



The 100% Mineral Alternative  
for Micropollutants Removal





## Minsorb® is the 100% mineral alternative for micropollutants removal in dry flue gas treatment

Minsorb® is a family of 100% mineral reagents dedicated to the removal of micropollutants:

- dioxins/furans (PCDD/PCDF), PCB and PAH
- mercury: metallic and ionic

## European sourced raw materials designed for flue gas treatment

Minsorb® products are specially selected phyllosilicates (layered minerals), sourced from European deposits and processed in our plants. They appear as a beige fine and dry powder.

## Minsorb® is not flammable and non-combustible

Minsorb® achieves similar performances as classical carbon-based sorbents while preventing the creation of red spots or fires starts in bag house filters as well as in residue silos. In addition it enables performing flue gas treatment at higher temperatures than usually authorised.

Another advantage of Minsorb® is the absence of carbon content in the treatment residues.

All these elements make Minsorb® products the alternative to carbon-based sorbents like activated carbon and lignite coke.

## The smart adsorbent reagent

For dioxins, the physical adsorption of the pollutants in the porosity of the reagent is the prevailing phenomenon: the interaction of a component in the gaseous phase with a solid adsorbent. This reaction is exothermic and favored by low temperatures so that dioxins adsorption efficiency drastically drops above 250 °C.

For mercury, a combination of chemical and physical adsorption is needed due to its extreme volatility. This reaction is favored by high temperatures up to 300 °C.



## A solid expertise in flue gas treatment

Minsorb® has been developed by Lhoist Research & Development. For many years, the Lhoist Group has demonstrated its expertise in FGT and is renowned amongst others for Sorbacal® SP: the unique high SSA, high porous volume hydrated lime dedicated to the neutralization of acidic pollutants (HCl, SO<sub>2</sub>, SO<sub>3</sub> and HF) in dry processes.

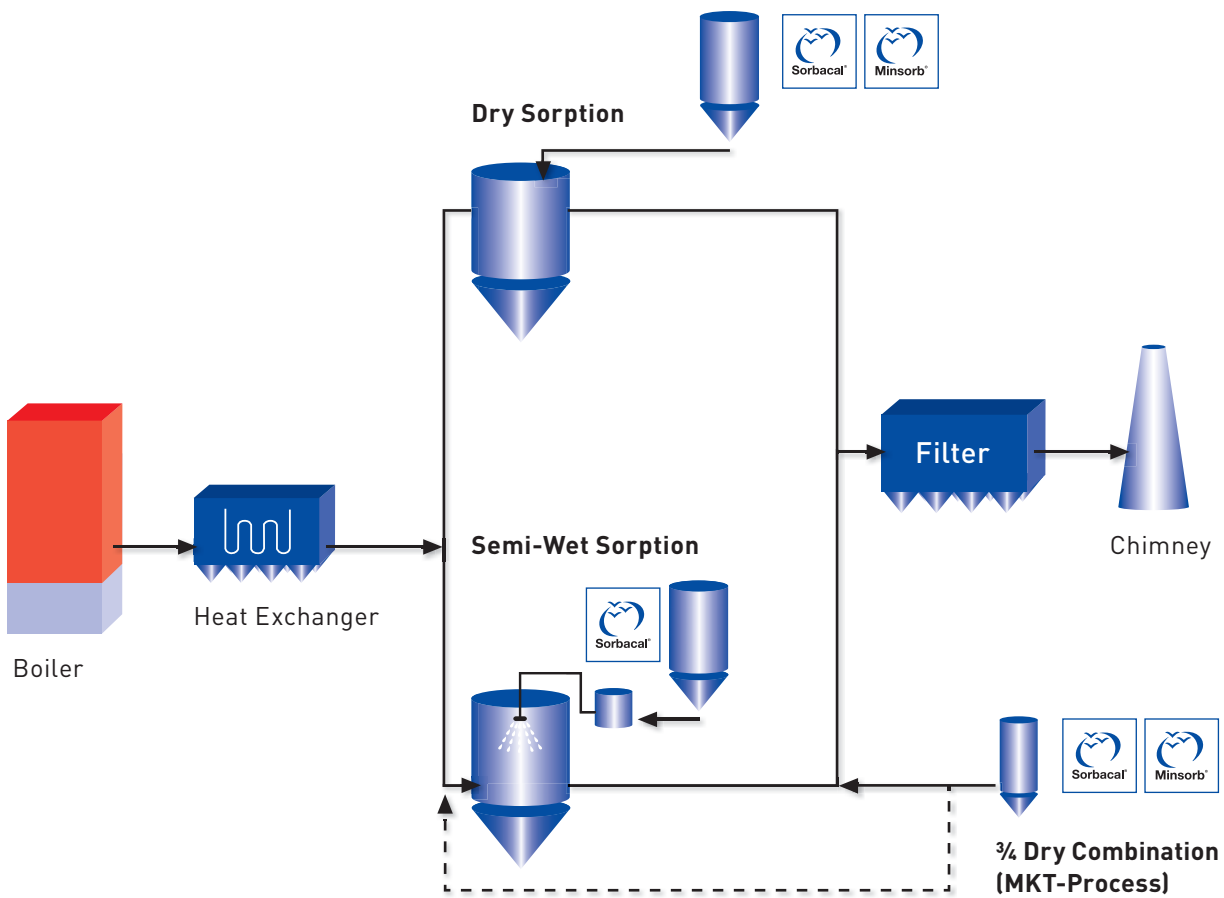
Minsorb® and Sorbacal® products benefit from an extended range of services to ensure optimal cost savings including test equipment, a Mobile Measurement Unit, CFD modeling, laboratory analyses, etc.

