

## SPHERON<sup>®</sup> 6000A carbon black



### GENERAL DESCRIPTION

The surface aspect of extruded automotive profile and window channels is a key performance parameter. Class A automotive surface applications demand a very low level of particles that could cause visible surface imperfections leading to rejects or "scrap." In response to this market requirement, Cabot has developed a SPHERON family of carbon blacks, identified by the suffix A, to address carbon black related extruded surface imperfections.

The SPHERON<sup>®</sup> A carbon black series are produced via a special process resulting in a very low amount of impurities or "grit." The reduced level of impurities can be measured via a test developed by Cabot known as the "MDP" test (Macro Defect Predictor). The MDP test is a Mesh sieve residue test that is more sensitive and less destructive than the traditional ASTM grit test. Compared to the ASTM grit test, the MDP test better reflects the performance of the SPHERON<sup>®</sup> A products in Class A extruded surface applications. All products within the SPHERON<sup>®</sup> A product family have good pellet properties and high product consistency.



Furthermore, some products within the SPHERON<sup>®</sup> A carbon black series have a unique morphology, which considerably improves the speed of dispersion and ease of mixing compared to standard ASTM N500, N600 and N700 series carbon blacks. The cleanliness and morphology features together drastically reduce the extruded surface defects normally associated with carbon black.

SPHERON<sup>®</sup> 6000A carbon black combines the cleanliness of SPHERON<sup>®</sup> A series with an optimized morphology. The cleanliness and morphology features together drastically reduce visual imperfections on the surfaces of extruded rubber parts normally associated with carbon black.

### PERFORMANCE FEATURES

SPHERON<sup>®</sup> 6000A carbon black gives very smooth surfaces in extruded automotive weather stripping and hoses with more grey/matte finish than SPHERON<sup>®</sup> 5000A and SPHERON<sup>®</sup> SOA carbon black. SPHERON<sup>®</sup> 6000A carbon black disperses more easily than SPHERON<sup>®</sup> SOA and SPHERON<sup>®</sup> 5000A carbon blacks and is particularly of interest for low viscosity and low hardness compounds requiring very good dispersion quality. SPHERON<sup>®</sup> 6000A carbon black requires a higher phr loading to match viscosity and hardness of compounds based on ASTM N550 and N650 carbon blacks. This higher phr loading enables improved processing and extrusion of polymer-rich compounds such as sponge profiles.

SPHERON<sup>®</sup> 6400A carbon black exhibits high compound electrical resistivity levels making it well-suited for avoiding contact corrosion problems between weather stripping and aluminum car body parts. SPHERON<sup>®</sup> 6000A carbon black enables manufacturers to fulfil high electrical resistivity specifications without the need for high white filler levels that can be detrimental for the processing and physical properties of rubber compounds.

### TYPICAL APPLICATIONS

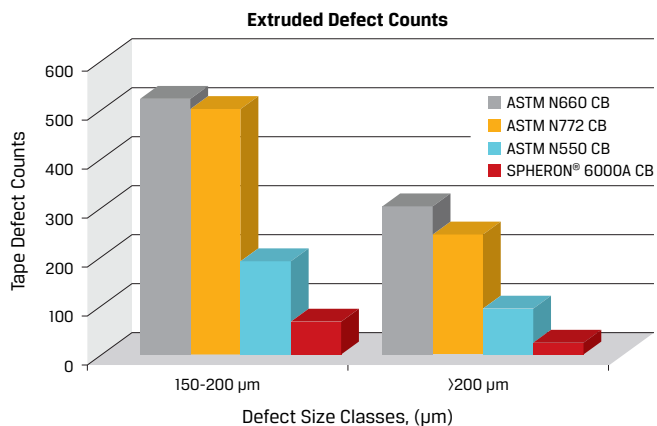
- ◆ Class A automotive weather stripping
- ◆ Hoses and extruded profiles

# SPHERON® 6000A carbon black

## TECHNICAL DATA

1) SPHERON® 6000A carbon black offers good properties with excellent dispersibility (test formulation: 100 EPDM phr, 75 phr Oil, S-cure system and carbon blacks at equal hardness loadings)

	SPHERON® 6000A CB	ASTM N660 CB	ASTM N772 CB	ASTM N550 CB
<b>CB loading (phr)</b>	150	130	160	120
<b>PROCESSING PROPERTIES</b>				
Mooney Viscosity				
ML (1+4) @100°C (MU)	59	54	53	60
<b>PHYSICAL PROPERTIES</b>				
<b>Hardness</b>				
Shore A ( 3 sec.)	63	62	63	63
<b>Tensile Properties</b>				
Tensile Strength (MPa)	11.3	13.4	12.2	13.5
100% Modulus (MPa)	3.7	3.2	3.0	3.6
Elongation @ Break (%)	440	439	438	404



2) SPHERON® 6000A carbon black can reduce the risk of electrical chemical degradation (ECD) in radiator/coolant hoses. The three photos are taken from rubber dumbbell sample surfaces after 168 hours submergence in a 50/50 cooling liquid/water blend at 80°C with an applied voltage of 10 Volt. The ASTM N550 and N683 carbon black based compounds exhibited more ECD with larger loss in tensile strength and elongation properties than SPHERON® 6000A carbon black (test formulation: 100 EPDM phr, 40 phr Oil, peroxide cure system)

	SPHERON® 6000A CB	ASTM N550 CB	ASTM N683 CB
<b>CB loading (phr)</b>	105	82	82
<b>Hardness</b>			
Shore A	63	65	64
<b>INITIAL PROPERTIES</b>			
Tensile Strength (MPa)	12.7	15.0	14.4
Elongation @ Break, (%)	340	360	370
Electrical Resistivity, (Ω•cm)	400,000	40,000	80,000
<b>PROPERTIES AFTER 168 HR ECD TEST</b>			
Tensile Strength (MPa)	13.0	11.4	11.0
Elongation @ Break (%)	340	280	290
<b>CHANGE AFTER 168 HR ECD TEST</b>			
Tensile Strength (%)	+ 2	-24	-24
Elongation @ Break (%)	0	-22	-22

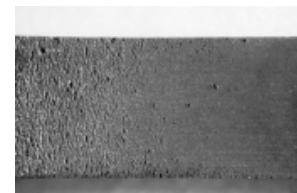


SPHERON® 6000A CB, 105 phr

➔ No cracks with SPHERON® 6000A CB



ASTM N683 CB, 82 phr



ASTM N550 CB, 82 phr

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