



Material Safety Data Sheet

Manganese Dioxide

Edition: 12/11/2015

In compliance with Regulation (EC)1907/2006,
Regulation (EC) 1272/2008 and Regulation (EC) 2015/830

1) Identification of substance/preparation and of the company undertaking

Material Manganese Dioxide
Synonyms Mangalox, Manganese Ore
Reach No. See section 3
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1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Use of the substance/preparation:

Substance used as such, in formulation or in formulation of products such as:

- Refractories
- Glass
- Ceramics
- Steel industries
- Water filtration

1.2.2. Uses advised against

None
full text of use descriptors: see section 16.

2) Hazard Identification

2.1. Classification of the substance or mixture

Depending on the type of handling and use (e.g. grinding, drying etc.), airborne respirable crystalline silica may be generated. Prolonged and/or massive inhalation of respirable crystalline silica dust may cause lung fibrosis, commonly referred to as silicosis. Principal symptoms of silicosis are cough and breathlessness. Occupational exposure to respirable crystalline silica dust should be monitored and controlled.

2.2 Label Elements



Signal word: Warning

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Serious eye damage/eye irritation. Category 2 – H319

Hazard Statements

H319: Causes serious eye irritation

Precautionary Statements

P264: Wash hands thoroughly after handling

P280: Wear protective gloves/protective clothing/eye protection/face protection

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P337+ P313: If eye irritation persists get medical advice/attention

Full text of H-phrases: see section 16

2.3. Other hazards

None

3) Composition/information on ingredients.

Chemical nature: Substance containing a main component

Impurities: Quartz (fine fraction)

Chemical Name	EC-No	CAS-No.	Weight %	Classification (1272/2008/EC)	Reach Registration Number
Naturally occurring substance Manganese Ore	310-127-6	999999-99-4	90-100	Eye Irrit. 2 H319	Exempted
Quartz (fine fraction)	238-878-4	14808-60-7	<1	STOT RE 1 H372	Exempted

Full text of H phrases/statements: see section 16

4) First Aid Measures

4.1. Description of first aid measures

Inhalation	Move the exposed person to fresh air at once. Get medical attention if any discomfort continues.
Ingestion	Rinse mouth thoroughly. Get medical attention if any discomfort continues.
Eyes	Make sure to remove any contact lenses from the eyes before rinsing. Rinse eye with water immediately. Get medical attention if any discomfort continues.
Skin	Wash skin with soap and water. Get medical attention if irritation persists after washing.

4.2. Most important symptoms and effects, both acute and delayed

Inhalation:	May cause coughing
Ingestion:	May cause indigestion
Skin contact:	No specific symptoms noted.
Eye contact:	May cause acute redness of the eyes

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5) Fire Fighting

5.1. Extinguishing media

Suitable extinguishing media:	Powder. CO2. Sand.
Unsuitable extinguishing media:	None

5.2. Special hazards arising from the substance or mixture

Fire hazard:	Not flammable.
Explosion hazard:	No explosive properties known.
Reactivity:	Stable under normal conditions of handling and storage.

5.3. Advice for firefighters

Protection during firefighting:	No specific fire fighting procedures given.
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6) Accidental Release

6.1. Personal precautions, protective equipment and emergency procedures

General measures: Keep public away from danger area. See section 8.2.

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent entry to sewers and soil. Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up: Sweep or shovel spills into appropriate container for disposal. Avoid dust production.

6.4. Reference to other sections

See section 8 and 13 for more information.

7) Handling/Storage

7.1. Precautions for safe handling

Precautions for safe handling: Do not breathe dust. Wash hands plentifully and other exposed areas with water after handling. Remove contaminated clothing and shoes. Wash clothing before re-using.

Packagings: Even those that have been emptied, will retain product residue. Always obey safety warnings and handle empty packages as if they were full. Avoid all contact with this substance.

Hygiene measures: When using do not eat, drink or smoke. Wash hands and other exposed areas with mild soap and water before eat, drink or smoke and when leaving work. Remove contaminated clothing and shoes.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in dry, cool, well-ventilated area. Keep away from food, drink and animal feeding stuffs.

