SAFETY DATA SHEET

Following Regulation 1910.1200

SDS Number: MK229 Date of first issue: 30 May 2017 Date of last revision: 21 February 2022

1 - Identification of product

a - Product identifier used on the label

Mix 437

Tradenames: Mix 437

b - Other means of identification

c - Recommended use of the chemical and restrictions on use

Flight Data Recorders

d - Name, address, and telephone number

Morgan Advanced Materials
P. O. Box 923; Dept. 300
Augusta, GA 30903-0923
Telephone: 706-796-4200

e - Emergency Phone Number

For Product Stewardship and Emergency Information:
Hotline - 1-800-722-5681
Fax - 706-560-4054

For additional SDSs and to confirm this is the most current SDS for the product, visit our web page www.morganthermalceramics.com or send a request to MT.NorthAmerica@morganplc.com

2 - Hazard Identification

a - Classification of the chemical in accordance with paragraph (d) of §1910.1200

Reproductive Toxicity Category 2

Acute Aquatic Toxicity Category 2

Category 2 Eye Irritant

b - Signal word, hazard statement(s), symbol(s) and precautionary statement(s) in accordance with paragraph (f) of §1910.1200

Hazard Pictograms

Signal Words

Warning

Hazard Statements

Causes serious eye irritation.

Suspected of damaging the unborn child.

Toxic to aquatic life with long-lasting effects.

Precaution Statements

Do not handle until all safety instructions have been read and understood.

Use appropriate PPE if needed : see Section 8 of the Safety Data Sheet.

Wear protective gloves, protective clothing , eye protection and face protection when needed

If concerned about exposure, get medical advice.

Dispose of waste in accordance with local, state and federal regulations.

Minimize exposure to airborne dust and vapor.

Emergency Overview

c - Describe any hazards not otherwise classified that have been identified during the classification process

d - Mixture Rule

Not applicable.

3 - Composition / Information On Ingredients

a - Composition table

COMPONENTS	CAS NUMBER	% BY WEIGHT
Zinc Borate	10361-94-1	30 - 50
Sodium Carbonate, Decahydrate	6132-0-1	15-20
Aluminum Oxide	1344-28-1	5-10
Decosane Waxes	629-97-0	10-20
Water	7732-18-5	5-10

b - Common Name

(See Section 8 "Exposure Controls / Personal Protection" for exposure guidelines)

d - Impurities and Stabilizing Additives

4 - First-Aid measures

a - Description of necessary measures, subdivided according to the different routes of exposure, i.e., inhalation, skin and eye contact, and ingestion

Eyes

Immediately flush eyes with a directed stream of water for at least 15 minutes, forcibly holding eyelids apart to ensure
Complete irrigation of all eye and lid tissues. Washing eyes within several seconds is essential to achieve maximum effectiveness. GET MEDICAL ATTENTION IMMEDIATELY.

Skin

Wash affected area gently with soap and water. Skin cream or lotion after washing may be helpful.

Respiratory Tract

If these become irritated move to a dust free area, drink water and blow nose.

Gastrointestinal

Unlikely route of exposure.

c - Indication of immediate medical attention and special treatment needed, if necessary

5 - Fire-fighting measures

a - Suitable (and unsuitable) extinguishing media and

Use extinguishing media suitable for type of surrounding fire

c - Special Protective Equipment and Precautions for Firefighters

NFPA Codes: Flammability: 0 Health: 1 Reactivity: 0 Special: 0

b - Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products):

None

6 - Accidental Release Measures

a - Personal precautions, protective equipment, and emergency procedures

Use routine housekeeping procedures. Avoid clean-up procedures that could result in water pollution.

b - Methods and materials for containment and cleaning up

Pick up large pieces and dispose in a closed container. Follow precaution stated in above section for clean up.

7 - Handling and storage

a - Precautions for safe handling

Do not get in eyes, on skin, or on clothing. Avoid breathing aerosol mist. Wash thoroughly after handling.

b - Conditions for safe storage, including any incompatibilities

Store in original packaging in a dry area. Always use sealed and clearly labelled containers. Avoid damaging containers. Reduce dust emission during unpacking.

c - empty containers

Product packaging may contain residue. Do not reuse.

