



## ADVANCED MATERIALS

# Safety Data Sheet

**Martoxid® TM-4410; Martoxid® TM-4220; Martoxid® TM-4240; Martoxid® TM-4250**

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006  
COMMISSION REGULATION (EU) No. 2020/878

Issue Date 15/Feb/2023

Print Date 17/Feb/2023

Revision Number 1.3

Page 1 of 12

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

### 1.1. Product identifier

**Product Name:** Martoxid® TM-4410; Martoxid® TM-4220; Martoxid® TM-4240; Martoxid® TM-4250

**Chemical Name** Al<sub>2</sub>O<sub>3</sub> (surface modified)

**Pure substance/mixture** Mixture

Chemical Name	CAS Number	EC No	EU REACH registration number	(CLP) Regulation (EC 1272/2008)	Weight-%
Aluminum oxide	1344-28-1	215-691-6	01-2119529248-35-xxxx 01-2119529248-35-0017	Not classified	>99

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Thermally conductive filler

**Industrial use** --

**Professional use** --

**Consumer use** --

**Uses advised against** None known.

### 1.3. Details of the supplier of the safety data sheet

**Manufacturer** MARTINSWERK GmbH  
Kölner Strasse 110  
50127 Bergheim  
Germany  
Tel. : +49-2271-90.22.78  
Fax. : +49-2271-90.27.17

**Internet** www.hubermaterials.com

**E-mail** hubermaterials@huber.com

**1.4. Emergency telephone number** CHEMTREC: +1 800 424 9300 or International +1 703 527 3887

**Poison control center phone number** National Anti-Poison Center UK: +44 844 892 0111 (National Poisons Information Service)

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

(CLP) Regulation (EC 1272/2008) Not classified

#### Hazards identification

**Physical Hazard** Not classified

**Health Hazards** Not classified

**Environmental Hazard** Not classified

### 2.2. Label elements

**Symbols/Pictograms** None

**Signal Word** None

**Hazard Statements** This product is not classified as hazardous according to the UN GHS guideline and labeling is not required  
This material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

#### Precautionary Statements

**Prevention** Employ good industrial hygiene practice  
Wash hands thoroughly after handling

**Response** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
IF ON SKIN: Wash with plenty of soap and water  
IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing  
If swallowed, rinse mouth with water (only if the person is conscious)  
Drink plenty of water

**Storage** Keep in a dry place  
Store away from incompatible materials

**Disposal** Disposal should be in accordance with applicable regional, national and local laws and regulations.

**Additional Information:** None.

**2.3. Other hazards** No information available.

## SECTION 3: Composition/information on ingredients

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## Safety Data Sheet

Martoxid® TM-4410; Martoxid® TM-4220; Martoxid® TM-4240; Martoxid® TM-4250

Issue Date 15/Feb/2023

Print Date 17/Feb/2023

Revision Number 1.3

Page 3 of 12

3.1. Substance --

3.2. Mixture Mixture

Chemical Name	CAS Number	EC No	EU REACH registration number	(CLP) Regulation (EC 1272/2008)	Annex	Weight-%
Aluminum oxide	1344-28-1	215-691-6	01-2119529248-35 -xxxx 01-2119529248-35 -0017	Not classified	-	>99

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

**General Advice** When in doubt or if symptoms are observed, get medical advice. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**Eye Contact** In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

**Skin Contact** Wash with plenty of soap and water.

**Inhalation** If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

**Ingestion** Rinse mouth thoroughly with water.

**Aspiration hazard** Not an expected route of exposure.

**Notes to Physician** Treat symptomatically.

**4.2. Most important symptoms and effects, both acute and delayed** Dust contact with the eyes can lead to mechanical irritation. Contact with dust can cause mechanical irritation or drying of the skin.

**4.3. Indication of any immediate medical attention and special treatment needed** Treatment should be symptomatic and supportive.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

#### Suitable Extinguishing Media

Water spray (fog). Foam. Dry chemical. Carbon dioxide (CO<sub>2</sub>).

#### Unsuitable Extinguishing Media

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## Safety Data Sheet

Martoxid® TM-4410; Martoxid® TM-4220; Martoxid® TM-4240; Martoxid® TM-4250

Issue Date 15/Feb/2023

Print Date 17/Feb/2023

Revision Number 1.3

Page 4 of 12

None known.

