



### Martoxid® TM-2250; Martoxid® TM-2320; Martoxid® TM-2410

Prepared in accordance with GB/T 16483-2008, GB/T 24774-2009, GB 13690 – 2009, GB/T 17519–2013  
GHS (Globally Harmonized System)

Issue Date 07/Oct/2022  
Print Date 07/Oct/2022

Revision Number 1.3.2  
Page 1 of 10

## Section 1: PRODUCT AND COMPANY IDENTIFICATION

<b>Product Name:</b>	Martoxid® TM-2250; Martoxid® TM-2320; Martoxid® TM-2410
<b>Chemical Name</b>	Al <sub>2</sub> O <sub>3</sub> (surface modified)
<b>Pure substance/mixture</b>	Mixture
<b><u>Aluminum oxide</u></b>	
<b>CAS Number</b>	1344-28-1
<b>Weight-%</b>	>99
<b>Recommended Use</b>	Thermally conductive filler
<b>Recommended use:</b>	--.
<b>Uses advised against</b>	None known
<b>Company:</b>	MARTINSWERK GmbH Kölner Strasse 110 50127 Bergheim Germany Tel. : +49-2271-90.22.78 Fax. : +49-2271-90.27.17
<b>Emergency Telephone</b>	CHEMTREC China: 4001-204937 (Mandarin) Local call: +86 532 5879 2008
<b>E-mail</b>	hubermaterials@huber.com
<b>Internet</b>	www.hubermaterials.com

## Section 2: HAZARDS IDENTIFICATION

<b>GHS Classification</b>	Not classified
<b>Physical Hazard</b>	Not classified
<b>Health Hazard</b>	Not classified
<b>Environmental Hazard</b>	Not classified
<b>Label Elements</b>	
<b>Symbols/Pictograms</b>	None

**Safety Data Sheet**

Martoxid® TM-2250; Martoxid® TM-2320; Martoxid® TM-2410

Issue Date 07/Oct/2022

Print Date 07/Oct/2022

Revision Number 1.3.2

Page 2 of 10

**Signal Word** None**Precautionary Statements**

**Prevention** Do not handle until all safety precautions have been read and understood. Observe good industrial hygiene practices. Wear protective gloves/protective clothing/eye protection/face protection. Use mechanical ventilation (dilution and local exhaust) to control exposure. Avoid breathing dust.

**Response** None**Spills and Leaks** Collect spillage**Storage** Store in a dry place**Disposal** Dispose of in accordance with federal, state and local regulations**General Advice** In case of doubt or when symptoms persist, seek medical attention.**Additional Information:** None.**Section 3: COMPOSITION/INFORMATION ON INGREDIENTS****Pure substance/mixture** Mixture

Chemical Name	CAS Number	China (IECSC)	China classification	TSCA: United States	EU REACH registration number	Weight-%
Aluminum oxide	1344-28-1	Y	Not classified	A	01-2119529248-35 -xxxx  01-2119529248-35 -0017	>99

**Section 4: FIRST AID MEASURES****General Advice** In case of doubt or when symptoms persist, seek medical attention.**Eye Contact** Hold eyelids apart and flush eyes with a steady, gentle stream of water for several minutes.**Skin Contact** Wash skin with soap and water**Inhalation** IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing

HUBER

## Safety Data Sheet

Martoxid® TM-2250; Martoxid® TM-2320; Martoxid® TM-2410

Issue Date 07/Oct/2022

Print Date 07/Oct/2022

Revision Number 1.3.2

Page 3 of 10

<b>Ingestion</b>	Rinse mouth with water. Do not induce vomiting.
<b>Notes to Physician</b>	Treat symptomatically
<b>Personal Protective Equipment For First Aid Responders</b>	Wear suitable protective clothing IF exposed or concerned: Get medical advice/attention
<b>Expected acute symptoms and delayed symptoms</b>	None known

### Section 5: FIRE FIGHTING MEASURES

<b>Flammable Properties</b>	None known
<b>Suitable Extinguishing Media</b>	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
<b>Unsuitable extinguishing media:</b>	None known
<b>Specific Hazards Arising from the Chemical</b>	None known
<b>Unusual fire &amp; explosion hazards:</b>	None
<b>Protective measures:</b>	Use protective equipment that is appropriate for surrounding materials.
<b>Protective Equipment and Precautions for Firefighters</b>	Wear self-contained breathing apparatus and protective suit

