SM-SILICON/3590™

Highest Capacity, Commercially Viable, Cycle Stable Validated Anode Material While Being Priced like Graphite $/kWh

SM-Silicon/3590™ Objectives	
Capacity of SM-Silicon/3590™	3,590 mAh/g vs. 400-450 mAh/g
First Cycle Efficiency	92-94% vs. 65-75%
Reversible Capacity (mAh/g) when using a 7.5% loading	3590 mAh/g (Determined by Customer) vs. Fixed at 400-450 mAh/g
Energy Density* when using a 7.5% loading	
Wh/L	650-718 Wh/L vs. 618-650 Wh/L
Wh/kg	250-320 Wh/kg vs. 250-257 Wh/kg
Ah	6.2Ah
Price	Graphite $/kWh vs. $1,200/kg for Si - $60/kg Blend
Cycle Retention	500-1,000, >80% at 100% DoD*
Swelling at the Cell Level	<10-12%*

*** Range depends on graphite capacity and battery design.**

SM-Silicon/3590™ Engineering Design

Paraclete Energy's **SM-Silicon/3590™** is the highest capacity, commercially viable, cycle-stable validated anode material available on the market today while being priced like graphite $/kWh.

Unlike what is on the market today at 430 mAh/g, those suppliers require that you also use their graphite and their fixed ratio of silicon to graphite. With Paraclete's **SM-Silicon/3590™**, the customer uses their preferred graphite they want to use, and they can add more or less **SM-Silicon/3590™**, thereby changing the reversible capacity to meet the application requirements. **SM-Silicon/3590™** also allows the customer to use a less expensive graphite and add the **SM-Silicon/3590™** until the desired capacity is achieved. This will make the total cell cost much less.

This is particularly advantageous given that **SM-Silicon/3590™** is up to five times less expensive than the silicon used in the ~430 mAh/g product already on the market.

Use the Graphite You Want at any Ratio

COMPETITOR'S PRODUCT

Other companies will sell you a **Silicon-Graphite Blend** containing **92-96% Graphite** with only **4-8% Silicon Oxide!**

You are forced to use the graphite already contained in the blend at the existing ratio. This blend only provides **400-450 mAh/g.**

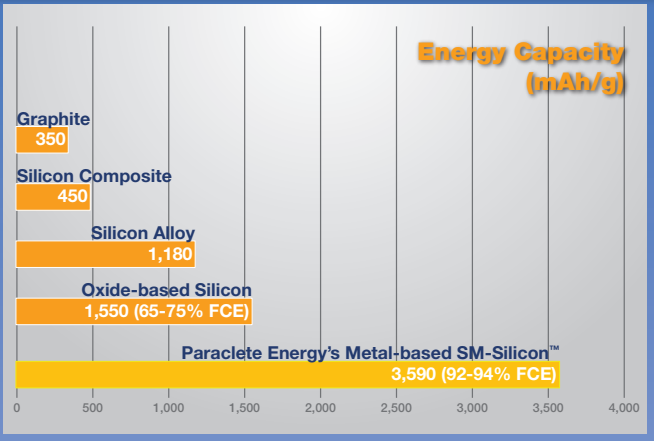
PARACLETE'S PRODUCT

Paraclete Energy offers **SM-Silicon/3590™** a Surface Modified, substantially oxide free elemental silicon metal. The multi-layer surface modifier is optimized for cycle stability but can also be optimized for the application such as fast charge, power vs. energy, pre-lithiation, etc.

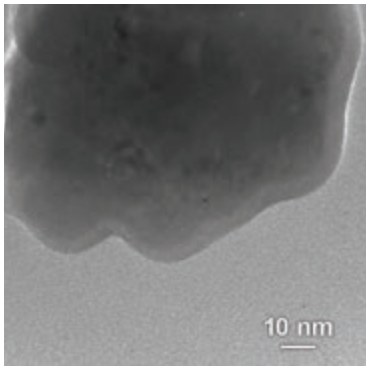
SM-Silicon/3590™ can be used with whatever graphite you want and at the ratio you want.

SM-SILICON™

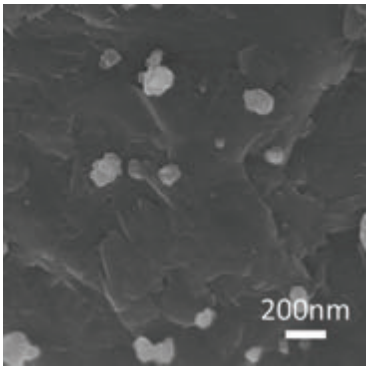
Paraclete Energy Manufactures Nanoparticle Surface Modified SM-Silicon™. SM-Silicon™ Has the Highest Reversible Capacity of Any Anode Material. Paraclete Energy Has Already Sold Tons of Its SM-Silicon™.



SM-Silicon™ Features an Outer, Artificial SEI, That Acts to Shield the Silicon from the Electrolyte.



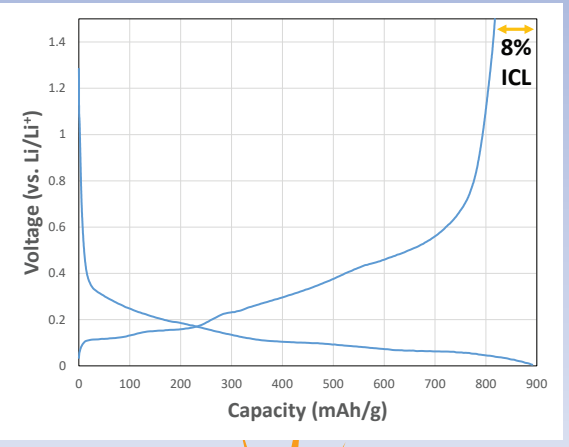
TEM image showing the outer, artificial SEI, stabilizing shell of 150nm SM-Silicon™



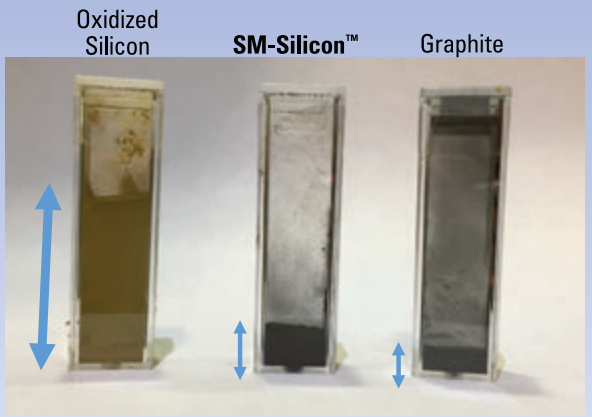
SM-Silicon™ dispersed with aqueous slurries.

Form	Amorphous/Crystalline Powder
Purity	≥99.5%
Metals Impurities	<0.5%
APS	150nm (custom sizes available)
BET/SSA	30 m^2/ g
Tap density	0.8 g / cm^3 nearly as Graphite (1.1 g/cm^3), helps to get denser anode
Morphology	Non-spherical
SM type	Organic, Inorganic or Hybrid. Customizeable

SM-Silicon™ Has Similar First Cycle Efficiency as Graphite.



SM-Silicon™ Has Similar Tap Density as Graphite.



0.08 g/cm^3 **0.8 g/cm^3** **1.1 g/cm^3**

PARACLETE ENERGY

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