



SAFETY DATA SHEET

1. Identification

Product identifier
Recommended use

Exothermic Hot Tops - DS
For Industrial Use Only.
Ingot casting hot top board.

Recommended restrictions

Users should be informed of the potential presence of respirable dust and respirable crystalline silica as well as their potential hazards. Appropriate training in the proper use and handling of this material should be provided as required under applicable regulations.

Manufacturer/Supplier information

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Suite 1200 #3008
Wilmington, DE 19801
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2. Hazard(s) identification

Classification according to Regulation (EC) No 1272/2008 (CPL/GHS)

Flammable Solid	Category, H228
Skin Sensitivity	Category 1, H317
Specific Target Organ Toxicity (Repeated Exposure)	Category 1, H372

Label elements



Signal word

Danger.

Hazard Statements

Flammable solid.
Flammable liquid and vapor.
May cause an allergic skin reaction.

Precautionary statements

Do not breathe dust/fume/gas/mist/vapors/spray.
Wash hands thoroughly after handling.
Do not eat, drink, or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Avoid release into the environment.

If inhaled: remove the person to fresh air and keep comfortable for breathing.
Get medical advice/attention if you feel unwell.
Specific treatment (see health care instructions on label).
Dispose of contents/containers to an approved waste disposal plant.

Hazard(s) not otherwise Classified (HNOC)

No data available.

Supplemental information

Users should be informed of the potential presence of respirable dust and respirable crystalline silica as well as their potential hazards. Overexposure to the respirable dust of crystalline silica (quartz or cristobalite, less than or equal to 5 microns in size) may lead to silicosis in humans, which is a progressive and irreversible lung disease. Appropriate training in properly using and handling this material should be provided as required under applicable regulations.

3. Composition/information on ingredients

Substances

Not applicable.

Mixtures

This product is a mixture.

Hazardous ingredients

Chemical Name	Classification	CAS Number	%
Cristobalite	H341 H350 H372	14464-46-1	2.0 - 10.0
Aluminum Oxide	H335 H372	1344-28-1	25.0 - 50.0
Aluminum	H261 H370	7429-90-5	2.5 - 10.0
Aluminum Fluoride	H301 H361 H372	7784-18-1	2.5 - 10.0
Methenamine	H228 H317 H361 H372	100-97-0	0.1 - 1.0

Additional information

See Section 16 or the full text of the R phases or H statements declared above.

4. First-aid measures

General Advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

Inhalation

Remove from exposure and provide fresh air for the victim. In case of difficulty of inhalation, seek medical advice immediately.

Skin contact Wash off immediately with pH-neutral soap and plenty of water. Get rid of dirty clothes. Get medical attention if irritation persists. Wash off dirty close before using them again.

Eye contact Check for and remove any contact lenses. Rinse out with water with the eyelid held wide open for a minimum of 15 minutes. Cold water can be used but warm water is recommended. Get medical attention if irritation persists.

Ingestion Do NOT induce vomiting unless directed to do so by medical personnel; call for medical help. Never give anything by mouth to an unconscious person.

Most important symptoms/effects, acute and delayed

No data available.

Indication of immediate medical attention and special treatment needed

Act by following the symptoms mentioned in section 4.1.

5. Fire-fighting measures

Suitable extinguishing media Use any extinguishing media appropriate for the surrounding fires.

Unsuitable extinguishing media Water.

Specific hazards arising from the substance or mixture

In case of decomposition, silicon dioxide (SiO₂), metal oxides, and toxic or irritating gases may occur. Powders may cause explosions in the presence of ignition.

Advice for firefighters As in any fire, NSHA, NIOSH-approved self-contained breathing apparatus (SCBA) and full protective gear should be worn. Avoid the generation of dust.

6. Accidental release measures

Personal precautions, protective equipment, and emergency procedures

For non-emergency personnel Ensure adequate ventilation.
Keep dust levels to a minimum.
Keep unprotected persons away.
Avoid contact with skin, eyes, and clothing – wear suitable protective equipment (see Section 8).
Avoid inhalation of dust – ensure sufficient ventilation or suitable respiratory protective equipment is used, wear suitable protective equipment (see Section 8).
Avoid humidification.