### Section 6: SPILLAGE, ACCIDENTAL RELEASE MEASURES

<b>Personal Precautions</b>	Avoid dust formation. When exposed to high concentrations of airborne dust, wear a SCBA in accordance with national legislation
<b>Environmental Precautions</b>	This product does not present any particular risk to the environment. Refer to applicable national, state and local regulations prior to washing in drain.
<b>Methods for cleaning up</b>	Pick up mechanically and / or by rinsing with water. Avoid dry sweeping and use a sprinkler system or exhaust ventilation to prevent dust formation.
<b>Other Information:</b>	None known

### Section 7: HANDLING AND STORAGE

<b>Handling</b>	Avoid dust formation. Avoid breathing dust. Handle in accordance with good industrial hygiene and safety practice.
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**Storage** Store in a dry area. Keep containers closed and protect from physical damage.

## Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

**Exposure Limits** Provide adequate ventilation as well as local exhaust at critical locations

### Aluminum oxide

China	TWA: 4 mg/m <sup>3</sup> total dust
China	STEL: 8 mg/m <sup>3</sup> total dust
ACGIH	TWA: 10 mg/m <sup>3</sup>
ACGIH TLV	TWA: 1 mg/m <sup>3</sup> respirable fraction
NIOSH	Not established
OSHA	TWA: 15 mg/m <sup>3</sup> total dust
	TWA: 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

**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

<b>Eye/Face Protection</b>	Wear safety glasses with side shields (or goggles)
<b>Skin and Body Protection</b>	Wear suitable protective clothing
<b>Hand Protection</b>	Impervious gloves
<b>Respiratory Protection</b>	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
<b>Hygiene Measures</b>	Handle in accordance with good industrial hygiene and safety practice Handle in accordance with good industrial hygiene and safety practice

**Environmental Exposure Controls** Dispose of in accordance with local regulations

## Section 9: PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

#### Appearance:

<b>Physical State</b>	Solid Powder
<b>Color</b>	White
<b>Odor</b>	Odorless
<b>Odor Threshold</b>	No information available
<b>pH:</b>	8.8 11% Water
<b>Melting point / Freezing point</b>	2000 °C (3632 °F) (1013 hPa)
<b>Initial boiling point and boiling</b>	2980 °C (5396 °F) (1013 hPa)

Issue Date 07/Oct/2022

Print Date 07/Oct/2022

Revision Number 1.3.2

Page 5 of 10

range	
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
Relative Density	3.98 g/cm <sup>3</sup>
Water Solubility	Insoluble
Solubility in other solvents	No information available
Partition coefficient	Not applicable Product/Substance is inorganic
Autoignition Temperature	Aluminum oxide has no potential to explode.
Decomposition Temperature	~2000 °C (> 2050 °C)
Kinematic viscosity	Not applicable Solid
Dynamic viscosity	Not applicable Solid
Explosive Properties	None
Oxidizing Properties	None

## Section 10: STABILITY AND REACTIVITY

Stability	Stable under normal conditions
Conditions to avoid:	None known
Incompatible materials	Strong acids
Hazardous decomposition products	None under normal processing
Hazardous Reactions	None under normal processing
Hazardous polymerization:	None under normal processing

## Section 11: TOXICOLOGICAL INFORMATION

**General Information** Users are advised to consider national Occupational Exposure Limits or other equivalent values.

### Product Information

#### Information on Likely Routes of Exposure

<b>Eyes</b>	Avoid contact with eyes Dust contact with the eyes can lead to mechanical irritation
<b>Skin</b>	Avoid prolonged or repeated contact with skin

**Safety Data Sheet****Martoxid® TM-2250; Martoxid® TM-2320; Martoxid® TM-2410**

Issue Date 07/Oct/2022

Print Date 07/Oct/2022

Revision Number 1.3.2

Page 6 of 10

	Contact with dust can cause mechanical irritation or drying of the skin
<b>Inhalation</b>	Do not breathe dust
<b>Ingestion</b>	Ingestion is not a likely route of exposure
<b>Aspiration hazard</b>	Not an expected route of exposure.
<b>Symptoms</b>	Low hazard for usual industrial or commercial handling

