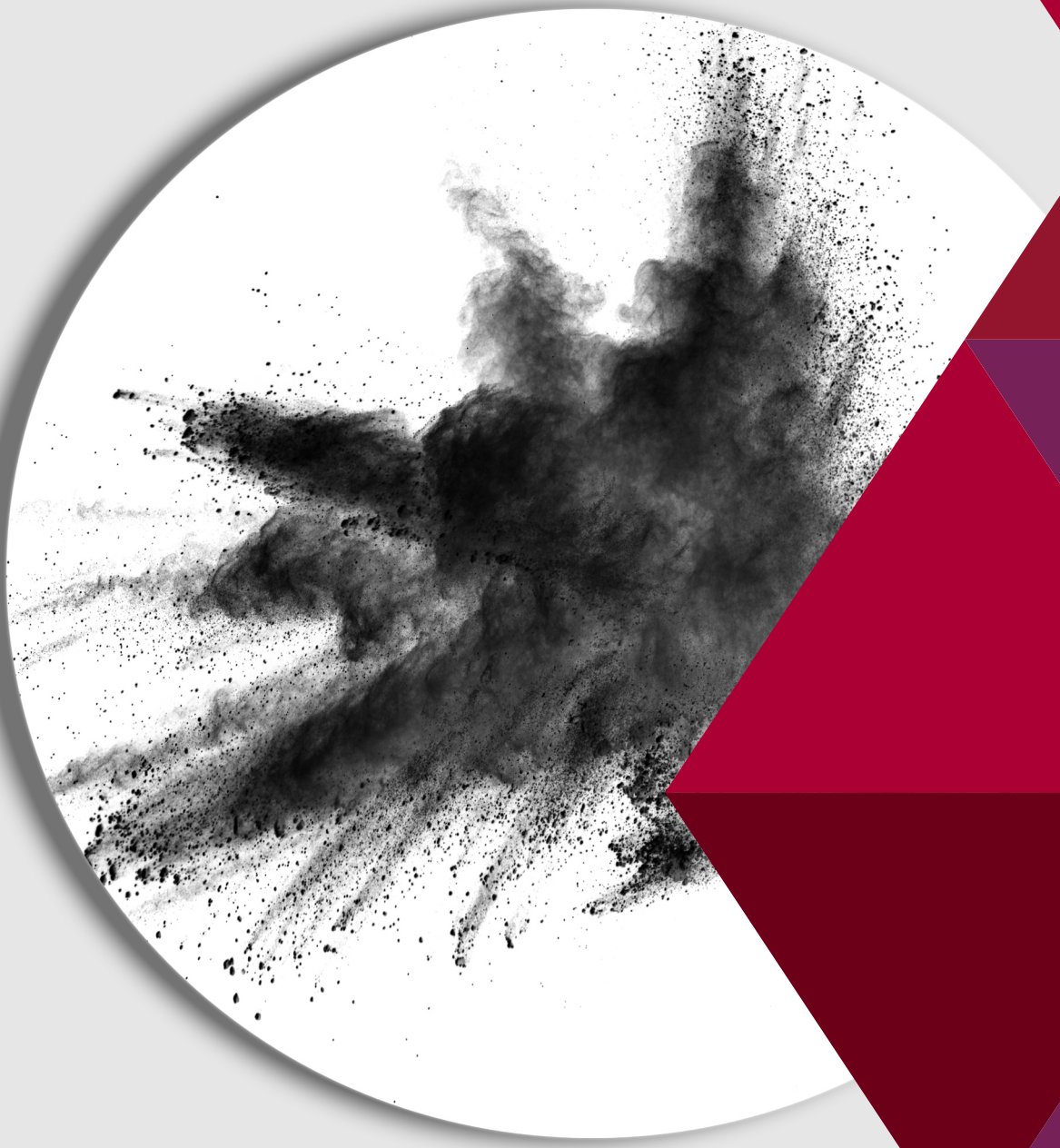
PRODUCTS FOR BATTERY

Silicon Anode Material



NAGASE | Delivering next.

Product Description

Carbon coated, high initial efficiency silicon oxide composite for anode material of LiB (material related inventions).

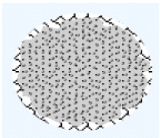
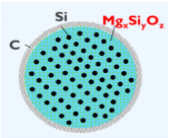
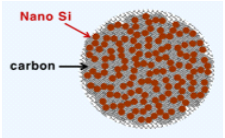
Advantages

- The first mass-produced silicon oxide anode material with high initial efficiency used in pouch batteries of electric vehicles
- Low expansion rate and excellent cycle life performance
- Market proven, already in use, in mass production
- Foreseeing to expand production capacity to 20,000 ton by 2025
- Patented technology (Material Patent)

Certifications

- ISO 9001/14001
- OHSAS 18001
- **IATF-16949**

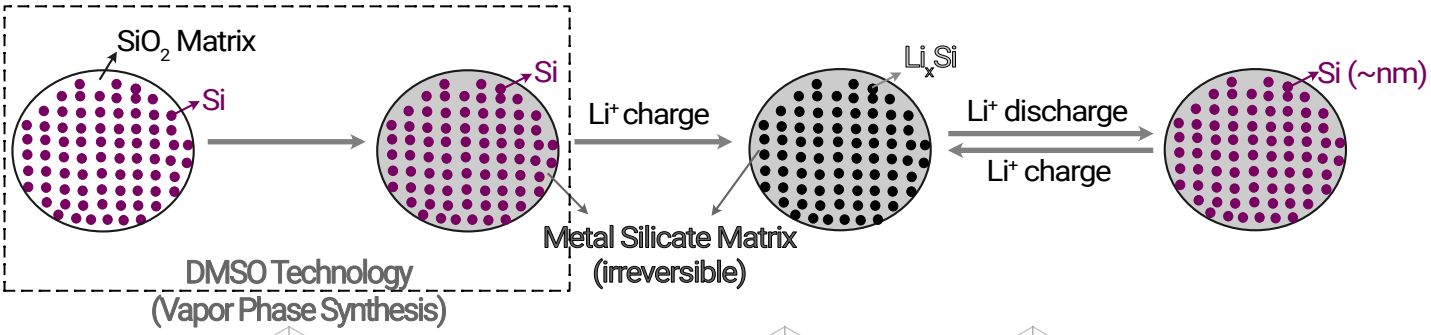
Electronic Materials

	General SiO	High ICE SiO	Nano Si/C
Structure			
Application (main)	P/T, EV	EV, P/T	EV, IT
Dosage (%)	1~3 %	4~10 %	Under development
Business Stage	Mass Production	Mass Production	Pilot & R&D Stage
Characteristics	Price competitiveness Applied to EV batteries due to good cycle life	Excellent low expansion, long cycle life, and high output characteristics, suitable for EV batteries	Outstanding efficiency and capacity High production cost
Product Series	DSO	DMSO Gen #1~4	DMSO Gen #5~6

DMSO Technology

DMSO shows ideal Si-silicate matrix, and prevents the formation of irreversible product intrinsically during charging & discharging process.

- Adding metal causes specially-designed Si/Silicate matrix, and the matrix prevents further efficiency loss during initial cycle.
- Substance patents are secured: **IP free**



For more information please reach out to mobility@nagase.eu

NAGASE (EUROPA) GmbH
Werdener Strasse 4, 40227 Düsseldorf, Germany, Tel: +49 (0)211 86620 0