For emergency responders Keep dust levels to a minimum.
Ensure adequate ventilation.
Keep unprotected persons away.
Avoid contact with skin, eyes, and clothing – wear suitable protective equipment (see Section 8).
Avoid inhalation of dust – ensure sufficient ventilation or suitable respiratory protective equipment is used, wear suitable protective equipment (see Section 8).

Environmental precautions Avoid humidification.
Contain spillage if safe to do so. Cover the area if possible to avoid unnecessary dust hazards. Avoid uncontrolled spills to watercourses and drains. Any large spillage into watercourses must be alerted to the Environment Agency or other regulatory body.

Methods and materials for containment and cleaning up
Collect mechanically and/or by flushing with water. Avoid dry sweeping. Use a water sprayer or ventilated vacuum system to prevent dust formation.

7. Handling and storage

Precautions for safe handling

Protective measures

Avoid dust formation. Keep away from materials that may cause heat, flame, or ignition. Do not smoke in the area. Keep in a cool, well-ventilated dry area. Wear protective equipment (refer to Section 8 of this safety data sheet).

Advice on safe handling

Avoid contact with skin and eyes. Do not wear contact lenses when handling this product. It is also advisable to have individual pocket eyewash. Keep dust levels to a minimum. Minimize dust generation. Enclose dust sources, and use exhaust ventilation (dust collector or handling points). Handling systems should preferably be enclosed. When handling bags usual precautions should be paid to the risks outlined in the Council Directive 90/269/EEC. Wear suitable NIOSH-approved respiratory equipment.

Fire prevention

This product is not flammable or combustible.

Aerosol and dust generation prevention

Good ventilation of the area minimizes the amount of dust, use dry cleaning methods.

Advice on general occupational hygiene

Avoid inhalation or ingestion and contact with skin and eyes. General occupational hygiene measures are required to ensure safe handling of the substance. These measures involve good personal and housekeeping practices (i.e. regular cleaning with suitable cleaning devices), no drinking, eating, and smoking at the workplace. Shower and change clothes at the end of the work shift. Do not wear contaminated clothing at home.

Conditions for safe storage, including any incompatibilities

Store under ventilated, dry conditions. Keep out of reach of children.

Specific end use(s)

Please check the identified uses in Table 1 of the Appendix of the SDS. For more information please see the relevant exposure scenario, available via your supplier.

8. Exposure controls/personal protection

Control parameters

<i>Product Name</i>	<i>CAS No.</i>	<i>TWA, mg/m³ ppm, 8 hr</i>	<i>STEL, mg/m³ ppm, 10 hr</i>	<i>Source</i>
Cristobalite	14464-46-1	0.05	-	NIOSH
Aluminum Oxide	1344-28-1	10.0	-	NIOSH
Aluminum	7429-90-5	10.0	5	NIOSH
Aluminum Fluoride	7784-18-1	10.0	-	NIOSH
Methenamine	100-97-0	-	-	NIOSH

US OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

<i>Components</i>	<i>Type</i>	<i>Value</i>	<i>Form</i>
Cristobalite (CAS 14464-46-1)	TWA	50 µg/m ³	Total dust
Aluminum Oxide (CAS 1344-28-1)	TWA	15 mg/m ³ 5 mg/m ³	Total dust Respirable
Aluminum (CAS 7429-90-5)	TWA	15 mg/m ³ 5 mg/m ³	Total dust Respirable

US OSHA Table Z-3 (29 CFR 1910.1000)

<i>Components</i>	<i>Type</i>	<i>Value</i>	<i>Form</i>
Cristobalite (CAS 14464-46-1)	TWA	0.15 mg/m ³ 0.05 mg/m ³ 1.2 mppcf	Total dust Respirable Respirable

US ACGIH Threshold Limit Values

<i>Components</i>	<i>Type</i>	<i>Value</i>	<i>Form</i>
Cristobalite (CAS 14464-46-1)	TWA	0.05 mg/m ³	Respirable
Aluminum Oxide (CAS 1344-28-1)	TWA	10 mg/m ³	Total dust
Aluminum (CAS 7429-90-5)	TWA	10 mg/m ³	Total dust

Exposure guidelines

To control potential exposures, the generation of dust should be avoided. Further, appropriate protective equipment is recommended. Eye protection equipment (e.g. goggles or visors) must be worn unless potential contact with the eye can be excluded by the nature and type of application (i.e. closed process). Additionally, face protection, protective clothing, and safety shoes are required to be worn as appropriate.

