# SAFETY DATA SHEET

according to Regulation (EC) No 1907/2006 (REACH) as amended

## Manganese(IV) oxide

<table>
<thead>
<tr>
<th>Creation date</th>
<th>12. September 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision date</td>
<td>1.0</td>
</tr>
</tbody>
</table>

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

1. **Product identifier**
   - **Substance / mixture**: Manganese(IV) oxide
   - **Chemical name**: manganese dioxide
   - **CAS number**: 1313-13-9
   - **Index number**: 025-001-00-3
   - **EC (EINECS) number**: 215-202-6

2. **Relevant identified uses of the substance or mixture and uses advised against**
   - **Substance's intended use**: Chemical production, analytical chemistry, laboratory synthesis, industrial applications.
   - **Substance uses advised against**: The product should not be used in ways other than those referred in Section 1.

3. **Details of the supplier of the safety data sheet**
   - **Name or trade name**: Ing. Petr Švec - PENTA s.r.o.
   - **Address**: Radiová 1122/1, Praha 10, 102 00 Czech Republic
   - **Identification number (CRN)**: 02096013
   - **VAT Reg No**: CZ02096013
   - **Phone**: +420 226 060 681
   - **E-mail**: info@pentachemicals.eu
   - **Web address**: www.pentachemicals.eu

4. **Emergency telephone number**
   - **National Health Service (NHS)**: 111
   - **National poisoning information centre Scotland, NHS 24**: 111

### SECTION 2: Hazards identification

2.1. **Classification of the substance or mixture**
   - **Classification of the substance in accordance with Regulation (EC) No 1272/2008**
     - **Acute Tox. 4, H302+H332**

     Full text of all classifications and hazard statements is given in the section 16.

**Most serious adverse effects on human health and the environment**
- Harmful if swallowed or if inhaled.

2.2. **Label elements**
   - **Hazard pictogram**
   - **Signal word**: Warning

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according to Regulation (EC) No 1907/2006 (REACH) as amended
Manganese(IV) oxide

Dangerous substance
manganese dioxide (Index: 025-001-00-3; CAS: 1313-13-9)

Hazard statements
H302+H332 Harmful if swallowed or if inhaled.

Precautionary statements
P261 Avoid breathing dust.

2.3. Other hazards
Substance does not meet the criteria for PBT or vPvB in accordance with Annex XIII of Regulation (EC) No. 1907/2006 (REACH) as amended.

SECTION 3: Composition/information on ingredients
3.1. Substances
Chemical characterization
The substance specified below.

<table>
<thead>
<tr>
<th>Identification numbers</th>
<th>Substance name</th>
<th>Content in % weight</th>
<th>Classification according to Regulation (EC) No 1272/2008</th>
<th>Note.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index: 025-001-00-3</td>
<td>substance main component manganese dioxide</td>
<td>&gt;90</td>
<td>Acute Tox. 4, H302, H332</td>
<td></td>
</tr>
<tr>
<td>CAS: 1313-13-9</td>
<td></td>
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<td></td>
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<td>EC: 215-202-6</td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Full text of all classifications and hazard statements is given in the section 16.

SECTION 4: First aid measures
4.1. Description of first aid measures
Take care of your own safety. If any health problems are manifested or if in doubt, inform a doctor and show him information from this safety data sheet. If unconscious, put the person in the stabilized (recovery) position on his side with his head slightly bent backwards and make sure that airways are free; never induce vomiting. If the person vomits by himself, make sure that the vomit is not inhaled. In life threatening conditions first of all provide resuscitation of the affected person and ensure medical assistance. Respiratory arrest - provide artificial respiration immediately. Cardiac arrest - provide indirect cardiac massage immediately.

If inhaled
Terminate the exposure immediately; move the affected person to fresh air. Protect the person against growing cold. Provide medical treatment if irritation, dyspnoea or other symptoms persist.

If on skin
Remove contaminated clothes. Wash the affected area with plenty of water, lukewarm if possible. Soap, soap solution or shampoo should be used if there is no skin injury. Provide medical treatment if skin irritation persists.

