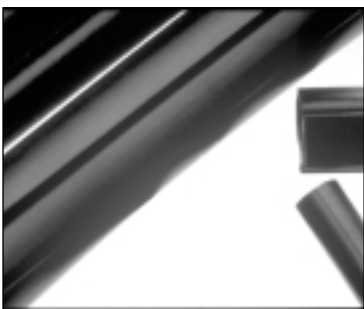


## SPHERON® 6400A



SPHERON® 6400A is one of the carbon blacks from CABOT's "A" grade family.

### Description

The surface appearance of extruded automotive profiles and window channels is very important today. 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 that market requirement, a family of carbon blacks appropriately identified by the suffix "A", was developed by Cabot to address carbon black related extruded surface imperfections.

All "A" grades are free from inorganic salts and have a very low metallic particle content. The "A" carbon black series are produced via a special process resulting in a very low amount of impurities often referred to in the past as "grit". The benefits of the reduced impurities can be directly measured via a new test developed by Cabot known as the "MDP" test (Macro Defect Predictor). MDP is a 120 Mesh sieve residue test that is more sensitive and less destructive than the traditional ASTM grit test. The MDP test better reflects the performance of the "A" grades in class "A" extruded surface applications.

Furthermore, some members of the "A" grade family have a unique morphology, which considerably improves the speed of dispersion and ease of mixing compared to well known standard carbon grades like the ASTM N500, N600 and N700 series. The cleanliness and morphology features together drastically reduce the extruded surface defects normally associated with carbon black.

Like SPHERON 6000A, SPHERON 6400A carbon black disperses quicker and easier than higher surface area grades like ASTM N500, 600 and 700 series of carbon blacks. It is therefore of particular interest for the production of low viscosity compounds and low hardness articles. The ability to compound with higher loading at equal viscosity or hardness compared to ASTM N500 type carbon blacks facilitates improved processing and extrusion in polymer rich compounds such as sponge profiles. The very low surface area and tint of SPHERON 6400A results in a relatively gray extruded surface finish compared to N500 and N600 carbon black grades. Rubber reinforcement is lower than ASTM N700, but still much higher than lamp or medium thermal black.

### Applications

SPHERON 6400A is a step beyond SPHERON 6000A for high electrical resistivity, high dispersion applications. Due to its very low surface area, SPHERON 6400A exhibits very high compound electrical resistivity levels which makes this carbon black good for avoiding contact corrosion problems in applications like window profiles that have contact with aluminum parts or electro chemical degradation in radiator hoses. SPHERON 6400A enables high electrical resistivity specifications to be fulfilled without the need for high white filler levels that can be detrimental to processing and physical compound properties.



