

SAFETY DATA SHEET



Aluminum powder

ACCORDING TO US OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

Date of issue: 27.09.2022
Date of First Issue: 27.09.2022
Version 1.0
SDS ID: 100-US-EN

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier

Product name Aluminum powder
Grade name 44; 101; 105; 105A; 105-ET; 140; 201; 201HS; 201CG; 233; 5662; 5682; 5710; CP75-100; FLSW
1413; 5238; 5263; 5606; 5702; 5713; 5713-D; 5715; 5736; 5737; 5745; 5750; 5760; ABW439; ABW444; ABW445; ABW479; ABW480; ABW488; ABW489; ABY488; SP75-90; SP75-100
X-40; X-64; X-65; X-69; X-70; X-71; X-71AC; X-79; X-80; X-81; X-81-40; X-82; X-83; X-85; X-85/7; X-85-CG; X-86
OX100C; OX200C; OX81S; OX86SXL
TCP-3; TCP-4; TCP-5; TCP-6; TCP-7; TCP-8; TCP-9; TCP9HS-45; TCP-9-1; TCP-12; TCP-14; TCP-16; TCP-18; TCP-20; TCP-50; TCP192; TCP172HS-45

Other means of identification

none

Relevant identified uses of the substance or mixture and uses advised against

Identified Use(s) Refractory material ; Chemicals; Fillers; Resin, Grease, Aluminium Paste
Uses advised against None Known

Details of the supplier of the safety data sheet

Supplier Toyal America Inc.
17401 South Broadway,
Lockport,
IL 60441 USA
Telephone +1 815-740-3000
E-mail (competent person) sds@toyal.com

Emergency telephone number

Emergency Phone No. +1-800-424-9300 Chemtrec (USA & Canada)
+1-703-527-3887 Chemtrec (International Call Collect)

SECTION 2: HAZARD(S) IDENTIFICATION

Classification of the substance or mixture according to US OSHA Hazard Communication Standard (29 CFR 1910.1200)

Physical hazards Combustible Dust
Hazards not otherwise classified
Health hazards Not classified as hazardous for supply/use.
Environmental hazards Not classified as hazardous for supply/use.

Label elements

Labeling according to US OSHA Hazard Communication Standard (29 CFR 1910.1200)
Product name / Trade Name Aluminum Powder
Hazard Pictogram(s) Not assigned
Signal Word(s) WARNING

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Hazard Statement(s)	May form combustible dust concentrations in air.
Precautionary Statement(s)	Keep away from heat/sparks/flames/hot surfaces-No smoking. Ground/bond container and receiving container. Use explosion-proof electrical/ventilating/lighting/equipment. Wear protective eye protection. In case of fire, use Class D extinguisher or dry sand to extinguish.
Other hazards	Handling of this material may generate a dust which can cause mechanical irritation of the eyes, skin nose and throat. Reacts violently with halogenated hydrocarbons and Oxidizing agents. (Formation of: Heat) Dust can form an explosive mixture with air. Humidity penetration into closed containers may lead to pressure increase and possible bursting of the container

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substances

Chemical identity of the substance	%W/W	CAS No.	EC No.
Aluminium powder	100	7429-90-5	231-072-3

Formula: Al
Molecular weight: 26.98 g/mol

Mixtures Substances in preparations / mixtures
not applicable

SECTION 4: FIRST AID MEASURES



Description of first aid measures

Self-protection of the first aider

Inhalation

Skin contact

Eye contact

Ingestion

Most important symptoms and effects, both acute and delayed

Indication of any immediate medical attention and special treatment needed

Use personal protective equipment as required. Wear appropriate personal protective equipment, avoid direct contact. Ensure adequate ventilation. Avoid breathing dust. Avoid all contact. Contaminated clothing should be laundered before reuse. Do not ingest. If swallowed then seek immediate medical assistance.

IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.

IF ON SKIN: Wash with plenty of water. Take off contaminated clothing and wash it before reuse. In case of skin reactions, consult a physician.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Consult an ophthalmologist.

IF SWALLOWED: Rinse mouth. Get medical advice/attention if you feel unwell. Do NOT induce vomiting. If vomiting occurs turn patient on side. Rinse mouth. Never give anything by mouth to an unconscious person.

Handling of this material may generate a dust which can cause mechanical irritation of the eyes, skin nose and throat.

Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

Extinguishing media

Suitable extinguishing media

As appropriate for surrounding fire. Extinguish with dry sand or special powder for metal fire (Class D).