If in eyes
Rinse eyes immediately with a flow of running water, open the eyelids (also using force if needed); remove contact lenses immediately if worn by the affected person. Rinsing should continue at least for 10 minutes.

If swallowed
DO NOT INDUCE VOMITING! Rinse out the mouth with water and provide 2-5 dL of water. Provide medical treatment.

4.2. Most important symptoms and effects, both acute and delayed
If inhaled
Cough, headache.

If on skin
Not expected.

If in eyes
Not expected.

If swallowed
Irritation, nausea.

4.3. Indication of any immediate medical attention and special treatment needed
Symptomatic treatment.
SAFETY DATA SHEET
根据《EC》第1907/2006号（REACH）规定修订
Manganese(IV) oxide

SECTION 5: Firefighting measures
5.1. Extinguishing media
Suitable extinguishing media
Alcohol-resistant foam, carbon dioxide, powder, water spray jet, water mist.

Unsuitable extinguishing media
Water - full jet.

5.2. Special hazards arising from the substance or mixture
In the event of fire, carbon monoxide, carbon dioxide and other toxic gases may arise. Inhalation of hazardous degradation (pyrolysis) products may cause serious health damage.

5.3. Advice for firefighters
Self-Contained Breathing Apparatus (SCBA) with a chemical protection suit only where personal (close) contact is likely. Use a self-contained breathing apparatus and full-body protective clothing. Do not allow run-off of contaminated fire extinguishing material to enter drains or surface and ground water.

SECTION 6: Accidental release measures
6.1. Personal precautions, protective equipment and emergency procedures
Use personal protective equipment for work. Follow the instructions in the Sections 7 and 8. Do not inhale dust. Prevent contact with skin and eyes.

6.2. Environmental precautions
Prevent contamination of the soil and entering surface or ground water.

6.3. Methods and material for containment and cleaning up
Place the product mechanically in an appropriate manner. Dispose of the collected material according to the instructions in the section 13.

6.4. Reference to other sections
See the Section 7, 8 and 13.

SECTION 7: Handling and storage
7.1. Precautions for safe handling
Prevent formation of gases and vapours in concentrations exceeding the occupational exposure limits. Do not inhale dust. Prevent contact with skin and eyes. Do not eat, drink or smoke when using this product. Wash hands and exposed parts of the body thoroughly after handling. Use only outdoors or in a well-ventilated area. Use personal protective equipment as per Section 8. Observe valid legal regulations on safety and health protection.

7.2. Conditions for safe storage, including any incompatibilities
Store in tightly closed containers in cold, dry and well ventilated areas designated for this purpose. Keep container tightly closed.

Storage class
13 - Other non-combustible solids

7.3. Specific end use(s)
not available

SECTION 8: Exposure controls/personal protection
8.1. Control parameters
none

8.2. Exposure controls
Follow the usual measures intended for health protection at work and especially for good ventilation. This can be achieved only by local suction or efficient general ventilation. Do not eat, drink and smoke during work. Wash your hands thoroughly with water and soap after work and before breaks for a meal and rest.

Eye/face protection
It is not needed.

Skin protection
Hand protection: Protective gloves resistant to the product. Contaminated skin should be washed thoroughly.
Respiratory protection
Use a mask with anti-dust filter when the exposition limits of the substances are exceeded or at the place with insufficient ventilation.

Thermal hazard
Not available.

Environmental exposure controls
Observe usual measures for protection of the environment, see Section 6.2.

SECTION 9: Physical and chemical properties
9.1. Information on basic physical and chemical properties
Appearance
- Physical state: solid at 20°C
- color: grey
- Odour: without fragrance
- Odour threshold: data not available
- pH: data not available
- Melting point/freezing point: 535 °C
- Initial boiling point and boiling range: data not available
- Flash point: data not available
- Evaporation rate: non-applicable
- Flammability (solid, gas): data not available
- Upper/lower flammability or explosive limits: data not available
- Vapour pressure: data not available
- Vapour density: data not available
- Relative density: data not available
- Solubility(ies)
  - solubility in water: data not available
  - solubility in fats: data not available
- Partition coefficient: n-octanol/water: data not available
- Auto-ignition temperature: data not available
- Decomposition temperature: data not available
- Viscosity: data not available
- Explosive properties: data not available
- Oxidising properties: data not available

9.2. Other information
- Density: 5.026 g/cm³
- ignition temperature: data not available

SECTION 10: Stability and reactivity
10.1. Reactivity
The substance is non-flammable.

