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

1.1 Product identifier
Trade name : ROTOVARIO FPG 550 104 Silver
Product code : 022352GD0 022352GD0

1.2 Relevant identified uses of the substance or mixture and uses advised against
This information is not available.

1.3 Details of the supplier of the safety data sheet
Company : ECKART GmbH
Guentersthal 4
91235 Hartenstein

Telephone : +4991527770
Telefax : +499152777008
E-mail address of person responsible for the SDS : msds.eckart@altana.com

1.4 Emergency telephone number
GBK Gefahrgut Büro GmbH, Ingelheim, Germany:
From outside US: (001) 352-323-3500
(First call in English, response in your language is possible)
US & Canada (toll free) : 1-800-5355-053

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
Classification (REGULATION (EC) No 1272/2008)
Flammable solids, Category 1 : H228: Flammable solid.
Eye irritation, Category 2 : H319: Causes serious eye irritation.
Specific target organ toxicity - single exposure, Category 3, Central nervous system : H336: May cause drowsiness or dizziness.

2.2 Label elements
Labelling (REGULATION (EC) No 1272/2008)
Hazard pictograms :

Signal word : Danger

Hazard statements :
- H228 Flammable solid.
- H319 Causes serious eye irritation.
- H336 May cause drowsiness or dizziness.

Precautionary statements :

Prevention:
- 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.
- P280 Wear protective gloves/ eye protection/ face protection.

Response:
- P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
- P337 + P313 If eye irritation persists: Get medical advice/ attention.
- P370 + P378 In case of fire: Use for extinction: Special powder for metal fires.
- P370 + P378 In case of fire: Use for extinction: Dry sand.

Hazardous components which must be listed on the label:
- propan-2-ol

2.3 Other hazards
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Hazardous components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index-No.</th>
<th>Registration number</th>
<th>Classification REGULATION (EC) No 1272/2008</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>aluminium powder (stabilised)</td>
<td>7429-90-5 231-072-3 013-002-00-1 01-2119529243-45</td>
<td>Flam. Sol. 1; H228</td>
<td>&gt;= 25 - &lt; 50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>propan-2-ol</td>
<td>67-63-0</td>
<td>Flam. Liq. 2; H225</td>
<td>&gt;= 25 - &lt; 50</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SECTION 4: First aid measures

4.1 Description of first aid measures

General advice: Move the victim to fresh air. Do not leave the victim unattended. Move out of dangerous area. Show this safety data sheet to the doctor in attendance.

If inhaled: Consult a physician after significant exposure. If unconscious, place in recovery position and seek medical advice.

In case of skin contact: Wash off immediately with soap and plenty of water. If on skin, rinse well with water. If on clothes, remove clothes.

In case of eye contact: Immediately flush eye(s) with plenty of water. Immediately flush eye(s) with plenty of water. Remove contact lenses. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed: Keep respiratory tract clear. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms: No information available.

Risks: No information available.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment: No information available.
SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media:
- Dry sand
- Special powder against metal fire

Unsuitable extinguishing media:
- Water
- Foam
- Carbon dioxide (CO2)
- ABC powder

5.2 Special hazards arising from the substance or mixture

5.3 Advice for firefighters

Special protective equipment for firefighters:

- Use personal protective equipment.
- Wear self-contained breathing apparatus for firefighting if necessary.

Further information:
- Standard procedure for chemical fires.
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions:
- Evacuate personnel to safe areas.
- Use personal protective equipment.
- Use personal protective equipment.
- Avoid dust formation.
- Remove all sources of ignition.

6.2 Environmental precautions

Environmental precautions:
- Prevent product from entering drains.
- Prevent further leakage or spillage if safe to do so.
- If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up:
- Use mechanical handling equipment.
- Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
- Do not flush with water.
- Keep in suitable, closed containers for disposal.
ROTOVARIO FPG 550 104 Silver

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling:
- Keep away from heat and sources of ignition.
- Avoid dust formation.
- Ensure adequate ventilation.
- Avoid formation of respirable particles.
- Do not breathe vapours/dust.
- Avoid exposure - obtain special instructions before use.
- Avoid contact with skin and eyes.
- For personal protection see section 8.
- Smoking, eating and drinking should be prohibited in the application area.
- Provide sufficient air exchange and/or exhaust in work rooms.
- Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion:
- Earthing of containers and apparatuses is essential. Take measures to prevent the build up of electrostatic charge. Use explosion-proof equipment.
- Avoid dust formation. Keep away from open flames, hot surfaces and sources of ignition.

Hygiene measures:
- When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers:
- Store in original container. Keep containers tightly closed in a cool, well-ventilated place. Keep container closed when not in use. Keep away from sources of ignition - No smoking.
- No smoking. Keep container tightly closed in a dry and well-ventilated place. Electrical installations / working materials must comply with the technological safety standards.