### 5.2. Special hazards arising from the substance or mixture

None known.

### 5.3. Advice for firefighters

#### Special protective equipment for firefighters

Wear a self-contained breathing apparatus and chemical protective clothing.

#### Fire-fighting measures

In case of fire and/or explosion do not breathe fumes.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Use personal protection recommended in Section 8. Avoid dust formation. Keep unauthorized personnel away.

**For non-emergency personnel** Keep unauthorized personnel away.

**For emergency responders** Keep unauthorized personnel away. Use personal protection recommended in Section 8.

**6.2. Environmental precautions** Avoid runoff to waterways and sewers.

**6.3. Methods and material for containment and cleaning up** Methods for Containment : Prevent further leakage or spillage if safe to do so  
Methods for Clean-up : Sweep up and shovel into suitable containers for disposal

**6.4. Reference to other sections** Section 8: Exposure controls and personal protection. See Section 13 for additional waste treatment information.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Minimize dust generation and accumulation  
Provide local exhaust ventilation  
Handle in accordance with good industrial hygiene and safety practice

**7.2. Conditions for safe storage, including any incompatibilities** Store away from incompatible materials  
Keep container tightly closed and dry

**7.3. Specific end use(s)** No information available.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

Issue Date 15/Feb/2023

Print Date 17/Feb/2023

Revision Number 1.3

Page 5 of 12

## Occupational exposure limits

Aluminum oxide

ACGIH

TWA: 10 mg/m<sup>3</sup>

OSHA

TWA: 15 mg/m<sup>3</sup> total dustTWA: 5 mg/m<sup>3</sup> respirable fraction(vacated) TWA: 10 mg/m<sup>3</sup> total dust(vacated) TWA: 5 mg/m<sup>3</sup> respirable fraction

NIOSH

Not established

Austria

TWA: 5 mg/m<sup>3</sup> respirable fraction, smoke

Austria

STEL: 10 mg/m<sup>3</sup> respirable fraction, smoke

Belgium

TWA: 1 mg/m<sup>3</sup>

Bulgaria

TWA: 1.5MGM3;Respirable fraction.

10.0MGM3;Dust.

Croatia

TWA: 10 mg/m<sup>3</sup> total dust4 mg/m<sup>3</sup> respirable dust

Czech Republic

TWA: 10.0 mg/m<sup>3</sup> dust

Denmark

TWA: 5 mg/m<sup>3</sup> total2 mg/m<sup>3</sup> respirable

Estonia

TWA: 10 mg/m<sup>3</sup> total dust4 mg/m<sup>3</sup> respirable dust

Finland

TWA: 2 mg/m<sup>3</sup> Al

France

VME/VLE: 10MGM3

Germany

DFG MAK: 8-hr TWA: 4 mg/m<sup>3</sup>: haltige Stäube (alveolengängige Fraktion)[4 mg/m<sup>3</sup> : inhalable dust fraction ]1.5 mg/m<sup>3</sup> haltige Stäube (einatembare Fraktion)[1.5MGM3 : respirable dust fraction]TRGS 900 limit : 3 mg/m<sup>3</sup>: respirable; 10MG/M3 inhalable

Greece

TWA: 10 mg/m<sup>3</sup> inhalable fraction5 mg/m<sup>3</sup> respirable fraction

Hungary

TWA: 6 mg/m<sup>3</sup> respirable dust

Ireland

TWA: 10 mg/m<sup>3</sup> total inhalable dust4 mg/m<sup>3</sup> respirable dust

Ireland

30 mg/m<sup>3</sup> total inhalable dust12 mg/m<sup>3</sup> respirable dust

Italy

TWA: 1MGM3;Respirable.

Latvia

TWA: 6 mg/m<sup>3</sup> disintegration aerosol

Lithuania

TWA: 5 mg/m<sup>3</sup> Al inhalable fraction2 mg/m<sup>3</sup> Al respirable fraction

Netherlands

MAC TWA: 10 mg/m<sup>3</sup>

Norway

TWA: 10 mg/m<sup>3</sup>

Norway

STEL: 10 mg/m<sup>3</sup>

Poland

TWA: 2.5 mg/m<sup>3</sup> inhalable fraction1.2 mg/m<sup>3</sup> respirable fraction

Portugal

TWA: 10 mg/m<sup>3</sup> particulate matter containing no Asbestos and <1% Crystalline silica

