CNTs-based Conductive Additives for Lithium Ion Battery

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Details:
CNTs-based Conductive Additives for Lithium Ion Battery
Outside diameter (d_{50}): 50-80 nm (from HRTEM, Raman)
Length: 10-15 um (TEM)
SSA: > 60 m\(^2\)/g (BET)
Appearance: Black Powder
PH Value: 9
Ash: < 0.3 wt\% (TGA)
Tap density: 0.17 g/cm\(^3\)
Adsorption value: >530 ml/100g
Volume resistivity: 2~5 x 10^{-4} \Omega \cdot \text{cm} (\text{Four-probe Method})
Moisture (as packed): 0.1-0.3 wt\%
Content of Ni: < 0.5 wt\% (ICP)
Content of Mg: < 50 ppm (ICP)
Content of Fe: < 50 ppm (ICP)

Product Description:
CNTs-based Conductive Additives for Lithium Ion Battery are a kind of composite. It is composed of high electric conductive CNTs and a kind of carbon black. The carbon black particles can not only prevent dispersed CNTs from reagglomerating, but also exhibit synergetic effect with CNTs in Li-ion battery. More important, the product is very easy to be dispersed in Li-ion battery electrode, and the CNTs network can ensure the Li-ion battery having the best cycle performance. As a CNTs-based conductive additive, the product can fit for artificial graphite, spherical natural graphite, MCMB, CMS, Li$_4$Ti$_5$O$_{12}$ et al anode materials, and for LiCoO$_2$, LiFePO$_4$, LiMn$_2$O$_4$, LiNiCoO$_2$, LiNi$_{0.8}$Mn$_{1.2}$O$_4$ et al cathode materials of lithium ion battery. Now, The product is utilized by most of lithium ion power vehicle manufacturers.

Discharge capacity for CNT/LiCoO$_2$ electrode
Capacity retention for CNT/LiCoO$_2$ electrode
Discharge capacity for CNT/LiFePO$_4$ electrode
Capacity retention for CNT/LiFePO$_4$ electrode
MSDS

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Compared with traditional conductive additive of Li-ion battery, the product contributes the evident superiority for Li-ion battery as follows:
- Longer cycle life and excellent performance at large current (increase twice).
- Higher tap density (adding 10%)
- Higher electrode conductivity
- Stronger electrode mechanical strength and adhesive attraction

**Application:**
The product can be used on both anode and cathode of Li-ion battery. The appropriate quantity of additive is 2~3wt% on cathode or 1~2wt% on anode. Dispersion circumstance could be oil or water. Before using the product, disperse it in N-methyl-2-pyrrolidinone or water first (high-speed stirring for 2~3 hours, adding PVP or other dispersing agents if necessary). After dispersion, add in binders and stir for 1 hour. Then add in electrode materials and stir mixture for 4~5 hours.

- [Discharge capacity for CNT/LiCoO₂ electrode](#)
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- [Discharge capacity for CNT/LiFePO₄ electrode](#)
- [Capacity retention for CNT/LiFePO₄ electrode](#)
- [MSDS](#)