

# APC19 Graphite Anode Powders

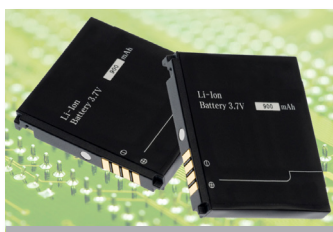
Technical Data Sheet 2000

## APC19: High Capacity Anode

- Superior full cell capacity in prismatic format
- Exceptional retained capacity after cell conditioning and stabilization
- Demonstrated best in class performance after >1000 cycles

## Typical Applications

- Automotive
- Consumer electronics
- Power tools
- Renewable energy storage



## Available Container Sizes

- 5kg increments up to 200kg
- Bulk packaging

## Typical Properties\*

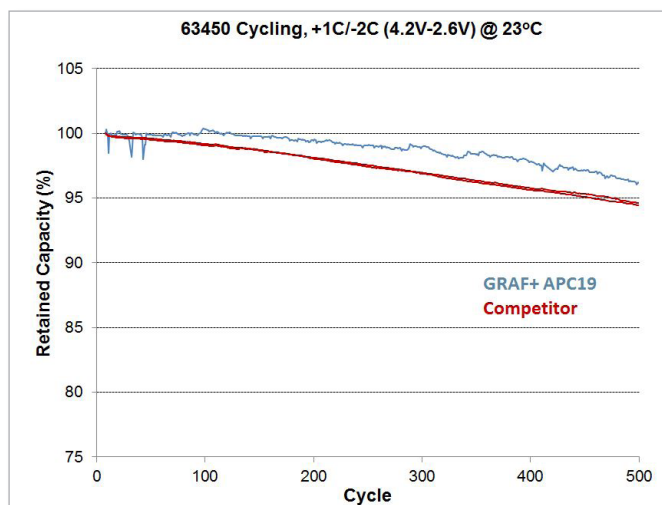
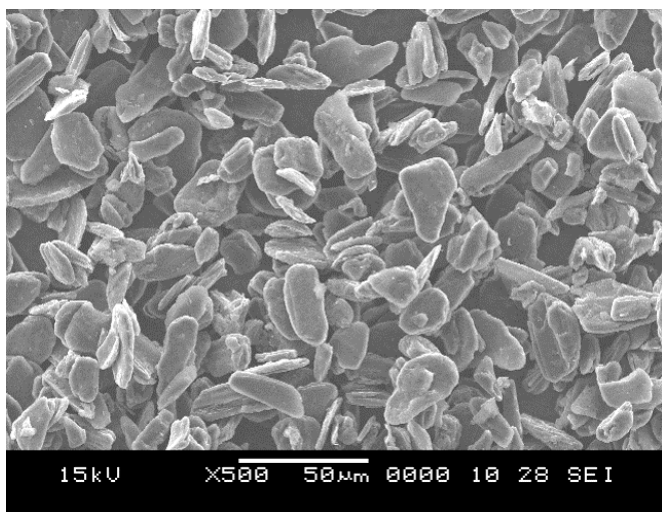
Characteristic	Unit	APC19	APS19	APN13
Capacity**	mAh/g	≥354	≥356	≥370
First Cycle Efficiency	%	≥94	≥92	≥92
Retained Capacity @ 23°C (after 500 cycles)***	%	96	96	95
Tap Density	g/cc	>0.9	>0.9	>0.9
D10	μm	10.0	9.6	8.2
D50	μm	19.4	19.0	13.0
D90	μm	30.8	30.7	21.1
Ash	ppm	<35	<35	<45

\* Properties listed are typical and cannot be used as accept/reject specifications.

\*\* Half cell data with Li counter electrode. Reported number is the average of the first 3 cycles. All cells are constructed with PVDF binder.

\*\*\* Full cell construction is prismatic 63450 with NCM cathode.

## APC19: High Capacity Anode



- Superior full cell capacity in prismatic format
- Exceptional retained capacity after cell conditioning and stabilization
- Demonstrated best in class performance after >1000 cycles

## GrafTech is Graphite

GrafTech International is a global company that has been redefining limits for more than 125 years. We offer innovative graphite material solutions for our customers in a wide range of industries and end markets, including steel manufacturing, advanced energy and latest generation electronics. GrafTech operates 20 principal manufacturing facilities on four continents and sells products in over 70 countries. Headquartered in Parma, Ohio, GrafTech employs 3,000 people.

## Redefining Technology

From the development of the first electric arc lamp to the cutting edge technology of electronic thermal management, GrafTech's history and world-renowned Research & Development center underscores its commitment to innovating and manufacturing engineered solutions across all the industries it serves.

- 730+ issued and pending patent applications
- 16 R&D 100 Awards recognizing groundbreaking technology
- 125+ scientists, engineers and R&D professionals
- Extensive testing facilities and capabilities
- Equipment to duplicate or simulate process technology
- Lean manufacturing expertise



[www.graftech.com](http://www.graftech.com) | [graf+@graftech.com](mailto:graf+@graftech.com)

**United States of America**  
101 N. Philippi Pike  
Anmoore, WV 26323-0120  
Ph: +1-800-842-8805  
+1-304-624-1253

**China**  
Unit 2104 of International Capital Plaza  
1318, Sichuan Road North  
Hongkou District, Shanghai China  
Ph: +86-21-6325-8018

**Italy**  
Via Forno Allione, 2  
1-25040 Malonno, Brescia, Italy  
Ph: +39-036-463-0131

**France**  
La Lechere  
73264 Aigueblanche Cedex, France  
Ph: +33-4-79-41-45-00

## Redefining limits

© 2014 GrafTech International Holdings Inc. This information is based on data believed to be reliable but GrafTech makes no warranties, express or implied, as to its accuracy and assumes no liability arising out of its use. The data listed falls within the normal range of product properties but should not be used to establish specification limits or used alone as the basis of design. GrafTech's liability to purchasers is expressly limited to the terms and conditions of sale. GRAF+ is a trademark of GrafTech International Holdings Inc.

11.10.2014