

# Certificate of Analysis

## Manganese Oxide Nanoparticles

- [Product Information](#)
- [Physicochemical Information](#)
- [Toxicological Information](#)
- [Safety Information according to GHS](#)
- [Safety Information](#)
- [Storage and Shipping Information](#)
- [Transport Information](#)
- [Specifications](#)
- [Key Spec Table](#)
- [Pricing & Availability](#)
- [Global Trade Item Number](#)


### Key Spec Table

CAS #	EC Number	Hill Formula	Chemical Formula	Molar Mass	
1313-13-9	215-202-6	MnO <sub>2</sub>	MnO <sub>2</sub>	86.94 g/mol	

### Pricing & Availability

Catalogue Number	Availability	Packaging	Qty/Pack	Price	Quantity		
1059571000	—	Glass bottle	1 kg	Upon Order Completion More Information	—		
1059579025	—	Fibre carton	25 kg	Upon Order Completion More Information	—		

<b>Description</b>		
<b>Catalogue Number</b>	105957	
<b>Synonyms</b>	Manganese dioxide, Pyrolusite	
<b>Description</b>	Manganese(IV) oxide	
<b>Product Information</b>		
<b>CAS number</b>	1313-13-9	
<b>EC index number</b>	025-001-00-3	
<b>EC number</b>	215-202-6	
<b>Hill Formula</b>	MnO <sub>2</sub>	
<b>Chemical formula</b>	MnO <sub>2</sub>	
<b>Molar Mass</b>	86.94 g/mol	
<b>HS Code</b>	2602 00 90	

<b>Physicochemical Information</b>		
<b>Density</b>	5.28 g/cm <sup>3</sup> (20 °C)	
<b>Bulk density</b>	600 - 800 kg/m <sup>3</sup>	
<b>Solubility</b>	<0.001 g/l insoluble	
<b>Toxicological Information</b>		
<b>LD 50 oral</b>	LD50 Rat > 3478 mg/kg	
<b>Safety Information according to GHS</b>		
<b>Hazard Pictogram(s)</b>		
<b>Hazard Statement(s)</b>	H302 + H332: Harmful if swallowed or if inhaled. H373: May cause damage to organs through prolonged or repeated exposure if inhaled.	
<b>Precautionary Statement(s)</b>	P260: Do not breathe dust. P264: Wash skin thoroughly after handling. P271: Use only outdoors or in a well-ventilated area. P301 + P312: IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. P304 + P340 + P312: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell. P314: Get medical advice/ attention if you feel unwell.	

<b>Safety Information according to GHS</b>		
<b>Signal Word</b>	Warning	
<b>RTECS</b>	OP0350000	
<b>Storage class</b>	10 - 13 Other liquids and solids	
<b>WGK</b>	WGK 2 obviously hazardous to water	
<b>Disposal</b>	22 Inorganic peroxides and oxidants as well as bromine and iodine should be rendered harmless by reduction with acidic sodium thiosulfate solution (Cat. No. 106513); container D or E. Slightly soluble oxidants should be collected separately in container E or I.	
<b>Safety Information</b>		
<b>Categories of danger</b>	harmful	
<b>Storage and Shipping Information</b>		
<b>Storage</b>	Store at +2°C to +30°C.	
<b>Transport Information</b>		
<b>Declaration (railroad and</b>	Kein Gefahrgut	