# SPHERON® 6400A

CARBON BLACK



**CABOT**

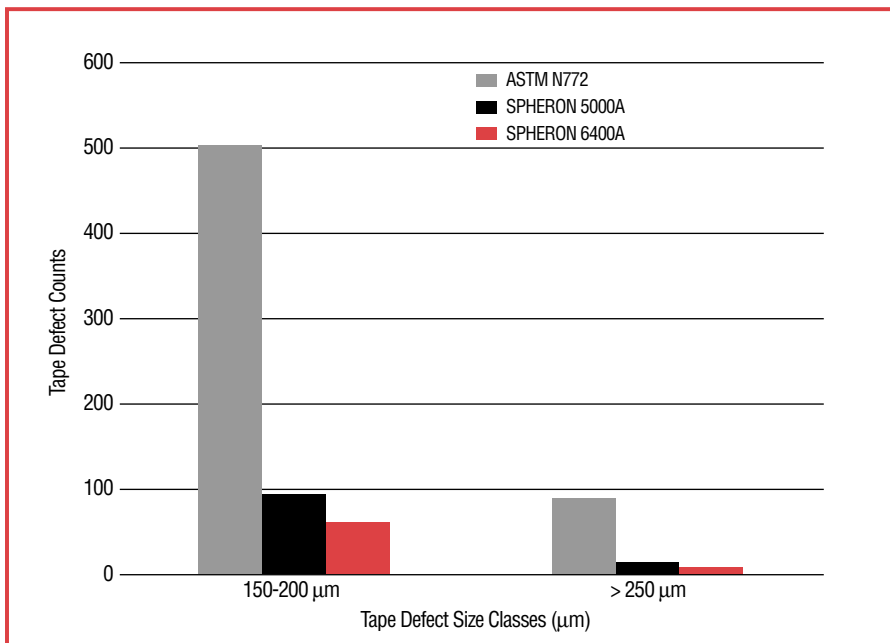
creating what matters

SPHERON 6400A has a structure similar to ASTM N660 carbon black, but a considerably lower surface area and contains less +120 Mesh size impurities. This results in a higher loading capability, higher electrical resistivity, better dispersion and much smoother extrusion. Reinforcement is somewhat less than for ASTM N600 and 700 type blacks, but SPHERON 6400A will disperse faster and better particularly in soft compounds. In some cases, dispersion in soft compounds is even better than for SPHERON 5000A.

These SPHERON 6400A performance features are shown below versus SPHERON 5000A and ASTM N772 at equal hardness in an EPDM test formulation (100 phr EPDM, see table for phr carbon black, 75 phr oil):

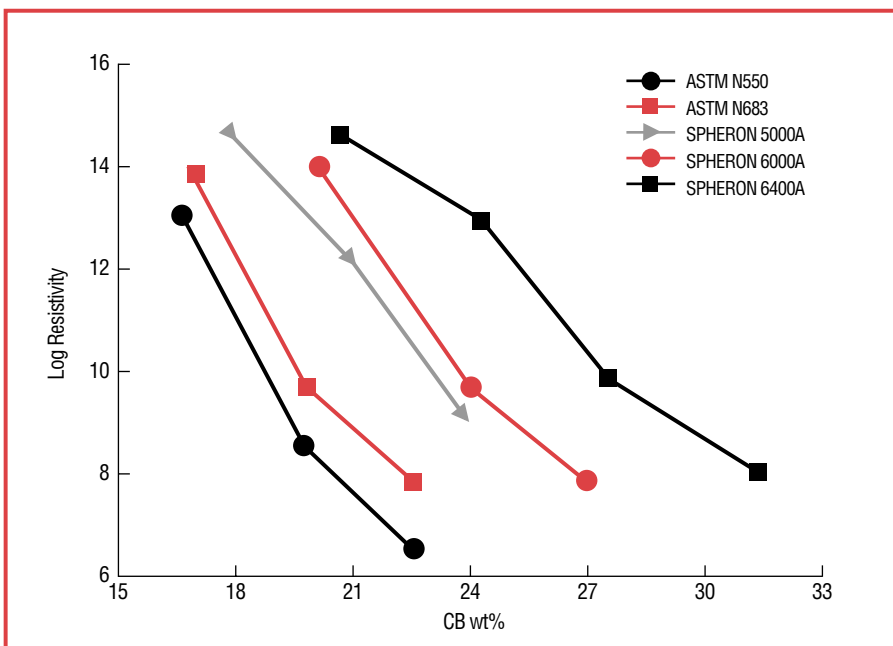
Carbon Black Grade	SPHERON 6400A	SPHERON 5000A	ASTM N772
Carbon Black Loading, (phr)	150	130	160
<b>Viscosity @ 100° C</b>			
ML (1+4), (MU)	61	61	53
<b>Hardness</b>			
Shore A, (3 sec.)	63	63	63
<b>Volume Resistivity</b>			
Cabot Method R (ohms.cm)	1420	270	195
<b>Tensile Properties</b>			
Tensile Strength, (MPa)	10.5	12.2	12.2
Elongation @ Break, (%)	422	423	438
100% Modulus (MPa)	3.7	3.9	3.0
<b>Tape Dispersion Rating</b>			
Defect count size distribution:			
100-150 µm	221	336	1544
150-200 µm	67	96	501
200-250 µm	20	32	155
>250 µm	10	17	90

## Extruded Tape Defect Counts



Some automotive rubber parts have to meet high electrical resistivity specifications to avoid contact corrosion problems between the rubber part and aluminum. This can be achieved by a large reduction in carbon black loading coupled with a strong increase of white filler loading. This however can have a clear negative effect on properties like tensile strength, compression set and can create dosing, mixing/dispersing and die plating problems. Some of these problems can be

overcome by the use of SPHERON 6400A, since the unique morphology of this carbon black allows a much higher carbon black loading at any electrical resistivity level. This is demonstrated below, in a comparison of 5 carbon black types at equal hardness in a typical 65 Shore EPDM extruded profile compound:



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