

# Anti-Caking and Free-Flow Solutions for Spices

**ZEOLEX®**  
**ZEOFREE®**  
**ZEOTHIX®**

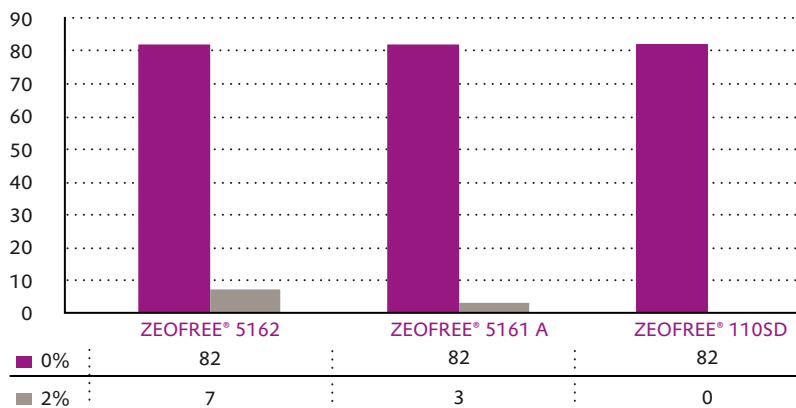


Caking and lumping can create serious problems for powdered food products during production, processing, storage and customer use. Evonik Silica has solved these problems for many customer applications with its outstanding line-up of high performing silica and silicate products and stands ready to remedy your issues today.

## BENEFITS OF EVONIK SILICA FREE-FLOW ADDITIVES

- Consistent metering**  
 Free flowing powders move more consistently through the manufacturing process, meter well and allow uniform and consistent filling of end containers.
- Increased production throughput**  
 Free-flowing powder offers faster production rates and increased capacity.
- Improved product quality and consistency**  
 Less off-spec or reject material from lumping and caking.
- Increased satisfaction**  
 Improve your customers' experiences with free-flowing, easy to use powder products.

### SPICE BLEND MOISTURE CAKING 9 %



Our silicas and silicates are extremely effective at reducing caking. ZEOFREE® products in the example above reduce caking from 82% to between 0% and 7% in a spice blend.



### FORMULATING TIPS

- Selecting the proper particle size anti-caking agent is critical to ensure uniform coverage of the host particle. Uniform coverage is necessary to improve flow and decrease caking.
- Selecting the optimum loading level is also critical; too high of a loading level of the anti-caking agent can result in excessive dust and can also decrease flowability. Too low of a loading level may not show any benefit.
- The point of addition at which the anti-caking agent is added in the blending process is frequently critical to optimizing anti-caking agent performance. When making a blend which contains very hygroscopic ingredients, it is best to add all the anti-caking agent to these ingredients first rather than at the end of the blend. This addition method results in a more thorough coating of the most troublesome ingredients in the blend.



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PRODUCT	OIL ABSORPTION (ml/100g)*	MEDIAN PARTICLE SIZE (µm) ***	pH	SURFACE AREA ** (m <sup>2</sup> /g)	BULK DENSITY (kg/m <sup>3</sup> )
<b>Synthetic Sodium Aluminosilicates</b>					
ZEOLEX® 7	110	8	7	120	220
ZEOLEX® 23D	130	8	10	60	190
ZEOLEX® 7A	150	10	7	200	180
<b>Synthetic Silicon Dioxides</b>					
ZEOFREE® 80	190	12	7	140	140
ZEOFREE® 110SD	200	20	7	140	190
ZEOFREE® 200	200	12	7	210	130
ZEOFREE® 5161	220	20	7	160	160
ZEOFREE® 5162	220	16	7	160	130
ZEOFREE® PLUS 5781	260	35	6.5	150	145
ZEOFREE® PLUS 5782	260	15	6.5	150	120
ZEOTHIX® 265	220	3	7	250	95
<b>Synthetic Calcium Silicates</b>					
ZEOFREE® 5121	90	20	9	50	290
ZEOFREE® 250	280	15	10	120	150
ZEOFREE® 600	475	8	10	250	95
ZEOFREE® 5133	130	11	10	60	200

\*Linseed oil

\*\* BET

\*\*\* Horiba

These typical product properties cannot be considered as specifications. Evonik strives for quality, consistency and reliability. Evonik precipitated silica and silicates comply with various global regulatory requirements. Please contact Evonik for specific information regarding regulatory approvals. The forementioned Silica products manufactured by Evonik have Kosher and Pareve as well as Kosher for Passover approvals.

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FROM EVONIK SEE ALSO**  
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