

Massachusetts EPH SPE Cartridge

cat.# 26065

Introduction

Resprep™ Massachusetts EPH SPE cartridges are designed to meet method requirements for the Massachusetts Department of Environmental Protection's *Method for the Determination of Extractable Petroleum Hydrocarbons (EPH)*.¹

This method uses solvent extraction of water and soil/sediment matrices, followed by silica gel SPE fractionation of aliphatics and aromatics from C9 to C36 hydrocarbons. Maximum sample concentrations, as determined by this sample preparation and analytical method, are 20mg/kg in soil/sediment and 100µg/mL in water. Maximum cartridge hydrocarbon loading should be no more than 25,000µg/mL. These cartridges are also suitable for any application with similar requirements and limitations. Always refer to the current official state or federal method guidelines.



Procedures

SPE Silica Gel Clean up and Fractionation

Cartridge: Massachusetts EPH 20mL/5g, (cat.# 26065)

Conditioning: Add 30mL hexane, do not allow top frit or silica bed to go dry.

Sample: Add 1mL of methylene chloride extracted EPH sample in hexane.

Elution:

Fraction #1 (aliphatic compounds):

- Accurately measure 17- 20mL (± 0.5 mL)* hexane and pass through cartridge.
- Collect aliphatic fraction in a clean sample container.
- Do not allow frit or bed to run dry.

Elution fraction #2 (aromatic compounds):

- As soon as the hexane level reaches the top frit, pass 20mL methylene chloride through cartridge.
- Collect aromatic fraction in a clean sample container.
- Process is complete when the methylene chloride level reaches the top frit; do not allow frit or bed to run dry.

Elution concentration: Concentrate each separate solvent fraction sample under a gentle nitrogen purge to 1mL. Do not dry to less than 1mL or go to dryness before analysis. Refer to Massachusetts Department of Environmental Protection *Method for the Determination of Extractable Petroleum Hydrocarbons*¹ for analytical conditions.

* The correct volume of hexane as defined by the method (within 0.5mL) needed for elution of the first aliphatic fraction, without breakthrough of any analytes from the aromatic fraction must be determined for each new lot of cartridges and should be verified within each lot as necessary.

Precautions

Successful fractionation results require both uncompromised cartridge quality and careful fractionation technique.

To ensure cartridge quality:

- Unopened packages should be stored in a clean, dry location and used promptly.
- Opened packages should be carefully resealed and stored in a desiccated container until the next use.
- Cartridges should not be removed from the packaging prematurely or exposed to the air for prolonged periods before use, as the silica is hygroscopic and will be deactivated by ambient moisture, resulting in poor fractionation performance.
- If the packing bed has shifted during transport or storage, tap tube to resettle the bed and press the top frit firmly into contact with the top of the silica bed.
- Do not condition cartridges with methylene chloride. Although this is permitted in the method to reduce background extractables, both excess methylene chloride left on the cartridge and excess drying of the cartridge with lab air, will compromise cartridge performance.

To ensure optimum fractionation:

- Opened tubes should be immediately filled with the conditioning hexane rinse.
- Exact volume of hexane used must be determined for every new lot of cartridges. Volume must be accurately measured ($< \pm 0.5\text{mL}$) and applied to cartridges.*
- Conditioning may be done using vacuum or positive pressure, but the fractionation steps with hexane and methylene chloride solvent should be done as close to gravity flow as possible.
- Excessive temperature or vigorous drying of each eluted fraction may cause loss of low molecular weight analytes and should be avoided.

1. *Method for the Determination of Extractable Petroleum Hydrocarbons (EPH)* Massachusetts Department of Environmental Protection, Division of Environmental Analysis, Office of Research and Standards, Bureau of Waste Site Cleanup, Revision 1.1, May 2004.

**Call Technical Service at 800-356-1688 or 814-353-1300, ext. 4
(or your Restek representative) if you have any questions about
this product or any other Restek product.**



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