

## TECHNICAL DATA SHEET

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# Adsorbi

Easy-to-use adsorbent for irreversible pollutant removal.

The product is the result of several years of research and extensive collaboration with conservators

Use in display cases & storage solutions to remove gaseous pollutants

Our product is safe to use, has a long lifetime and high performance for volatile organic pollutants, such as organic acids, aldehydes,  $\text{NH}_3$  and  $\text{NO}_x$





# Background



EU-funded project APACHE\* (2019-2022) which aimed to develop new tools and materials for preventive art conservation & cultural heritage.



The Applied Chemistry division at Chalmers University of Technology (Gothenburg, Sweden) participated in the project.

In close collaboration with museums & archives, the aim was to develop new adsorbents for capturing harmful gaseous pollutants.



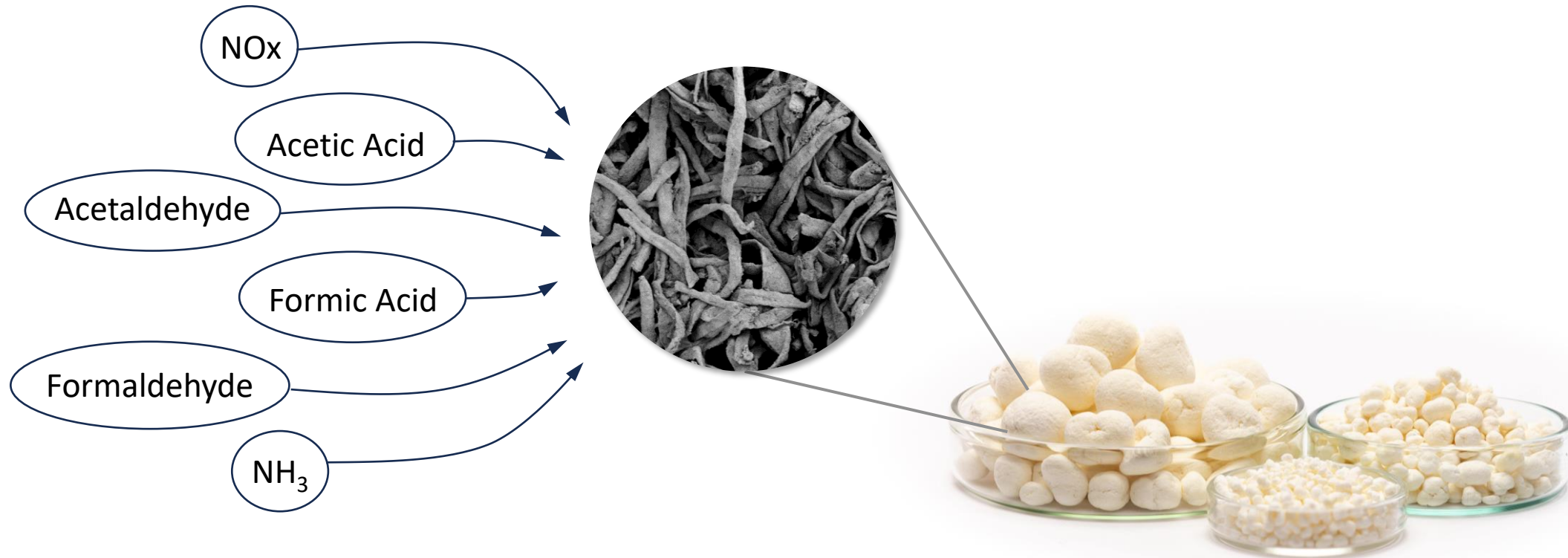
In 2022 Adsorbi was started as a spin-off company from the university.

The purpose of the company is to continue working with conservators and to bring new materials to the field.

*\*APACHE - Active & intelligent packaging materials and display cases as a tool for preventive conservation of cultural heritage*



# The technology



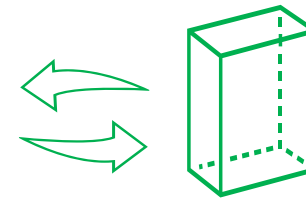
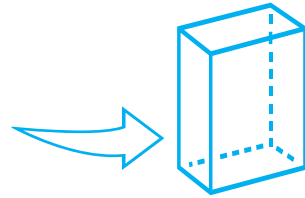
The high surface area attracts pollutants

Active groups binds the pollutants in the material - irreversibly

The concentration of pollutants in the environment decreases



# How to use Adsorbi?



1

Open and remove the cassette from the sealed packaging

2

Place Adsorbi in a display case or other storage solutions

3

A colour change function indicates when the material should be replaced. Monitor the colour change every 6-12 months

