Active Material Pastes for Capacitors: HITASOL GA-1000, GA-11000, GA-1200

Technical background

Use of large-scale electric double layer capacitors (EDLC) in industrial and automotive applications has begun, taking advantage of their high capacitance, high power, and maintenance-free features, and further expansion is expected. As a feature of lithium ion capacitors (LIC), which use intercalation of lithium ions, the energy density of LIC is approximately 4 times higher than that of EDLC, and expansion to industrial, automotive, and other applications is also expected in the future. Capacitor electrode manufacturing methods can be broadly divided into the sheet method and the coating method. However, expansion of the coating method is foreseen in the future, as this method enables production of good quality electrodes at low cost. Therefore, utilizing this company's particle size control technology, dispersion technology, and resistance reduction technology, Hitachi Powdered Metals developed high grade active material pastes (electrode pastes) which enable uniform coating and contribute to minimizing coating film defects (improved productivity) and improved quality (capacitance, internal resistance).

Conventional technology and new technology

An active material paste is supplied, which contributes to reduction of the internal resistance of capacitors and improvement of productivity in capacitor manufacturing.

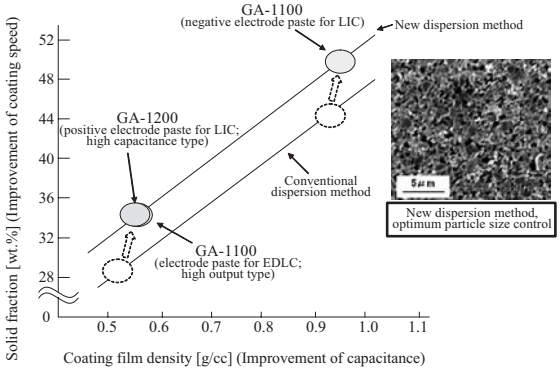


Fig. 1 Improvement of mass-producability and quality

Table 1 Features of products

Product name Type	HITASOL GA-1000 Electrode paste for EDLC	HISATSOL GA-1100 Negative electrode paste for LIC	HITASOL GA-1200 Positive electrode paste for LIC
Active material	Active carbon	Non-graphitizing carbon	High specific surface area active carbon
Viscosity	1500mpa·s	1100mpa·s	1500mpa·s
Solid fraction	34wt%	49wt%	29–34wt%
Particle size	4.0μm	2.0μm	2.5μm
Density	0.54g/cc	0.95g/cc	0.54g/cc
Paste quality guarantee period	3 months	3 months	3 months

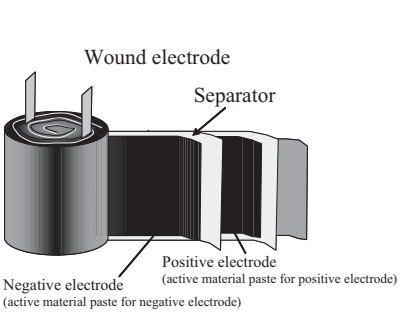
Features of the new products

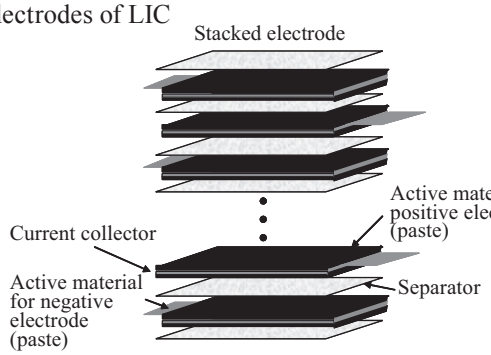
The features of the developed electrode pastes are presented below.

(1) 3 month quality guarantee period. (Possible to store and use in coating when necessary)
(2) Form a uniform coating film with minimal coating defects. (Improved productivity)
(3) High solid fraction, enabling increase in coating speed. (Improved productivity)
(4) High coating film density, enabling formation of a low-resistance coating film. (Increased capacitance, reduced internal resistance)
(5) Good workability and safety because pastes are water-based.

Applicable products

· Active material paste for electric double layer capacitors (EDLC)
· Active material paste for negative electrodes of lithium ion capacitors (LIC)
· Active material paste for positive electrodes of LIC





Optimal flow property

Appearance of product