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

1.1 Product identifier
DS1

1.2 Relevant identified uses of the substance or mixture and uses advised against
Relevant identified uses: cleaning of cooling systems in injection molds.
Uses advised against: not determined.

1.3 Details of the supplier of the safety data sheet
Manufacturer: FADO Sp. z o.o.
Address: Solna 7a st., 85-862 Bydgoszcz, Poland
Telephone: +48 52 370 88 35
E-mail address for a competent person responsible for SDS: biuro@theta-doradztwo.pl

1.4 Emergency telephone number
112

Section 2: Hazards identification

2.1 Classification of the substance or mixture
Acute Tox. 4 H302, Acute Tox. 4 H312, Skin Sens. 1 H317, Eye Dam. 1 H318
Harmful if swallowed. Harmful in contact with skin. May cause an allergic skin reaction. Causes serious eye damage.

2.2 Label elements
Hazard symbols and signal words
DANGER

Dangerous components placed on the label
Contains: oxalic acid; methenamine.
Hazard statements
H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
Precautionary statements
P264 Wash hands thoroughly after handling.
P280 Wear protective gloves/protective clothing.
P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P302+P352 IF ON SKIN: Wash with plenty of water and soap.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER/doctor.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P501 Dispose of contents/container to property labeled waste containers in accordance with national legislation.

2.3 Other hazards
Product does not contain ingredients, which meet criteria for PBT or vPvB in accordance with Annex XIII of REACH Regulation.
Section 3: Composition/information on ingredients

3.2 Mixtures

<table>
<thead>
<tr>
<th>CAS number</th>
<th>EC number</th>
<th>Index number</th>
<th>Registration number</th>
<th>Oxalic Acid (1) (%)</th>
<th>Sulphamic Acid (%)</th>
<th>Methenamine (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>144-62-7/6153-56-6</td>
<td>205-634-3</td>
<td>607-006-00-8</td>
<td>01-211934576-33-XXXX</td>
<td>Acute Tox. 4 H302, Acute Tox. 4 H312, Eye Dam. 1 H318</td>
<td>&gt; 70 %</td>
<td>&lt; 10 %</td>
</tr>
<tr>
<td>5329-14-6</td>
<td>226-218-8</td>
<td>016-026-00-0</td>
<td>01-211948633-28-XXXX</td>
<td>Skin Irrit. 2 H315, Eye Irrit. 2 H319, Aquatic Chronic 3 H412</td>
<td>&lt; 10 %</td>
<td>&lt; 1.5 %</td>
</tr>
<tr>
<td>100-97-0</td>
<td>202-305-8</td>
<td>612-101-00-2</td>
<td>01-211947895-20-XXXX</td>
<td>Flam. Sol. 2 H228, Skin Sens. 1 H317</td>
<td>&lt; 1.5 %</td>
<td></td>
</tr>
</tbody>
</table>

1 Substance with a specific value at the European Union level of the permissible concentration in the work environment.

Full text of each relevant H phrase is given in section 16 of SDS.

Section 4: First aid measures

4.1 Description of first aid measures

Skin contact: take off contaminated clothing. Wash out the contaminated skin with plenty of water and soap. Consult a doctor if disturbing symptoms appear.

Eye contact: protect non-irritated eye, remove contact lenses. Wash contaminated eyes thoroughly with water for at least 10-15 minutes. Avoid strong water jet – risk of corneal damage. Put a sterile dressing. Consult an ophthalmologist if disturbing symptoms appear.

Ingestion: do not induce vomiting. Never give anything to drink to an unconscious person. Consult a physician – show the container or label.

Inhalation: in case of exposure remove to fresh air. Keep warm and calm. Consult a doctor if disturbing symptoms occur.

4.2 Most important symptoms and effects, both acute and delayed

Skin contact: causes redness, dryness, allergic reactions.

Eye contact: redness, tearing, burning, blurred vision, pain, irritation, risk of serious eye damage.

Ingestion: stomachache, nausea, vomiting.

Inhalation: may cause irritation of mucous membranes of the eyes and respiratory tract, cough.