10.2. Chemical stability
The product is stable under normal conditions.

10.3. Possibility of hazardous reactions
Unknown.
10.4. Conditions to avoid
The product is stable and no degradation occurs under normal use. Protect against flames, sparks, overheating and against frost.

10.5. Incompatible materials
Protect against strong acids, bases and oxidizing agents.

10.6. Hazardous decomposition products
Not developed under normal uses. Dangerous outcomes such as carbon monoxide and carbon dioxide are formed at high temperature and in fire.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
No toxicological data is available for the substance.

Acute toxicity
Harmful if swallowed or if inhaled.

Skin corrosion/irritation
Based on available data the classification criteria are not met.

Serious eye damage/irritation
Based on available data the classification criteria are not met.

Respiratory or skin sensitisation
Based on available data the classification criteria are not met.

Germ cell mutagenicity
Based on available data the classification criteria are not met.

Carcinogenicity
Based on available data the classification criteria are not met.

Reproductive toxicity
Based on available data the classification criteria are not met.

Toxicity for specific target organ - single exposure
Based on available data the classification criteria are not met.

Toxicity for specific target organ - repeated exposure
Based on available data the classification criteria are not met.

Aspiration hazard
Inhalation of solvent vapors above values exceeding exposure limits for working environment may result in acute inhalation poisoning, depending on the level of concentration and exposure time. Based on available data the classification criteria are not met.

SECTION 12: Ecological information

12.1. Toxicity

Acute toxicity
Based on available data the classification criteria are not met.

12.2. Persistence and degradability
Data not available.
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12.3. Bioaccumulative potential
Not available.

12.4. Mobility in soil
Not available.

12.5. Results of PBT and vPvB assessment
Product does not contain any substance meeting the criteria for PBT or vPvB in accordance with the Annex XIII of Regulation (EC) No 1907/2006 (REACH) as amended.

12.6. Other adverse effects
Not available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Hazard of environmental contamination; dispose of the waste in accordance with the local and/or national regulations. Proceed in accordance with valid regulations on waste disposal. Any unused product and contaminated packaging should be put in labelled containers for waste collection and submitted for disposal to a person authorised for waste removal (a specialized company) that is entitled for such activity. Do not empty unused product in drainage systems. The product must not be disposed of with municipal waste. Empty containers may be used at waste incinerators to produce energy or deposited in a dump with appropriate classification. Perfectly cleaned containers can be submitted for recycling.

Waste management legislation

SECTION 14: Transport information

14.1. UN number
Not subject to ADR

14.2. UN proper shipping name
not available

14.3. Transport hazard class(es)
not available

14.4. Packing group
not available

14.5. Environmental hazards
not available

14.6. Special precautions for user
Reference in the Sections 4 to 8.

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code
not available

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.2. Chemical safety assessment
not available
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### SECTION 16: Other information

#### A list of standard risk phrases used in the safety data sheet

- **H302** Harmful if swallowed.
- **H332** Harmful if inhaled.
- **H302+H332** Harmful if swallowed or if inhaled.

#### Guidelines for safe handling used in the safety data sheet

- **P261** Avoid breathing dust.

#### Other important information about human health protection

The product must not be - unless specifically approved by the manufacturer/importer - used for purposes other than as per the Section 1. The user is responsible for adherence to all related health protection regulations.

