

Sample preparation

- [Sample preparation - context](#)
- [Sample preparation - motivation](#)
- [Purpose of sample preparation](#)
- [Overview of preparation methods](#)
- ↓ ● [Liquid liquid extraction \(LLE\)](#)
- ↓ ● [Solid phase extraction \(SPE\)](#)
- ↓ ● [Solid phase microextraction \(SPME\)](#)
- ↓ ● [Purge and trap \(PT\)](#)
- ↓ ● [\(Accelerated\) Solvent extraction \(\(A\)SE\)](#)
- ↓ ● [Supercritical fluid extraction \(SFE\)](#)
- ↓ ● [Filter Techniques \(FT\)](#)
- [Box 10 Filtration](#)
- [Box 11 Sorbents](#)
- [Box 12 Preconcentration](#)
- ▶ [Selftest](#)
- ▶ [Problems](#)
- ↓ ● [1\) Adsorbents](#)
- ↓ ● [Answer](#)
- ↓ ● [2\) Purge and trap](#)
- ↓ ● [Help](#)
- ↓ ● [Answer](#)
- ↓ ● [3\) Solvents for liquid extraction](#)
- ↓ ● [4\) Concept map](#)
- ↓ ● [5\) Cargo screening](#)
- ↓ ● [Answer](#)
- [End of chapter](#)

1) Adsorbents

Problem:

1a) What properties should an adsorbent have that is used to clean a moist exhaust gas stream?

Which of the following materials would you use: quartz sand, clay, peat, glass beads, and/or activated charcoal?

1b) Can you think of reasons why adsorbents are typically preferred over absorbents?

Answer:

1a) In a moist gas stream there is the danger that water molecules compete with pollutants for the same sorption sites. This would lower the sorption capacity of the sorbent and also make the sorption capacity difficult to predict. Therefore a sorbent that is not attractive for water (i.e. without H-bonding sites) such as activated charcoal should be chosen. In addition, the adsorbent should be cheap, have a high sorption capacity (i.e. sorption coefficient) for the compound(s) under consideration and should be easy to be recovered or be disposed of.

1b) Absorbents would require diffusion of the compound into a (organic) matrix. This is a rather slow process (unless the diffusion path is very short), which is not suitable given the short contact time in a gas filter.

Download this page as a [pdf](#)

