Sorbacal®

Sorbacal® SPS, the most effective calcium sorbent on the market

The choice for innovative flue gas treatment

Sorbacal®

Performance and ease of use

Sorbacal® SPS is an engineered hydrated lime characterized by high porosity and high surface area to enhance acid gas capture. It has been specifically formulated to remove acidic components from flue gas with greater efficiency, while optimizing the total cost of use. Its implementation requires low or no capital investment.

In the form of a dry, white, ready-to-use powder, Sorbacal® SPS is used predominantly with dry sorbent injection (DSI) as the main gas cleaning technology, or as a way to boost an existing process, such as a semi-wet or a wet scrubber. Sorbacal® SPS provides superior performance for all acid gases, but is particularly effective for SO_2 capture.

Main benefits

- Increased acidic gas mitigation capacity for SO_2, SO_3, HCl and HF
- No additional investment in capital equipment necessary: no switching cost for existing hydrated lime users
- Low footprint and limited downtime for installation
- Single dosing system for acid gas and micropollutants control by using Sorbacal® SPS blends with activated carbon or Sorbacal® Micro additive.
- Reduced residues leaching compared to using sodium sorbents
- Compatibility with higher removal requirement from some DeNOx technology

Areas of application

- Waste to energy recovery
- Incineration of industrial waste, hazardous waste, sludge or hospital waste
- Industrial production processes (glass, cement, metals, etc.).)

FSI and/or DSI process

FSI: Furnace Sorbent Injection
DSI: Dry Sorbent Injection

Main pollutants neutralized

SO_2
SO_3
HCl
HF
Selenium

Advanced technology available to everyone

The result of an intensive research program, this innovative and patented product is the most recent development in calcium sorbents on the market. Providing the most effective acid gas removal performance, Sorbacal® SPS allows less sorbent to be injected, thus reducing the overall load on the particulate collection device. Sorbacal® SPS also boasts lower electrical resistivity, which makes it more compatible with ESPs, unlike any other calcium sorbent on the market.

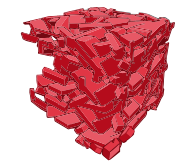
Wide usage flexibility

As an effective control strategy for all acid gas pollutants, Sorbacal® SPS is used in the following applications:

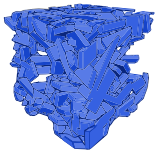
- DSI as the main control technology, even when high removals are needed
- DSI as a boost to an existing flue gas treatment (FGT) system
- Circulating dry scrubber (CDS) technology with demonstrated improved performance
- Both baghouse filter and ESP particulate control devices, with high effectiveness
- Existing DSI systems without added expense when switching sorbent
- Existing sodium systems without the need for on-site milling
- Dry injection over a wide range of temperatures: from 50 to 1,200°C

The proven technique of injecting sorbent into the furnace (FSI) requires specific know-how that our experts can bring to you. The injection of Sorbacal® SPS above the combustion zone (between 850°C and 1,200°C) can be combined with any other flue gas treatment to:

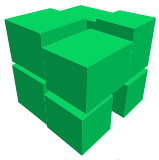
- Selectively capture SO_2 with a low stoichiometry to achieve lower emission values or reduce overall consumption by about 30%
- Decrease equipment corrosion
- Improve combustion ash behavior in the furnace



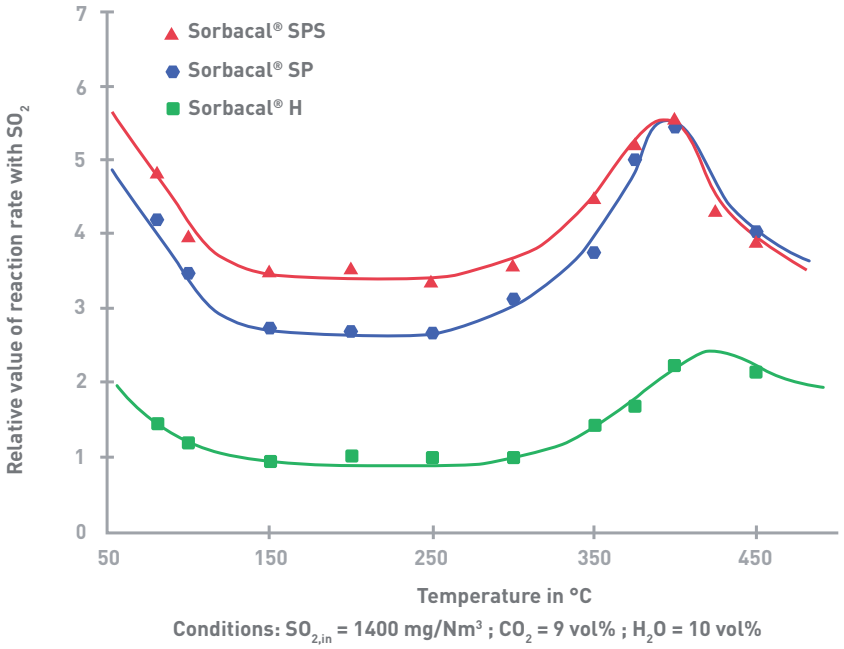
Sorbacal® SPS



Sorbacal® SP



Sorbacal® H



Your benefits

Sorbacal® SPS provides major benefits in nearly all FGT setups.