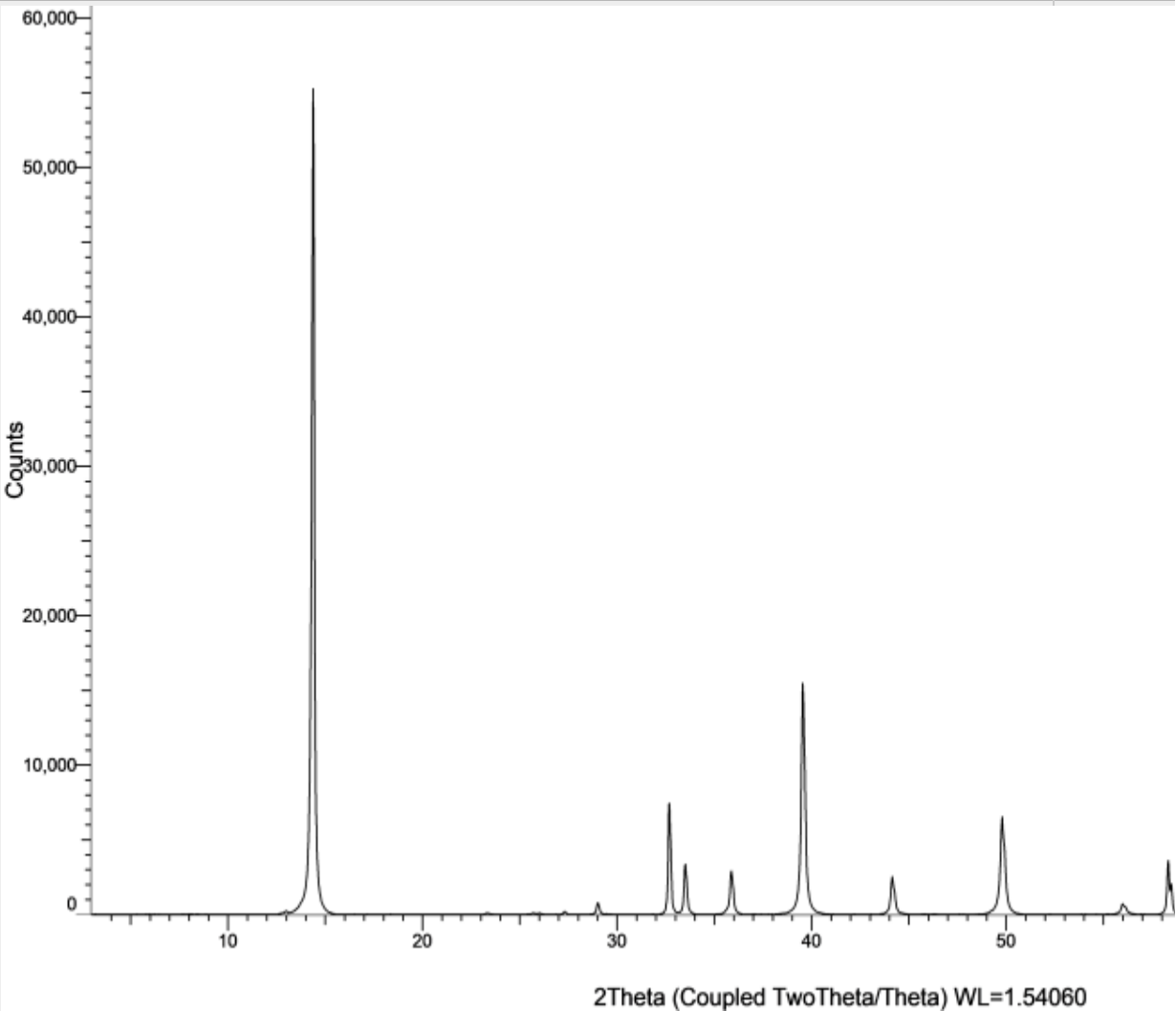
<b>Transport Information</b>		
<b>road) ADR, RID</b>		
<b>Declaration (transport by air) IATA-DGR</b>	No Dangerous Good	
<b>Declaration (transport by sea) IMDG- Code</b>	No Dangerous Good	
<b>Specifications</b>		
<b>Assay (manganometric)</b>	$\geq 89.0 \%$	
<b>Substances insoluble in hydrochloric acid</b>	$\leq 5.0 \%$	
<b>Sulfate (SO<sub>4</sub>)</b>	$\leq 0.1 \%$	
<b>Ba (Barium)</b>	$\leq 1.0 \%$	
<b>Ca (Calcium)</b>	$\leq 1.0 \%$	
<b>Fe (Iron)</b>	$\leq 1.5 \%$	

Specifications

Loss on Drying (105 °C)

≤ 0.3 %

Particle Size XRD



Size by XRD 20nm

## SEM