4

Replace the Adsorbi cassette when the colour turns brown

5

Dispose the used Adsorbi cassette in waste for incineration



# Benefits of using Adsorbi

## High performing

- ✓ Specific pollutant capture
  - Aldehydes, organic acids, NO<sub>x</sub>, NH<sub>3</sub>
- ✓ Long lifetime
- ✓ Performing in high & low humidity

## Safe

- ✓ Irreversible pollutant capture
- ✓ Dust-free
- ✓ Water & Fire resistant


## Easy-to-use

- ✓ Easy to place & replace
- ✓ Color change to indicate replacement time





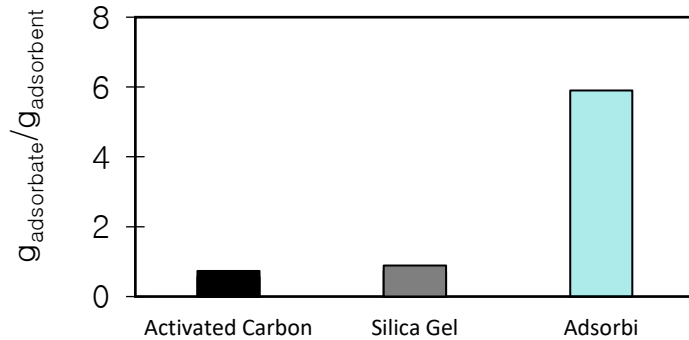
# Other materials used in the filed

	 Adsorbi	Activated carbon	Zeolites
Irreversible capture	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dust-free	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No humidity impact	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fire & water resistance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Biobased	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

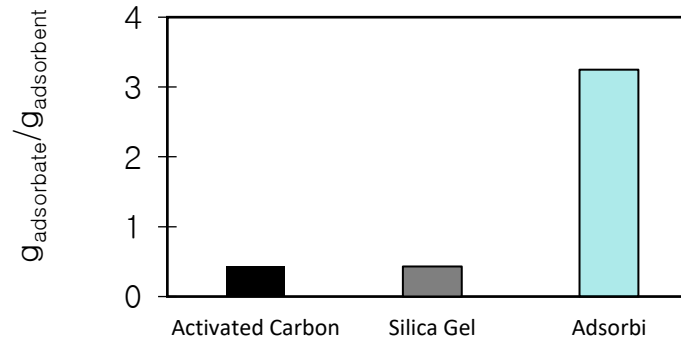


# Performance

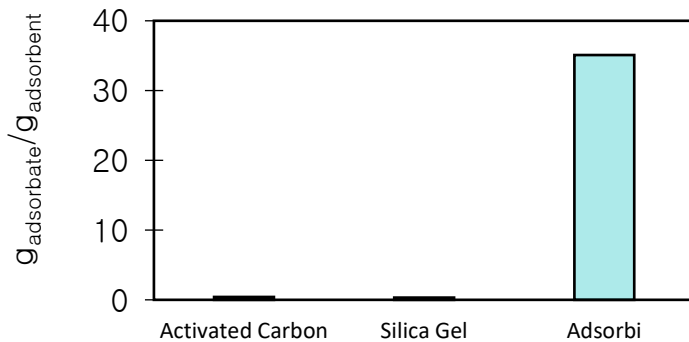
Formic Acid



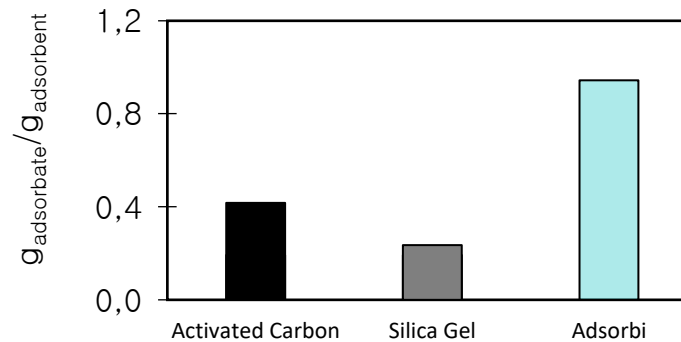
Acetic Acid



Acetaldehyde



Formaldehyde



- The graphs illustrate **adsorption capacity**
- High adsorption capacity results in longer adsorbent lifetime, extended object protection, and less material use





# Field studies

Conservators from museums & archives have been involved in the development of the material from the design-phase

During the development field studies have been performed in Sweden to improve the product and add desired functions

We are continuously performing field studies to better understand how adsorbents should be used.

