

Material Safety Data Sheet

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|---------------------|------------------------|
| Product name | Aluminium(8xxx) |
|---------------------|------------------------|

1. Product and company identification

| | |
|---|---|
| Product | Aluminium wrought metal, 8xxx series alloys |
| Various fabricated aluminum parts and product | Aluminium coil |
| Chemical Formula | Mixture |
| Supplier Information | |
| Manufacture's Name | DONG-IL ALUMINIUM CO., LTD |
| Address | 160, seonggeo-gil, seonggeo-eup, seobuk-gu, Cheonan-si, Chungnam, KOREA |
| Telephone | +82-41-559-2271 |

2. Hazards identification, including emergency overview

| | |
|--------------------------|--|
| NFPA Rating | Health = 0 , Flammability = 0 , Reactivity = 0 |
| Emergency overview | Solid. Silver colored. Odorless. Non-combustible as supplied. Small chips, fine turnings and dust from processing may be readily ignitable. |
| Potential health effects | Explosion/fire hazards may be present when (See Sections 5, 7 and 10 for additional information): <ul style="list-style-type: none"> Dust or fines are dispersed in air. Chips, dust or fines are in contact with water. Dust and fines are in contact with certain metal oxides (e.g., rust, copper oxide). No information found |
| Eye contact | Dust and fumes from processing: Can cause irritation. |
| Skin contact | Contact with residual oil/oil coating: Can cause irritation. Prolonged or repeated skin contact may cause dermatitis. Dust and fumes from processing: Can cause irritation. Prolonged or repeated skin contact may cause sensitization and allergic contact dermatitis. |
| Inhalation | For dust exposure : If irritation or other pulmonary symptoms persist, seek medical attention. |
| Ingestion | Not applicable. |

3. Composition / Information on ingredients

| Product/Ingredient name | Identifiers | Classification | | % |
|-------------------------|--|-----------------|-------------------------------------|-------|
| | | 67/548/EEC | Regulation (EC) no. 1272/2008 [CLP] | |
| Aluminium | REACH#.01-2119529243-45 EC : 231-072-3 CAS : 7429-90-5 | Not Classified. | Not Classified. | >94 |
| Copper | REACH#.01-2119480154-42 EC : 231-159-6 CAS : 7440-50-8 | Not Classified. | Not Classified. | 0~0.4 |
| Iron | REACH#.01-2119462838-24 EC : 231-096-4 CAS : 7439-89-6 | Not Classified. | Not Classified. | 0.1~2 |
| Manganese | REACH#.01-2119449803-34 EC : 231-105-1 CAS : 7439-96-5 | Not Classified. | Not Classified. | 0~0.9 |
| Magnesium | REACH#.01-2119537203-49 EC : 231-104-6 CAS : 7439-95-4 | Not Classified. | Not Classified. | 0~0.5 |
| Silicon | REACH#.01-2119480401-47 EC : 231-130-8 CAS : 7440-21-3 | Not Classified. | Not Classified. | 0~1 |

4. First Aid Measures

| | |
|--------------|---|
| Eye contact | Dust and fumes from processing: Rinse eyes with plenty of water or saline for at least 15 minutes. Consult a physician. |
| Skin contact | Dust and fume from processing or contact with lubricant/residual oil: Wash with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists. |

Inhalation

Dust and fumes from processing: Remove to fresh air. Check for clear airway, breathing, Consult a physician

5. Fire Fighting Measures

Extinguishing media

Suitable extinguishing media Use Class D extinguishing agents on fines, dust or molten metal. Use coarse water spray on chips and turnings.

Unsuitable extinguishing media Water, foam, halogenated extinguishing agents.

Advice for firefighters

Hazards from the substance or mixture No specific fire or explosion hazard.

Special protective actions for fire-fighters promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. no action shall be taken involving any personal risk or without suitable training. aluminium may lose structural strength when subject to fire and will melt to a hazardous liquid at temperatures in the range of 480~660 degrees celsius(dependent on the alloy composition).

