

SIPERNAT® and AEROSIL® products in the food industry



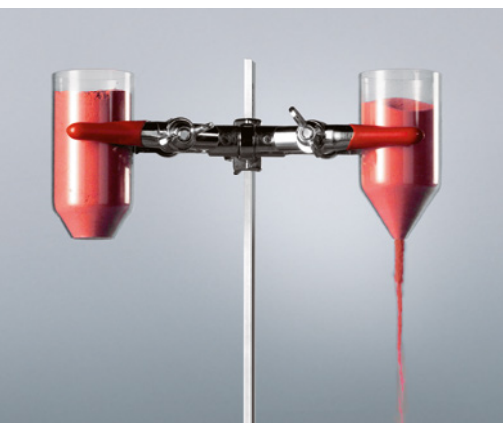
What can SIPERNAT® and AEROSIL® products do for you?

Convenient food products at high quality standards are increasingly popular. Powdered ingredients are often used in these products. Due to their fine particle size or stickiness some powders show poor flow properties and cake on storage which makes handling and proper dosing difficult.

Hygroscopic substances, such as fruit powders, table salt or vegetable extracts as well as ground spices or spice mixtures are only a few of many examples. For all those ingredients SIPERNAT® precipitated and AEROSIL® fumed silica offer an efficient low cost way to meet this challenge and improve productivity.

Benefits for you and for your customer:

- Improved flowability
- Reduced caking tendency
- Exact dosing
- Food grade silica quality
- Improved storage stability
- Increased productivity
- Constant quality
- Cost savings



Picture 1: Fruit powder without (left) and with (right) addition of silica



SIPERNAT® and AEROSIL® products help to dose powdered ingredients easily and accurately

When used in industrial processes, powdered ingredients, such as spice mixtures, fruit powders or table salt usually are added by automated dosing systems. For the quality of the food ingredient, a constant and accurate dosing is crucial. Bad flowability of a powder will lead to erratic dosing and an unsatisfactory quality of the final product.

As a manufacturer of powdered ingredients you can help your customer to make

dosing easier. SIPERNAT® and AEROSIL® types improve the flowability of your products. They act as flow aid by covering the surface of powder particles, thus, spacing them apart. An additional advantage is their large absorption capacity, which enables them to take up moisture or oil from the powder surface and reduce stickiness considerably. When choosing the right silica, in particular AEROSIL® fumed silica, the colour of your product remains unchanged.

SIPERNAT® and AEROSIL® products help to spray dry your products

Many food ingredients are spray dried. Some examples are vegetable powder, whey powder, egg powder, or coffee creamer. During production caking can occur on the inner wall of the spray drier, which makes regular cleaning necessary. The addition of SIPERNAT® precipitated silica or AEROSIL® fumed silica directly

into the spray tower separately from the slurry, reduces the caking and minimizes expensive downtimes. Furthermore, this addition saves a mixing step and increases your throughput. This is the most efficient way to apply silica as a flow- and anti-caking aid.

SIPERNAT® and AEROSIL® products as milling aid

Milling is widely used in various industries for example when processing spice and seasoning blends or low melting powdered food-stuff. Due to their content of water, oil or fat the handling of such kind of products whilst milling can cause problems like adhesions in the mill or lumping of the product that lead to clogging. Furthermore a good flowing powder is desired but may not be possible without the addition of SIPERNAT® specialty silica or AEROSIL® fumed silica. These highly efficient milling aids offer a number of benefits. Besides the quality improvement like a better flow ability and reduced caking tendency AEROSIL® and SIPERNAT® products are able to improve the milling process with regards to the throughput helping to keep the mill clean by absorbing any released liquid immediately. Thus their addition lead to a reduced number of cleaning

intervals resulting in a tremendous cost saving effect. AEROSIL® and SIPERNAT® products can be applied for example in hammer mills, pin mills or alike and can be dosed directly into the mill respectively in a post mixing step after milling or in a pre-mixing step before milling.



SIPERNAT® and AEROSIL® products help to avoid caking during transport and storage

As a producer of ingredients you ship your products throughout the world and store them under different climate conditions. Varying temperature and humidity during transport and storage may lead to caking of your products, which makes it

more difficult for your customer to process them. The addition of SIPERNAT® or AEROSIL® products helps to avoid such agglomerates efficiently enabling you to deliver a constant product quality to every place of the world.