**11.1. Information on toxicological effects****Aluminum oxide**

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

**Safety Data Sheet**

Martoxid® TM-2250; Martoxid® TM-2320; Martoxid® TM-2410

Issue Date 07/Oct/2022

Print Date 07/Oct/2022

Revision Number 1.3.2

Page 7 of 10

**Mixture versus substance information** Not applicable.

**Section 12: ECOLOGICAL INFORMATION**

**Ecotoxicity** Very low solubility. Not considered to be harmful to aquatic life.

**Persistence/Degradability:** The methods for determining biodegradability are not applicable to inorganic substances.

**Bioaccumulative Potential** Not likely to bioaccumulate.

**Partition coefficient** Not available  
**Bioconcentration factor (BCF)** No data available.  
**Mobility in soil** None.

**Results of PBT and vPvB assessment** This substance does not meet the criteria for classification as PBT or vPvB.

**Other Adverse Effects** None known

**Section 13: DISPOSAL CONSIDERATIONS**

**Waste from Residues/Unused Products** Dispose of in accordance with local regulations

**Contaminated Packaging:** Empty containers should be taken to an approved waste handling site for recycling or disposal.

**Section 14: TRANSPORT INFORMATION****Mode of Transportation (Road, Water, Air, Rail)**

DOT	Not regulated
ADR	Not regulated
RID	Not regulated
ADN	Not regulated
IATA	Not regulated
IMDG/IMO	Not regulated
ICAO	Not regulated

HUBER

## Safety Data Sheet

Martoxid® TM-2250; Martoxid® TM-2320; Martoxid® TM-2410

Issue Date 07/Oct/2022

Print Date 07/Oct/2022

Revision Number 1.3.2

Page 8 of 10

- 14.1. UN number None
- 14.2. UN proper shipping name None
- 14.3. Transport hazard class(es) None
- 14.4. Packing group None
- 14.5. Environmental hazards No
- 14.6. Special precautions for user Not applicable
- 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable

### Section 15: REGULATORY INFORMATION

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

##### Global Inventories

Chemical Name	CAS Number	EC No	EU REACH registration number	Australia (AIC)	Canada (DSL)	China (IECSC)	Japan	S. Korea (KECL)	Mexico	New Zealand	Philippines (PICCS)	Taiwan	TSCA: United States
Aluminum oxide	1344-28-1	215-691-6	01-211952924-8-35-xxxx 01-211952924-8-35-0017	Y	Y	Y	(1)-23 (ENCS)(IS HL)	KE-01012	Y	Y	Y	Y	A

##### Legend

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



## Section 16: OTHER INFORMATION

<b>Prepared by</b>	Huber Engineered Materials Global Regulatory Affairs email: regulatory.affairs@huber.com
<b>Reason for Revision</b>	GB/T 16483-2008 GB/T 24774-2009 GB 13690 – 2009 GB/T 17519–2013
<b>GHS Classification</b>	Not classified
<b>Physical Hazard</b>	Not classified
<b>Health Hazard</b>	Not classified
<b>Environmental Hazard</b>	Not classified
<b>Label Elements</b>	
<b>Symbols/Pictograms</b>	None
<b>Signal Word</b>	None
<b>Abbreviations and acronyms</b>	IARC (International Agency for Research on Cancer) IATA (International Air Transport Association) IMDG (International Maritime Dangerous Goods) IUCLID (International Uniform Chemical Information Database) WHMIS (Workplace Hazardous Materials Information System) DOT (Department of Transportation) 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) TDG (Transport of Dangerous Goods) Canada 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) SCBA (Self-Contained Breathing Apparatus) Positive Pressure GHS (Globally Harmonized System) ADR (European Agreement Concerning the International Carriage of Dangerous Goods by Road) RID (Agreement Concerning the International Carriage of Dangerous Goods by Rail) SARA (Superfund Amendments and Reauthorization Act of 1986) TSCA (Toxic Substances Control Act)

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## Safety Data Sheet

Martoxid® TM-2250; Martoxid® TM-2320; Martoxid® TM-2410

**Issue Date** 07/Oct/2022

**Print Date** 07/Oct/2022

**Revision Number** 1.3.2

**Page 10 of 10**

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**End of Safety Data Sheet**