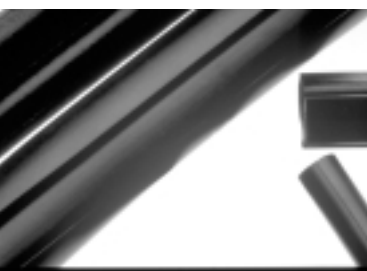


SPHERON® 5000A



SPHERON 5000A is one of the carbon blacks from CABOT's "A" grade family

Description

The surface aspect of extruded automotive profile 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 calcium 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 new, by CABOT developed 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

SPHERON 5000A carbon black has a similar structure to ASTM N550 or N650, but a considerably lower surface area. This results in a higher loading capability, excellent high speed processing with smooth extruded or calendered surfaces. Reinforcement is somewhat less than ASTM N500 and N600 type blacks, but elasticity and dynamic properties are better.

Applications

The excellent mixing and extrusion characteristics of SPHERON 5000A carbon black makes it ideally suited for the production of any extruded articles requiring smooth surfaces and good elasticity. It's lower surface area compared to ASTM N500 and N600 type carbon blacks makes SPHERON 5000A carbon black very applicable to reduce electrostatic cracking in radiator hoses or corrosion problems with extruded profiles.

SPHERON 5000A carbon black can also be applicable for some injection or compression molded rubber articles requiring a very good dispersion, a high carbon black cleanliness level and good physical rubber properties.

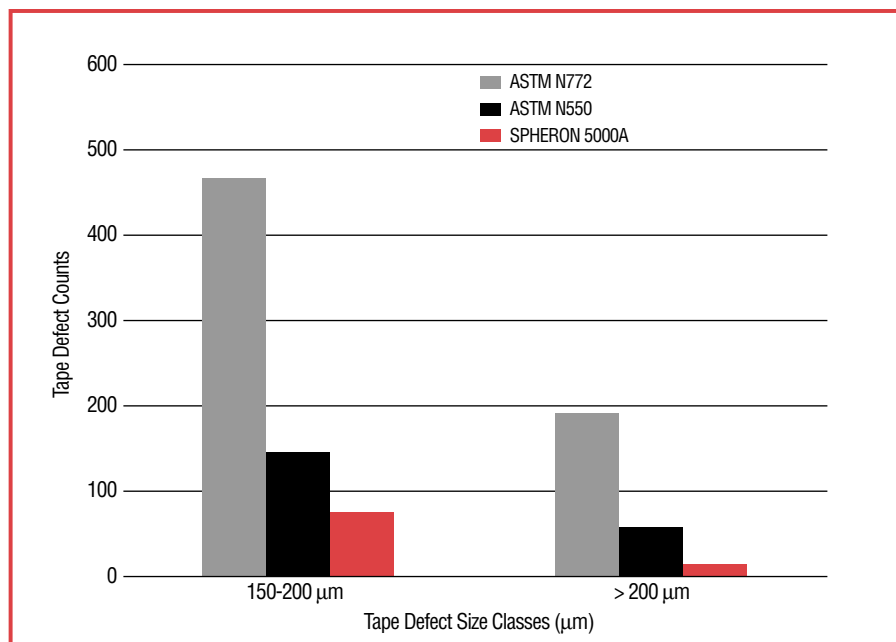


SPHERON 5000A carbon black has a similar structure to ASTM N550 or N650, but a considerably lower surface area and contains less +120 Mesh size impurities. This results in a higher loading capability, higher electrical resistivity and better dispersion for smooth extruded or calendered surfaces. Reinforcement and microwave receptivity is somewhat less than for ASTM N500 type blacks, but SPHERON 5000A carbon black will demonstrate a reduced number of visible imperfections on extruded "A" class rubber surfaces particular in soft compounds.

These SPHERON 5000A performance features are shown in below comparison against ASTM N550 and N772 at equal hardness in a EPDM test formulation (100 phr EPDM, see table for phr carbon black, 75 phr oil):

Carbon Black Grade	SPHERON 5000A	ASTM N550	ASTM N772
Carbon Black Loading, (phr)	130	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)	270	65	195
Tensile Properties			
Tensile Strength, (MPa)	12.2	13.5	12.2
Elongation @ Break, (%)	423	404	438
100% Modulus (MPa)	3.9	3.6	3.0
Tape Dispersion Rating			
Defect count size distribution:			
100-150 µm	336	708	1544
150-200 µm	96	191	501
200-250 µm	32	66	155
>250 µm	17	28	90

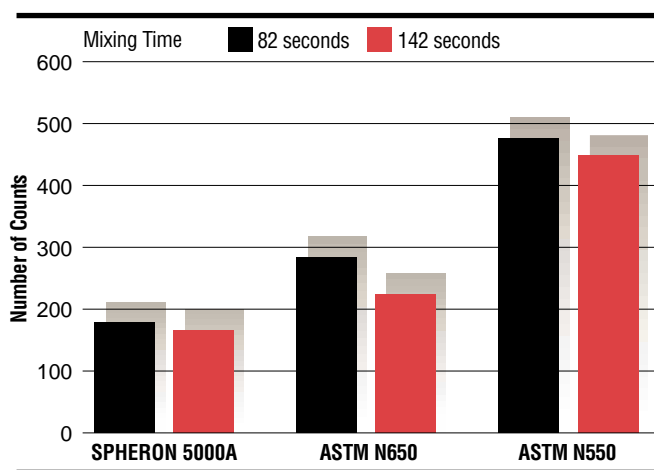
Extruded Tape Defect Counts



Another way to demonstrate the excellent dispersibility of SPHERON 5000A carbon black is by measuring the compound dispersion as a function of mixing time. This comparison is shown below and done for SPHERON 5000A vs. ASTM N650 and ASTM N550 at equal hardness in an EPDM test compound (100 phr EPDM, 75 phr oil, 120 phr for N550, 125 phr for N650, 130 phr for SPHERON 5000A). SPHERON 5000A carbon black exhibited, because of its easier dispersible morphology and higher cleanliness, fewer defects than the N550 and N650 carbon blacks at the 2 mixing times employed.

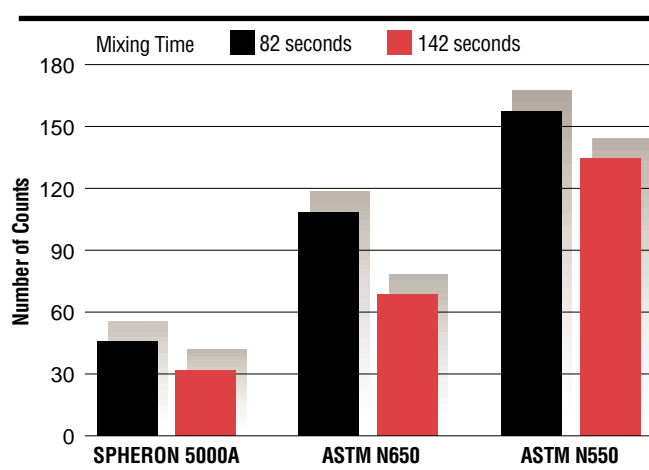
Mixing Time vs. Tape Dispersion

(100-150 µm defect size class)



Mixing Time vs. Tape Dispersion

(>150 µm defect size class)



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