

SECTION 1. IDENTIFICATION

GHS product identifier	Aluminum Nitride Ceramic
Other means of identification	Aluminum Nitride, Sintered (fired) Aluminum Nitride
Recommended use and restrictions	Not available.
Supplier's details	CoorsTek, Inc. 16000 Table Mountain Parkway Golden, CO 80403 Phone: +1 303 271 7000 Fax: +1 303 271 7009
Emergency telephone number (with hours of operation)	+1 303 271 7000 8am-5pm MDT (M-F)

SECTION 2. HAZARDS IDENTIFICATION

OSHA/HCS status While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this SDS contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

Classification of the substance or mixture Not classified

GHS LABEL ELEMENTS

Signal word No signal word

Hazard statements No known significant effects or critical hazards

PRECAUTIONARY STATEMENTS

General Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention Not applicable

Response Not applicable

Storage Not applicable

Disposal Not applicable

Hazards not otherwise classified None known

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/mixture Mixture

Other means of identification Aluminum Nitride, Sintered (fired) Aluminum Nitride

CAS NUMBER/OTHER IDENTIFIERS

CAS number Not applicable

Product code Not available

Ingredient name	%	CAS Number
Aluminum nitride	60 - 100	24304-00-5

This SDS reflects the health, physical and environmental hazards of this product. Because of the nature of the finished product i.e. the fact that it is in solid form, and given that the chemicals are not released in the course of normal use, the user of the product and/or the reader of this SDS should consider the potential exposure to the chemicals to be minimal during the normal use of the product. Refer to relevant sections of the SDS (7 and 13) for additional information on handling and disposal considerations.

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section. Occupational exposure limits, if available, are listed in Section 8.

SECTION 4. FIRST AID MEASURES
DESCRIPTION OF NECESSARY FIRST AID MEASURES

- Eye contact** Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
- Inhalation** Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
- Ingestion** Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

SECTION 4. FIRST AID MEASURES CONTINUED**MOST IMPORTANT SYMPTOMS/EFFECTS,
ACUTE AND DELAYED****Potential acute health effects**

- Eye contact** No known significant effects or critical hazards.
- Inhalation** Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** No known significant effects or critical hazards
- Ingestion** No known significant effects or critical hazards

Over-exposure signs/symptoms

- Eye contact** No known significant effects or critical hazards
- Inhalation** No known significant effects or critical hazards
- Skin contact** No known significant effects or critical hazards
- Ingestion** No known significant effects or critical hazards

**INDICATION OF IMMEDIATE MEDICAL
ATTENTION AND SPECIAL TREATMENT
NEEDED, IF NECESSARY**

- Notes to physician** In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** No specific treatment
- Protection of first-aiders** No action shall be taken involving any personal risk or without suitable training.
See toxicological information (Section 11)

SECTION 5. FIRE-FIGHTING MEASURES
EXTINGUISHING MEDIA

Suitable extinguishing media Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media None known. Product may generate small amounts of ammonia when in water.

Specific hazards arising from the chemical No specific fire or explosion hazard

Hazardous thermal decomposition products Decomposition products may include the following materials: metal oxide/oxides

Special protective actions for fire-fighters No special protection is required

Special protective equipment for fire-fighters Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

SECTION 6. ACCIDENTAL RELEASE MEASURES
PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT & EMERGENCY PROCEDURES

For non-emergency personnel No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Put on appropriate personal protective equipment.

For emergency responders If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

METHODS & MATERIALS FOR CONTAINMENT AND CLEANING UP

Small spill Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

SECTION 7. HANDLING AND STORAGE
PRECAUTIONS FOR SAFE HANDLING

Protective measures Put on appropriate personal protective equipment (see Section 8).

Advice on general occupational hygiene Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities Store in accordance with local regulations. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION
CONTROL PARAMETERS
Occupational exposure limits

Ingredient Name	Exposure Limits
Aluminum nitride	ACGIH TLV (United States) STEL: 10 mg/m ³ 8 hours. Form: Nuisance dust. TWA: 5 mg/m ³ 8 hours. Form: Nuisance dust.

Appropriate engineering controls No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.

Environmental exposure controls Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

INDIVIDUAL PROTECTION MEASURES

Hygiene measures Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side shields.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION CONTINUED**SKIN PROTECTION**

Hand protection Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Body protection Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**APPEARANCE**

Physical state	Solid
Color	White to pale yellow
Odor	Ammonia [Slight]
Odor threshold	Not available
pH	Not available
Melting point	>2200° C (>3992° F)
Boiling point	>2500° C (>4532° F)
Flash point	Not available
Burning time	Not available
Burning rate	Not available
Evaporation rate	Not available
Flammability (solid, gas)	Not available
Lower and upper explosive (flammable) limits	Not available

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES CONTINUED

Vapor pressure Not available

Vapor density Not available

Relative density Not available

Solubility Very slightly soluble in the following materials: cold water and hot water

Solubility in water Not available

Partition coefficient: n- octanol/water Not available

Auto-ignition temperature Not available

Decomposition temperature Not available

SADT Not available

Viscosity Not available

SECTION 10. STABILITY AND REACTIVITY

Reactivity No specific test data related to reactivity available for this product or its ingredients.

