

PPG HI-SIL[®]

Silica Products for Agrochemical Applications



AGROCHEMICAL APPLICATIONS

Carrying, Free-Flow and Anti-Blocking

As a trusted name with global agrochemical manufacturers for decades, PPG HI-SIL[®] silica includes an extensive collection of products with a range of physical properties, making it uniquely equipped to help address many of the diverse challenges that agrochemical manufacturers encounter when working with liquid and dry active ingredients.

Challenges Faced by Agrochemical Manufacturers

- Safe storage and handling of both dry powder and highly viscous liquid ingredients
- Precise dosing of thick, viscous or sticky liquids or cohesive, sticky solids
- Efficient release of active ingredients into soil to increase efficacy
- Stabilizing insoluble active ingredients
- Increasing the efficiency of insoluble active ingredients
- Improving crop yields through early-stage seed treatment and young plant nutrition

Solutions for Liquid Active Ingredients and Formulations¹

PPG Hi-Sil silica converts liquid ingredients – especially thick, viscous and sticky liquids – into a free-flowing powder, or dry liquid concentrate (DLC), to deliver a variety of benefits to agrochemical manufacturers.

- Supports accurate and consistent dosing of liquid active ingredients to help control formulation efficacy and cost
- Serves as a vehicle to efficiently deliver active ingredients and micro-nutrients that aid seed germination and young plant nutrition
- Helps make liquid active ingredients easy to handle, transport and store

Solutions for Dry Active Ingredients and Formulations¹

PPG Hi-Sil silica serves as an agent to promote flow, anti-caking and anti-blocking for dry active ingredients and formulations.

- Increases flow rates and improves flow rate consistency through bulk material handling equipment, such as hoppers, silos, and feeders
- Absorbs ambient moisture to reduce caking and extend product shelf-life
- Serves as an anti-blocking agent to improve the flow of coated seeds through handling equipment



Potential Applications

Biocides
Fertilizers
Fungicides
Herbicides
Insecticides
Pesticides
Seed treatment
Young plant nutrition



¹ Benefits referred to in this document are relative to the product without silica added. Benefits are observed in a combination of customer applications and/or controlled lab settings. Users may or may not observe all of the aforementioned benefits based on their specific application. The referenced benefits are not exhaustive.

Typical Performance by Function²

The PPG HI-SIL® silica portfolio for carrying, free-flowing and anti-blocking applications includes a broad range of products. While the suitability of a *PPG Hi-Sil* silica product is specific to your unique situation and application, the chart below provides particle size and the strengths of each product and can help you begin the evaluation process. Actual results may vary depending on process conditions. Final product selection should be based on testing in customer-specific products and processes.

+++	Preferred
++	Recommended
+	Suitable

Manufacturing Location	PPG Silica Product	Particle Size, µm*	Carrying / Dry Liquid Concentrate	Free-Flowing / Anti-Caking / Anti-Blocking
North America	<i>Hi-Sil</i> 210	1,400	+++	+
	<i>Hi-Sil</i> 213	600	+++	+
	<i>Hi-Sil</i> SC-72X	250	+++	++
	<i>Hi-Sil</i> 215	250	+++	+
	<i>Hi-Sil</i> LPC	140	+++	++
	<i>Hi-Sil</i> SP	45	+	+++
	<i>Hi-Sil</i> ABS	40	+++	+++
	<i>Hi-Sil</i> FF	20		+++
	<i>Hi-Sil</i> 233	18	+++	++
	<i>Hi-Sil</i> 532EP	15		+
	<i>Hi-Sil</i> 915	10	+	+++
Europe	<i>Hi-Sil</i> 255C-D	45	+++	++
	<i>Hi-Sil</i> 233-D	45	+++	++
	<i>Hi-Sil</i> ABS-D	40	+++	+++
	<i>Hi-Sil</i> 315-D	30	++	++
	<i>Hi-Sil</i> 155C-D	22	+++	++

* Median D 50 particle size as determined by laser scattering.

²Suitability ratings are based on the experience of PPG's technical service team.

