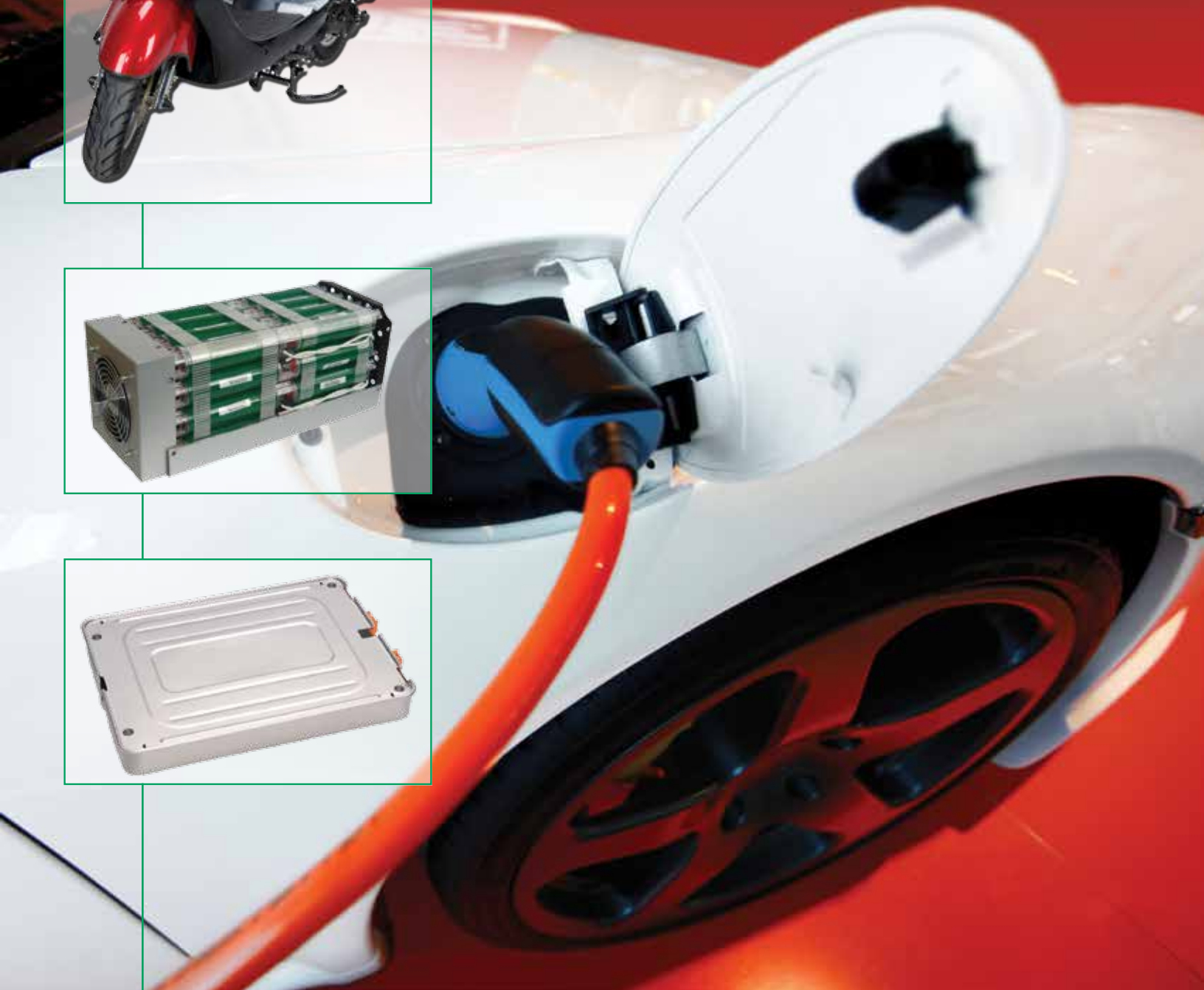


SUPERIOR  GRAPHITE  
INNOVATING SINCE 1917



Formula **BT**<sup>®</sup>





## FormulaBT®: Superior Performance Graphite/Carbon for Energy Applications

### Graphite/Carbon Anode Materials Used in Rechargeable Li-ion Batteries.

FormulaBT® (Battery Technology) are carbon and graphitic powders, developed and manufactured by Superior Graphite, primarily for use in the energy conversion marketplace. Combined with a variety of milling and surface treatment techniques and processes, FormulaBT® provides the market with superior performance and high purity products.