4.3 Indication of any immediate medical attention and special treatment needed

Physician makes a decision regarding further medical treatment after thoroughly examination of the injured. Symptomatic treatment.

Section 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media: CO2, dry chemical, water spray, foam. Adapt the extinguishing media to the surrounding materials.

Unsuitable extinguishing media: water jet – risk of the propagation of the flame.

5.2 Special hazards arising from the substance or mixture

During the fire, the product may produce harmful fumes containing carbon oxides and other unidentified products of thermal decomposition. Do not inhale combustion products, they can be dangerous for human health.
5.3 Advice for firefighters

The product is not flammable. Personal protection typical in case of fire. Do not stay in the fire zone without self-contained breathing apparatus and protective clothing resistant to chemicals. Remove endangered containers if this can be done safely. In case of fire cool endangered containers with water fog from safe distance. Collect used extinguishing media.

Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: limit the access for the outsiders into the breakdown area, until the suitable cleaning operations are completed. In the case of large releases, isolate the exposed area. Use personal protective equipment. Avoid contact with eyes and skin. Avoid formation and inhalation of product dusts. Ensure adequate ventilation.

For rescuers: ensure that only personnel trained to remove the malfunction and its effects. Use personal protective equipment.

6.2 Environmental precautions

Do not empty into drains, surface or ground water. In case of release of large amounts of the product, it is necessary to take appropriate steps to prevent it from spreading into the environment. Notify relevant emergency services.

6.3 Methods and material for containment and cleaning up

Pick up mechanically, avoiding dust formation and transfer to appropriate waste disposal containers. Collected material should be treated as waste. Clean the contaminated place with a large amount of water. Ventilate contaminated place.

6.4 Reference to other sections

Use personal protective equipment in accordance with section 8. Dispose in accordance with recommendations from section 13.

Section 7: Handling and storage

7.1 Precautions for safe handling

Handle in accordance with good occupational hygiene and safety practices. Do not eat, drink or smoke in the workplace. Before break and after work wash hands carefully. Avoid eyes, skin and clothing contamination. Contaminated clothing should be removed and washed before reuse. Avoid inhalation and formation of product dust. Ensure adequate ventilation of the area in which product is stored and used. Use adequate protective equipment. Keep unused containers tightly sealed. Do not use empty containers for other purposes.

7.2 Conditions for safe storage, including any incompatibilities

Keep only in original, tightly closed containers in a cool, dry and well-ventilated area. Do not store with food, drink, animal feedingstuffs and incompatible materials (see subsection 10.5). Avoid direct sunlight and moisture.

7.3 Specific end use(s)

No data concerning other uses than given in subsection 1.2.

Section 8: Exposure controls/personal protection

8.1 Control parameters

<table>
<thead>
<tr>
<th>Specification</th>
<th>TWA 8 hour</th>
<th>STEL 15 min</th>
<th>Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td>oxalic acid CAS [144-62-7]</td>
<td>1mg/m³</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>


Please check any national occupational exposure limit values in your country.
Recommended control procedures

Procedures concerning the control over the dangerous components concentrations in the air and control over the air quality in the workplace - if they are available and justified for the position - in accordance with the European Standards, with the conditions within the exposure place and a proper test methodology adapted to the working conditions.

**DNEL values for components**

**oxalic acid**

<table>
<thead>
<tr>
<th>subjects</th>
<th>way of operation</th>
<th>effects</th>
<th>type of exposure</th>
<th>value</th>
</tr>
</thead>
<tbody>
<tr>
<td>employees</td>
<td>skin</td>
<td>short-term</td>
<td>local effect</td>
<td>0.69 mg/cm²</td>
</tr>
<tr>
<td></td>
<td>skin</td>
<td>long-term</td>
<td>systemic effect</td>
<td>2.29 mg/kg body weight</td>
</tr>
<tr>
<td></td>
<td>inhalation</td>
<td>long-term</td>
<td>systemic effect</td>
<td>4.03 mg/m³</td>
</tr>
<tr>
<td>population</td>
<td>skin</td>
<td>short-term</td>
<td>local effect</td>
<td>0.35 mg/cm²</td>
</tr>
<tr>
<td></td>
<td>skin</td>
<td>long-term</td>
<td>systemic effect</td>
<td>2.14 mg/kg body weight</td>
</tr>
</tbody>
</table>