Romania

TWA: 2 mg/m<sup>3</sup> aerosol3 mg/m<sup>3</sup>1 mg/m<sup>3</sup>

Romania

STEL: 5 mg/m<sup>3</sup> aerosol10 mg/m<sup>3</sup> dust3 mg/m<sup>3</sup> fume

Slovakia

TWA: 1.5 mg/m<sup>3</sup> fume1.5 mg/m<sup>3</sup>0.1 mg/m<sup>3</sup> respirable fraction 6 mg/m<sup>3</sup> total aerosol

Spain

TWA: 10 mg/m<sup>3</sup>

Sweden

TWA: 5 mg/m<sup>3</sup> total dust2 mg/m<sup>3</sup> respirable dust

Switzerland

TWA: 3 mg/m<sup>3</sup> respirable dust, smoke

Switzerland

STEL: 24 mg/m<sup>3</sup> respirable dust, smoke

United Kingdom

TWA: 10 mg/m<sup>3</sup> inhalable dust

# Safety Data Sheet

**Martoxid® TM-4410; Martoxid® TM-4220; Martoxid® TM-4240; Martoxid® TM-4250****Issue Date** 15/Feb/2023**Print Date** 17/Feb/2023**Revision Number** 1.3**Page** 6 of 124 mg/m<sup>3</sup> respirable dust**Recommended monitoring procedures**

Refer also to national guidance documents for information on currently recommended monitoring procedures

**Biological Limit Values**

None

**DNEL (Derived No Effect Level)****Aluminum oxide**

Worker - inhalative, long-term - systemic	3 mg/m <sup>3</sup>
Consumer - oral, long-term - systemic	6.22 mg/kg bw/d

**PNEC (Predicted No Effect Concentration)****Aluminum oxide**

Sewage treatment plant	20 mg/l
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**8.2. Exposure controls****Engineering Measures**

Do not handle until all safety precautions have been read and understood  
Ensure adequate ventilation, especially in confined areas  
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)  
Use exhaust ventilation to keep airborne concentrations below exposure limits  
In case of insufficient ventilation, wear suitable respiratory equipment

**Personal protective equipment****Eye/Face Protection**

Wear safety glasses with side shields (or goggles).

**Skin and Body Protection**

Wear suitable protective clothing.

**Hand protection**

For operations where prolonged or repeated skin contact may occur, impervious gloves should be worn. Wear suitable gloves tested to EN 374.

**Respiratory Protection**

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.  
Recommended filter type:  
(FFP2)  
(FFP3)

**Thermal hazards**

None known.

**Hygiene Measures**

Follow general hygiene considerations recognized as common good workplace practices  
The worker should wash daily at the end of each work shift, and prior to eating, drinking, smoking, etc

**Environmental Exposure**

Dispose of in accordance with local regulations

## Controls

**SECTION 9: Physical and chemical properties****9.1. Information on basic physical and chemical properties****Appearance:**

Physical State	Solid Powder
Color	White
Odor	Odorless
Odor Threshold	No information available
pH:	8.8 11% Water
Melting point / Freezing point	2000 °C (3632 °F) (1013 hPa)
Initial boiling point and boiling range	2980 °C (5396 °F) (1013 hPa)
Freezing Point	Not applicable
Flash Point	Not applicable Product/Substance is inorganic Solid
Evaporation Rate	Not applicable. Melting Point : > 300°C
Flammability (solid, gas)	No information available
Upper flammability limit:	--
Lower flammability limit:	--
Vapor Pressure	1 hPa (2158 °C)
Vapor Density	Not applicable Melting Point : > 300°C
Density	No data available
Relative Density	0.85
Water Solubility	Insoluble
Solubility in other solvents	No information available
Partition coefficient	No information available Not applicable Product/Substance is inorganic
Autoignition Temperature	Aluminum oxide has no potential to explode.
Decomposition Temperature	~2000 °C (> 2050 °C)
Viscosity	No information available.
Kinematic viscosity	Not applicable Solid
Dynamic viscosity	Not applicable Solid
Explosive Properties	None
Oxidizing Properties	None
Particle Size	No information available
VOC Content (%)	Not applicable