7.3. Specific end use(s)

The identified uses for this product are detailed in section 1.2

8) Exposure Controls/Personal Protection

8.1. Control parameters

Exposure limits: Follow workplace regulatory exposure limits for all types of airborne dust (e.g. total dust, respirable dust)

Chemical Name	United Kingdom
Naturally occurring substance Manganese ore	TWA: 0.5mg/m ³ as Mn
Hausmannite	TWA: 0.5mg/m ³ as Mn
Respirable Crystalline Silica (Quartz)	TWA: 0.1mg/m ³

8.2. Exposure controls

Appropriate engineering controls: Use as far as possible in a closed system. Provide a regular control of the atmosphere. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Local exhaust and general ventilation must be adequate to meet exposure standards. Please refer to the annex (exposure scenarios).

Hand protection: Use gloves resistant to chemical products corresponding to EN 374:3. Take advice to gloves' manufacturer.

Eye protection: Wear safety glasses with side shields according EN 166.

Skin and body protection: Wear closed protective clothing.

Respiratory protection: Use respiratory protection mask according to EN 140 or EN 405 with filter type P3 according to EN 143:2000 or FFP3 according to EN 149:2001.

Environmental exposure controls: Avoid release to the environment.

9) Physical/Chemical Properties

Physical state	Solid powder
Colour	Black
Odour	Odourless
Odour threshold	N/A
pH	7 (@10% aqueous dispersion @20°C)
Relative evaporation rate (butylacetate=1)	No data available
Melting point	>1,000 °C
Freezing point	Not applicable
Boiling point	Not applicable
Flash point	Not flammable
Self ignition temperature	Not flammable
Decomposition temperature	550 ⁰ C
Flammability (solid, gas)	Not flammable
Vapour pressure	Not applicable.
Relative vapour density at 20 °C	No data available
Relative density	4.5 (water =1)
Density	No data available
Solubility	Negligible
Log Pow	Not applicable
Log Kow	Not applicable
Viscosity, kinematic	Not applicable
Viscosity, dynamic	Not applicable
Explosive properties	Not explosive.
Oxidising properties	Oxidiser
Explosive limits	Not applicable

9.2. Other information

No additional information available

10) Stability/Reactivity

10.1. Reactivity

No specific reactivity hazards associated with this product.

10.2. Chemical stability

Stable under normal conditions of handling and storage.

10.3. Possibility of hazardous reactions

Not relevant.

10.4. Conditions to avoid

Not relevant

10.5. Incompatible materials

No specific, or groups of materials, are likely to react to produce a hazardous situation.

10.6. Hazardous decomposition products

Not relevant

11) Toxicological Info**11.1. Information on toxicological effects****Acute toxicity:**

Ingestion: The acute oral LD50 of Quartz is greater than 2,000mg/kg.

Skin Contact: The acute dermal LD50 of Quartz is greater than 2,000mg/kg.

Inhalation: There is no specific acute toxicity data at doses that enable a categorical decision on the acute inhalation toxicity classification for any form of crystalline silica at 100%. Acute inhalation toxicity is not expected based on read across to an OECD compliant study, with a substance that contains 45% Cristobalite and gives no indication of lethality.

Acute toxicity	Based on available data, the classification criteria are not met
Skin corrosion/irritation	Based on available data, the classification criteria are not met
Serious eye damage/irritation	Causes serious eye irritation.
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
STOT – single exposure	Based on available data, the classification criteria are not met
STOT – repeated exposure	Based on available data, the classification criteria are not met
Aspiration hazard	Based on available data, the classification criteria are not met

12) Ecological Information**12.1. Acute fish toxicity**

Not relevant

12.2. Persistence and degradability

This product is not readily biodegradable.

12.3. Bioaccumulative potential

The product is not bioaccumulating.

12.4. Mobility in soil

Negligible.

12.5. Results of PBT and vPvB assessment

This substance/mixture does not meet the PBT or vPvB criteria of REACH, annex XIII.

12.6. Other adverse effects

None known.

13) Disposal Consideration

13.1. Waste treatment methods

Waste treatment methods: Dispose of this material and residues in accordance with local authority requirements.

Additional information: Empty packaging can have residues or dusts and are subject to proper waste disposal, as above.

Ecology - waste materials: See the European waste catalogue.

14) Transport Information

14.1. UN number

The product is not covered by international regulation on transport of dangerous goods (IMDG, IATA, ADR/RID).

14.2. UN proper shipping name

Not classified for transportation.

14.3. Transport hazard class(es)

Not classified for transportation.

14.4. Packing group

Not classified for transportation.

14.5. Environmental hazards

Other information: No environmental hazards known with this product.

14.6. Special precautions for user

Not classified for transportation.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable.

