

PPG Silica Products

Agilon[®] 454 Performance Silica

TRUCK TIRE

High Surface Area, Superior Processing

Agilon 454[®] performance silica is a new high surface area offering in the *Agilon* performance silica technology platform. Like *Agilon* 400 performance silica, *Agilon* 454 performance silica eliminates the need for silane coupling agent addition which results in improved manufacturing efficiency and reduced volatile organic compound (VOC) emissions. Furthermore, the change in surface chemistry for *Agilon* 454 performance silica yields reduced mix viscosities resulting in unparalleled processing for silicas of this surface area range.



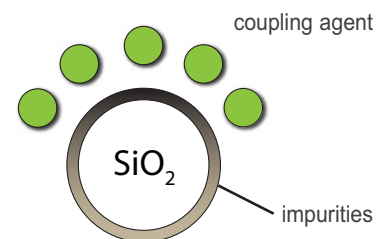
Typical Properties

CTAB Surface Area, m ² /g	200
N ₂ (BET-5) Surface Area, m ² /g	140
SH, Wt. %	0.5
Carbon, Wt. %	4.0
pH	6.5
Reinforcing Capability	High
Dispersibility	High
Processing	Good

Superior Performance

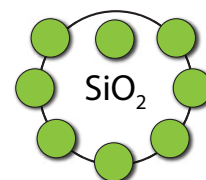
Natural rubber may contain up to six percent by weight of impurities associated with its biosynthesis and subsequent processing. These impurities typically consist of: proteins, amino acids, carbohydrates, lipids, amines, nucleic acids, dirt ash, and metal ions, all of which may have some affinity for the silica surface during in-situ mixing, resulting in a reduced ability for the silica to react with the coupling agent and the rubber matrix. The pre-functionalized surface of *Agilon* 454 performance silica eliminates this issue and results in significantly reduced rolling resistance with excellent wear and improved mechanical properties in natural rubber compounds. Furthermore, the silica can be used at lower mix/dump temperatures, better preserving the intrinsic mechanical properties of natural rubber.

Traditional Compounding



When adding silane and silica during in-situ mixing, the NR impurities compete with the silane coupling agent for surface sites.

Compounding with *Agilon* 454



NR impurities not a problem for effective coupling since the silane coupling reaction has already occurred.

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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, PPG recommends that our 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 Industries 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 Material 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.

Natural Rubber Based Model Truck Tire Tread Formulation Laboratory Properties at Equal Filler Loading

	Carbon Black N220	Agilon 454 Performance Silica	
<u>Non-Cured Performance Properties</u>			
Viscosity (ML 1+4)	65.2	59.9	Improved Processing
Scorch Time (TS5)	12.3	12.8	
Cure Time (T _C 90)	8.4	6.8	
<u>Cured Performance Properties</u>			
tan δ @ 60 °C	0.107	0.039	Better Fuel Efficiency
tan δ @ -30 °C	0.316	0.294	Good Traction
G'@16% strain MPa	1.655	1.637	Good Handling
Hardness	63	62	Reduced Blowouts
Heat Buildup, °C	17	8	
Tensile, MPa	30.6	33.6	Improved Strength
DIN Loss, mm ³	130	123	Better Wear
MG Tear, kN/m	20.4	22.2	Better Tear

Product Safety and Regulatory Information

For the latest product safety and regulatory information, please reference the Product Safety Sheets at www.ppgsilica.com.



PPG Silica Products

Bringing innovation to the surface.™

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