Chemical stability The product is stable.

Possibility of hazardous reactions Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid No specific data

Incompatible materials Reactive or incompatible with the following materials: moisture
Ammonia gas may be formed when the material comes into contact with water.

Hazardous decomposition products Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity There is no data available.

IRRITATION/CORROSION

Skin There is no data available.

Eyes There is no data available.

Respiratory There is no data available.

SENSITIZATION

Skin There is no data available.

Respiratory There is no data available.

Mutagenicity There is no data available.

Carcinogenicity There is no data available.

Reproductive toxicity There is no data available

Teratogenicity There is no data available

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Aluminum nitride	Category 3	Not applicable	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

There is no data available

Aspiration hazard

There is no data available

Information on the likely routes of exposure

Routes of entry anticipated: Oral, Dermal, Inhalation

POTENTIAL ACUTE HEALTH EFFECTS

Eye contact

No known significant effects or critical hazards

Inhalation

Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact

No known significant effects or critical hazards

Ingestion

No known significant effects or critical hazards

	Product name
Form R - Reporting requirements	Aluminum oxide Chromium (III)
Supplier notification	Aluminum oxide Chromium (III)

SECTION 11. TOXICOLOGICAL INFORMATION CONTINUED

SYMPTOMS RELATED TO THE PHYSICAL, CHEMICAL AND TOXICOLOGICAL CHARACTERISTICS

- Eye contact** No known significant effects or critical hazards
- Inhalation** No known significant effects or critical hazards
- Skin contact** No known significant effects or critical hazards
- Ingestion** No known significant effects or critical hazards

DELAYED AND IMMEDIATE EFFECTS AND ALSO CHRONIC EFFECTS FROM SHORT AND LONG TERM EXPOSURE

SHORT TERM EXPOSURE

- Potential immediate effects** No known significant effects or critical hazards
- Potential delayed effects** No known significant effects or critical hazards

LONG TERM EXPOSURE

- Potential immediate effects** No known significant effects or critical hazards
- Potential delayed effects** No known significant effects or critical hazards

POTENTIAL CHRONIC HEALTH EFFECTS

- General** No known significant effects or critical hazards
- Carcinogenicity** No known significant effects or critical hazards
- Mutagenicity** No known significant effects or critical hazards
- Teratogenicity** No known significant effects or critical hazards
- Developmental effects** No known significant effects or critical hazards
- Fertility effects** No known significant effects or critical hazards

NUMERICAL MEASURES OF TOXICITY

- Acute toxicity estimates** No data available

SECTION 12. ECOLOGICAL INFORMATION

Toxicity No data available

Persistence and degradability No data available

Bioaccumulative potential No data available

MOBILITY IN SOIL

Soil/water partition coefficient (K_{oc}) No data available

Other adverse effects No known significant effects or critical hazards

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14. TRANSPORT INFORMATION

	DOT	IMDG	IATA
UN Number	Not regulated	Not regulated	Not regulated
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	No	No	No
Additional information	-	-	-

Special precautions for user **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not available

SECTION 15. REGULATORY INFORMATION

U.S. Federal regulations TSCA 8(a) CDR Exempt/Partial exemption: Not determined
 United States inventory (TSCA 8b): All components are listed or exempted.

**Clean Air Act Section 112
 (b) Hazardous Air Pollutants (HAPs)** Not listed

**Clean Air Act Section 602
 Class I Substances** Not listed
Class II Substances Not listed

DEA List I Chemicals (Precursor Chemicals) Not listed

DEA List II Chemicals (Essential Chemicals) Not listed

SARA 302/304 Composition/information on ingredients: no products were found

SARA 304 RQ Not applicable

SARA 311/312 Not applicable
 Composition/information on ingredients: no products were found.

STATE REGULATIONS

Massachusetts None of the components are listed.

New York None of the components are listed.

New Jersey None of the components are listed.

Pennsylvania None of the components are listed.

California Prop. 65 No products were found.

INTERNATIONAL REGULATIONS

International lists **Australia inventory (AICS):** Not determined
China inventory (IECSC): All components are listed or exempted.
Japan inventory: All components are listed or exempted.
Korea inventory: All components are listed or exempted.
Malaysia Inventory (EHS Register): Not determined
New Zealand Inventory of Chemicals (NZIoC): Not determined
Philippines inventory (PICCS): Not determined
Taiwan inventory (CSNN): Not determined

Chemical Weapons Convention List
Schedule I Chemicals Not listed
Schedule II Chemicals Not listed
Schedule III Chemicals Not listed

SECTION 16. OTHER INFORMATION
Hazardous Material Information System (U.S.A.)
Health: 2* Flammability: 0 Physical hazards: 0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)
Health: 2 Flammability: 0 Instability: 0

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HISTORY
Date of issue mm/dd/yyyy 03/15/2013

Version 1

Revised Section(s) Not applicable

Prepared by KMK Regulatory Services Inc.

Key to abbreviations

ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 UN = United Nations

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