15) Regulatory Information

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

National regulatory information: No information available.

International legislation/requirements: No information available

15.2. Chemical Safety Assessment.

Exempted from REACH Registration in accordance with Annex V.7

16) Other Information

Full text of H-phrases/statements referred to under sections 2 and 3

H319: Causes serious eye irritation

H372: Causes damage to lung through prolonged or repeated exposure by inhalation

Indication of the changes made to the previous version of SDS

Date of the previous version, National occupational exposure limits, Respiratory protection

Abbreviations and acronyms:

ADN: European Agreement concerning international carriage of Dangerous goods by Inland waterways

ADR: European Agreement concerning international carriage of Dangerous goods by Road

AF: Assessment factor

BCF: Bioconcentration factor

Bw: Body weight

CAS: Chemical Abstracts Service

CLP: Classification, labelling, packaging

CSR: Chemical Safety Report

DMEL: Derived maximum effect level

DNEL: Derivative No effect Level

EC: European Community

ELV: Emission limit values

EN: European Norm

EUH: European Hazard Statement

EWC: European Waste catalogue

IATA: International Air Transport Association

ICAO: International Civil Aviation Organization

IMDG: International Maritime Dangerous Goods

LC50: Median lethal concentration

LD50: Median lethal dose

NOAEL: No-observed-adverse-effect-level

NOEC: No observed effect concentration

NOEL: No observed effect level

OEL: Operator exposure level

PBT: Persistent, bioaccumulative, Toxic

PEC: Predicted effect level

PNEC: Predicted No effect Concentration

REACH: Registration, evaluation and autorisation of chemicals

RID: Regulations concerning the international carriage of dangerous goods by rail

STEL: Short Term Exposure Limit

TWA: Time weighted average

vPvB: Very persistent, very bioaccumulative.

Training advice: Workers must be informed of the presence of crystalline silica and trained in the proper use and handling of this product as required under applicable regulations.

Social Dialogue on Respirable Crystalline Silica

A multi-sectorial social dialogue agreement on workers Health Protection through the Good Handling and Use of Crystalline Silica Products Containing it was signed on 25th April 2006. This autonomous agreement, which receives the European Commission's financial support, is based on a Good Practices Guide. The requirements of the Agreement came into

force on 25th October 2006. The Agreement was published in the Official Journal of the European Union (2006/C 279/02). The text of the Agreement and its annexes, including the Good Practices Guide, are available from <http://www.nepsi.eu> and provide useful information and guidance for the handling of products containing respirable crystalline silica. Literature references are available on request from EUROSIL, the European Association of Industrial Silica Producers.

Prolonged and/or massive exposure to respirable crystalline silica-containing dust may cause silicosis, a nodular pulmonary fibrosis caused by deposition in the lungs of fine respirable particles of crystalline silica.

In 1997, IARC (the International Agency for Research on cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However it pointed out that not all industrial circumstances, nor all crystalline silica types, were to be incriminated. (IARC Monographs on the evaluation of the carcinogenic risks of chemicals to humans, Silica, silicates dust and organic fibres, 1997, Vol 60, IARC, Lyon. France). In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits) concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. "There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis, exposed to silica dust in quarries and in the ceramic industry). Therefore preventing the onset of silicosis will also reduce the cancer risk..." (SCOEL SUM Doc 94-final, June 2003).

So there is a body of evidence supporting the fact that increased cancer risk would be limited to people already suffering from silicosis. Worker protection against silicosis should be assured by respecting the existing regulatory occupational exposure limits and implementing additional risk management measures where required (see section 16 below)

Health & Safety Executive:

Detailed reviews of the scientific evidence on the health effects of crystalline silica have been published by HSE (Health and Safety Executive, UK) in the Hazard Assessment Documents EH75/4 (2002) and EH75/5 (2003). The HSE points out on its website that "Workers exposed to fine dust containing quartz are at risk of developing a chronic and possibly severely disabling lung disease known as "silicosis". In addition to silicosis, there is now evidence that heavy and prolonged workplace exposure to dust containing crystalline silica can lead to an increased risk of lung cancer. The evidence suggests that an increased risk of lung cancer is likely to occur only in those workers who have developed silicosis". In addition to silicosis, there is now evidence that heavy and prolonged workplace exposure to dust containing crystalline silica can lead to an increased risk of lung cancer. The evidence suggests that an increased risk of lung cancer is likely to occur only in those workers who have developed silicosis.

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

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