Further information on storage conditions:
- Protect from humidity and water. Do not allow to dry.

Advice on common storage:
- Do not store together with oxidizing and self-igniting products. Never allow product to get in contact with water during storage.
- Keep away from oxidizing agents, strongly alkaline and strongly acid materials in order to avoid exothermic reactions.

Further information on storage stability:
- No decomposition if stored and applied as directed.
7.3 Specific end use(s)
This information is not available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters</th>
<th>Basis (Version Date)</th>
</tr>
</thead>
<tbody>
<tr>
<td>aluminium powder (stabilised)</td>
<td>7429-90-5</td>
<td>NGV (Total)</td>
<td>5 mg/m³</td>
<td>SE AFS (2011-12-16)</td>
</tr>
</tbody>
</table>

Further information
Inhalable dust refers to the dust fraction as defined in the Swedish Standard SS-EN 481, Workplace Atmospheres - Size fraction definitions for measurement of airborne particles, 1st ED., 1993., Section 2.3 and having sampling characteristics as specified in paragraph 5.1. Respirable dust refers to the dust fraction as defined in the Swedish Standard SS-EN 481, Workplace Atmospheres - Size fraction definitions for measurement of airborne particles, 1st ED., 1993., Section 2.11 and having sampling characteristics as specified in paragraph 5.3. Total dust refers to all the particles (aerosols) trapped in a filter in the sampling apparatus described in Methods, Sampling of total dust and respirable dust, method nr 1010, published by the National Board of Occupational Safety and Health, now Work Environment Authority. The filter diameter shall normally be 37 mm but can also be 25 mm. Despite its name, not the total amount of airborne particles is measured by this method.

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters</th>
<th>Basis (Version Date)</th>
</tr>
</thead>
<tbody>
<tr>
<td>propan-2-ol</td>
<td>67-63-0</td>
<td>NGV</td>
<td>150 ppm 350 mg/m³</td>
<td>SE AFS (2015-11-12)</td>
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</tbody>
</table>

Further information
Indicative short term limit value shall be used as a recommended maximum value and should not be exceeded
Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

<table>
<thead>
<tr>
<th>Substance name</th>
<th>End Use</th>
<th>Exposure routes</th>
<th>Potential health effects</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>propan-2-ol</td>
<td>Workers</td>
<td>Skin contact</td>
<td>long term – systemic effects</td>
<td>888 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Workers</td>
<td>Inhalation</td>
<td>long term – systemic effects</td>
<td>500 mg/m³</td>
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<tr>
<td></td>
<td>Consumers</td>
<td>Ingestion</td>
<td>long term – systemic effects</td>
<td>26 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Skin contact</td>
<td>long term – systemic effects</td>
<td>319 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Consumers</td>
<td>Inhalation</td>
<td>long term – systemic effects</td>
<td>89 mg/m³</td>
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</tbody>
</table>

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

<table>
<thead>
<tr>
<th>Substance name</th>
<th>Environmental Compartment</th>
<th>Value</th>
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</thead>
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<tr>
<td>propan-2-ol</td>
<td>Soil</td>
<td>28 mg/kg</td>
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<tr>
<td></td>
<td>Fresh water</td>
<td>140,9 mg/l</td>
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<tr>
<td></td>
<td>Fresh water sediment</td>
<td>552 mg/kg</td>
</tr>
<tr>
<td></td>
<td>Marine water</td>
<td>140,9 mg/l</td>
</tr>
<tr>
<td></td>
<td>Marine sediment</td>
<td>552 mg/kg</td>
</tr>
<tr>
<td></td>
<td>STP</td>
<td>2251 mg/l</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Personal protective equipment

Eye protection : Wear face-shield and protective suit for abnormal processing problems.

Hand protection

Material : Solvent-resistant gloves (butyl-rubber)

Remarks

Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact). The exact break through time can be obtained from the protective glove producer and this has to be observed. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Recommended preventive skin protection Skin should be washed after contact. The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Skin and body protection : Long sleeved clothing

Choose body protection according to the amount and
concentration of the dangerous substance at the workplace.

Respiratory protection: Use suitable breathing protection if workplace concentration requires.

In the case of dust or aerosol formation use respirator with an approved filter.

