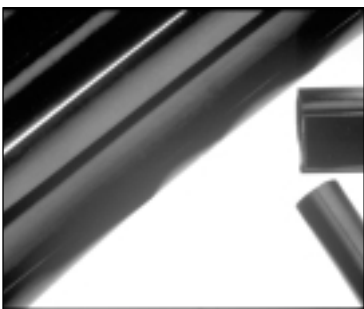


SPHERON® 6400



Description

SPHERON® 6400 furnace carbon black is a pelleted semi-reinforcing carbon black having a very low surface area per unit mass with a moderate level of particle aggregation resulting in a medium-high structure.

SPHERON 6400 carbon black disperses quicker and easier than higher surface area grades like ASTM N500, 600 and 700 carbon black series and is therefore particularly of 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 and N600 type carbon blacks facilitates improved processing and extrusion in polymer rich compounds such as sponge profiles. The very low surface area and tinting strength of SPHERON 6400 carbon black results in relative gray extruded surface finish compared to ASTM N500 and N600 carbon black grades. Rubber reinforcement is lower, but still much higher than Lamp or Medium Thermal Black.

Applications

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

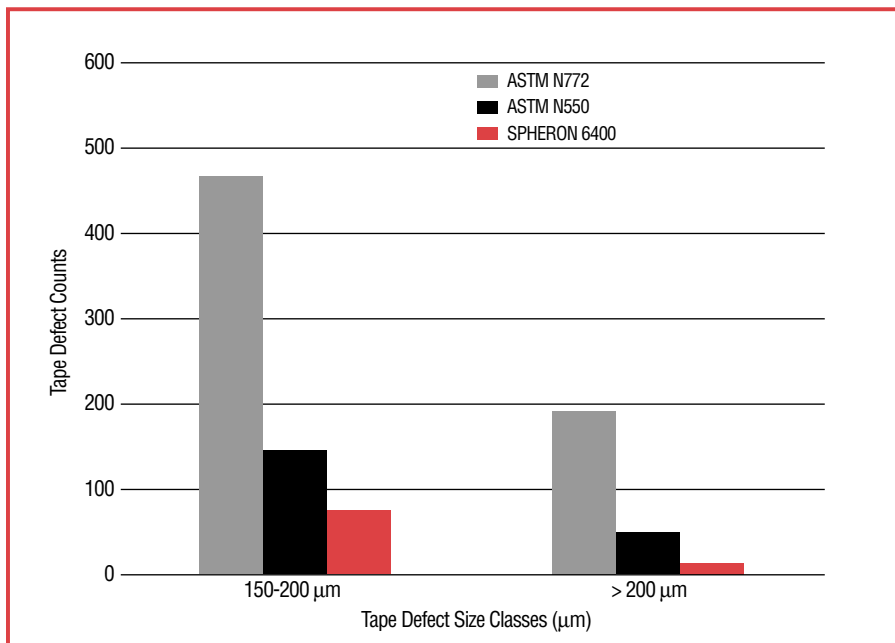


SPHERON 6400 carbon black has a similar structure as ASTM N660 carbon black, but a considerably lower surface area. This results in a higher loading capability, higher electrical resistivity, better dispersion and much smoother extrusion. Reinforcement is somewhat less than for ASTM N500, N600 and 700 type carbon blacks, but SPHERON 6400 carbon black will demonstrate a much better and faster achieved dispersion level, particular in soft compounds.

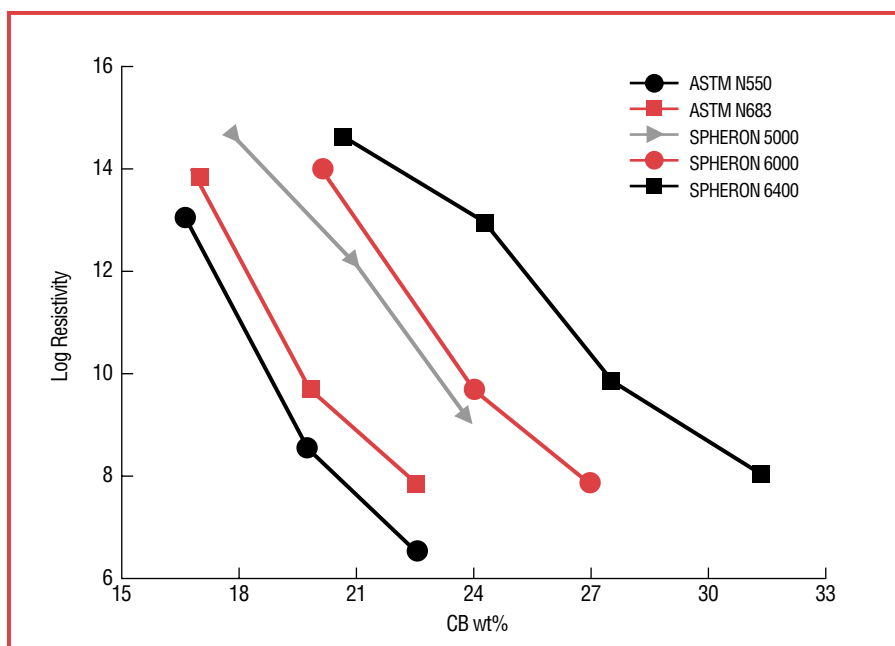
These SPHERON 6400 carbon black performance features are shown in below comparison against ASTM N550 and ASTM N772 carbon black at equal hardness in a EPDM test formulation (100 phr EPDM, see table for phr carbon black, 75 phr oil):

Carbon Black Grade	SPHERON 6400	ASTM N550	ASTM N772
Carbon Black Loading, (phr)	150	120	160
Viscosity @ 100° C			
ML (1+4), (MU)	61	60	53
Hardness			
Shore A, (3 sec.)	63	63	63
Volume Resistivity			
Cabot Method			
R (ohms.cm)	1420	65	195
Tensile Properties			
Tensile Strength, (MPa)	10.5	13.5	12.2
Elongation @ Break, (%)	422	404	438
100% Modulus (MPa)	3.7	3.6	3.0
Tape Dispersion Rating			
Defect count size distribution:			
100-150 µm	221	708	1544
150-200 µm	67	191	501
200-250 µm	20	66	155
>250 µm	10	28	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 metal. 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 6400 carbon black, since the unique morphology of this carbon black allows a much higher carbon black loading at high electrical resistivity. This is demonstrated in below figure, which shows a comparison of 5 carbon black types at equal hardness in a typical 65 Shore EPDM extruded profile compound:



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