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Unsuitable extinguishing media

Special hazards arising from the substance or mixture

Advice for firefighters

Direct water jet may spread the fire. Direct water jet may spread the fire. Do not use halogenated agents. Do not use water, foam or dry agent. (ABC-powder)
Product is not classified as flammable, but will burn on contact with flame or exposure to high temperature. The aluminium particles will burn at a very high temperature as a mass of material or be potentially explosive if loosened and dispersed in air. Aluminium reacts with water, acids, or alkalis to form flammable hydrogen gas. In case of fire may be liberated: Metal oxide smoke, toxic
Fight fire with normal precautions from a reasonable distance. Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Keep containers cool by spraying with water if exposed to fire. Avoid run off to waterways and sewers.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Methods and material for containment and cleaning up

Ensure suitable personal protection during removal of spillages. Eliminate sources of ignition. Shut off leaks if without risk. Avoid all contact. Ensure adequate ventilation. Avoid breathing dust. Avoid generation of dust.
Avoid release to the environment. Do not allow to enter drains, sewers or watercourses. Provided it is safe to do so, isolate the source of the leak. Take up mechanically, placing in appropriate containers for disposal. Treat the recovered material as prescribed in the section on waste disposal. Clean contaminated articles and floor according to the environmental legislation.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

Conditions for safe storage, including any incompatibilities

storage temperature
Incompatible materials

Ensure operatives are trained to minimise exposures. Ensure adequate ventilation. Avoid breathing dust. Avoid generation of dust. Avoid contact with heat and ignition sources. In case of inadequate ventilation wear respiratory protection. Avoid all contact. Do not ingest. Wear protective gloves/eye protection. Do not eat, drink or smoke when using this product. Wash hands before breaks and after work. Take precautionary measures against static discharge. Use explosion-proof equipment. Use non-sparking tools. Usual measures for fire prevention.
Keep container tightly closed. Bund storage facilities to prevent soil and water pollution in the event of spillage. Store in a cool/low-temperature, well-ventilated (dry) place away from heat and ignition sources. Protect from moisture. Humidity penetration into closed containers may lead to pressure increase and possible bursting of the container
Ambient temperatures.
Keep away from: Water, Acid, Alkali (lye), Oxidizing agent, Nitrates, Alcohols, halogenated hydrocarbons, Halogens, Combustible materials

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits

SUBSTANCE	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m ³)	STEL (ppm)	STEL (mg/m ³)	Note
Aluminium	7429-90-5	-	(total) 10 (resp.) 5			NIOSH
		-	(total) 15 (resp.) 5			OSHA
		-	(resp.) 1			ACGIH

Source:

ACGIH: American Conference of Governmental Industrial Hygienists – Threshold limit values (TLV) 2022

NIOSH: National Institute for Occupational Safety and Health (NIOSH) Recommended exposure limits (RELs)

OSHA Permissible Exposure Limit (PEL): Occupational Safety and Health Standards, 1910.1000 TABLE Z-1/Z-2/Z-3

Notes:

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resp.: respirable fraction; respirable particles
total: total dust

Biological exposure indicies

Not established

Appropriate engineering controls

Ensure adequate ventilation Use explosion-proof equipment. Guarantee that the eye flushing systems and safety showers are located close to the working place.

Individual protection measures, such as personal protective equipment

Keep good industrial hygiene. Wear appropriate personal protective equipment, avoid direct contact. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke at the work place. Avoid breathing dust. Avoid generation of dust.

Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

Eye/ face protection



Use eye protection according to EN 166, designed to protect against liquid splashes.

Skin protection



Hand protection Wear suitable gloves. (Recommended: EN ISO 374)

The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. Breakthrough times and swelling properties of the material must be taken into consideration. Check the condition of protective gloves before each use. Replace when worn.

Body protection: Wear suitable coveralls to prevent exposure to the skin.

Respiratory protection



In case of inadequate ventilation wear respiratory protection.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Solid (silver/grey Finely divided Powder)
Odour	not determined
Odour threshold	not determined
pH	not determined
Melting point/freezing point	660 °C
Initial boiling point and boiling range	not determined
Flash point	not applicable - Product is a solid.
Evaporation rate	not determined
Flammability (solid, gas)	Non-flammable. (DOT test Class 4, Division 4.1 "Flammable solid.")
Upper/lower flammability or explosive limits	not applicable - Product is a solid.
Vapour pressure	not determined
Vapour density	not applicable - Product is a solid.
Relative density	2.7
Solubility(ies)	Insoluble in water
Partition coefficient: n-octanol/water	not applicable - The product is: Inorganic
Auto-ignition temperature	not applicable - Product is a solid.