SIPERNAT® and AEROSIL® products help the consumer of powdered food products

Powdered food products, like instant beverages or soup powders, play an increasingly important role for the consumer, too. It is desirable that those powders flow freely, do not cake, and are easy-to-disperse in water. SIPERNAT® precipitated silica and AEROSIL® fumed silica improve those properties

considerably. Especially powdered drinks in vending machines are exposed to steam permanently which leads to caking easily. It is the high absorption capacity of SIPERNAT® and AEROSIL® products which helps to keep the flowability of the treated powders even in this challenging environment.



Picture 3: Instant Cappuccino

Recommended products

The following table summarises some of the most important applications and the recommended SIPERNAT® and AEROSIL® products.

The recommendations are valid for typical products within the respective group.

Individual products may behave differently. We are happy to answer your questions in detail and assist you in choosing the right product for your individual application as well as in handling and processing our products.

Typical applications and recommended products

Your application	SIPERNAT® precipitated silica			AEROSIL® fumed silica	
	22 S	50 S	350	200 F	380 F
Chili powder	+	+		+	
Coffee creamer	++		+		
Confectioner's sugar	+		++		
Emulsifiers	+		++		
Flavors	+	++		+	
Fruit powder	+	++		+	
Garlic powder	+	+		+	
Instant beverage	+	++		++	
Instant soup	+	+			
Onion powder		+		+	
Paprika powder	+	+		+	
Protein concentrate	+	+		+	+
Spice blend	+	++		+	+
Table salt	++	++			
Tomato powder		+		++	++
Vegetable powder	+	+		+	++