6. Accidental Release Measures

Spill or leak procedure Collect scrap for recycling.
If molten: Contain the flow using dry sand or salt flux as a dam. All tooling (e.g., shovels or hand tools) and containers which come in contact with molten metal must be preheated or specially

7. Handling and Storage

Protective measures Use standard techniques to check metal temperature before handling. Hot aluminium does not present any warning color change. Exercise great caution, since the metal may be hot. For more information on the handling and storing of aluminium, consult the following documents published by the Aluminium Association, 1525 Wilson Blvd Suite 600, Arlington, VA 22209(www.aluminium.org) :
– Guidelines for handling molten aluminium.
– Recommendations for storage and handling of aluminium powders and pastes.
– Guidelines for handling aluminium fines generated during various aluminium fabrication operations.
See also "National Fire Protection Association Codes" : NFPA 484 : Standard for Combustible Materials.

8. Exposure Controls / Personal Protection

Engineering controls Dust and fumes from processing: Use with adequate explosion-proof ventilation designed to handle particulates to meet the limits listed in Section 8, Exposure Guidelines.

Occupational exposure limits

| Product/ingredient name | Exposure limit values |
|-------------------------|--|
| Aluminium | ACGIH TLV (United States 2/2010). TWA : 1 mg/m ³ 8 hour(s). From : Respirable fraction; see Appendix c |
| Managese | ACGIH TLV (United States 2/2010). TWA : 0.2 mg/m ³ 8 hour(s) |
| Silicon | Arbejdstilsynet (Denmark, 3/2008). TWA : 10 mg/m ³ 8 hour(s) Arbejdstilsynet(Norway, 3/2009). TWA : 10 mg/m ³ 8 hour(s) Sotsiaalminister (Estonia, 10/2007). TWA : 10 mg/m ³ 8 hour(s) TWA : 5 mg/m ³ 8 hour(s). From : Inhalable dust NAOSH (Ireland, 8/2007). OELV-8hr : 10 mg/m ³ , (as Si) 8 hour(s). From : Inhalable dust OELV-8hr : 4 mg/m ³ , (as Si) 8 hour(s). From : Resoirable dust LV Nat. Standardisation and Meterological Centre(Latvia, 5/2007). TWA : 4 mg/m ³ 8 hour(s) EH40/2005 WELs(United Kingdom (UK), 8/2007). TWA : 10 mg/m ³ 8 hour(s). From : Inhalable dust TWA : 4 mg/m ³ 8 hour(s). From : Respirable dust INSHT(Spain, 3/2010). TWA : 10 mg/m ³ 8 hour(s). From : Inhalable fraction. TWA : 4 mg/m ³ 8 hour(s). From : Respirable fraction. PD 90/1999(Greece, 8/2007). TWA : 10 mg/m ³ 8 hour(s). From : Inhalable fraction. TWA : 5 mg/m ³ 8 hour(s). From : Respirable fraction. SUVA(Switzerland, 1/2009). Oxygen Depletion [Asphyxiant]. TWA : 3 mg/m ³ 8 hour(s). From : Respirable dust Lijst Grenswaarden / Valeurs Limites(Belgium, 6/2009). TWA : 10 mg/m ³ 8 hour(s). INRS(France, 12/2007). Notes : Indicative exposure limits. TWA : 10 mg/m ³ 8 hour(s). From : Dust |
| Copper | ACGIH TLV(United States, 2/2010). TWA : 1 mg/m ³ , (as Cu) 8 hour(s). TWA : 0.2 mg/m ³ 8 hour(s). From : Fume |
| Iron | P6 MTCN n M3 Hapea6a No 13/2003(Bulgaria, 8/2007). Limit value 8 Hours : 6 mg/m ³ 8 hour(s). From : Dust, Inhalable fraction. PO Mnh3apaCou, NAK (RU, 2/2004). TWA : 10 mg/m ³ 8 Hour(s). From : aerosol Nariadenie Vlady Slovenskej republiky(Slovakia, 6/2007). TWA : 6 mg/m ³ 8 hour(s). From : compact aerosols MZCR PEL/NPK-P(Czech Republic, 3/2010). TWA L 10 mg/m ³ 8 hour(s). From : Dust |