**9.2. Other information****9.2.1. Information with regard to physical hazard classes**

Not applicable

**9.2.2. Other safety characteristics**

Not applicable

**SECTION 10: Stability and reactivity****10.1. Reactivity**

No data available

Issue Date 15/Feb/2023

Print Date 17/Feb/2023

Revision Number 1.3

Page 8 of 12

10.2. Chemical stability	Stable under normal conditions
10.3. Possibility of hazardous reactions	None under normal processing
10.4. Conditions to avoid	Incompatible materials Decomposition Temperature ~ 2000 °C (> 2050°C) < / =0.3% : Al <sub>2</sub> O <sub>3</sub> , Water
10.5. Incompatible materials	Strong acids
10.6. Hazardous decomposition products	None known

## SECTION 11: Toxicological information

General Information	Users are advised to consider national Occupational Exposure Limits or other equivalent values.
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### 11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

#### Aluminum oxide

Serious eye damage/eye irritation	Non-irritant : Rabbit
Skin Corrosion/Irritation	Non-irritant : Rabbit
Mutagenicity	Based on available data, the classification criteria are not met
Reproductive Effects	No indication of effects on fertility. No indication of effects on developmental toxicity.
Target Organ Effects	Lungs
Specific target organ toxicity - Single exposure	May cause respiratory irritation
Specific target organ toxicity - Repeated exposure	May cause damage to organs through prolonged or repeated exposure if inhaled Lungs
Acute Toxicity	Based on available data, the classification criteria are not met
Chronic Toxicity	Based on available data, the classification criteria are not met.
Chronic Effects	Based on available data, the classification criteria are not met.
Respiratory Sensitization	Based on available data, the classification criteria are not met
Serious eye damage/eye irritation	Based on available data, the classification criteria are not met
Skin Corrosion/Irritation	Based on available data, the classification criteria are not met
Skin Sensitization	Based on available data, the classification criteria are not met
Mutagenicity	Based on available data, the classification criteria are not met



<b>Reproductive Effects</b>	This product does not contain any known or suspected reproductive hazards.
<b>Reproductive Toxicity</b>	Based on available data, the classification criteria are not met.
<b>Carcinogenicity</b>	This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.
<b>Specific target organ toxicity - Single exposure</b>	Based on available data, the classification criteria are not met.
<b>Specific target organ toxicity - Repeated exposure</b>	Based on available data, the classification criteria are not met.

**Information on Likely Routes of Exposure**

<b>Inhalation</b>	Do not breathe dust
<b>Ingestion</b>	Ingestion is not a likely route of exposure
<b>Skin</b>	Avoid prolonged or repeated contact with skin Contact with dust can cause mechanical irritation or drying of the skin
<b>Eyes</b>	Avoid contact with eyes Dust contact with the eyes can lead to mechanical irritation
<b>Aspiration hazard</b>	Not an expected route of exposure.

**11.2. Information on other hazards**

<b>11.2.1. Endocrine disrupting properties</b>	This product does not contain any known or suspected endocrine disruptors
<b>11.2.2. Other information</b>	Not applicable

**SECTION 12: Ecological information**

<b>12.1. Toxicity</b>	Not considered to be harmful to aquatic life
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**Aluminum oxide**

**WGK Classification (AwSV)** 1346 WGK: nwg

<b>12.2. Persistence and degradability</b>	The methods for determining biodegradability are not applicable to inorganic substances.
<b>12.3. Bioaccumulative potential</b>	Not likely to bioaccumulate.
<b>Bioconcentration factor (BCF)</b>	No data available.

Issue Date 15/Feb/2023

Print Date 17/Feb/2023

Revision Number 1.3

Page 10 of 12

**12.4. Mobility in soil** None.**12.5. Results of PBT and vPvB assessment** This substance does not meet the criteria for classification as PBT or vPvB.**12.6. Endocrine disrupting properties** This product does not contain any known or suspected endocrine disruptors

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

**Disposal Methods** Disposal should be in accordance with applicable regional, national and local laws and regulations.**Contaminated Packaging** Empty containers should be taken to an approved waste handling site for recycling or disposal. Do not reuse container.**Waste codes** Waste codes should be assigned by the user based on the application for which the product was used

#### Aluminum oxide

**WGK Classification (AwSV)** 1346 WGK: nwg

## SECTION 14: Transport information

### Mode of Transportation (Road, Water, Air, Rail)

<b>TDG -Canada</b>	Not regulated
<b>DOT</b>	Not regulated
<b>ADR</b>	Not regulated
<b>RID</b>	Not regulated
<b>ADN</b>	Not regulated
<b>IATA</b>	Not regulated
<b>IMDG/IMO</b>	Not regulated
<b>ICAO</b>	Not regulated

