

# Safety Data Sheet

## 1. Identification

Product name: Aluminium paste 4660NS  
 Company name: TOYO ALUMINIUM K.K.  
 Address: Midosuji Daiwa Bldg., 6-8, Kyutaramachi 3-chome, Chuo-ku, OSAKA, 541-0056, JAPAN  
 Section: Quality Assurance Dept.  
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 Recommended uses: Aluminium pigment for paint

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## 2. Hazard identification

[Hazard classification]

Physical Hazards	Not Applicable	
Health Hazards	Skin corrosion or irritation	Category 2
	Serious eye damage or eye irritation	Category 2A
	Acute toxicity (inhalation)	Category 4
	Specific target organ toxicity – single exposure	Category 3 (respiratory irritation)
		Category 3 (anesthetizing)
	Specific target organ toxicity – repeated exposure	Category 2 (liver, testicle, central nervous system, lungs)
Environmental Hazards	Hazardous to the aquatic environment – acute	Category 1
	Hazardous to the aquatic environment – chronic	Category 1
Other Hazards	Not applicable	

Hazards that aren't written as the above are "Can't classify" or "Not Classified".

[GHS Label elements]

Pictogram



Signal word

Warning

Precautionary statements

- H315 Causes skin irritation
- H319 Causes serious eye irritation
- H332 Harmful if inhaled
- H335 May cause respiratory irritation (respiratory irritation)
- H336 May cause drowsiness or dizziness (anesthetizing)
- H373 May cause damage to organs through prolonged or repeated exposure (liver, testicle, central nervous system, lungs)
- H400 Very toxic to aquatic life
- H410 Very toxic to aquatic life with long lasting effects
- P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
- P271 Use only outdoors or in a well-ventilated area.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P312 Call a POISON CENTER or doctor/physician if you feel unwell.
- P370+P378 In case of fire: Use metal fire powder for extinction.



P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

P501 Dispose of contents/container in accordance with applicable regulations.

### 3. Composition/information on ingredients

Substance/Mixture:	Mixture		
Chemical Name	Composition (%)	ENCS (Japan)	CAS No.
Aluminium flake	68.0-71.0	-	7429-90-5
Naphtha (petroleum), hydrodesulfurized heavy	20.0-25.0	9-1702	64742-82-1
Solvent naphtha (petroleum), light aromatic	5.0-10.0	9-1694	64742-95-6
Oleic acid	0-2.0	2-975	112-80-1

\* The following substances are contained in solvent as impurities. (The content rate in this product)

Trimethylbenzene (CAS.25551-13-7)	7.7%
1,2,4-Trimethylbenzene (CAS.95-63-6)	5.7%
Nonane (CAS.111-84-2)	2.5%
1,3,5-Trimethylbenzene (CAS.108-67-8)	1.6%
Xylene (CAS.1330-20-7)	0.3%
Cumene (CAS.98-82-8)	0.3%

### 4. First-aid measures

IF INHALED:

Move victim to fresh air and keep at rest and get medical attention.

IF ON SKIN:

Remove contaminated clothing/shoes, wash contaminated area with clean running water and soap. If inflammation or pain occurs, get medical attention/advice.

IF IN EYES:

Immediately rinse with plenty of clean running water for 15 minutes or more and get medical attention/advice. Not rub victim's eyes. In the case victim wears contact lenses, remove them if possible.

IF SWALLOWED:

Not force victim to vomit. If victim is consciousness, firstly rinse mouth with water. If victim feels badly, get medical attention/advice.

Protection of the person who gives the first aid: In case of inhalation, first aid provider should wear protective mask, in case of skin contact, wear protective equipment such as rubber gloves. Wear protective glasses if necessary.

### 5. Fire-fighting measures

Extinguishing media: Powder extinguisher, carbon dioxide gas, dry sand, glass fiber clothing

Unsuitable extinguishing media: Water, extinguishing media containing water, halogen extinguishing media

Specific hazards: May generate irritative and/or toxic gas by fire. Burn if intensively heated.

May cause extremely dangerous explosion especially in closed environment (building, ware house etc.). Package may explode by heat. Dust or fume may form explosive mixture gas with air. May ignite by friction, heat, spark or flame.

Specific fire-fighting method:

Use powder extinguisher or carbon dioxide gas at early stage of fire where only solvent is burning. At the final stage of fire, aluminium powder will ignite and burn with white light with releasing large heat. Try smothering extinguishment by covering the origin of fire by dry sand, glass cloth at this stage of fire.

Continue smothering extinguishment until aluminium get cold because inside may be still burning without flame even when it seems to be extinguished. Treat or transport burned aluminium powder after confirming the inside temperature did not rise after one day. Product that is not burning should be removed promptly to safe place.

### 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Wear appropriate protective equipment (see 8. Exposure control/personal protection) and avoid contact with eye/skin and inhalation of gas /dust.