Magnesium Sotsiaalmnister(Estonia, 10/2007).
 TWA : 0.5 mg/m³ 8 hour(s). From : Inhalable dust
 TWA : 1 mg/m³ 8 hour(s). From : Total dust

Exposure controls

Appropriate engineering controls Special ventilation should be used to convey finely divided metallic dust generated by grinding, sawing or polishing operations, in order to eliminate explosion hazards. Matintain dust concentration in ventilation ducts below the lower explosive limit of 40g/m³(0.04 oz/ft³).

Individual protection measures

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 splashesm mists, gases or dusts. Recommended : Face shield.

Skin protection

Hand protection Use strong, cut-resistant gloves suitable for handling metals. Wear suitable gloves.

Body protection No special protective clothing is required. Recommende : For handling molten metal : Clothing must be resistant to drops of molten metal and radiant heat.

Environmental exposure controls Recommended : If workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators.

9. Physical and chemical properties

Information on basic physical and chemical properties

| | |
|--|--|
| Physical state | Solid. [Metal] |
| Colour | Silvery grey |
| Odour | Odourless. |
| Odour threshold | Not applicable. |
| pH | Not applicable. |
| Melting point/freezing point | 482 to 660°C |
| Initial boiling potin and boiling range | Not applicable. |
| Flash point | Not applicable. |
| Flammability(solid, gas) | Not applicable. |
| Burning time | Not applicable. |
| Burning rate | Not applicable. |
| Upper/lower flammability or explosive limits | Not applicable. |
| Vapour pressure | Not applicable. |
| Vapour density | Not applicable. |
| Bulk density | Not applicable. |
| Relative density | 2.5 to 2.9 |
| Solubility(ies) | Insholuble in the following materials : cold water, hot water, methanol, diethyl ether, n-octanol and acetone. |
| Partition coefficient : n-octanol/water | Not applicable. |
| Auto-ignition temperature | Not applicable. |
| Decomposition temperature | Not applicable. |
| Viscosity | Not applicable. |
| Explosive properties | Not applicable. |
| Oxdising properties | Not applicable. |
| Other information | No additional information. |

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 reaction will not occur. Fine dust presents an explosion hazard if dispersed in air at high concentrations. |
| Conditions to avoid | In the form of particles, may explode when mixed with halogenated acids, halogenated solvents, bromates, iodates or ammonium nitrate. Aluminium particles on contact with copper, lead, or iron oxides can react vigorously with release of heat if there is a source of ignition or intense heat. |
| Incompatible materials | In the form of particles, may explode when mixed with halogenated acids, halogenated solvents, bromates, iodates or ammonium nitrate. Aluminium particles on contact with copper, lead, or iron oxides can react vigorously with release of heat if there is a |
| Hazardous decomposition products | Under normal conditions of storage and use, hazardous decomposition products should not be produced. |

11. Toxicological information

Information on toxicological effects

Acute toxicity

| Product/ingredient name | Result | Species | Dose | Exposure |
|-------------------------|--------|---------|------|----------|
|-------------------------|--------|---------|------|----------|

| | | | | |
|-----------|---------------------------------|-----|------------------|---------|
| Aluminium | LC50 Inhalation Dusts and mists | Rat | >2350 mg/l | 4 hours |
| | Dermal | Rat | No effect level. | – |
| | LD50 Oral | Rat | >5000 mg/kg | – |

Conclusion/Summary No known significant effects or critical hazards.

Irritation/Corrosion

Eyes Not applicable for solid metal form. Aluminium dust may cause eye discomfort and irritation.