### FormulaBT® Advantages:

#### High Reversible Capacity

Close to the theoretical capacity of 372 mAh/g to meet energy requirements for high-energy Li-ion battery applications, e.g. electric vehicles, e-bikes, etc.

#### Low Irreversible Loss

Irreversible capacity as low as 5% to maximize the efficiency (determined in Hoshen half cells).

#### Long Cycle Life

A selective permeable surface layer prevents electrolytes from intercalating into the graphite and avoids the decomposition of the graphite.

#### Excellent High-Rate Capacity

Functional additives in the surface layer lead to higher electrical conductivity, and better high-rate capacity.

#### High Adhesion

Excellent adhesion to the substrate to improve battery-manufacturing processability.

### FormulaBT® Characteristics:

#### High Purity

High consistent carbon content (>99.9%) with low moisture content, and extremely low impurities.

#### High Crystallinity

Near 100% crystallinity leads to high reversible capacity by inserting one lithium ion for every six carbons to form the intercalation compound  $\text{LiC}_6$ .

#### High Packing Density

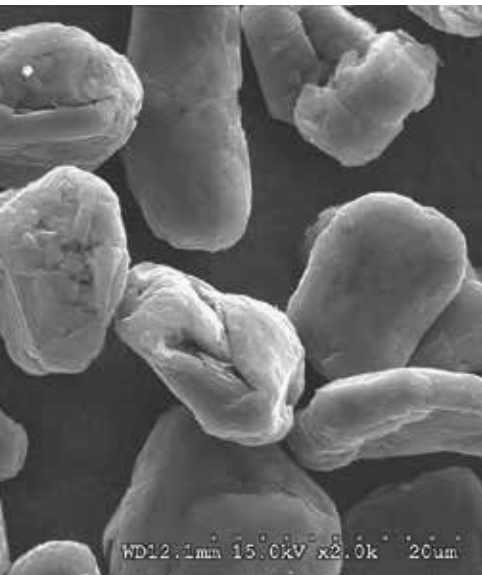
Maximizing the Li-ion cell capacity at the limited volume.

#### Spherical Particle Shape

Reducing the volume usage, increasing cell capacity, and providing isotropic characteristics of the electrode.

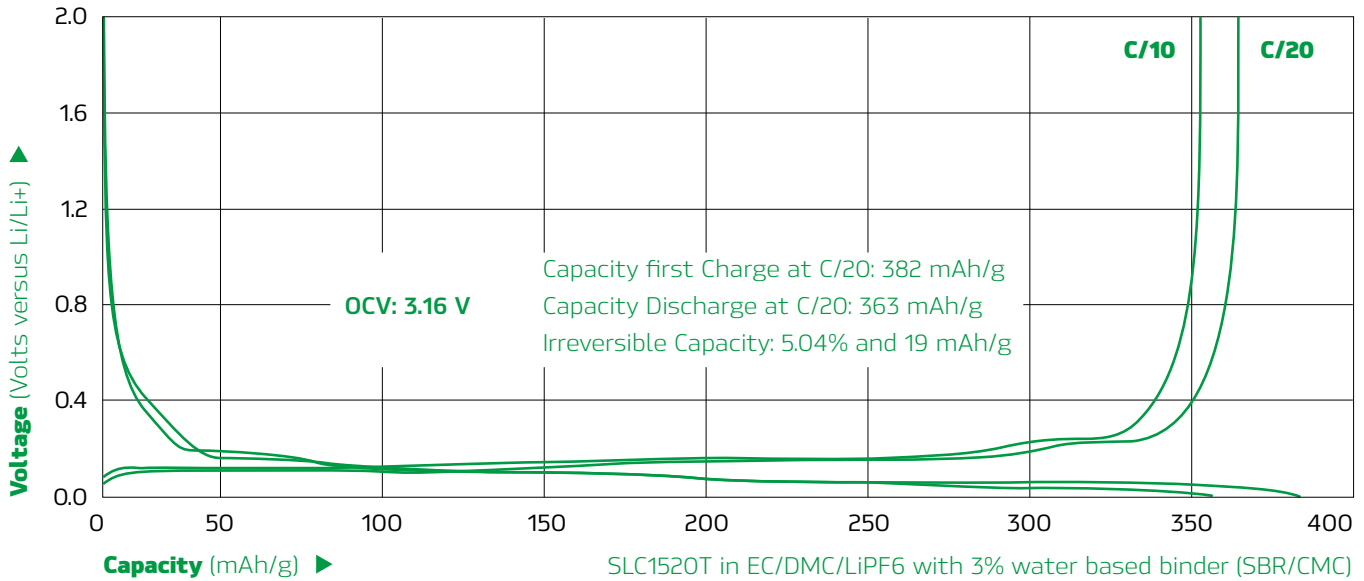
#### Treated Surface and Low Surface Area

Forming selective permeable surface layer and minimizing the amount of lithium ions consumed for the formation of SEI layer.