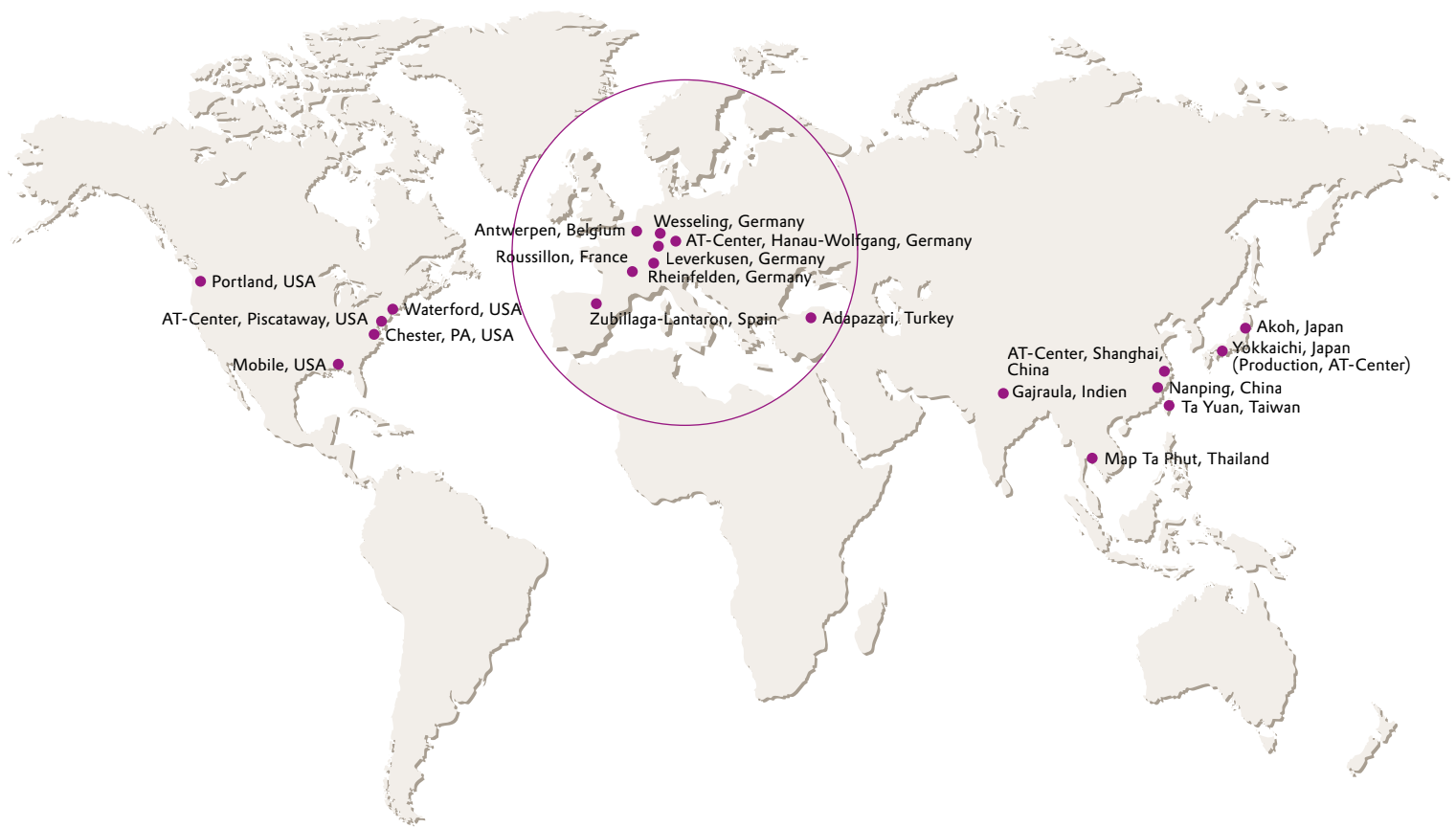
+ recommended

++ especially recommended

Please check regional availability and regulatory status of each type individually before use!

For material, produced according to HACCP principles, please contact our responsible sales department.

Evonik Resource Efficiency GmbH – Your global partner



Additional publications on the subject

- AEROSIL® fumed silica and SIPERNAT® specialty silica as flow aid, anticaking agent and carrier - Recommended mixing procedures for powders and granulates, Technical Information TI 1213.
- SIPERNAT® and AEROSIL® for the Salt Industry, Industry Information II 2124.
- SIPERNAT® and AEROSIL® in Powdered drinks, Technical Information TI 1356.
- AEROSIL® and SIPERNAT® for spices and seasonings, Technical Information TI 1364.
- AEROSIL® and SIPERNAT® for free flowing and non-caking sugars and sugar alcohols, Technical Information TI 1386.
- Improving performance of high fat containing and soft powders with AEROSIL® and SIPERNAT® products, Technical Information TI 1405.

Food additive certification

Below mentioned types of

- SIPERNAT® (hydrophilic precipitated synthetic amorphous silica) and
- AEROSIL® (hydrophilic fumed synthetic amorphous silica)

are approved as food additive E 551 respectively food additive INS 551 for a large number of food applications worldwide. The purity criteria for E 551 of COMMISSION REGULATION (EU) No 231/2012 laying down specifications for

food additives listed in Annexes II and III to Regulation (EC) No 1333/2008 and the quality requirements of the JECFA Monograph 1 (2006) for Silicon Dioxide, Amorphous, INS 551 are fulfilled. Details can be found in the Product Safety Information for each product. Kosher and Halal certificates are available on request.

Please contact your usual sales contact for more information.

Types of Evonik Resource Efficiency GmbH specialty silica available for food per region include:

	Europe	NAFTA	Asia – Pacific & other regions
AEROSIL® 200 Pharma***	+	+	+
AEROSIL® 200 F*	+	+	+
AEROSIL® 380 F*	+	+	+
SIPERNAT® 22 S*	+	+	+
SIPERNAT® 50 S*	+	+	+
SIPERNAT® 340		+	
SIPERNAT® 350**	+	+	+

+ available and compliant to regional legislation

* Only products ex Wesseling plant, Germany and our products AEROSIL® 200 F and AEROSIL® 380 F ex Antwerp plant, Belgium are produced according to HACCP principles, as required by regulation (EG) No. 852/2004.

** For material, produced according to HACCP principles, please contact our responsible sales department.

*** AEROSIL® 200 Pharma ex Rheinfelden plant, Germany is produced according to HACCP principles, as required by regulation (EG) No. 852/2004 and IPEC-GMP.

SIPERNAT® 

AEROSIL® 

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