



# Safety Data Sheet

FIRE RETARDANT ADDITIVES

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

Japan-JIS Z 7253:2012  
Occupational Safety and Health Act  
Globally Harmonized System (GHS)

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## 1. PRODUCT AND COMPANY IDENTIFICATION

<b>Product Name:</b>	Martoxid® TM-4410; Martoxid® TM-4220; Martoxid® TM-4240; Martoxid® TM-4250
<b>Chemical Name</b>	Al <sub>2</sub> O <sub>3</sub> (surface modified)
<b>Pure substance/mixture</b>	Mixture
<b>Aluminium oxide</b>	
<b>CAS Number</b>	1344-28-1
<b>Weight-%</b>	>99
<b>Recommended Use</b>	Thermally conductive filler
<b>Company:</b>	MARTINSWERK GmbH Kölner Strasse 110 50127 Bergheim Germany Tel. : +49-2271-90.22.78 Fax. : +49-2271-90.27.17
<b>Internet</b>	<a href="http://www.hubermaterials.com">www.hubermaterials.com</a>
<b>E-mail</b>	<a href="mailto:hubermaterials@huber.com">hubermaterials@huber.com</a>
<b>Emergency Telephone Number</b>	CHEMTREC: +1 800 424 9300 or International +1 703 527 3887 +81 03-3560-7316

## 2. HAZARD IDENTIFICATION

<b>Japan GHS Classification</b>	
<b>Physical Hazards</b>	Not classified
<b>Health Hazard</b>	Not classified
<b>Environmental Hazards</b>	Not classified
<b>GHS label elements</b>	
<b>Symbols/Pictograms</b>	None
<b>Signal Word</b>	None
<b>Hazard statements</b>	Based on available data, the classification criteria are not met
<b>Precautionary Statements</b>	
<b>Prevention</b>	Do not handle until all safety precautions have been read and understood.

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Employ good industrial hygiene practice

Do not breathe dust

**Response**

IF exposed or concerned: Get medical advice/attention

Wash with plenty of soap and water

**Storage**

Store away from incompatible materials.

Keep in a dry place

**Disposal**

Dispose of contents/container to an approved waste disposal plant

**Additional Information:**

None

**3. COMPOSITION/INFORMATION ON INGREDIENTS****Pure substance/mixture**

Mixture

Chemical Name	CAS Number	Japan	Japan GHS Classification	TSCA: United States	REACH registration number	Weight-%
Aluminium oxide	1344-28-1	(1)-23 (ENCS)(ISHL)	Not classified	A	01-2119529248-35 -xxxx  01-2119529248-35 -0017	>99

**4. FIRST AID MEASURES****If inhaled:**

Remove victim to fresh air and keep at rest in a position comfortable for breathing

**IF ON SKIN:**

Wash with plenty of soap and water

Take off contaminated clothing and wash before reuse

**IF IN EYES:**

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

Call a physician if irritation develops and persists

**If swallowed:**

Rinse mouth thoroughly with water

**Self-Protection of the First Aider**

Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves

**Notes to Physician**

Treat symptomatically.

**5. FIRE-FIGHTING MEASURES****Suitable Extinguishing**

Water spray (fog)

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**Media** Foam  
Dry chemical  
Carbon dioxide (CO<sub>2</sub>)

**Unsuitable Extinguishing Media** Do not use water jetstream

**Special hazards arising from the substance or mixture** Avoid dust formation

**Fire-fighting measures** In case of fire and/or explosion do not breathe fumes  
Water mist may be used to cool closed containers  
Keep unauthorized personnel away

**Special Protective Equipment for Firefighters** Wear self-contained breathing apparatus and protective suit

## 6. ACCIDENTAL RELEASE MEASURES

**Protective Equipment and Precautions for Firefighters** Avoid dust formation  
Ensure adequate ventilation  
Use personal protection recommended in Section 8  
Avoid contact with eyes and skin. Wear suitable personal protection equipment.  
Keep unauthorized personnel away

**Environmental Precautions** Keep out of drains, sewers, ditches and waterways  
Disposal considerations  
See section 13 for more information

**Methods and material for containment and cleaning up** Large Spill: Do not dry sweep dust. Wet dust with water before sweeping or use a vacuum to collect dust  
Small Spill: Vacuum or sweep material and place in a disposal container Minimize use of water during clean-up  
Recommended filter type: High efficiency particulate air filter (HEPA filter)

**Other Information** Not applicable

## 7. HANDLING AND STORAGE

### Handling

**Technical measures** Provide adequate ventilation as well as local exhaust at critical locations  
Ensure adequate ventilation  
Use personal protection equipment  
See section 8 for more information

**Advice on safe handling** Minimize dust generation and accumulation

**Conditions for safe storage, including any incompatibilities** Keep containers tightly closed in a cool, well-ventilated place

**Hygiene Measures** Wash hands thoroughly after handling

### Storage

**Packaging compatibilities** Keep/store only in original container

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<b>Exposure Limits</b>	Provide adequate ventilation as well as local exhaust at critical locations
<b>Aluminium oxide</b>	
Japan	TWA: 0.5 mg/m <sup>3</sup> (respirable dust) 2 mg/m <sup>3</sup> (total dust)
ACGIH	TWA: 10 mg/m <sup>3</sup>
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
<b>Engineering Measures</b>	Ensure adequate ventilation, especially in confined areas
<b>Personal Protective Equipment</b>	
<b>Respiratory Protection</b>	In case of inadequate ventilation wear respiratory protection
<b>Hand protection</b>	For operations where prolonged or repeated skin contact may occur, impervious gloves should be worn
<b>Eye Protection</b>	Wear safety glasses with side shields (or goggles)
<b>Skin and Body Protection</b>	Wear suitable protective clothing. Chemical resistant apron.
<b>Hygiene Measures</b>	Handle in accordance with good industrial hygiene and safety practice Wash thoroughly after handling Avoid contact with eyes and skin Do not breathe dust