Typical Properties

PPG Silica Product	Particle Size, μm^*	DOA Oil Absorption, mL/100g	pH	Bulk Density		Carrying Capacity**
				lb/ft ³	g/L	
<i>Hi-Sil</i> 210	1,400	200	7.0	15	240	60-65%
<i>Hi-Sil</i> 213	600	200	6.9	16	256	60-65%
<i>Hi-Sil</i> SC-72X	250	290	6.7	13	208	70-75%
<i>Hi-Sil</i> 215	250	200	7.0	15	240	60-65%
<i>Hi-Sil</i> LPC	140	250	6.9	12	192	60-65%
<i>Hi-Sil</i> 255C-D	45	290	6.3	8	128	65-70%
<i>Hi-Sil</i> SP	45	275	6.9	11	176	55-60%
<i>Hi-Sil</i> 233-D	45	280	7.0	9	136	60-65%
<i>Hi-Sil</i> ABS-D	40	305	6.9	8	128	70-75%
<i>Hi-Sil</i> ABS	40	305	6.9	8	128	70-75%
<i>Hi-Sil</i> 315-D	30	290	7.0	6	96	60-65%
<i>Hi-Sil</i> 155C-D	22	285	6.9	5	80	55-60%
<i>Hi-Sil</i> FF	20	215	7.0	8	128	55-60%
<i>Hi-Sil</i> 233	18	190	7.0	9	144	55-60%
<i>Hi-Sil</i> 532EP	15	186	8.0	10	160	40-45%
<i>Hi-Sil</i> 915	10	265	7.0	5	80	50-55%

* Median D 50 particle size as determined by laser scattering.

** Carrying capacity is an typical range based on the experience of PPG's technical service team.

PPG Hi-Sil 233 silica is highlighted in the formulations of several registered agrochemical products due to its time-tested effectiveness in converting liquid active ingredients, such as herbicides, pesticides and fertilizers, into DLCs to improve ease of handling and to promote accurate dosing within formulations.

PPG Hi-Sil 210 and Hi-Sil 213 silicas are used to carry mold-prevention ingredients, such as propionic acid, and other active ingredients to crops to reduce yield loss caused by mold and plant growth inhibitors.

Product Safety and Regulatory Information

For the latest safety and regulatory information, please reference:

- Product Safety Data Sheets, available at www.ppgsilica.com/SDS
- Global Product Safety and Regulatory Information Sheet, available at www.ppgsilica.com/GPSRIS

Packaging

Standard packaging includes small bags and Flexible Intermediate Bulk Containers (FIBCs). Bags are unitized for shipping on pallets that are stretch wrapped with clear plastic film. FIBC's are double stacked on wood pallets. Please consult with Customer Service or your sales representative regarding additional packaging options including custom package sizes and bulk shipments.

Samples

Samples are available upon request from PPG's customer service team at 1-800-243-6745 (U.S.) or +31-596-676710 (Europe).

Storage

To ensure product integrity, PPG recommends that our silica products be stored under dry, clean conditions and protected against exposure to other substances. Since silica may pick up moisture, we also recommend that products that are stored for more than one year from the date of manufacture be re-tested for moisture content. There is no shelf life limit when stretch-wrapped palletized units or bags are kept under the above stated conditions. Pallets should not be double-stacked.

Safety and Health Effects

PPG recommends that, before use, anyone using or handling this product thoroughly read and understand the information and precautions on the label, as well as in other product safety publications such as the Safety Data Sheet. Any health hazard and safety information contained herein should be passed on to your customers or employees, as the case may be. The products mentioned herein can be hazardous if not used properly. Like all potentially hazardous materials, this product must be kept out of the reach of children.

Visit www.ppgsilica.com for more information.



USA
PPG Silica Products
440 College Park Drive
Monroeville, PA 15146 USA

Customer Service: 1-800-243-6745
Technical Service: 1-800-764-7369
E-mail: silicacustserv@ppg.com

EUROPE
PPG Delfzijl Plant
P.O. Box 181
9930 AD Delfzijl, The Netherlands

Customer Service: +31-596-676710
Technical Service: +31-596-676710
E-mail: csdelfzijl@ppg.com