8 - Risk Management Measures / Exposures Controls / Personal Protection

a - OSHA permissible exposure limit (PEL), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available

EXPOSURE GUIDELINES			
MAJOR COMPONENT	***OSHA PEL***	***ACGIH TLV***	***MANUFACTURER'S REG***
Mixture	15 mg/m^3(total dust) 5 mg/m^3(respirable dust)	None Established	NONE
OTHER OCCUPATIONAL EXPOSURE LEVELS (OEL) Industrial hygiene standards and occupational exposure limits vary between countries and local jurisdictions. Check which exposure levels apply to your facility and comply with local regulations. If no regulatory dust or other standards apply, a qualified industrial hygienist can assist with a specific workplace evaluation including recommendations for respiratory protection.			

b - Appropriate Engineering Controls

Use in well ventilated area when product is subject to heat.

c - Individual protection measures, such as personal protective equipment

PPE - Skin

FOR ROUTINE HANDLING AND SPILLS -
Use reasonable care. Washing at mealtime and end of shift is adequate.
Suitable Gloves: Avoid skin contact by implementing good industrial hygiene practices and procedures. Select and use gloves and/or protective clothing to further minimize the potential for skin contact. Consult with your glove and/or personnel protective equipment manufacturer for selection of appropriate compatible materials. Washing at mealtime and end of shift is adequate.

PPE - Eye

As necessary wear goggles or safety glasses with side shields.

PPE – Respiratory

Over exposure to any of the chemicals listed in Section 2 is not anticipated. Consult an industrial hygienist for exposure assessment due to abnormal use of this product. If respirators are selected, use NIOSH certified respirators, in compliance with OSHA Respiratory Protection Standard 29 CFR 1910.134 and 29 CFR 1926.103, for the particular hazard or airborne concentrations to be encountered in the work environment.

9 - Physical and chemical properties

a - Appearance	White compounds
b -Odor	Slight formaldehyde odor during first heat
c - Odor Threshold	Not available
e- pH	8.5
d - Melting Point	850^{o}C (1562^{o} F)
f- Initial Boiling Point/Range	Not applicable
g- Flashpoint	Not applicable
h - Evaporation Rate	Not applicable
i - Flammability	Product is not flammable.
j - Upper/Lower Flammability or Explosive Limits	Not applicable
k - VAPOR PRESSURE	Not applicable
l - VAPOR DENSITY	Not applicable
m - Solubility	Not determined
n - Relative Density	1.3 - 1.4
o - Partition Coefficient: n-Octanol/water	Not available
p - Auto-ignition temperature	Not applicable
q - Decomposition Temperature	46^{o}C (114.8^{o}F)
r - Viscosity	Not available

10 - Stability and Reactivity

a - Reactivity

Stable under conditions of normal use.

b - Chemical Stability

Stable under conditions of normal use.

c - Possibility of Hazardous Reaction

None

d - Conditions to Avoid

None

e - Incompatible Materials

Not known

f - Hazardous decomposition products

No known hazardous decomposition

11 - Toxicological information

a - TOXICOKINETICS, METABOLISM AND DISTRIBUTION

b - Acute Toxicity

c - Epidemiology

This material has not been the subject of an epidemiology study.

d - Toxicology

Sidium Carbonate : Draize test, rabbit, eye: 100 mg/24H Moderate; Draize test, rabbit, eye: 50 mg Severe; Draize test, rabbit, skin: 500 mg/24H Mild; Inhalation, mouse: LC50 = 1200 mg/m3/2H; Inhalation, rat: LC50 = 2300 mg/m3/2H; Oral, mouse: LD50 = 6600 mg/kg; Oral, mouse: LD50 = 6600 mg/kg; Oral, rat: LD50 = 4090 mg/kg;

Zinc Borate: Category 2 eye irritant classification; Contact can cause serious eye irritation - Dermal, rabbit: LD50>10,000mg/kg; Oral, rat: LD50>10,000mg/kg; Reproductive Toxicity Category 2 classification- NOAEL in rates for effects on fertility in males is 100 mg zinc borate (hydrate)/kg/bw.; NOAEL in rates for developmental effects on the fetus including fetus weight loss and minor skeletal variations is < 100 mg zinc borate (hydrate)/kg/bw.