If in doors, adequately ventilate until processing is complete.

Environmental precautions:

Do not release leakage to river or sewage directly.

Methods and materials for containment and cleaning up:

Stop leakage, if safe to do so. When leaked from the package wipe with cloth (waste cloth) and store in sealed package where no water, acid or alkali exists. Dispose of as industrial waste.

Prevention of secondary disaster:

Use equipment that do not cause spark. Avoid flowing into drainage, sewage or the basement and other closed places.



## 7. Handling and storage

### [Handling]

- Local exhaust/total ventilation: Install equipment described in '8. EXPOSURE CONTROLS/PERSONAL PROTECTION' for local exhaust/total ventilation.
- Special precautions: Do not handle until all the safety precautions have been read and understood.  
Prohibit using high temperature material, spark or fire in surrounding area.  
Do not eat, drink or smoke when using this product.  
Wash the hands thoroughly after handling.  
Avoid swallow and contact with skin.  
Use only outdoors or in a well-ventilated area.  
Do not breathe dust, fume, gas, mist, vapor, spray.  
Install ventilation for exhaust to keep the concentration in the air below the exposure limit.  
Avoid release to the environment.  
In case package swells by abnormal inner pressure:  
-Package with degassing bulb on lid;  
Loosen the bulb gradually. Open after reducing pressure to the atmosphere pressure.  
-Package without degassing bulb on lid;  
Hold the lid so that it will not fly and decrease pressure by gradually loosening handle lever and open.

### [Storage]

- Storage conditions: In the store room, install the day lighting, lighting, and ventilating equipment needed for storing or handling the product.  
Apply the fireproof structure to walls, pillars and floors of the storage room.  
Use noncombustible material for beams.  
For floors of the storage room, apply a structure that prevents water influx/infiltration.  
Store away from ignition sources such as heat, spark or fire.-No smoking.  
Store away from oxidizing agent.  
Store in sealed container at fixed place where protection from light and ventilation are adequate and temperature ( 40 ) and humidity are appropriate.
- Container material Use containers specified by Fire Service Law or UN transport regulation.

## 8 . Exposure controls/personal protection

Administrative level, acceptable concentration limit

	ACGIH	OSHA	NIOSH
Aluminium	TWA 1mg/m <sup>3</sup> (R), STEL -	15 mg/m <sup>3</sup> TWA (total dust); 5 mg/m <sup>3</sup> TWA	10 mg/m <sup>3</sup> TWA (total dust); 5 mg/m <sup>3</sup> TWA
Naphtha(petroleum), hydrodesulfurized heavy	No data	No data	No data
Solvent naphtha (petroleum), light aromatic	No data	No data	No data
Trimethylbenzene	25 ppm TWA	No data	25 ppm TWA 125 mg/m <sup>3</sup> TWA
1,2,4-Trimethylbenzene	25 ppm TWA	No data	25 ppm TWA 125 mg/m <sup>3</sup> TWA
Nonane	No data	No data	200 ppm TWA 1050 mg/m <sup>3</sup> TWA
1,3,5-Trimethylbenzene	No data	No data	No data
Xylene	100 ppm TWA 150 ppm STEL	100 ppm TWA 435 mg/m <sup>3</sup> TWA	100 ppm TWA 435 mg/m <sup>3</sup> TWA
Cumene	50 ppm TWA	50 ppm TWA 245 mg/m <sup>3</sup> TWA	50 ppm TWA 245 mg/m <sup>3</sup> TWA

[Facility measures]

Use explosion-proof electrical/ventilating/lighting equipment.

When dust/fume/mist/gas is generated at high temperature install ventilation equipment to keep concentration of air pollutant below administrative level/acceptable concentration limit.

Handle in the place where total ventilation is installed.

General proper ventilation is good for control the concentration in the air.

[Protective equipment]

Respiratory organ:

In case ventilation is not adequate, wear appropriate respiratory protection.

Use personal respiratory protective equipment as required.

Hand:

Use personal protective gloves as required.

Eye:

Wear appropriate eye protection.

Skin and body:

Wear appropriate face protection.

Use personal antistatic protective clothing and protective mask as required.

[Hygienic measures]

Wash the hands thoroughly after handling.