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Handle in

accordance with good industrial hygiene and safety practices. Wash hands before breaks and at the end of the workday.

Individual protection measures, such as personal protective equipment

Eye/face protection

Do not wear contact lenses. For powders, tight-fitting goggles with side shields, or wide-vision full goggles. It is also advisable to have individual pocket eyewash. Wear safety glasses with side shields suitable with EN 166 or NIOSH standards.

Skin protection

Minimize dermal exposure as far as technically feasible. The use of protective gloves (nitrile), protective standard working clothes fully covering skin, full-length trousers, long-sleeved overalls, with close fittings at openings, and shoes resistant to caustics and avoiding dust penetration are required to be worn.

Respiratory protection

Local ventilation to keep levels below established threshold values is recommended. A suitable particle filter mask is recommended, depending on the expected exposure levels – please check the relevant exposure scenario, given in the Appendix/available via your suppliers. Use an FFP2 type mask with EN143 standard or respirator type N99.

Thermal hazards

No data available.



Environmental exposure controls

All ventilation systems should be filtered before discharge to the atmosphere.

Avoid releasing to the environment.

Contain the spillage. Any large spillage into watercourses must be reported to the regulatory authority responsible for environmental protection or other regulatory body.

For detailed explanations of the risk management measures that adequately control exposure of the environment or the substance please check the relevant exposure scenario, available via your supplier.

9. Physical and chemical properties

Appearance

Solid.

Color

Brown.

Odor

Odorless.

Odor threshold

Not applicable.

pH (20 °C)

Not applicable.

Water solubility

Not soluble.

Viscosity

Not applicable.

Density (g/cm ³)	1.0
Partition coefficient	Not applicable.
Auto ignition temperature	340°C (644°F)
Decomposition temperature	Not applicable.
Boiling point (°C) 760 mmHg	Not applicable.
Melting point (°C) 760 mmHg	Not applicable.
Flash point	Not applicable.
Evaporation rate	Not applicable.
Flammable properties	Not applicable.
Explosive properties	Not explosive.
Oxidizing properties	No data available.
Vapor pressure	Not applicable.
Vapor density	Not applicable.
Other information	No data available.

10. Stability and reactivity

Stability	May react with water.
Conditions to avoid	Stable under ambient temperature (21°C) and pressure (760 mmHg).
Possibility of hazardous reactions	No data available.
Conditions to avoid	In high temperatures (> 125°C) polymerization may occur.
Incompatible materials	Strong acids, strong oxidizers.
Hazardous decomposition products	Silicon dioxide, metal oxides, toxic or irritating gases.

11. Toxicological information

Information on toxicological effects

ATE_{Mixture} > 2500 mg/kg (Oral)
ATE_{Mixture} > 2500 mg/kg (Dermal)
ATE_{Mixture} > 2500 mg/kg (Inhalation)

Skin corrosion/irritation May dry skin and mucous membranes.

Serious eye damage/eye irritation Slightly irritating, not classified.

Respiratory or skin sensitization Does not cause sensitization.

Germ cell mutagenicity No data available.

Carcinogenicity In 1997, IARC (the International Agency for Research on Cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However in making the overall evaluation, IARC noted that "carcinogenicity was not detected in all industrial circumstances studied. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." (IARC Monographs on the evaluation of the carcinogenic risks of chemicals to humans, Silica, silicates dust and organic fibres, 1997, Vol.

68, IARC, Lyon, France.) In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits) concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. "There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore, preventing the onset of silicosis will also reduce the cancer risk..." (SCOEL SUM Doc 94-final, June 2003) According to the current state of the art, worker protection against silicosis can be consistently assured by respecting the existing regulatory occupational exposure limits. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled. Not classifiable as to carcinogenicity to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Cristobalite (CAS 14464-46-1) 1 Carcinogenic to humans.

