



# Safety Data Sheet

FIRE RETARDANT ADDITIVES

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

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

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### Section 1: PRODUCT AND COMPANY IDENTIFICATION

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
<u>Aluminum oxide</u>	
CAS Number	1344-28-1
Weight-%	>99
Recommended Use	Thermally conductive filler
Company:	MARTINSWERK GmbH Kölner Strasse 110 50127 Bergheim Germany Tel. : +49-2271-90.22.78 Fax. : +49-2271-90.27.17
Emergency Telephone	CHEMTREC: 1 800 424 9300 or International +1 703 527 3887
E-mail	hubermaterials@huber.com
Internet	www.hubermaterials.com

### Section 2: HAZARDS IDENTIFICATION

GHS Classification	Not classified
Physical Hazard	Not classified
Health Hazard	Not classified
Environmental Hazard	Not classified
Label Elements	
Symbols/Pictograms	None
Signal Word	None

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### 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	REACH registration number	Weight-%
Aluminum oxide	1344-28-1	Y	Not classified	Y	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

**Ingestion** Rinse mouth with water. Do not induce vomiting.

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Notes to Physician	Treat symptomatically
Personal Protective Equipment For First Aid Responders	Wear suitable protective clothing IF exposed or concerned: Get medical advice/attention
Expected acute symptoms and delayed symptoms	None known

## Section 5: FIRE FIGHTING MEASURES

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

## Section 6: SPILLAGE, ACCIDENTAL RELEASE MEASURES

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

## Section 7: HANDLING AND STORAGE

Handling	Avoid dust formation. Avoid breathing dust. Handle in accordance with good industrial hygiene and safety practice.
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 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**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**

Impervious gloves

**Respiratory Protection**

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

**Hygiene Measures**

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:****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)

**Flash Point:**

Not applicable. Product/Substance is inorganic. Solid.

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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	0.85
Water Solubility	Insoluble
Solubility in other solvents	No information available
Partition coefficient	Not applicable Product/Substance is inorganic
Autoignition Temperature	No information available
Decomposition Temperature	~2000 °C (> 2050 °C)
Kinematic viscosity	Not applicable Solid
Dynamic viscosity	Not applicable Solid
Explosive Properties	None
Oxidizing Properties	None

No data available

## Section 10: STABILITY AND REACTIVITY

Stability	Stable under normal conditions
Conditions to avoid:	Incompatible materials Decomposition Temperature ~ 2000 °C (>2050 °C) </= 0.3% : Al <sub>2</sub> O <sub>3</sub> , Water
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.
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### Product Information

#### Information on Likely Routes of Exposure

Eyes	Avoid contact with eyes Dust contact with the eyes can lead to mechanical irritation
Skin	Avoid prolonged or repeated contact with skin Contact with dust can cause mechanical irritation or drying of the skin

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<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>	in vitro in vivo 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>	No information available
<b>Specific target organ toxicity - Repeated exposure</b>	Repeated dose toxicity Inhalation 28-d Rat NOAEL (No observed adverse effect level) 70 mg(Al)/m <sup>3</sup> Repeated dose toxicity 1- Year Rat NOAEL (No observed adverse effect level) $\geq 30$ mg Al/kg bw
<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>	Not classified.
<b>Specific target organ toxicity -</b>	Not classified.

Repeated exposure

**Section 12: ECOLOGICAL INFORMATION**

<b>Ecotoxicity</b>	Very low solubility. Not considered to be harmful to aquatic life.
<b>Persistence/Degradability:</b>	The methods for determining biodegradability are not applicable to inorganic substances.
<b>Bioaccumulative Potential</b>	Not likely to bioaccumulate.
<b>Partition coefficient</b>	Not available
<b>Bioconcentration factor (BCF)</b>	No data available.
<b>Mobility in soil</b>	None.
<b>Results of PBT and vPvB assessment</b>	This substance does not meet the criteria for classification as PBT or vPvB.
<b>Other Adverse Effects</b>	None known

**Section 13: DISPOSAL CONSIDERATIONS**

<b>Waste from Residues/Unused Products</b>	Dispose of in accordance with local regulations
<b>Contaminated Packaging:</b>	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)**

<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 None

14.2. UN proper shipping name None

14.3. Transport hazard class(es) None

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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	REACH registration number	Australia (AICS)	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)	Y	Y	Y	Y	Y	Y

#### Legend

X / Y: Complies - / N: Not Listed Exempt



**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>	International Agency for Research on Cancer (IARC) International Air Transport Association (IATA) International Maritime Dangerous Goods (IMDG) International Uniform Chemical Information Database (IUCLID) Workplace Hazardous Materials Information System (WHMIS) status and classification EPA SARA Title III Section 312 (40 CFR 370) Hazard Classification DOT (Department of Transportation) OSHA (Occupational Safety and Health Administration of the US Department of Labor) TWA - Time-Weighted Average Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) The Classification, Labeling and Packaging of Substances and Mixtures (CLP) 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) Reportable Quantity (RQ) (RQ/% in mixture) STEL - Short Term Exposure Limit TLV® - Threshold Limit Value Derived No Effect Level (DNEL) SVHC: Substances of Very High Concern for Authorization: Land transport (ADR/RID) Biochemical oxygen demand (BOD) Chemical oxygen demand (COD) ICAO (air) (IMDG) International Maritime Dangerous Goods Positive Pressure Self-Contained Breathing Apparatus (SCBA) Predicted No Effect Concentration (PNEC) Globally Harmonized System (GHS)

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**End of Safety Data Sheet**