## 9. Physical and chemical properties

Physical state:	Solid (paste)
Colour:	Silver-white
Odour:	Petroleum odor
Initial boiling point and boiling range:	If data is available, it is described below.
Flammability:	Not applicable
Explosion limit:	If data is available, it is described below.
Flash point:	If data is available, it is described below.
Auto-ignition temperature:	If data is available, it is described below.
Decomposition temperature:	N.A.
pH:	N.A.
Kinematic viscosity:	N.A.
Vapor pressure:	If data is available, it is described below.
Relative density(g/cm <sup>3</sup> , calculated):	1.6
Relative vapour density:	N.A.
Particle characteristics(D50)( $\mu$ m):	1-100

Components	Flash point (°C)	Ignition point(°C)	initial boiling point (°C)	Boiling point (°C)	Vapour pressure	Density (Air = 1)	Explosion limit(%)	
							Upper	Lower
Naphtha (petroleum), hydrodesulfurized heavy	40-45 (SETA Closed-cup)	Ca. 245	130	130-200	-	3-4	4.9	0.8
Solvent naphtha (petroleum),light aromatic	>40 (Closed-cup)	470	155	155-180	-	4.2	6.5	0.5

## 10. STABILITY AND REACTIVITY

Stability:	Stable in air or under light shielded condition.
Hazardous/harmful reactivity:	React with water, acid, alkali, oxidizing agent metal oxide, halogen compound and generate hydrogen gas. Heat accelerates the reaction. Sealed container elevates inner pressure and may burst or the content may blow out and it is especially dangerous.
Conditions to avoid:	Organic solvent in the product may evaporate when temperature is elevated. Avoid contact with flame, spark, high temperature material and heating.
Incompatible materials:	Avoid contact with water, acid, alkali, oxidizing agent (peroxide, sulfuric acids etc), metal oxides (iron oxide etc.), halogen compounds (chlorine carbon hydrides).
Hazardous decomposition products:	May generate hydrogen gas.

## 11. TOXICOLOGICAL INFORMATION

Acute toxicity (oral)	Not applicable to category
Acute toxicity (dermal)	Not applicable to category
Acute toxicity (inhalation)	2500ppm<ATEmix 5000ppm and classified as Category 4.
Skin corrosion or irritation	Category 2 is more than 10% and classified as Category 2.
Serious eye damage or eye irritation	Category 2A is more than 10% and classified as Category 2A.
Respiratory sensitization	Not applicable to category
Skin sensitization	Not applicable to category
Germ cell mutagenicity	Not applicable to category
Carcinogenicity	Not applicable to category
Reproductive toxicity	Not applicable to category
Specific target organ toxicity – repeated exposure	Category 2 is more than 1% and classified as Category 2. (liver,testicle,central nervous system,lungs)
Specific target organ toxicity – single exposure	Category 3 is more than 20% and classified as Category 3. (anesthetizing) Category 3 is more than 20% and classified as Category 3. (respiratory irritation)
Aspiration hazard	Not applicable to category



## 12 . Ecological information

Hazardous to the aquatic environment - acute	Category 1 is more than 25% and classified as Category 1.		
Hazardous to the aquatic environment - chronic	Category 1 is more than 25% and classified as Category 1.		
Hazardous to the Ozone Layer Ecotoxicity:	N.A.		
Crustacea	48h	LC50	0.42-2.3mg/L (Naphtha (petroleum), hydrodesulfurized heavy)
Fish	48h	EC50	5.0-8.0mg/L (Solvent naphtha (petroleum), light aromatic)
Persistence and degradability:	No information at this point.		
Bioaccumulation:	No information at this point.		
Mobility in soil:	No information at this point.		
Other hazards:	No information at this point.		

## 13 . Disposal considerations

Disposal:	Do not reuse empty package. Do not put sealed container in a flame. Do not weld or melt down. When dispose of waste product and empty container commission to legally approved industrial waste disposer.
Contaminated container and packing:	Confirm that there is not breakage, corrosion, leakage etc. of the package. Pile containers in a way that does not cause falling, tumbling or breakage. Put appropriate cover to avoid direct sunlight and penetration of rain. Transfer the container avoiding significant friction or shaking. Pack, label and transfer according to related regulations.

## 14 . Transport information

Land Transportation:	Comply with regulations. When the product significantly leak and there is a risk of fire during transportation take precautionary measures to prevent the fire and inform nearest fire service station.
Marine transportation:	Comply with regulations.
Air transportation:	Comply with regulations.
International regulation:	UN class 9 UN number 3077 Packing group: III Proper shipping name: Environmentally hazardous substance, Solid, N.O.S. (Aluminium powder and petroleum mixture)
Marine Pollutant	Applicable

## 15 . Regulatory information

Ensure this material is on compliance with federal requirements and ensure it is conformity to local regulations.

## 16 . Other information

References	Guidance for safe handling of aluminium paste 2004, 2nd revision, Japan Aluminium Association, Aluminium paste committee GHS of Classification and Labelling of Chemicals Recommendations on the TRANSPORT OF DANGEROUS GOODS Chemical Risk Information Platform, National Institute of Technology and Evaluation (NITE)
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Safety Data Sheet is to provide reference information to assure the safe handling of the product. The descriptions herein are based on the currently available sources, information and data but no guarantee is given for its contents, physico-chemical properties, risk or hazard. The precautions herein are for normal handling. If you use this product under the special conditions, take safety measures appropriate for the special use and usage.