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Decomposition temperature	not determined
Viscosity	not applicable - Product is a solid.
Particle size	5 – 200 µm
Pyrophoric solid	Not pyrophoric.
Dangerous When Wet	Not Dangerous When Wet (DOT test Class 4, Division 4.3 "Dangerous When Wet")
Explosive properties	Dust can form an explosive mixture with air. Humidity penetration into closed containers may lead to pressure increase and possible bursting of the container

SECTION 10: STABILITY AND REACTIVITY

Reactivity	Stable under normal conditions
Chemical stability	Stable under normal conditions
Possibility of hazardous reactions	Combustible Dust. Dust can form an explosive mixture with air. Reacts violently with halogenated hydrocarbons and Oxidizing agents. (Formation of: Heat) Humidity penetration into closed containers may lead to pressure increase and possible bursting of the container. Aluminium reacts with water, acids, or alkalis to form flammable hydrogen gas
Conditions to avoid	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Protect from moisture.
Incompatible materials	Water, Acid, Alkali (lye), Oxidizing agent, Nitrates, Alcohols, halogenated hydrocarbons, Halogens, Combustible materials
Hazardous decomposition products	Hydrogen may be formed. In case of fire may be liberated: Metal oxide smoke, toxic

SECTION 11: TOXICOLOGICAL INFORMATION

Information on toxicological effects	
Acute toxicity - Ingestion	Based upon the available data, the classification criteria are not met. LD50: > 15900 mg/kg bw (Rat; OECD 401) Source: ECHA registration dossier
Acute toxicity - Skin contact	Based upon the available data, the classification criteria are not met.
Acute toxicity - Inhalation	Based upon the available data, the classification criteria are not met. LC50: > 5.09 mg/L (Rat; 4 hours; OECD 403) Source: ECHA registration dossier
Skin corrosion/irritation	Based upon the available data, the classification criteria are not met. Result: Not irritating to skin (Albino rabbit; OECD 404) Source: ECHA registration dossier
Serious eye damage/irritation	Based upon the available data, the classification criteria are not met. Result: Not irritating to eyes (Albino rabbit) Source: ECHA registration dossier
Respiratory or skin sensitisation	Based upon the available data, the classification criteria are not met. Skin sensitization: Result: not sensitising. (Guinea pig; OECD 406) Respiratory sensitization: Result: not sensitising. (Mouse) Source: ECHA registration dossier
Germ cell mutagenicity	Based upon the available data, the classification criteria are not met. Source: ECHA Registration Endpoint summary
Carcinogenicity	Based upon the available data, the classification criteria are not met. Source: ECHA Registration Endpoint summary
Reproductive toxicity	Based upon the available data, the classification criteria are not met. Source: ECHA Registration Endpoint summary
STOT - single exposure	Based upon the available data, the classification criteria are not met. Source: ECHA Registration Endpoint summary
STOT - repeated exposure	Based upon the available data, the classification criteria are not met.

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Aspiration hazard	NOAEL: 30 mg/kg bw/day (Rat; oral) LOAEC: 50 mg/m ³ (Rat; inhalation) Source: ECHA Registration Endpoint summary Based upon the available data, the classification criteria are not met. The product is: solid
Information on likely routes of exposure	
Inhalation	Possible – accidental exposure
Ingestion	Possible – accidental exposure
Skin contact	Possible – accidental exposure
Eye contact	Unlikely – accidental exposure
Early onset symptoms related to exposure	Handling of this material may generate a dust which can cause mechanical irritation of the eyes, skin nose and throat.
Delayed health effects from exposure	None Known
Exposure levels and health effects	See Section: 8
Interactive effects	None known
Other information	
OSHA Designated Carcinogen	Not listed
NIOSH Occupational Carcinogen List	Not listed
NTP Report on Carcinogens	Not listed
IARC Monographs	Aluminium Production: IARC Classification: Group 1.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity	Based upon the available data, the classification criteria are not met. By analogy with similar materials: LC50: 35 mg/L (Pimephales promelas (fathead minnow); 96 hours) NOEC: 0.5483 mg/L (Danio rerio (zebrafish); 33 days) EC50: 1.5 – 2.56 mg/L (Ceriodaphnia dubia; 48 hours) NOEC: 1.02 mg/L (Ceriodaphnia dubia; 6 days) EC50: 0,35 mg/L (Raphidocelis subcapitata; 72 hours; OECD 201) Source: ECHA registration dossier
Persistence and degradability	The methods for determining the biological degradability are not applicable to inorganic substances. Source: ECHA registration dossier
Bioaccumulative potential	No data available Source: ECHA registration dossier
Mobility in soil	No data available Source: ECHA registration dossier
Other adverse effects	No information available.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste treatment methods	Dispose of wastes in an approved waste disposal facility. Recover or recycle if possible. Avoid release to the environment. Disposal should be in accordance with local, state or national legislation. Handle contaminated packages in the same way as the substance itself. Non-contaminated packages may be recycled.
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SECTION 14: TRANSPORT INFORMATION

Not classified according to the United Nations 'Recommendations on the Transport of Dangerous Goods'.

