

Teflon Cleaning for Trace Element Analysis

1 INTRODUCTION

This procedure is used to clean all Teflon associated with ICP-MS, but it can be used for all Teflon in the lab. Total cleaning should take no less than four hours.

2 SCOPE AND APPLICATION

2.1 OVERVIEW

2.1.1 MARS microwave is used, in combination with nitric acid, to clean Teflon vessels.

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 MARS Microwave (Mars 5, CEM)

4.1.2 50 mL graduated cylinder

4.2 REAGENTS

4.2.1 Nitric acid, concentrated (16N)

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 Rinse out Teflon container with distilled deionized water.
- 8.1.2 In a hood, using the 50 mL graduated cylinder, fill Teflon vessel with 10-15 mL of concentrated nitric acid.
- 8.1.3 Place septa over opening and tighten the cap.
- 8.1.4 Turn on microwave, and place vessel on microwave carousel.
- 8.1.5 Repeat for all vessels.
- 8.1.6 Place loaded carousel in MARS microwave.
- 8.1.7 Select "Load Method" from main microwave menu, and locate the vessel cleaning method.
- 8.1.8 Once the method has been located and selected, press the "Start" button.
- 8.1.9 Once the cycle is complete, remove the carousel from the microwave and place in the hood.
- 8.1.10 Pour remaining nitric acid into a large beaker which is 80% full of water.
- 8.1.11 Rinse vessel with distilled deionized water and place on a drying rack in the hood.
- 8.1.12 Once all acid is disposed into the beaker, it can be neutralized and then disposed of in the sink in Room 205.
- 8.1.13 The beaker and graduated cylinder must be rinsed numerous times, and then washed with regular glassware.

9 DATA REDUCTION AND STATISTICS

10 QUALITY ASSURANCE

11 ADDITIONAL INFORMATION

11.1 REFERENCES

- 11.1.1 EPA Method 3052 Sec 7.2

11.2 COMMENTS

11.2.1 Acids are found in 2.5 L jugs, located in cabinets under the radioactive hood in the acid lab (Room 205).

12 PREVIOUS ISSUES AND CHANGES

Document File Name	Issue	Issue Effective Dates	Author
Gen-Teflon cleaning-001	001	March 1 st , 2006 – March 11 th , 2015	Unknown
Teflon cleaning-002	002	March 11 th , 2015 – April 12 th , 2018	Aaron Isaac Shultis
07_02_04.003 Teflon Cleaning	003	April 12 th , 2018 - Present	Victoria Wickham

12.1 ISSUE CHANGES

12.1.1 Issue 001:

- Changed filename
- Re-worded materials and reagents

12.1.2 Issue 002:

- Rewrote whole procedure

12.1.3 Issue 003:

- Moved SOP to new format

13 DIAGRAMS, FIGURES, AND PHOTOGRAPHS