More efficient

- Better reduction of SO_2 (up to > 99%), SO_3, HCl, and HF
- Capture performance maintained between 150°C and 300°C
- Better peak control
- Actual consumption consistent with our estimates
- Better ESP collection, due to lower resistivity

More practical

- Can be used with an existing sorbent injection system
- Ready for use – no milling required
- Multiple production facilities, reliable supply
- Odorless
- Scientific design data available
- Easier stabilization of residues
- Option of combining acid gas and micropollutant abatement (blends)

More economical

- Increased processing capacity
- Option of optimization by using several injection points (FSI)
- No need to reheat gases after acid gas treatment
- Option of reducing tax on polluting activities
- Custom services to optimize your consumption

Sorbacal® SPS in practice

Client: IVAGO
Location: Ghent (Belgium)

The challenge

The client, a household waste incinerator, was complying with 10 times tighter limits than the emission limit values (1 mg HCl/Nm^3 and 5 mg SO_2/Nm^3).
The operator wanted to increase the flue gas temperature at the filter outlet (150°C) in order to reduce the costs of reheating the gases with a low SO_2 content at the SCR inlet from 70°C to 200°C. The existing system was semi-wet (lime slurry), plus bag filters, a wet scrubber (soda) and DeNOx SCR.
The client wished to replace the existing system with a dry injection at 180°C before the filter, maintaining the stack emission values.

The Lhoist solution

Following tests, Lhoist recommended a combined injection of Sorbacal® SPS at the furnace outlet (FSI) upstream of the bag filter (DSI).

		Target 1 10 mg HCl/Nm^3 50 mg SO_2/Nm^3	Target 2 5 mg HCl/Nm^3 25 mg SO_2/Nm^3	Target 3 1 mg HCl/Nm^3 5 mg SO_2/Nm^3
Initial setup	**Milk of lime (lime slurry)**	132*	-	-
Lhoist option #1	**Sorbacal® SPS as DSI**	-	150*	-
Lhoist option #2	**Sorbacal® SPS FSI (30%) + DSI**	50-60*	65-75*	105-115*

* Values in kg/h of $Ca(OH)_2$

The benefits

The combined injection (FSI + DSI) of Sorbacal® SPS is the only setup that enables the client to fulfill the site's emission objectives at 1/10 of the standard with a stoichiometry in the order of 2 (confirmed by the residue analysis). The operator thus benefits by saving on operational costs (lime slurry installation maintenance), the wet scrubber's soda consumption, and the reheating of flue gases at the SCR inlet.

International expertise at your service

With global expertise acquired over two decades, our local experts support you both in designing your treatment solution and in using Sorbacal® SPS.

Design

- Modeling and estimating sorbent consumption and residue production
- Running computer simulation of product dispersion (computational fluid dynamic modeling)
- Determining the best injection conditions

Use

- On-site testing
- Performance optimization
- Periodic analysis of residues for performance monitoring
- Infrasonic technology to minimize operations & maintenance associated with conveying-line scaling, plugging and dosing
- Reliable logistics services

Infrasound equipment

Infrasound technology

This technology minimizes the formation of deposits when sorbents are transferred pneumatically. It emits low-frequency sound waves into the pneumatic conveying lines to ensure solid particles stay suspended in the airflow.

Lhoist has implemented the infrasonic equipment successfully at more than 25 client units, as well as its own facilities. This proprietary solution is customized to suit each client's specific Sorbacal® SPS injection setup.

Sorbacal®

Sorbacal® SPS, a product developed by Lhoist Recherche et Développement S.A.

Lhoist, your global partner in flue gas treatment

Lhoist is a multi-national company specialized in hydrated lime, quick lime, dolomitic lime and mineral products. The diversity of our product range, along with the worldwide presence of our industrial sites, enables our group to play a leading partner role across many industrial sectors.

What Lhoist offers

EXPERTISE
providing reliable and effective solutions

+

SORBENTS
meeting your specific needs

+

SERVICES
offering customized technical assistance and logistics support

To find out more,
visit www.sorbacal.com

Lhoist

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