### Key to abbreviations and acronyms used in the safety data sheet

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>ADR</td>
<td>European agreement concerning the international carriage of dangerous goods by road</td>
</tr>
<tr>
<td>BCF</td>
<td>Bioconcentration Factor</td>
</tr>
<tr>
<td>CAS</td>
<td>Chemical Abstracts Service</td>
</tr>
<tr>
<td>CLP</td>
<td>Regulation (EC) No 1272/2008 on classification, labelling and packaging of substance and mixtures</td>
</tr>
<tr>
<td>DNEL</td>
<td>Derived no-effect level</td>
</tr>
<tr>
<td>EC</td>
<td>Identification code for each substance listed in EINECS</td>
</tr>
<tr>
<td>EC50</td>
<td>Concentration of a substance when it is affected 50% of the population</td>
</tr>
<tr>
<td>EINECS</td>
<td>European Inventory of Existing Commercial Chemical Substances</td>
</tr>
<tr>
<td>EmS</td>
<td>Emergency plan</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>IATA</td>
<td>International Air Transport Association</td>
</tr>
<tr>
<td>IBC</td>
<td>International Code For The Construction And Equipment of Ships Carrying Dangerous Chemicals</td>
</tr>
<tr>
<td>IC50</td>
<td>Concentration causing 50% blockade</td>
</tr>
<tr>
<td>ICAO</td>
<td>International Civil Aviation Organization</td>
</tr>
<tr>
<td>IMDG</td>
<td>International Maritime Dangerous Goods</td>
</tr>
<tr>
<td>INCI</td>
<td>International Nomenclature of Cosmetic Ingredients</td>
</tr>
<tr>
<td>ISO</td>
<td>International Organization for Standardization</td>
</tr>
<tr>
<td>IUPAC</td>
<td>International Union of Pure and Applied Chemistry</td>
</tr>
<tr>
<td>LC50</td>
<td>Lethal concentration of a substance in which it can be expected death of 50% of the population</td>
</tr>
<tr>
<td>LD50</td>
<td>Lethal dose of a substance in which it can be expected death of 50% of the population</td>
</tr>
<tr>
<td>LOAEC</td>
<td>Lowest observed adverse effect concentration</td>
</tr>
<tr>
<td>LOAEL</td>
<td>Lowest observed adverse effect level</td>
</tr>
<tr>
<td>log Kow</td>
<td>Octanol-water partition coefficient</td>
</tr>
<tr>
<td>MARPOL</td>
<td>International Convention for the Prevention of Pollution From Ships</td>
</tr>
<tr>
<td>NOAEC</td>
<td>No observed adverse effect concentration</td>
</tr>
<tr>
<td>NOAEL</td>
<td>No observed adverse effect level</td>
</tr>
<tr>
<td>NOEC</td>
<td>No observed effect concentration</td>
</tr>
<tr>
<td>NOEL</td>
<td>No observed effect level</td>
</tr>
<tr>
<td>OEL</td>
<td>Occupational Exposure Limits</td>
</tr>
<tr>
<td>PBT</td>
<td>Persistent, Bioaccumulative and Toxic</td>
</tr>
<tr>
<td>PNEC</td>
<td>Predicted no-effect concentration</td>
</tr>
<tr>
<td>ppm</td>
<td>Parts per million</td>
</tr>
<tr>
<td>REACH</td>
<td>Registration, Evaluation, Authorisation and Restriction of Chemicals</td>
</tr>
<tr>
<td>RID</td>
<td>Agreement on the transport of dangerous goods by rail</td>
</tr>
<tr>
<td>UN</td>
<td>Four-figure identification number of the substance or article taken from the UN Model Regulations</td>
</tr>
<tr>
<td>UVCB</td>
<td>Substances of unknown or variable composition, complex reaction products or biological materials</td>
</tr>
<tr>
<td>VOC</td>
<td>Volatile organic compounds</td>
</tr>
</tbody>
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vPvB Very Persistent and very Bioaccumulative

Acute Tox. Acute toxicity

**Training guidelines**
Inform the personnel about the recommended ways of use, mandatory protective equipment, first aid and prohibited ways of handling the product.

**Recommended restrictions of use**
not available

**Information about data sources used to compile the Safety Data Sheet**

**More information**
Classification procedure - calculation method.

**Statement**
The safety data sheet provides information aimed at ensuring safety and health protection at work and environmental protection. The provided information corresponds to the current status of knowledge and experience and complies with valid legal regulations. The information should not be understood as guaranteeing the suitability and usability of the product for a particular application.