

MATERIAL SAFETY DATA SHEET

Aluminum Powder



SECTION 1: Identification of the substance/mixture and of the company

1.1 Product identifiers

Chemical name	Aluminum powder
Product name	High-purity spherical aluminum powder
CAS number	7429-90-5

1.2 Details of the supplier of the material safety data sheet

Company	SHAANXI DAYU CHEMICAL CO., LTD.
Address	Building NO.8, XiShi Jiajun, , XiShi 2nd Road, Lianhu District, Xi'an, Shaanxi, China
Telephone	0086-29-88643345
Email	info@dayuchemical.com
Website	www.hidayuchemical.com

SECTION 2: Composition/information on ingredients

Chemical formula	Al
Main content	$\geq 99.70\%$
Molecular weight	26.98
Appearance	Grey metallic powder

SECTION 3: Hazards identification

Dangerous cargo grade: 4.3 combustibles in the damp

Inhalation methods: Inhalation, skin contact

Health Hazard: Pulmonary fibrosis from chronic inhalation has been reported. May causes irritation to

eyes and respiratory tract, may affect lungs. May cause skin irritation.

Environmental Hazard: N/A

Explosion conditions: Reacts with water - some acids and caustic solutions to produce hydrogen.

Flammable solid, dust may form flammable or explosive mixture with air.

SECTION 4: First aid measures

Skin Contact: Wash exposed area with soap and water. Get medical advice if irritation develops.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Give several glasses of water to drink to dilute. If large amounts were swallowed, get medical advice.

SECTION 5: Firefighting measures

Dangerous Property:

1. Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.
2. May cause flame when meeting water or damp air, when the temperature is high
3. Reacts with oxidizer, may foam explosion with the flame, high heat.
4. Reacts with acids and caustic solutions to release of flammable hydrogen gas

Hazardous Combustion product: Al_2O_3

Fire-fighting measures and extinguishing media:

The use of inert dry granular material fire-fighting materials such as asbestos were gently covered in circle; up to avoid dust; only for Class D fire extinguisher

Fire-fighting comments and measures:

Fire-fighters must wear Fire-fighting protective clothes. Water and carbon dioxide kind extinguishers are forbidden.

SECTION 6: Accidental release measures

Emergency action: Segregate the area of lead or spill, remove the sources of ignition and water from the polluted area.

Personnel protective measurements: wear dust-proof mask, heat-proof clothes and use the explosion prevention tools and equipments.

Environmental protective measurements: avoid powder flying, properly collect and place in a closed container.

SECTION 7: Handling and storage

Handling:

Operators must pass special trade, obey the operating rules. Suggest operators wear filter-type dust-proof respirator, chemical safe goggles, static-free working clothes. Far away from sources of ignition and heat and smoking is not allowed in working area. Apply explosion prevention ventilation system and equipment. Avoid power flying and contact with oxidant, acids and alkalis. Load and unload slightly and protect package from breaking out. Prepare the related suitable extinguisher with full quantity and accidental release handling devices. It may leave harmful materials in emptied out containers.

Storage:

Store in dry and ventilated warehouse. Be far away from sources of ignition and heat. Humidity of the warehouse should max 65%. Stored in separated place against oxidant, acids and alkalis and shouldn't be swapped. Use explosion prevention ventilation and lighting devices. Be not stored in long time to avoid out of date. Prepare the related suitable extinguisher with full quantity; There are suitable containers to pick up the leaking powder.

SECTION 8: Exposure controls/personal protection

China MAC (mg/m^3): NO Standard

Te former Soviet Union MAC (mg/m^3): 2[AL]

USA TLV-TWA: NO Standard TLVTN:ACGIH $10\text{mg}/\text{m}^3$ [dust]/ $5\text{mg}/\text{m}^3$ [welding smoke]

USA TLV-STEL: NO Standard TLVWN: NO Standard

Project Control: Operation in a closed devise, be well ventilated in the workshop. Supply the shower and safety devise.

Respiratory tract protection: must wear protective mask when contacting the powder, if necessary, wear air-purifying respirators

Eye Protection: Use chemical safety goggles.

Body protection: wear antistatic working clothes.

Hands' protection: wear antistatic gloves.