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	
<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 range</b>	2980 °C (5396 °F) (1013 hPa)
<b>Flash Point:</b>	Not applicable. Product/Substance is inorganic. Solid.
<b>Evaporation Rate</b>	Not applicable Melting Point : > 300°C
<b>Flammability (solid, gas)</b>	No information available
<b>Upper flammability limit:</b>	
<b>Lower flammability limit:</b>	
<b>Vapor Pressure</b>	1 hPa (2158 °C)
<b>Vapor Density</b>	Not applicable Melting Point : > 300°C
<b>Relative Density</b>	0.85
<b>Water Solubility</b>	Insoluble
<b>Solubility in other solvents</b>	No information available Not applicable Product/Substance is inorganic
<b>Autoignition Temperature</b>	Aluminum oxide has no potential to explode.
<b>Decomposition Temperature</b>	~2000 °C (> 2050 °C)
<b>Kinematic viscosity</b>	Not applicable Solid

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Dynamic viscosity	Not applicable Solid
Explosive Properties	None
Oxidizing Properties	None

## 10. STABILITY AND REACTIVITY

Reactivity	Stable under normal conditions
Chemical stability	Stable under normal conditions
Possibility of hazardous reactions	None known
Incompatible materials	Strong oxidizing agents
Hazardous decomposition products	None known

## 11. TOXICOLOGICAL INFORMATION

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

### Information on Likely Routes of Exposure

<b>Inhalation</b>	Do not breathe dust
<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>Ingestion</b>	Ingestion is not a likely route of exposure
<b>Aspiration hazard</b>	Not an expected route of exposure.

**Symptoms** Low hazard for usual industrial or commercial handling

### 11.1. Information on toxicological effects

#### Aluminium 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</b>	Repeated dose toxicity Inhalation 28-d Rat NOAEL (No observed adverse effect

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<b>- Repeated exposure</b>	level) 70 mg(AI)/m <sup>3</sup> Repeated dose toxicity 1- Year Rat NOAEL (No observed adverse effect level) >=30 mg AI/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 - Repeated exposure</b>	Not classified.

**12. ECOLOGICAL INFORMATION**

<b>Ecotoxicity</b>	Based on available data, the classification criteria are not met
<b>Persistence and degradability</b>	No data available
<b>Bioaccumulation</b>	No data available.
<b>Mobility in soil</b>	No data available
<b>Hazardous to the ozone layer</b>	No data available

**13. DISPOSAL CONSIDERATIONS**

<b>Disposal</b>	Dispose of in accordance with federal, state and local regulations
<b>Contaminated packaging</b>	Empty containers should be taken to an approved waste handling site for recycling or disposal

**14. TRANSPORT INFORMATION**

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

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

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

## 15. REGULATORY INFORMATION

### Global Inventories

Pure substance/mixture

Mixture

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
Aluminium oxide	1344-28-1	215-691-6	01-211952 9248-35-x xxx  01-211952 9248-35-0 017	Y	Y	Y	(1)-23 (ENCS)(ISHL)	KE-01012	Y	Y	Y	Y	A

#### Legend

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

KECL - Korean Existing and Evaluated Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

TSCA (Toxic Substances Control Act)

DSL (Domestic Substance List)

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NDSL (Non-Domestic Substances List)  
 Japan - ISHL Notifiable Substances  
 ENCS - Japan Existing and New Chemical Substances

## Japan

Occupational Safety and Health Act (Industrial Safety and Health Act): This product, labor hazardous material should be notified of the names and the monitoring chemicals.

PRTR and Promotion of Chemical Management Law (PRTR Law): This like the Safety and Health Act and harmful substances, the component corresponding to the dangerous goods and hazardous substances should be displayed the name, etc.,  
 It does not include the range (wt%).

Law Concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances (CSCL): This product is a priority assessment substance of Chemical Substances Control Law, does not contain a specific chemical substance, the appropriate component in product is not a component corresponding to the first Class I Designated Chemical Substance and the second Class I Designated Chemical Substance PRTR law, within the target range (wt%) as a .

Poisonous and Deleterious Substances Control Act: This product, contains a component corresponding to the Poisonous and Deleterious Substances Control Law, but is does below the range (wt%) as a target.

Fire Service Act: This product does not contain substances at a level for restriction is not due to the Fire Defense Law.

Ship Safety Act: Not applicable.

Aviation Law: Not applicable.

## 16. OTHER INFORMATION

<b>Prepared by</b>	Huber Engineered Materials Global Regulatory Affairs email: regulatory.affairs@huber.com
<b>Reason for Revision</b>	This SDS complies with the requirements of JIS Z 7250:2010 and JIS Z 7252:2009 (Japan)
<b>Bibliography</b>	NITE GHS Classified list Japan Society for occupational health (2015) recommendation of allowable concentrations, etc. ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value
<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 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)

**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



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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**