



QSI-Nano® Manganese

NANO MANGANESE

QSI-Nano® manganese nanopowder is manufactured by a patented vapor condensation process. Average particle sizes from 20 to 50 nanometers can be produced with independent control of the manganese oxide coating from 0.5 to 1.5 nanometer thickness.

QSI-Nano® Manganese Specifications

Chemical Formula	Mn (core) / Mn ₃ O ₄ (shell)
Crystal Phase	FCC / amorphous
Particle Size Range	20 – 50 nm
Oxide Thickness Range	≥ 0.5nm
Specific Surface Area (BET)	20 – 35 m ² /g
Color	Black
Bulk Density	0.72 g/cm ³
Mn Density	7.3 g/cm ³
Mn ₃ O ₄ Density	4.86 g/cm ³
T _{melt} of Mn	1246 °C

Custom Formulation and Production

Depending on a customer's specific application and needs, QSI offers nano manganese as a dry, unfunctionalized powder, or dispersed in a selected carrier fluid.

Pricing Information

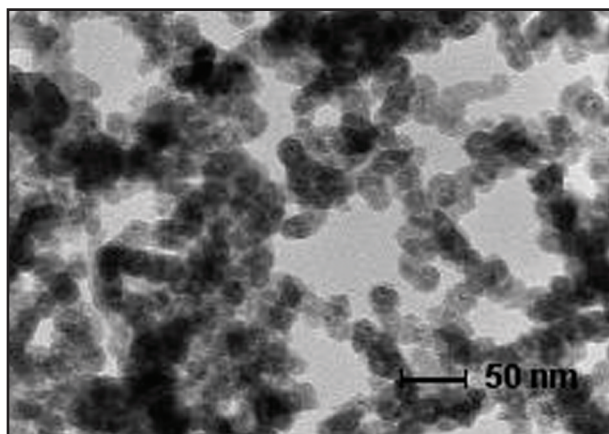
Call for a quote. Prices are subject to change without notice. Delivery time and shipping charges will be quoted at time of order.

Quotes, Orders and Information

Call 714-545-NANO (6266) to speak with a product specialist or visit us online at www.qsinano.com.



QSI-Nano® manganese powder



QSI-Nano® manganese is available in sizes ranging from 20 to 50 nanometers. Manganese content is controlled by oxide thickness and can range from 30% wt. to 90% wt.

QSI-Nano® Manganese Applications

ADVANCED APPLICATIONS	QSI-Nano® ADVANTAGES
Electrodes and Capacitors <ul style="list-style-type: none"> • Batteries • Fuel Cells • Water Electrolysis • Capacitors 	High surface area and greater surface energy combine to produce significant increase in reactivity.
Chemical Catalysis <ul style="list-style-type: none"> • Oxidation Reactions 	Increased product yield, increased product selectivity.
Separation <ul style="list-style-type: none"> • Ion Adsorption 	Increased available surface area, increased adsorption.

Disclosure: QuantumSphere, Inc. makes no guarantee of results and assumes no liability for injuries, damages or penalties resulting from the use of our products, as the conditions of handling and use are beyond our control. In purchasing or receiving these products, the customer acknowledges that there are hazards associated with their use. The Customer represents and warrants to us that from customer's own independent review and study it is fully aware and knowledgeable about (a) the health and safety hazards associated with the handling of the products purchased; (b) industrial hygiene controls necessary to protect its workers from such health and safety hazards; (c) the need to adequately warn of health and safety hazards associated with these products; and (d) government regulations regarding the use and exposure to such products. These products are exported from the United States in accordance with the Export Administration Regulations. Diversion contrary to U.S. law is prohibited.

Avoid contact with skin and eyes. Avoid breathing dust. Use only with adequate ventilation. Always use Neoprene or Nitrile protective gloves and safety glasses. NIOSH certified respirators are recommended and will be useful for protecting workers from nanoparticle inhalation when opening/emptying containers or processing this material. Do not eat or drink in work area. Wash in soap and water after exposure to any dust. Refer to MSDS prior to handling this material.

QuantumSphere, Inc.

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