



Safety Data Sheet

FIRE RETARDANT ADDITIVES

Martoxid® TM-3220; Martoxid® TM-3310; Martoxid® TM-3510

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

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1. PRODUCT AND COMPANY IDENTIFICATION

Product Name:	Martoxid® TM-3220; Martoxid® TM-3310; Martoxid® TM-3510
Chemical Name	Al ₂ O ₃ (surface modified)
Pure substance/mixture	Mixture
Aluminium oxide	
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
Internet	www.hubermaterials.com
E-mail	hubermaterials@huber.com
Emergency Telephone Number	CHEMTREC: +1 800 424 9300 or International +1 703 527 3887 +81 03-3560-7316

2. HAZARD IDENTIFICATION

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

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Do not breathe dust

ResponseIF 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 Media**Water spray (fog)
Foam

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Dry chemical
 Carbon dioxide (CO2)

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

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

Aluminium oxide

Japan

TWA: 0.5 mg/m³ (respirable dust)2 mg/m³ (total dust)

ACGIH

TWA: 10 mg/m³

OSHA

TWA: 15 mg/m³ total dustTWA: 5 mg/m³ respirable fraction(vacated) TWA: 10 mg/m³ total dust(vacated) TWA: 5 mg/m³ respirable fraction

Engineering Measures Ensure adequate ventilation, especially in confined areas

Personal Protective Equipment

Respiratory Protection In case of inadequate ventilation wear respiratory protection

Hand protection For operations where prolonged or repeated skin contact may occur, impervious gloves should be worn

Eye Protection Wear safety glasses with side shields (or goggles)

Skin and Body Protection Wear suitable protective clothing.
Chemical resistant apron.

Hygiene Measures 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

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.

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 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

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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

Inhalation Do not breathe dust

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

Ingestion Ingestion is not a likely route of exposure

Aspiration hazard Not an expected route of exposure.

Symptoms Low hazard for usual industrial or commercial handling

11.1. Information on toxicological effects

Aluminium oxide

Serious eye damage/eye irritation Non-irritant : Rabbit

Skin Corrosion/Irritation Non-irritant : Rabbit

Mutagenicity in vitro in vivo 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 No information available

- Single exposure

Specific target organ toxicity Repeated dose toxicity Inhalation 28-d Rat NOAEL (No observed adverse effect level) 70 mg(Al)/m³

- Repeated exposure Repeated dose toxicity 1- Year Rat NOAEL (No observed adverse effect level)

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>=30 mg Al/kg bw

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.
Serious eye damage/eye irritation	Based on available data, the classification criteria are not met
Respiratory Sensitization	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.
Reproductive Effects	This product does not contain any known or suspected reproductive hazards.
Reproductive Toxicity	Based on available data, the classification criteria are not met.
Carcinogenicity	This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.
Specific target organ toxicity - Single exposure	Not classified.
Specific target organ toxicity - Repeated exposure	Not classified.

12. ECOLOGICAL INFORMATION

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

13. DISPOSAL CONSIDERATIONS

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

14. TRANSPORT INFORMATION

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

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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)
 NDSL (Non-Domestic Substances List)
 Japan - ISHL Notifiable Substances

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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 themonitoring 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

Prepared by	Huber Engineered Materials Global Regulatory Affairs email: regulatory.affairs@huber.com
Reason for Revision	This SDS complies with the requirements of JIS Z 7250:2010 and JIS Z 7252:2009 (Japan)
Bibliography	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
Abbreviations and acronyms	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 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

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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