



# Technical Data Sheet

## PRODUCT INFORMATION

|                  |                                          |
|------------------|------------------------------------------|
| Product Name     | $\beta$ -Manganese Dioxide               |
| Synonym          | Pyrolusite<br>Manganese(IV) Oxide - Beta |
| CAS Number       | 1313-13-9, 301678-04-6                   |
| Formula          | MnO <sub>2</sub>                         |
| Molecular Weight | 86.94 g/mol                              |

## PRODUCT PROPERTIES

|                              |                                    |
|------------------------------|------------------------------------|
| Purity (XRF analysis)        | > 99.5%                            |
| Particle size (TEM analysis) | Mix of NPs, needles and micro rods |

### Supply form 1

|                    |        |
|--------------------|--------|
| Appearance (form)  | Powder |
| Appearance (color) | Black  |

### Supply form 2

|                    |              |
|--------------------|--------------|
| Appearance (form)  | Dispersion   |
| Appearance (color) | Black        |
| Solvent            | Water        |
| Concentration      | 1% to 15% wt |

*For concentration > 15% wt or for dispersions in different solvents please contact [Technical Support](#)*



## ANALYSIS

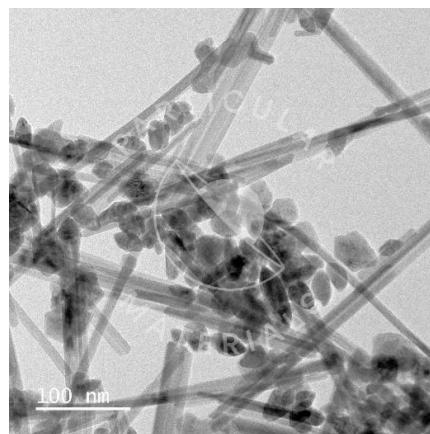
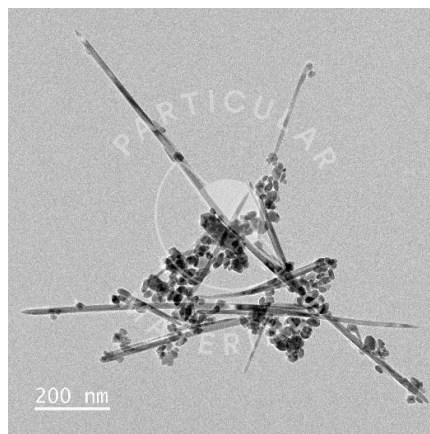
### TEM

Mix of NPs, needles and micro rods:

NPs:  $30 \pm 10$  nm

Needles:  $300 \pm 200$  nm (length),  $15 \pm 4$  nm (width)

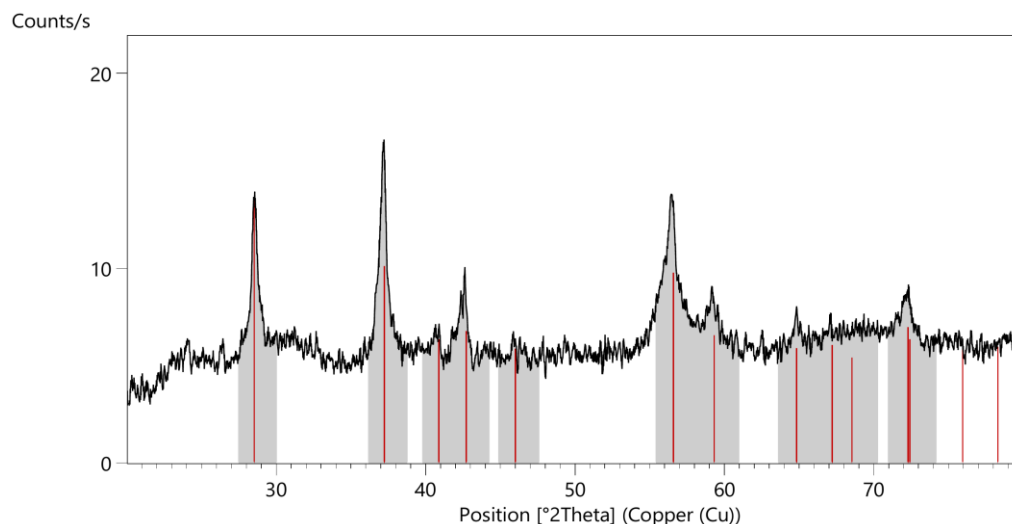
Micrometric rods:  $1.0 \pm 0.5$   $\mu$ m (length),  $150 \pm 60$  nm (width)



### XRD

ICSD: 98-007-3716

Manganese(IV) Oxide - Beta





## **QUALITY CONTROL**

When stored as recommended, most nanoparticles are stable for 6 months to > 1 year. Be sure to visually inspect your materials before each use. If there are any visible particulates floating in the solution, if the color of the solution has changed, or if the color intensity has decreased, the nanoparticles may have aggregated. These materials should be analyzed via UV-Visible spectroscopy, DLS, or TEM for quality verification.

## **HANDLING NANOPARTICLE COLLOIDS**

Shake prior to use. During storage the nanoparticles may settle to the bottom. Resuspend the settled nanoparticles by vigorously shaking the bottle until the solution is homogenous.

## **HANDLING DRY NANOPOWDERS**

Storage away from excess moisture and humidity is recommended until the materials are ready for use or redispersion.

## **QUESTIONS & SUPPORT**

If you have any questions, please don't hesitate to contact us by email at [we.are@particularmaterials.com](mailto:we.are@particularmaterials.com).