Aluminum Oxide: Alumina metal dust has been shown to present a minimal health hazard, according to results from the McIntyre Foundation's 27-year study of aluminum oxide dust (Patty's Industrial Hygiene and Toxicology, 3rd rev. ed.)

International Agency for Research on Cancer and National Toxicology Program

Not applicable.

12 - Ecological information

c - Bioaccumulative potential

No information for the product.

d - Mobility in soil

No information for the product.

e - Other adverse effects (such as hazardous to the ozone layer

No adverse effects of this material on the environment are anticipated.

13 - Disposal Considerations

Waste Management and Disposal

Dispose of contents/container in accordance with the local/regional/national/international regulation.
No EPA Hazardous Waste Number applys. Zinc borae has a reportable quantity (RQ) of 1000 lbs (454 Kg).

Additional information

14 - Transport information

a - UN number.

3077

b - UN proper shipping name

Environmentally Hazardous Substance. Solid, N.O.S. (Zinc borate)

c - Transport hazard class(es)

9

d - Packing group, if applicable

III

e - Environmental hazards (e.g., Marine pollutant (Yes/No))

Marine pollutant

f - Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code)

Not regulated.

g - Special precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance either within or outside their premises

US D.O.T. rules apply when these products transported with zinc borate in quantities equal to or exceeding the zinc borate RQ (1000 lbs). When trasported in packages less than the RQ, they are not a DOT Hazardous Material.

International

INTERNATIONAL
Canadian TDG Hazard Class & PIN: Not regulated
Not classified as dangerous goods under ADR (road), RID (train), IATA (air) or IMDG (ship).

15 - Regulatory information

15.1 - United States Regulations

UNITED STATES REGULATIONS
SARA Title III: This product contain Zinc borate with Reportable Quantity (RQ) of 1,000lbs (454 kg), Sections 311, 312 and 313 (40 CFR 372) apply.
OSHA: Comply with Hazard Communication Standards 29 CFR 1910.1200 and 29 CFR 1926.59 and Respiratory Protection Standards 29 CFR 1910.134 and 29 CFR 1926.103.
TSCA: All substances contained in this product are listed in the TSCA Chemical Inventory
California Proposition 65: not listed.
Other States: Not listed.

15.2 - International Regulations

INTERNATIONAL REGULATIONS
Canadian WHMIS: Class D-2A Materials Causing Other Toxic Effects.
Canadian EPA: All substances in this product are listed, as required, on the Domestic Substance List (DSL).

16 - Other Information

initial statement

Devitrification

Product Stewardship Program

Morgan Thermal Ceramics www.morganthermalceramics.com

HMIS HAZARD RATING

HMIS Health	1* (* denotes potential for chronic effects)
HMIS Flammable	0
HMIS Reactivity	0
HMIS Personal Protective Equipment	X (To be determined by user)

TECHNICAL DATA SHEETS

Revision Summary

New product SDS - June, 2017.

MSDS prepared by

SDS Prepared By: MORGAN THERMAL CERAMICS ENVIRONMENTAL, HEALTH & SAFETY DEPARTMENT

Disclaimer

The information presented herein is presented in good faith and believed to be accurate as of the effective date of this Safety Data Sheet. Employers may use this SDS to supplement other information gathered by them in their efforts to assure the health and safety of their employees and the proper use of the product. This summary of the relevant data reflects professional judgment; employers should note that information perceived to be less relevant has not been included in this SDS. Therefore, given the summary nature of this document, Morgan Thermal Ceramics does not extend any warranty (expressed or implied), assume any responsibility, or make any representation regarding the completeness of this information or its suitability for the purposes envisioned by the user.