

# PPG AGILON® Performance Silica



## INDUSTRIAL RUBBER

Designed to improve the performance and processing of a wide array of elastomer formulations, PPG AGILON® performance silica offers easier dispersion, reduced viscosity and improved mechanical and dynamic properties when compared to carbon black, silica, and traditional in-situ silica-silane applications. As part of the value-added, pre-treated technology platform, *Agilon* silica eliminates both the need for silane coupling agents and a silanization step during mixing, thus eliminating more than 99 percent of the volatile organic compound (VOC) emissions and increasing manufacturing efficiency.

### Benefits

- Lower viscosity at same or higher loadings (improved extrusion throughput)
- Enables high-temperature mixing without increasing viscosity or premature vulcanization
- Improved dispersion and lower filler-filler interaction
- Lower hysteresis and heat build-up
- Lower compression set
- Better abrasion resistance, tear strength, and crack growth resistance
- Eliminates silane handling
- Eliminates silanization (prolonged, high-temperature mixing) requirement
- Eliminates more than 99 percent of the VOC emissions



### Applications

Conveyor belts  
Automotive engine mounts  
Gaskets and seals  
Rubber hoses



Typical Properties		
	<i>Agilon 400 silica</i>	<i>Agilon 454 silica</i>
CTAB Surface Area, m <sup>2</sup> /g	140	200
pH	6.5	6.5
SH, Wt. %	0.5	0.5
Carbon, Wt. %	4.0	4.0
Moisture, as packaged, wt. %	5.5	5.5
Residual Salt	Na <sub>2</sub> SO <sub>4</sub>	Na <sub>2</sub> SO <sub>4</sub>
Physical Form	Powder or granule	Powder or granule



## Samples

Samples are available per request from customer service.

## Packaging

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

## Storage

To ensure product integrity, we recommend that our *Agilon* silica products be stored under dry, clean conditions, protected against exposure to direct sunlight and other substances, and used within twelve months of the date of manufacture.

## 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.

## Product Safety and Regulatory Information

For the latest product safety and regulatory information, please reference the Safety Data Sheets at [www.ppgsilica.com](http://www.ppgsilica.com).



### Conveyor Belt (EPDM – 65 Durometer, sulfur-cure)\*

Filler	Conventional Silica	<i>Agilon</i> 400G-D	Normalized, %**	Comments
Surface Area, m <sup>2</sup> /g	135	140		
Loading, phr	55	65		
ML(1+4)	84	58	144	Improved processing
TC90, min	26	27	101	
% Dispersion	84	90	107	Better dispersion
Modulus @ 100%, MPa	1.4	1.9	131	Higher modulus, better reinforcement
Modulus @ 300%, MPa	2.6	6.1	234	
300/100 Modulus Ratio	1.8	3.3	178	
Hardness @ 23 °C	64	66	103	
Rebound @ 100 °C, %	55	64	116	Lower hysteresis and HBU
Tan (δ) @ 60 °C	0.17	0.15	133	
Heat Build Up, °C	6	41	112	
Compression Set, %	88	82	107	Lower compression set
Demattia Flex Crack Growth, 100k cycles, mm	20	18	11	Improved fatigue performance
DIN Abrasion Index	100	107	107	Better abrasion resistance
Die C Tear, N/mm	38	43	112	Better tear strength

\*FORMULA: Keltan 4450S – 100, Silica – see above, Paraffinic Oil – 20, TMQ – 2, Zinc Oxide – 15, Stearic Acid – 2, Sulfur – 0.4, MBTS – 1.5, MDB – 2, ZBDC – 1

\*\*Higher is better

Silane is typically used in sulfur-cured silica-filled compounds to improve processing, increase abrasion resistance, reduce heat build-up, and lower compression set. When silica is used without silane in industrial rubber compounds, it normally results in unfulfilled potential in dynamic and mechanical properties. When silane is used, high energy input is needed to allow the chemical reaction between silane and silica to take place. This requires capital equipment and increases mixing times with the consequent reduction in productivity. Not only is a VOC-contributing alcohol by-product produced during this reaction, but undesired premature vulcanization can happen at elevated temperatures, which increases viscosity and creates processing challenges. *Agilon* silica eliminates the need for silane and its associated issues by connecting the silica core to the rubber matrix only after adding curatives.

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