strata™
Solid Phase Extraction

Strata Activated Carbon FAQs

1. What is activated carbon?

Activated carbon is a highly porous carbon-based particle that can extract analytes from aqueous matrices. The high surface area combined with dense network of internal pore, results in adsorption of analytes to its surface, delivering efficient extraction of polar analytes.

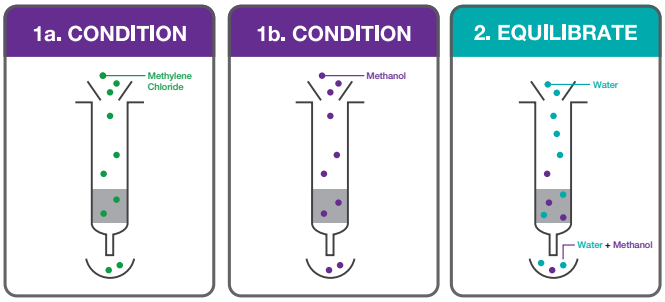
Morphology: Porous carbon
Application: Polar analytes, unretained by reversed phase
Primary Industries: Environmental, Food, and Pharmaceutical

2. Does activated carbon absorb or adsorb?

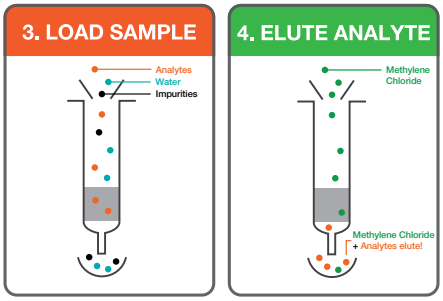
Activated carbon adsorbs. Adsorption is a process whereby molecules stick to the surface only. As mentioned above, activated carbon has a large surface area due to being a porous material. The analyte of interest gets adsorbed to the surface of the carbon particlesand the impurities are passed through the cartridge. Then, the analytes are released with addition of a strong organic solvent, facilitating the clean extraction.

3. What are the extraction steps using Strata Activated Carbon?

The schematic below shows the steps involved in extraction of analytes using Strata Activated carbon. The volumes mentioned are based on a 2g sorbent mass and may need optimization if sample volume or sorbent mass is changed.



2 x 10 mL Methylene Chloride | 2 x 10 mL Methanol | 2 x 10 mL Water



500 mL water sample spiked with internal standard. Dry for 10 min. | 3 x 3 mL Methylene Chloride

5. REMOVE MOISTURE
Pass the eluent through Methylene Chloride prewetted Strata Sodium Sulfate Giga™ Tubes, 5 g / 20 mL (Part No. 8B-S124-LEG) and wash with 5 mL Methylene Chloride.

6. RECONSTITUTE
Evaporate solvent under Nitrogen to required volume and reconstitute with Methylene Chloride.

4. Can a different chemistry, other than carbon, be used for the extraction of polar analytes such as nitrosamines?

Yes, other chemistries can be used but will not have the same efficiency as activated carbon. You will benefit from the abundancy of surface adsorption that is available when using an activated carbon media for polar analyte extraction.

5. What is the typical learning curve for this technique for a new chemist?

SPE is sometimes perceived as a complex sample preparation method. Activated carbon-based extraction is an of non-retentive SPE, making it a simpler method to implement. This extraction works based on the adsorption phenomenon. The method does require fine tuning a few skills. Phenomenex can assist with any method development. Reach out to www.phenomenex.com/chat to chat with a live technical expert.

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6. Could the Strata Activated Carbon cartridges be reused or regenerated?