Sensitisation

Skin Non-sensitiser.

Respiratory Non-sensitiser.

Mutagenicity

Conclusion/Summary No mutagenic effect.

Carcinogenicity

Conclusion/Summary No carcinogenicity effect.

Reproductive toxicity

Conclusion/Summary Not considered to be toxic to the reproductive system.

Teratogenicity

Conclusion/Summary No teratogenic effect.

Specific target organ toxicity (single exposure)

| Product/ingredient name | Category | Route of exposure | Target organs |
|-------------------------|----------|-------------------|---------------|
|-------------------------|----------|-------------------|---------------|

No known significant effects or critical hazards.

Specific target organ toxicity (repeated exposure)

| Product/ingredient name | Category | Route of exposure | Target organs |
|-------------------------|----------|-------------------|---------------|
|-------------------------|----------|-------------------|---------------|

No known significant effects or critical hazards.

Aspiration hazard Not applicable.

Information on the likely routes of exposure Routes of entry anticipated : Inhalation.

Potential acute health effects

Eye contact Not applicable.

Inhalation Not applicable.

Skin contact Contact with hot material causes thermal skin burns.

Ingestion Not applicable.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact No specific data.

Inhalation No specific data.

Skin contact No specific data.

Ingestion No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects No specific data.

Potential delayed effects No specific data.

Long term exposure

Potential immediate effects No specific data.

Potential delayed effects No specific data.

Potential chronic health effects

Conclusion/Summary No known significant effects or critical hazards.

General

No known significant effects or critical hazards. Not applicable for metal solid form. Prolonged over exposure to fine aluminium dust may cause pneumoconiosis and pulmonary fibrosis. Case study reports of disease due to sole exposure to vaporized aluminium are old and rare.

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.

12. Ecological effects

Environmental effects No information found

Environmental toxicity No information found

13. Disposal considerations

Methods of disposal Recycle, if possible. The generation of waste should be avoided or minimised wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor.

Hazardous waste Within the present knowledge of the supplier, this product is not regarded as hazardous waste, as defined by EU Directive 91/689/EEC

Special precautions Not applicable.

14. Transport information

| UN number | ADR/RID | AND/ADNR | IMDG | IATA |
|-----------------------------|-----------------|-----------------|-----------------|-----------------|
| UN proper shipping name | Not regulated. | Not regulated. | Not regulated. | Not regulated. |
| Transport hazard class | – | – | – | – |
| Packing group | – | – | – | – |
| Environmental hazards | No. | No. | No. | No. |
| Special precaution for user | Not applicable. | Not applicable. | Not applicable. | Not applicable. |
| Additional information | – | – | – | – |

14. Transport information

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

EU Regulation (EC) No. 1907/2006(REACH)

Annex XIV – List of substances subject to authorisation

Substances of very high concern

None of the components are listed.

Annex XVII – Restrictions Not applicable.

Other EU Regulations

Europe inventory All components are listed or exempted.

Black List Chemicals Not listed.

Priority List Chemicals Not listed.

Integrated pollution Prevention and control list(IPPC) – Air Listed.

Integrated pollution Prevention and control list(IPPC) – Water Listed.

International regulations

Chemical Weapons Convention List Schedule I Not listed.

Chemical Weapons Convention List Schedule II Not listed.

Chemical Safety Assessment Complete.

15. Other information

Abbreviations and acronyms ATE = Acute Toxicity Estimate
 CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
 DNEL = Derived No Effect Level
 EUH statement = CLP-specific Hazard statement
 PNEC = Predicted No Effect Concentration
 RRN = REACH Registration Number

| Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS] | Classification | Justification |
|--|-----------------|---------------|
| | Not classified. | |

Full text of abbreviated H statements Not applicable.

Full text of classifications[CLP/GHS] Not applicable.

Full text of abbreviated R phrases Not applicable.

Full text of classifications[DSD/DPD] Not applicable.

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