

SPHERON® 4000



SPHERON® 4000 is a cost-effective carbon black that provides improved flowability in rubber compounds for high-temperature injection-molded applications and high-hardness extrusion profiles.

SPHERON 4000 carbon black offers a unique combination of large particle size and low structure that results in excellent flowability by imparting low viscosity (mainly in high-shear conditions) even at high loadings. The improved flowability provided by SPHERON 4000 carbon black permits better filling of mold cavities, especially in injection-molded applications.

The unique morphology of SPHERON 4000 carbon black significantly reduces the potential for mold fouling, especially in high-temperature, high-speed injection-molding applications. This can improve productivity and lower cost by reducing the need for mold cleaning in NBR. In hydraulic hose applications, the very high loading capability of SPHERON 4000 carbon black also improves compound green strength and decreases rubber push-back that can occur during wire applications.

The loadability of SPHERON 4000 carbon black also enhances the performance of high-hardness extrusion profiles by reducing the need for organic resins and other costly additives. In these applications, SPHERON 4000 carbon black demonstrates lower compression set, higher resilience, and better dimensional control than conventional compounds containing organic resins. The improved loadability can also facilitate easier deflashing.

Performance Features

- Better flow for improved productivity in injection-molded applications
 - Decreases injection time in the same mold size
 - Uses larger molds at the same injection time
 - Reduces or eliminates the use of processing aids that can cause mold fouling in NBR
- Increased loadability
 - Facilitates compounding cost reductions in high-performance elastomers
 - Enhances performance of high-hardness extruded profiles
- Lower viscosity than most conventional furnace carbon blacks
 - At high shear promotes better flow for better mold filling
 - At low shear decreases back-up or “milking” in wire-braided hydraulic hose applications

Typical Applications

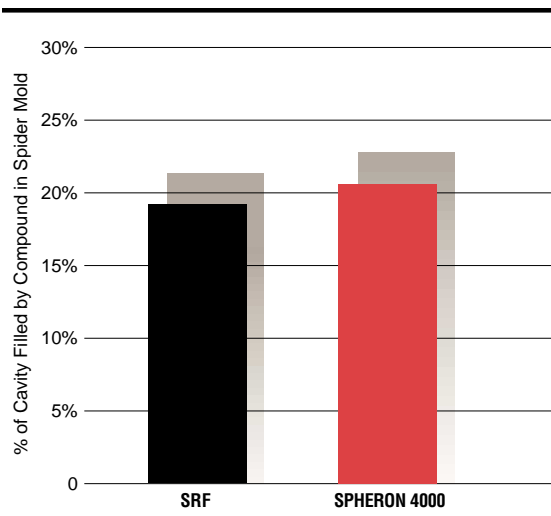
- High-temperature injection-molded parts
- Wire-braided hydraulic hoses
- Seals and gaskets
- O-rings
- Intricately molded dynamic parts
- High-hardness extruded profiles

SPHERON 4000 carbon black and other custom carbon black products have been specially developed by Cabot's Industrial Products business as part of the company's ongoing commitment to exceed existing market needs and promote solutions for future product design and processing challenges.



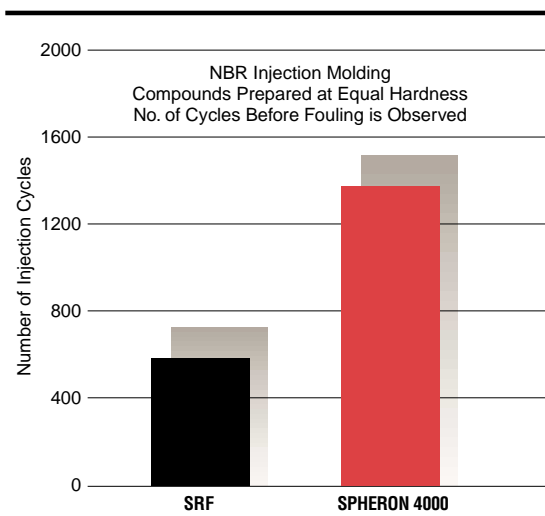
Flow Properties of SPHERON 4000 Carbon Black vs. SRF

SPHERON 4000 carbon black gives noticeably better flow in a spider mold than a conventional SRF grade.



Mold Fouling Minimization Using SPHERON 4000 Carbon Black vs. SRF

SPHERON 4000 carbon black significantly decreases a compound's tendency for mold fouling in high-speed, high-temperature, injection-molding applications.



Improved Loading Using Spheron 4000 Carbon Black vs. Conventional SRF In a Typical 70 Shore A HNBR Compound For Injection Molding

70 Shore Formulation: Basic Compound Composition

	Mix 1	Mix 2
HBNR	100	100
Plasticizer	5	5
SRF	50	—
SPHERON 4000 Carbon Black	—	62
Relative Cost	1.00	0.88

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