# Flexible Dry Sorption of Micropollutants

The dry sorption process consists basically of a filtration unit combined with the injection of a dry sorbent. The treatment takes place in the duct and on the surface of the filter bags. This process has low investment costs and can be adapted easily to any existing installation.

Minsorb® is delivered in bulk or in big bags and can easily substitute carbon-based sorbents without any investment.

If acidic pollutants ( $\text{SO}_x$ , HCl, HF) are to be treated, Minsorb® can be delivered as a blend with Sorbacal® SP at any percentage depending on the abatement level of each pollutant and the operating conditions.



## Typical performance in municipal solid waste incineration plant

### Operating conditions

<b>Flow rate</b>	40,000 Nm <sup>3</sup> /h		
<b>Bag filter temperature</b>	180 °C		
<b>Minsorb® DM injection rate</b>	5.2 kg/h (130 mg/Nm <sup>3</sup> )		
	Inlet	Outlet	Emission limits Dir. 2000/76 EC
<b>Dioxins</b>	10 ng/Nm <sup>3</sup>	<<0.1 ng/Nm <sup>3</sup>	0.1 ng/Nm <sup>3</sup>
<b>Mercury Hg<sup>0</sup>/Hg<sup>2+</sup></b>	Peaks up to 70 µg/Nm <sup>3</sup>	<8 µg/Nm <sup>3</sup>	50 µg/Nm <sup>3</sup>

Results are expressed at 11% O<sub>2</sub>

### Minsorb® products range

#### Pure Minsorb®

<b>Minsorb® Dx</b>	removal of dioxins/furans, PAH, PCB
<b>Minsorb® DM</b>	removal of dioxins/furans, PAH, PCB and mercury (Hg <sup>0</sup> , Hg <sup>++</sup> )
<b>Minsorb® Me</b>	top performance removal of mercury (Hg <sup>0</sup> , Hg <sup>++</sup> )

#### Sorbacal® blends

<b>Sorbacal® Dx SP*</b>	removal of dioxins/furans and SO <sub>2</sub> , SO <sub>3</sub> , HCl, HF
<b>Sorbacal® DM SP*</b>	removal of dioxins/furans, mercury and SO <sub>2</sub> , SO <sub>3</sub> , HCl, HF
<b>Sorbacal® Me SP*</b>	top performance removal of mercury and SO <sub>2</sub> , SO <sub>3</sub> , HCl, HF

\* any % of Minsorb® depending on pollutants concentration

