SAFETY DATA SHEET
according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 08/11/2015 Version 1.2

SECTION 1. Identification

Product identifier

Product number 105341
Product name Devarda's alloy for analysis EMSURE®
CAS-No. 8049-11-4

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

Identified uses Use restricted under TSCA to research and development or as analytical reagent. Uses regulated under FDA or FIFRA are not affected.
Reagent for analysis

Details of the supplier of the safety data sheet

Company EMD Millipore Corporation | 290 Concord Road, Billerica, MA 01821, United States of America | General Inquiries: +1-978-715-4321 | Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)

Emergency telephone 800-424-9300 CHEMTREC (USA)
+1-703-527-3887 CHEMTREC (International)
24 Hours/day; 7 Days/week

SECTION 2. Hazards identification

GHS-Labeling Not a dangerous substance according to GHS.

Other hazards None known.

SECTION 3. Composition/information on ingredients

Chemical nature Inorganic substance.

SECTION 4. First aid measures

Description of first-aid measures
Inhalation
After inhalation: fresh air.

Skin contact
After skin contact: wash off with plenty of water. Remove contaminated clothing.

Eye contact
After eye contact: rinse out with plenty of water with the eyelid held wide open. Call in ophthalmologist if necessary.

Ingestion
After swallowing: make victim drink water (two glasses at most). Consult doctor if feeling unwell.

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed
irritant effects, Cough, Shortness of breath

Indication of any immediate medical attention and special treatment needed
No information available.

SECTION 5. Fire-fighting measures

Extinguishing media
Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture
Not combustible.
Ambient fire may liberate hazardous vapors.

Advice for firefighters
Special protective equipment for fire-fighters
In the event of fire, wear self-contained breathing apparatus.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Avoid inhalation of vapors/aerosols or dusts. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

Environmental precautions
No special precautionary measures necessary.

Methods and materials for containment and cleaning up
Observe possible material restrictions (see sections 7 and 10).
Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.
SECTION 7. Handling and storage

Precautions for safe handling
Observe label precautions.

Conditions for safe storage, including any incompatibilities
Tightly closed. Dry.
Store at +5°C to +30°C (+41°F to +86°F).

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Basis</th>
<th>Value</th>
<th>Threshold limits</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General threshold limit value for dust</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Z1A (TWA):</td>
<td>5 mg/m³</td>
<td>Form of exposure: Respirable fraction.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time Weighted Average (TWA):</td>
<td>15 mg/m³</td>
<td>Form of exposure: Total dust.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time Weighted Average (TWA):</td>
<td>50 millions of particles per cubic foot of air</td>
<td>Form of exposure: Total dust.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time Weighted Average (TWA):</td>
<td>15 millions of particles per cubic foot of air</td>
<td>Form of exposure: Respirable fraction.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA_TRANS PEL:</td>
<td>5 mg/m³</td>
<td>Form of exposure: Respirable fraction.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time Weighted Average (TWA):</td>
<td>15 mg/m³</td>
<td>Form of exposure: Total dust.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time Weighted Average (TWA):</td>
<td>5 mg/m³</td>
<td>Form of exposure: Respirable fraction.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PEL:</td>
<td>5 mg/m³</td>
<td>Form of exposure: Respirable fraction.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 mg/m³</td>
<td>Form of exposure: Total dust.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ACGIH (TWA):</td>
<td>10 mg/m³</td>
<td>Form of exposure: Inhalable particles.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time Weighted Average (TWA):</td>
<td>3 mg/m³</td>
<td>Form of exposure: Respirable particles.</td>
<td></td>
</tr>
</tbody>
</table>

Contains no substances with occupational exposure limit values.

Engineering measures
Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Individual protection measures
Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures
Change contaminated clothing. Wash hands after working with substance.

Eye/face protection
Safety glasses
Hand protection

full contact:

Glove material: Nitrile rubber
Glove thickness: 0.11 mm
Break through time: > 480 min

splash contact:

Glove material: Nitrile rubber
Glove thickness: 0.11 mm
Break through time: > 480 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 741 Dermatril® L (full contact), KCL 741 Dermatril® L (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet and supplied by us as well as to the purpose specified by us. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Respiratory protection

required when dusts are generated.

Recommended Filter type: Filter P 1 (acc. to DIN 3181) for solid particles of inert substances

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are performed according to the instructions of the producer. These measures have to be properly documented.

SECTION 9. Physical and chemical properties

Physical state solid
Color gray
Odor odorless
Odor Threshold No information available.
pH No information available.
Melting point 490 - 560 °C
Boiling point/boiling range 906 °C (906 °C)
Flash point No information available.
Evaporation rate No information available.
Flammability (solid, gas) No information available.
Lower explosion limit No information available.
Upper explosion limit: No information available.
Vapor pressure: No information available.
Relative vapor density: No information available.
Density: ca. 5.79 g/cm³ at 20 °C (20 °C)
Relative density: No information available.
Water solubility: Insoluble at 20 °C (20 °C)
Partition coefficient: n-octanol/water: No information available.
Autoignition temperature: No information available.
Decomposition temperature: No information available.
Viscosity, dynamic: No information available.
Explosive properties: Not classified as explosive.
Oxidizing properties: None
Bulk density: ca. 2,080 kg/m³
Particle size: 0.05 - 0.20 mm

SECTION 10. Stability and reactivity

Reactivity
See below

Chemical stability
The product is chemically stable under standard ambient conditions (room temperature).

Possibility of hazardous reactions
No information available

Conditions to avoid
No information available

Incompatible materials
No information available

Hazardous decomposition products
No information available
SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure
Eye contact, Skin contact, Ingestion

Specific target organ systemic toxicity - single exposure
The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific target organ systemic toxicity - repeated exposure
The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard
Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

IARC
No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

ACGIH
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Further information
Quantitative data on the toxicity of this product are not available.

Further toxicological data:
Hazardous properties cannot be excluded but are unlikely when the product is handled appropriately.

Possible effects:
After inhalation: Irritations of the mucous membranes, coughing, and dyspnoea.
Metal-fume fever after inhalation of large quantities.

Further data:
Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

Ecotoxicity
No information available.

Persistence and degradability
No information available.

Bioaccumulative potential
No information available.
Mobility in soil
No information available.

SECTION 13. Disposal considerations
The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information

Land transport (DOT)
Not classified as dangerous in the meaning of transport regulations.

Air transport (IATA)
Not classified as dangerous in the meaning of transport regulations.

Sea transport (IMDG)
Not classified as dangerous in the meaning of transport regulations.

SECTION 15. Regulatory information

United States of America

SARA 313
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 302
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

Clean Water Act
This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

US State Regulations

Massachusetts Right To Know
Remarks
No components are subject to the Massachusetts Right to Know Act.

California Prop 65 Components
This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.
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according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number 105341 Version 1.2
Product name Devarda's alloy for analysis EMSURE®

Notification status
TSCA: Not Listed on TSCA inventory. For Research and Development Use only. Not For Manufacturing or Commercial Purposes.
DSL: This product contains one or several components that are not on the Canadian DSL nor NDSL.

SECTION 16. Other information

Training advice
Provide adequate information, instruction and training for operators.

Key or legend to abbreviations and acronyms used in the safety data sheet
Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Revision Date 08/11/2015

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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