Additional information: No smoking, eating and drinking in the workshop, wash the hands before eating. Wash thoroughly and change the clothing after handling. Do physical examination regularly if contacting the powder with a long time.

SECTION 9: Physical and chemical properties

Appearance: Fine, silver-gray powder.

Boiling point ($^{\circ}\text{C}$) : 2467

Melting point ($^{\circ}\text{C}$) : 660 $^{\circ}\text{C}$

Relative density: ≥ 1.40 (Tap density)
Relative density of steam (air=1): No Data
Saturated vapor pressure: 0.13 (1284°C)
Burning hot: 822.9
Critical temperature (°C): Meaningless
Critical press (MPa): meaningless
Flash point: No Data
Octanol/water partition coefficient: No Data
Ignition Temperature (°C): 700 °C
Explosion max limit: No Data
Explosion min limit: 40g/ m³
Solubility: react with water and ethanol, insoluble in other organic solvents.
Mainly applications: metal pigment, chemical catalyst, powder and refractory material and so on.
Other chemical and physical properties: microns grade powder, no organic, no radioactive and corrosive, min ignition heat 15mg.

SECTION 10: Stability and reactivity

Stability: Stable
Hazardous Polymerization: Will not occur.
Avoid contact: fire, heat and humid air.
Conditions to Avoid: flames, heat, moisture
Taboo: water, acids, alkalis and strong oxidant.
Combustion product: Al₂O₃

SECTION 11: Toxicological information

Acute toxicity: LD50: No Data
LC50: No Data
Irritation: light stimulate to eyes
Allergenicity: No Data
Sub-acute and chronic toxicity: No Data
Mutagenicity: No Data
Teratogenicity: No Data
Carcinogenicity: No Data

SECTION 12: Ecological information

Biological effect: This substance is harmful to environment, please pay special attention to mammal.
Biodegradable: No Data
Non-biodegradable: No Data

Bioconcentration: No Data

Environmental migration: No Data

SECTION 13: Disposal considerations

Waste characters: not belong to hazardous waste

Waste: must follow the laws of the Country and location before dispose it. If can recycling, also can bury safety.

Disposal attentions: Suggest the operator wear self-priming and filter to dust mask.

SECTION 14: Transport information

Dangerous goods code: 43013

UN No.: 1396

Packing mark: easy to flame material meet met.

Packing Group: II

Packing: put into the double-coated bags, sealing with double-coated HDPE (High Density Polyethylene) bags in inner. Or put into the steel drums, 0.5mm thick, with double-coated HDPE bags sealing.

Attentions: Railway transportation should be strictly accordance with the Ministry of Railway's the Transportation of Dangerous Goods Rules in the distribution of dangerous goods loaded table for compatibility. It is ban to put away when the goods on railway transportation. It should be packing well when shipment, loading should be safe. During the shipment, must ensure the containers no leaking, no collapsing, not falling, no damage. It is strictly prohibited shipping mix with oxidizer, acids, bases, etc. Transportation vehicles should be equipped with the corresponding variety and quantity of the leak and fire equipment and emergency equipment. During the transport should anti-exposure, anti-rain, anti-high-temperature, anti-leaking and throwing and sprinkling , and it should stop away from fire and heat. The vehicles and vessels must be dry, and have good water-resistant facilities. The vehicles must be cleaning completely after transporting.

SECTION 15: Regulatory information

Dangerous Chemical Goods Regulations (published by the State Council in February 17, 1987), the Implementation of Details of Chemical Safety Management of Dangerous Goods Regulations (published by chemical labor council [1992] NO.677), Regulations Safety Using Chemical Goods in Workplace ([1996] NO. 423 Labor Department published) etc, all give the regulations focus on hazardous chemicals using, producing, storage, transportation and handling: The classification and mark of usual dangerous chemical goods divided it into 4.3 wet flammable materials. Other regulations: The dust explosion-proof safety of processing Al and Ma powder (GB17269-2003). The standard of Al, alumina and aluminum powder content in workshop air, etc.

SECTION 16: Other information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. SHAANXI DAYU CHEMICAL CO., LTD. shall not be held liable for any damage resulting from handling or from contact with the above product. Please see additional terms and conditions for reference.