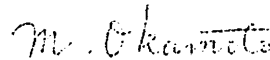


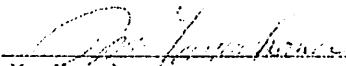
Material Safety Data Sheet**[1] CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

Product Name: Aluminum Nitride (ALN)
 Company Name: TOSHIBA MATERIALS CO., LTD.
 Section in charge: PRODUCTION MANAGEMENT & QUALITY ENGINEERING DEPARTMENT
 Address: 8, SHIN-SUGITA-CHO, ISOGO-KU, YOKOHAMA
 235-8522, JAPAN
 Telephone: +81-45-770-3056
 Facsimile: +81-45-770-3054
 Prepared by: January, 31 2007



M. Okamoto
 Fine Ceramics Engineering Group
 Fine Ceramics Products Dept.

Approved by: January, 31 2007



M. Yamakawa
 Quality Assurance Group, Manager.
 Production Management & Quality Engineering Dept.

[2] COMPOSITION, INFORMATION ON INGREDIENTS

Component	Chemical name	Wt%	CAS Registry No.
Substance	Aluminum Nitride (ALN)	approx. 95%	24304-00-5
	Boundary materials *	approx. 5%	No information
	-	-	-

* $(Al_2O_3)_m(Y_2O_3)_n$ complex, et al.

[3] HAZARDS IDENTIFICATION

Potential health effects: It is not hazardous in the form of substrate. However, in case of processing waste powder, which is formed during machine processing such as cutting, grinding or polishing of substrate, if it is inhaled in large quantity, there is a possibility that inflammation will occur on top part of respiratory tract or lungs. Also if powder is repeatedly inhaled in large quantity, it will affect respiratory system.

Ecotoxicity: It is comparatively stable in form of substrate. However, in form of powder, hazardous ammonia is formed especially as resolution generated substance.

Physical/Chemical Hazards: No information.

[4] FIRST AID MEASURES

Inhalation: Move to area where you can get a fresh air and check with the doctor.

Skin contact: Wash with running water when process waste powder adhered. If adhered on clothing or accessory, please take it off.

Eye contact: Wash eyes immediately by running water (at least 15 minutes) and check with the doctor. In certain cases, wash back side of top and bottom eyelid.

Ingestion: Do not force to vomit. Immediately check with the doctor. If patient is unconscious or convulsion is seen, do not give liquid or emetics.

Protective measures to paramedics: No information.

Specific item for doctors: There is no specific antidote so treat with allopathy. In case of resolution generated substance ammonia is formed, there is a possibility that disorder originating from ammonia such as lungs edema could occur.

[5] FIRE FIGHTING MEASURES

Extinguishing media: It is nonflammable so there is no special designation.

Incompatibles: When water is used, warn for ammonia generated by resolution reaction from processing waste powder.

Specific hazard information: No information.

Firefighting instructions: No information.

Protective measures to firefighters: Protection eyeglass, gas mask and protection glove when ammonia is generated.

[6] ACCIDENTAL RELEASE MEASURES

Personal Protection: Warn against inhaling of process waste powder.

Environmental Protection: Ammonia is generated as resolution generated substance. It is conspicuous especially for process waste powder.

Recovery and Neutralization measures: In case of process waste powder, collect by using broom or vacuum cleaner without making a dust.

Protective measures to secondary disasters: No information.

[7] HANDLING AND STORAGE

Personal exposure protection: To prevent contact and inhalation during machine processing operation, handle by wearing protection tool in good ventilation place.

Fire and Explosion protection: No information.

Appropriate storage conditions: It is desirable to replace container by dry inert gas for process waste powder.

Inappropriate storage conditions: Prevent high temperature/humidity especially for process waste powder.

Appropriate materials for containers and packages: Packing material that is not affected by liquid is desirable.

[8] EXPOSURE CONTROLS, PERSONAL PROTECTION

Engineering controls: It is desirable to place partial/total ventilation device when machine process powder is generated.

Exposure guidelines or Biological index guidelines: No information.

Appropriate personal protective equipment: Use protection eyeglass, dust proof mask and protection glove when machine process powder is generated.

[9] PHYSICAL AND CHEMICAL PROPERTIES

Physical properties: Stable solid
Appearance: Plates
Color: Ivory white
Odor: None
Decomposition temperature: 2150°C
Boiling point: Not applicable
Auto ignition temperature: Not applicable
Vapor pressure: 0 (at room temperature)
Specific gravity: 3.3
Solubility in water: Insoluble
Solubility in alcohol: Insoluble

[10] STABILITY AND REACTIVITY

Stability of the chemicals concerned: It is comparatively stable at substrate condition but hazardous ammonia as resolution generated substance is generated especially in case of process waste powder.
Hazardous reaction under specific conditions: When product relates in a form of process waste powder with water, liquid including water or gas, ammonia is generated by reaction. Reaction is accelerated especially under high temperature.
Conditions to avoid: High temperature/humidity environment
Incompatibility with other materials: Water, liquid including water, gas
Hazardous decomposition products: Ammonia

[11] TOXICOLOGICAL INFORMATION

LD50/LC50: No applicable information found
Carcinogenicity: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

[12] ECOLOGICAL INFORMATION

Bioaccumulation No applicable information found
Ecotoxicity/Biototoxicity No applicable information found

[13] DISPOSAL CONSIDERATIONS

Dispose of in a manner consistent with federal, state and local regulations.

[14] TRANSPORT INFORMATION

Non-hazardous for air, sea and road freight

[15] REGULATORY INFORMATION

Laws and Regulations for chemical substances:
ALY3012: 1-4%
ALY03: 1-4%
Hazard and Toxicity Information and Safety Information: No information.
Recipients shall observe the regulations of local government: No information.
Comply with the regulations of your country.

[16] OTHER INFORMATION

Safety information and bibliography:
This product is for industrial use and not for domestic.
When new information is obtained, addition or revision of the content might be done.

This information is furnished without warranty, express or implied, except that it is accurate to the best knowledge of TOSHIBA MATERIALS. It relates only to the specific material designated herein, and does not relate to use in combination with any other material or in any process. TOSHIBA MATERIALS assumes no legal responsibility for use of or reliance upon this information.