US National Toxicology Program (NTP) Report on Carcinogens

Cristobalite (CAS 14464-46-1) Known to be Human Carcinogen

Reproductive toxicity No data available.

Specific target organ toxicity - single exposure
No data available.

Specific target organ toxicity - repeated exposure
Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard No data available.

12. Ecological information

Ecotoxicity No ecotoxicological effect is known.

Persistence and degradability No data available.

Bio-accumulative potential No data available.

Mobility in soil No data available.

Results of PBT and vPvB assessment
No data available.

Other adverse effects No data available.

13. Disposal considerations

Waste treatment methods Disposal of this product should be in accordance with local and national legislation. Processing, use, or contamination of this product may change the waste management options. Dispose of container and unused contents in accordance with applicable member state and local requirements.

The used packaging is only meant for packing this product; it should not be reused for other purposes. After usage, empty the packaging completely.

14. Transport information

DOT	Not applicable.
UN No.	Not applicable.
UN Proper shipping name	Not applicable.
Transport hazard class(es)	Not applicable.
Packaging Group	Not applicable.
Environmental hazards	Not applicable.
Special precautions for users	Not applicable.
Transport in bulk according to Annex II of MARPOL and the IBC Code	Not applicable.

15. Regulatory information

US federal regulations	This product is not known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All chemical substances in this product are listed on the TSCA chemical substance inventory where required.
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)	Not regulated.
CERCLA Hazardous Substance List (40 CFR 302.4)	Not listed.
SARA 304 Emergency Release Notification	Not regulated.
US OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)	Not listed.
Superfund Amendments and Reauthorization Act of 1986 (SARA)	
Hazard categories	Immediate hazard - No Delayed hazard - Yes Fire hazard - No Pressure hazard - No Reactivity hazard - No
SARA 302 Extremely hazardous substance	Not listed.
SARA 311/312 Hazardous Chemical	Fire hazard, chronic health hazard, acute health hazard.
SARA 313 (TRI reporting)	

Chemical Name	CAS Number
Formaldehyde	50-00-0

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List	Not regulated.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)	Not regulated.
Safe Drinking Water Act (SDWA)	Not regulated.

US state regulations

US California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US Massachusetts RTK - Substance List

Not listed

US New Jersey Worker and Community Right-to-Know Act

Cristobalite (CAS 14464-46-1)

Aluminum (CAS 7429-90-5)

Aluminum Fluoride (CAS 7748-18-1)

Aluminum Oxide (CAS 1344-28-1)

US Pennsylvania Worker and Community Right-to-Know Law

Cristobalite (CAS 14464-46-1)

US Rhode Island RTK Not listed.

US California Proposition 65

This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

US California Proposition 65 - CRT: Listed date/Carcinogenic substance

Not listed.

16. Other information, including date of preparation or last revision

Abbreviations and acronyms

CLP	Classification Labeling and Packaging
GHS	Global Harmonized System
TLV	Threshold Limit Value
WEL	Workplace Exposure Limit
TWA	A Time-Weighted Average
STEL	A Short-Term Exposure Limit
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
IMDG	International Maritime Code for Dangerous Goods
ICAO	International Civil Aviation Organization
IATA	International Air Transport Association

Relevant R-, H, and EUH-phrases (number and full text)

H228	Flammable solid.
H261	In contact with water releases flammable gas.
H301	Toxic if swallowed.
H317	May cause an allergic skin reaction.
H335	May cause respiratory irritation.
H350	May cause cancer.
H351	Suspected of causing cancer.
H370	Causes damage to organs.
H372	Causes damage to organs through prolonged or repeated exposure.

This information is supplied to be informative and to alert the user of the material. The ultimate compliance with federal, state, and/or local regulations concerning the use of this

material, or compliance with respect to product liability, rests solely upon the purchaser thereof.

Prepared by: FRC Global
Date: September 2023

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End of Safety Data Sheet