	Land transport (US DoT 49 CFR)	Sea transport (IMDG)	Air transport (IATA/ICAO)
UN number	Not assigned	Not assigned	Not assigned

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UN proper shipping name	Not assigned	Not assigned	Not assigned
Transport hazard class(es)	Not assigned	Not assigned	Not assigned
Packing group	Not assigned	Not assigned	Not assigned
Environmental hazards	Not classified as Environmentally hazardous substance	Not classified as a Marine Pollutant.	Not classified as Environmentally hazardous substance
Special precautions for user	See Section: 2		
Transport in bulk according to Annex II of Marpol and the IBC Code	not applicable		
Additional information	none		

SECTION 15: REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

US Federal Regulations

Agency for Toxic Substances and Disease Registry – Toxic Substances	The substance is listed.
TSCA Chemical Substance Inventory	The substance is listed.
TSCA Chemical Data Reporting (CDR) Rule	The substance is listed.
NIOSH Occupational Carcinogen List	The substance is not listed.
EPCRA Section 313	The substance is listed.
CWA 307- Toxic	The substance is not listed.
CERCLA - Hazardous Substances	The substance is not listed.
CWA Section 311 List of Hazardous Substances	The substance is not listed.
EPA – Endocrine Disruptor Screening Programm – Estrogen Receptor Bioactivity (ER Bioactivity)	The substance is not listed.
EPA – Safer Chemicals Ingredients List	The substance is not listed.

US State Regulations

Proposition 65 (California)	The substance is not listed.
California (CA) – Hazardous substances information and training Act	The substance is listed.
California (CA) – Safer Consumer Products Regulations	The substance is listed.
Massachusetts (MA), New Jersey (NJ), Pennsylvania (PA), Rhode Island (RI)- State Right to Know Lists	The substance is listed.
New York -State Right to Know Lists	The substance is listed.
Minnesota (MN) - State Right to Know Lists	The substance is listed.
Massachusetts (MA) – Toxic Use reduction act	The substance is listed.
Minnesota (MN) – Toxic Free Kids Act	The substance is not listed.

Non-Regional

IARC Monographs	Aluminium Production: IARC Classification: Group 1.
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SECTION 16: OTHER INFORMATION

HMIS (Hazardous Material Information System)

Health: 1 Flammability: 3 Physical hazard: 1

NFPA 704

Health: 1 Flammability: 3 Reactivity: 1 Special hazards: W

The following sections contain revisions or new statements: not applicable – V1.0

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This safety data sheet was compiled in accordance with OSHA HCS (29 CFR 1910.1200)

References:

Existing Safety Data Sheet (SDS)
Existing ECHA registration for Aluminium (CAS No. 7429-90-5)

Legend

ACGIH	American Conference of Governmental Industrial Hygienists
BCF	Bioconcentration factor
CAA	Clean Air Act (CAA)
CAS	Chemical Abstracts Service
CERCLA	CERCLA (Comprehensive Environmental Response Compensation and Liability Act)
CFR	Code of Federal Regulations
CWA	Clean Water Act (CWA)
DoT	United States Department of Transportation
ECHA	European Chemicals Agency
EC	European Community
EC50	Effective Concentration 50%
EN	European Standard
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act (EPCRA)
EU	European Union
HCS	Hazard Communication Standard
IATA	International Air Transport Association
IARC	International Agency for Research on Cancer
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods
IBC	Intermediate Bulk Container
ISO	International Organization for Standardization
LC50	Lethal concentration 50 %
LD50	Lethal dose 50 %
LOAEL	Lowest Observed Adverse Effect Level
LOAEC	Lowest Observed Adverse Effect Concentration
LTEL	Long term exposure limit
MARPOL	The International Convention for the Prevention of Pollution from Ships
NIOSH	National Institute for Occupational Safety & Health
NFPA	National Fire Protection Association
NTP	National Toxicology Program
No.	Number
NOEC	No Observed Effect Concentration
OECD	Organisation for Economic Cooperation and Development
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
REL	Recommended Exposure Limits
STEL	Short term exposure limit
TSCA	Toxic Substances Control Act (TSCA)
TWA	Time Weighted Average
UN	United Nations
US	United States

Training advice: Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required.

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