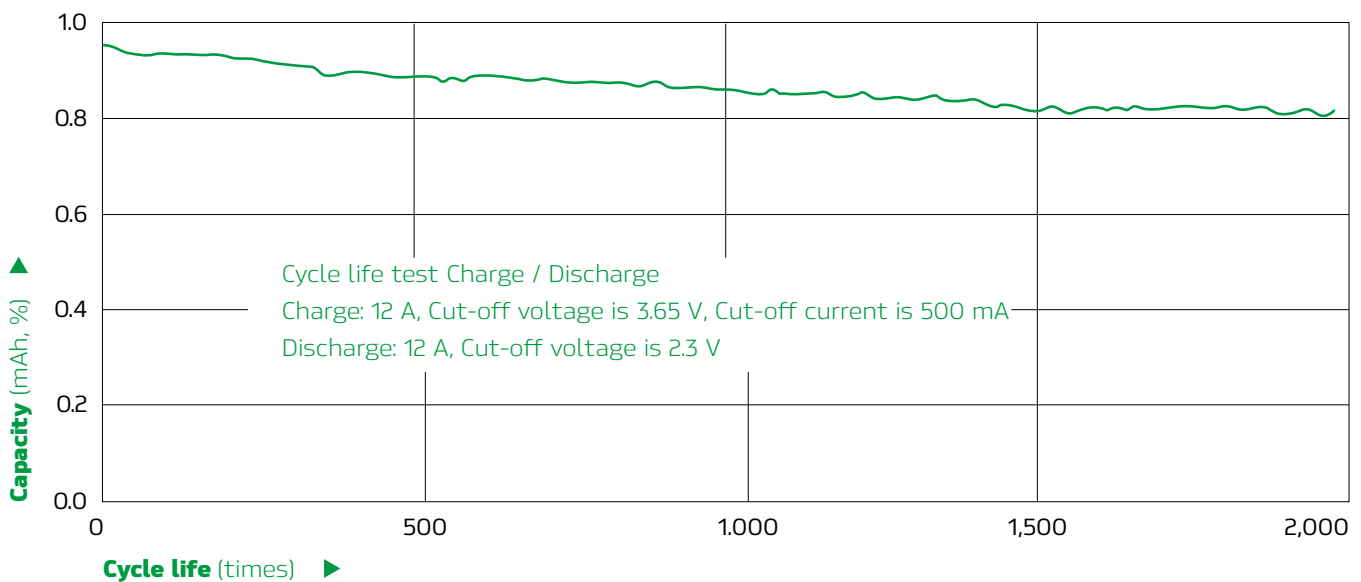
# FormulaBT<sup>®</sup> Offers High Reversible Capacity

Charge and discharge capacity of FormulaBT<sup>®</sup>  
SLC1520T in EC/DMC electrolyte



# FormulaBT<sup>®</sup> Offers Long Cycle Life to Meet Electric Vehicle Requirements

FormulaBT<sup>®</sup> SLC1520P in LiFePO4 battery for EV application



## FormulaBT® Products

### Graphite/Carbon Anode Materials Used in Rechargeable Li-ion Batteries

**FormulaBT® SLC series** has superior performance natural flake graphite with surface treatment, spheroidal particle shape, low surface area, and various particle sizes. Other features include high capacity, low irreversible loss, high stability, PC resistance, and excellent adhesion to the substrate.

**FormulaBT®** is more than just a high performance energy material. **FormulaBT®** is a philosophy:

- Our innovative research and development team provides superior solutions with customized products.
- Our dedicated production staff, combined with ISO 9001 certified quality management systems ensure high quality products which meet agreed-upon specifications.
- Our extensive worldwide distribution network ensures supply chain efficiency.
- Our materials management experts secure the supply of high quality raw materials, and continuously evaluate new sources globally.

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### OUR MISSION:

We create value for our customers by providing SUPERIOR SOLUTIONS – utilizing our unique technologies, processes and talents – while contributing to the company's long-term success.



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