Environmental exposure controls
Water: The product should not be allowed to enter drains, water courses or the soil.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance: Pasty solid
Colour: silver
Odour: characteristic
Odour Threshold: No data available
pH: No data available
Freezing point: No data available
Boiling point/boiling range: No data available
Flash point: No data available
Evaporation rate: No data available
Flammability (solid, gas): The substance or mixture is a flammable solid with the category 1.
Self-ignition: not auto-flammable
Auto-ignition temperature: No data available
Smoldering temperature: No data available
Decomposition temperature: No data available
Explosive properties: Not explosive
Vapours may form explosive mixture with air.
Oxidizing properties: No data available
SECTION 10: Stability and reactivity

10.1 Reactivity
No decomposition if stored and applied as directed.

10.2 Chemical stability
No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions
Hazardous reactions: Reacts with alkalis, acids, halogenes and oxidizing agents. Contact with acids and alkalis may release hydrogen. Mixture reacts slowly with water resulting in evolution of hydrogen. Vapours may form explosive mixture with air. Stable under recommended storage conditions.
10.4 Conditions to avoid

Conditions to avoid: Do not allow to dry.
Heat, flames and sparks.

10.5 Incompatible materials

Materials to avoid:
- Acids
- Bases
- Oxidizing agents
- Highly halogenated compounds

10.6 Hazardous decomposition products

Contact with water or humid air: This information is not available.

Thermal decomposition: This information is not available.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Components:
- aluminium powder (stabilised):
  - Acute inhalation toxicity: LC50 (Rat): > 5 mg/l
    Exposure time: 4 h
    Test atmosphere: dust/mist

- propan-2-ol:
  - Acute oral toxicity: LD50 (Rat): > 2.000 mg/kg
  - Acute dermal toxicity: LD50 (Rabbit): > 2.000 mg/kg

Skin corrosion/irritation

Product:
Remarks: May cause skin irritation in susceptible persons.

Serious eye damage/eye irritation

Product:
Remarks: Eye irritation
Further information

Product:
Remarks: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Concentrations substantially above the TLV value may cause narcotic effects. Solvents may degrease the skin.

SECTION 12: Ecological information

12.1 Toxicity
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
Product:
Assessment: This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects
Product:
Additional ecological information: No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Product: Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company. In accordance with local and national regulations.

Contaminated packaging: Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.
In accordance with local and national regulations.

### SECTION 14: Transport information

#### 14.1 UN number

<table>
<thead>
<tr>
<th></th>
<th>ADR</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN number</td>
<td>UN 1325</td>
<td>UN 1325</td>
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</tbody>
</table>

#### 14.2 UN proper shipping name

<table>
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<th>ADR</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>FLAMMABLE SOLID, ORGANIC, N.O.S. (Aluminium pigment paste)</td>
<td>FLAMMABLE SOLID, ORGANIC, N.O.S. (Aluminium pigment paste)</td>
<td>Flammable solid, organic, n.o.s. (Aluminium pigment paste)</td>
</tr>
</tbody>
</table>

#### 14.3 Transport hazard class(es)

<table>
<thead>
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<th></th>
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<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
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<td>Transport hazard class(es)</td>
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</tbody>
</table>

#### 14.4 Packing group

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<th>IMDG</th>
<th>IATA</th>
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</thead>
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<td>Packing group</td>
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<td>Labels</td>
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<td>Tunnel restriction code</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>IATA (Cargo)</th>
<th>IATA (Passenger)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packing instruction (cargo aircraft)</td>
<td>448</td>
<td>445</td>
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<tr>
<td>Packing instruction (LQ)</td>
<td>Y441</td>
<td></td>
</tr>
<tr>
<td>Packing group</td>
<td>II</td>
<td>II</td>
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<tr>
<td>Labels</td>
<td>Flammable Solid</td>
<td>Flammable Solid</td>
</tr>
<tr>
<td>EmS Code</td>
<td>F-A, S-G</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td>IMDG Code segregation group 15 - Powdered metals</td>
<td></td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET
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ROTOVARIO FPG 550 104 Silver

Packing instruction (LQ) : Y441
Packing group : II
Labels : Flammable Solid

14.5 Environmental hazards

ADR
Environmentally hazardous : no

IMDG
Marine pollutant : no

14.6 Special precautions for user
Not applicable

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
Not applicable for product as supplied.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : Not applicable

15.2 Chemical safety assessment
This information is not available.

SECTION 16: Other information

Full text of H-Statements
H225 : Highly flammable liquid and vapour.
H228 : Flammable solid.
H319 : Causes serious eye irritation.
H336 : May cause drowsiness or dizziness.

Full text of other abbreviations
Eye Irrit. : Eye irritation
Flam. Liq. : Flammable liquids
Flam. Sol. : Flammable solids
STOT SE : Specific target organ toxicity - single exposure
SE AFS : Sweden. Occupational Exposure Limit Values
SE AFS / NGV : Time Weighted Average
SE AFS / KTV : Short Term Exposure Limit

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

ROTOVARIO FPG 550 104 Silver

Version 1.0  Revision Date: 28.11.2017  SDS Number: 102000024458  Print Date: 19.11.2018
Date of first issue: 29.11.2017

Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50% of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SE / EN