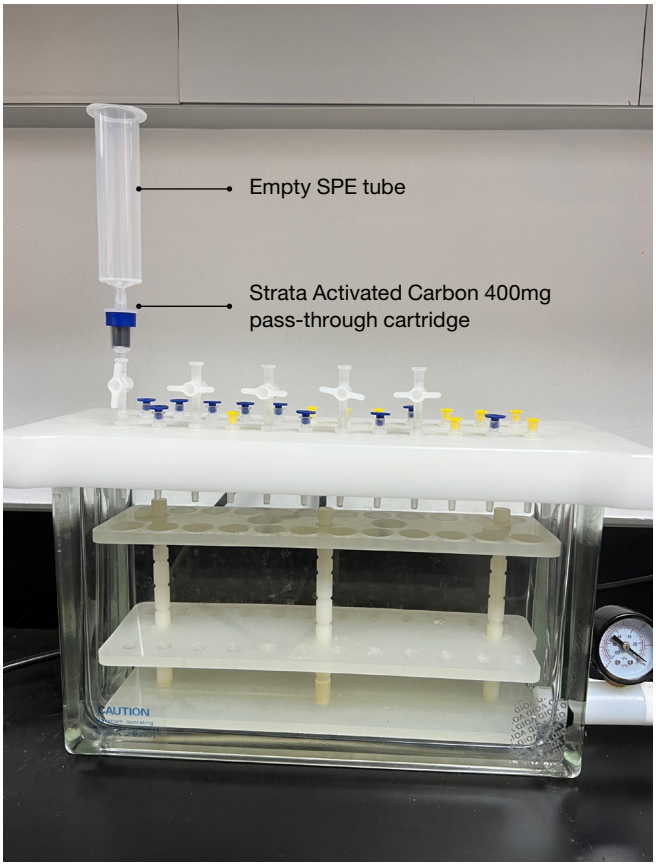
These cartridges are made for a one-time use only. To assure reproducibility and ensure there is no false positive or interference with analyte of interest, these cartridges are meticulously cleaned and tested during the manufacturing process; therefore, in the interest of assuring the best data quality, it is best to use a brand new Strata Activated Carbon cartridge with every extraction.

7. Are there any specific requirements for retention and elution of analytes such as Nitrosamine and 1,4-Dioxane on Strata Activated Carbon?

Regarding the elution, the sample volume and choice of solvent can be modified per analyte and method requirement. Generally, water-soluble polar analytes are good candidates for extraction on Strata Activated Carbon. A water insoluble solvent is recommended for elution. Nitrosamines are volatile, so adding a few drops of ethylene glycol to the extract will prevent evaporation and loss of analyte during the drying and reconstitution step. Recommended elution solvent is Methylene Chloride.

8. I am not familiar with the 400 mg format. Could you provide more information about it? How is it used? What are its benefits?

The 400 mg format is a pass-through cartridge without a head volume. The format ensures denser packing and hence better loading. An empty SPE tube of desired volume is used by customers to load samples.



Comparative separations may not be representative of all applications.

9. In Technical Note TN-0154 published by Phenomenex, Nitrosamines were extracted from a Losartan drug sample using Strata Activated Carbon 400 mg SPE cartridge. Could you provide additional information about sample pre-treatment?

Strata Activated Carbon is an adsorption-based cartridge and requires the maximum volume to slowly send the analyte and get maximum adsorption. The 400 mg cartridge's maximum volume is 100 mL water and the 2g is 500 mL. Hence, to facilitate adsorption in the sample extraction using the Strata Activated Carbon 400 mg cartridge, Losartan API was dissolved in 100 mL water.

If the formulation is water insoluble, small volume of organic solvent can be added (1-2 mL) followed by 100 mL water dilution, spin down undissolved material, and then pass through the cartridge. The analyte of interest (Nitrosamine) will still be soluble in aqueous extract and will go through the cartridge even though undissolved components are present.

10. Many laboratories do not want (or are not allowed) to use methylene chloride or other halogenated solvents to avoid environmental hazard. Is there an alternative eluting solvent for eluting analytes from Strata Activated Carbon?

Methylene Chloride is used in the last elution step and is low volume. The general protocol for loading and eluting on Strata Activated Carbon is based on regulatory methods EPA 521 and EPA 522. Considering an environmental perspective, MTBE and/or Ethyl Acetate can be used as the extraction solvent.

11. Are there similar products available in the market, and how is Strata Activated Carbon different from them?

Strata Activated Carbon sample preparation product is a superior adsorption based carbon SPE in comparison to traditional porous carbon, activated charcoal or coconut carbon products available. Phenomenex offers this SPE in both formats 2 g/6 mL and 400 mg pass-through.

When compared to similar products, Strata Activated Carbon has demonstrated better recovery and reproducibility. Data on product performance comparison is available in the Strata Activated Carbon product brochure, and in the technical notes listed on the following page.

Need to Process Large or Small Sample Volume?

We've got you covered!

Click to view and download:

- Strata Activated Carbon 2g/6mL: Extraction and Robust Analysis of 1,4-Dioxane by Isotopic Solution
- Strata Activated Carbon 2g/6ml: Extraction and Robust Analysis of Nitrosamines from Water Sample
- Strata Activated Carbon 400 mg pass-through: Extraction and Robust Analysis of Acrylamide in Coffee
- Strata Activated Carbon Product Brochure

For more information about this product click the links below:

- Strata Activated Carbon Information (USA)
- Strata Activated Carbon Information (Other Countries)

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Have questions or want more details? We would love to help!
Visit www.phenomenex.com/Chat to get in touch with one of our Technical Specialists