**14.1. UN number or ID number** None**14.1. UN number** None**14.2. UN proper shipping name** None**14.3. Transport hazard class(es)** None

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# Safety Data Sheet

Martoxid® TM-4410; Martoxid® TM-4220; Martoxid® TM-4240; Martoxid® TM-4250

Issue Date 15/Feb/2023

Print Date 17/Feb/2023

Revision Number 1.3

Page 11 of 12

- 14.4. Packing group None
- 14.5. Environmental hazards No
- 14.6. Special precautions for user Not applicable

14.7. Maritime transport in bulk according to IMO instruments  
Not applicable

## SECTION 15: Regulatory information

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

#### Global Inventories

Pure substance/mixture Mixture

Chemical Name	CAS Number	EC No	Australia (AIIIC)	Canada (DSL)	China (IECSC)	Japan	S. Korea (KECL)	Mexico	Thailand (TECI)	New Zealand	Philippines (PICCS)	Taiwan	TSCA: United States
Aluminum oxide	1344-28-1	215-691-6	Y	Y	Y	(1)-23 (ENCS)(IS HL)	KE-01012	Y	55-1-01517	Y	Y	Y	A

Legend X / Y: Complies ; A: Active ; - / N: Exempt / Not Listed

#### REACH No.

#### Aluminum oxide

EU REACH registration number 01-2119529248-35-xxxx  
01-2119529248-35-0017

Turkish KKDIK pre-registration 05-0000192736-20-0000

#### Germany

Very low solubility Not considered to be harmful to aquatic life

#### Aluminum oxide

WGK Classification (AwSV) 1346 WGK: nwg

### 15.2. Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance

## SECTION 16: Other information

#### Reason for Revision

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006 & COMMISSION REGULATION (EU) No. 2020/878

Issue Date

15/Feb/2023

Print Date

17/Feb/2023

Revision Number

1.3

HUBER

## Safety Data Sheet

Martoxid® TM-4410; Martoxid® TM-4220; Martoxid® TM-4240; Martoxid® TM-4250

Issue Date 15/Feb/2023

Print Date 17/Feb/2023

Revision Number 1.3

Page 12 of 12

**Prepared by** Huber Engineered Materials Global Regulatory Affairs  
email: regulatory.affairs@huber.com.

**(CLP) Regulation (EC 1272/2008)** Not classified

### Labeling

**Symbols/Pictograms** None

**Signal Word** None

**Hazard Statements** This product is not classified as hazardous according to the UN GHS guideline and labeling is not required. This material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

**Training Advice** Do not handle until all safety precautions have been read and understood.

### Abbreviations and acronyms

IARC (International Agency for Research on Cancer)  
IUCLID (International Uniform Chemical Information Database)  
WHMIS (Workplace Hazardous Materials Information System)  
OSHA (Occupational Safety and Health Administration of the US Department of Labor)  
TWA (Time-Weighted Average)  
CLP (The Classification, Labeling and Packaging of Substances and Mixtures Regulation (EC 1272/2008))  
PPE (Personal Protection Equipment)  
NIOSH (National Institute for Occupational Safety and Health)  
CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act)  
RQ (Reportable Quantity) (RQ/% in mixture)  
STEL (Short Term Exposure Limit)  
TLV® (Threshold Limit Value)  
DNEL (Derived No Effect Level)  
SVHC (Substances of Very High Concern)  
BOD (Biochemical oxygen demand)  
COD (Chemical oxygen demand)  
ICAO (International Civil Aviation Organization)  
IMDG (International Maritime Dangerous Goods)  
ADR (European Agreement Concerning the International Carriage of Dangerous Goods by Road)  
RID (Agreement Concerning the International Carriage of Dangerous Goods by Rail)  
IATA (International Air Transport Association)  
IMDG (International Maritime Dangerous Goods)  
DOT (Department of Transportation)  
TDG (Transport of Dangerous Goods) Canada  
PNEC (Predicted No Effect Concentration)  
SCBA (Self-Contained Breathing Apparatus) Positive Pressure  
GHS (Globally Harmonized System)  
TSCA (Toxic Substances Control Act)

### Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**End of Safety Data Sheet**