory personnel must document that they read and understood this procedure and all other necessary SOPs as per the Training Schedule. It is the responsibility of the Laboratory Director to keep a record of all personnel who have read this and other SOPs.

11 ADDITIONAL INFORMATION

11.1 REFERENCES

11.1.1 Gen-Teflon Cleaning-001

11.2 COMMENTS

11.2.1 Acids are in 1 gallon jugs located in cabinets under the Mars Express microwave. There are two grades of HCl 1X (or first stage) and 2X (or second stage). The first stage HCl is reagent grade acid from the bottle, or reagent grade HCl that has been used before as first stage acid and has been through the distillation one time (1X). Second stage HCl is un-used first stage HCl that is put through another distillation (2X). Acids should be distilled at least every other month. See acid distillation SOP.

12 PREVIOUS ISSUES AND CHANGES

Document File Name	Issue	Issue Effective Dates	Author
Gen-Plastic cleaning-001	001	March 1st, 2006 – March 11th, 2015	Unknown
Plastic Cleaning-002	002	March 11th, 2015 – April 12th, 2018	Aaron Isaac Shultis
07_02_02.003 Plastic Cleaning	003	April 12th, 2018 - Present	Victoria Wickham

12.1 ISSUE CHANGES

12.1.1 Issue 001:
- Unknown

12.1.2 Issue 002:
- Revised filename

12.1.3 Issue 003:
- Moved SOP over to new format

13 DIAGRAMS, FIGURES, AND PHOTOGRAPHS