**sulphamic acid**

<table>
<thead>
<tr>
<th>subjects</th>
<th>way of operation</th>
<th>effects</th>
<th>type of exposure</th>
<th>value</th>
</tr>
</thead>
<tbody>
<tr>
<td>employees</td>
<td>skin</td>
<td>long-term</td>
<td>systemic effect</td>
<td>10 mg/kg mc/day</td>
</tr>
<tr>
<td></td>
<td>inhalation</td>
<td>long-term</td>
<td>systemic effect</td>
<td>70.5 mg/m³</td>
</tr>
<tr>
<td>population</td>
<td>skin</td>
<td>long-term</td>
<td>systemic effect</td>
<td>5 mg/kg mc/day</td>
</tr>
<tr>
<td></td>
<td>inhalation</td>
<td>long-term</td>
<td>systemic effect</td>
<td>17.4 mg/m³</td>
</tr>
<tr>
<td></td>
<td>ingestion</td>
<td>long-term</td>
<td>systemic effect</td>
<td>5 mg/kg mc/day</td>
</tr>
</tbody>
</table>

**PNEC values for components**

**oxalic acid**

- Fresh water: 0.1622 mg/l
- Marine water: 0.01622 mg/l
- Sewage treatment plant: 1550 mg/l

**sulphamic acid**

- Fresh water: 1.8 mg/l
- Marine water: 0.18 mg/l
- Water: 0.48 mg/l
- Fresh water sediment: 8.36 mg/kg
- Marine water sediment: 0.84 mg/kg
- Soil: 5 mg/kg
- Sewage treatment plant: 20 mg/l

**8.2 Exposure controls**

Use the product in accordance with good occupational hygiene and safety practices. Do not eat, drink or smoke. Wash hands thoroughly after breaks and after work. Avoid eyes and skin contamination. Avoid inhalation and formation of product dust. Use personal protective equipment. Provide adequate general ventilation and / or local. Eye showers (washers) should be installed near workplaces.
Hand and body protection
Wear protective gloves resistant to the product. The material on the gloves should be chosen individually at the workplace. In case of short term exposure wear protective gloves with a level of efficacy of 2 or more (breakthrough time > 30 minutes). In case of prolonged contact wear protective gloves with a level of effectiveness of 6 (breakthrough time > 480 minutes).

The material that the gloves are made of must be impenetrable and resistant to the product's effects. The selection of material must be performed with consideration of breakthrough time, penetration speed and degradation. Moreover, the selection of proper gloves depends not only on the material, but also on other quality features and changes depending on the manufacturer. The producer should provide detailed information regarding the exact breakthrough time. This information should be followed.

Eye/face protection
Use adequate protective goggles, if there is a risk of eye contamination.

Respiratory protection
In case of failure, appropriate respiratory protection equipment should be selected considering the concentration of oxygen in the air, the type of airborne contaminants and their physical and chemical properties, location and concentration of harmful substances and gases, operating conditions, load and their duration, temperature and humidity.

The necessity to use and selection of appropriate personal protective equipment should take into account the type of hazard posed by the product, the conditions at the workplace and the manner in which the product is handled. Personal protective equipment must meet requirements of regulation 2016/425 and standards. Employer is obliged to ensure equipment adequate to activities carried out, with quality demands, cleaning and maintenance. Any contaminated or damaged personal protective equipment must be replaced immediately.

Environmental exposure controls
Avoid environment contamination, do not empty into drains. Possible emissions from the ventilation systems and processing equipment should be controlled in order to determine their compatibility with environmental protection regulations.

Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>solid, powder</td>
</tr>
<tr>
<td>Colour</td>
<td>white</td>
</tr>
<tr>
<td>Odour</td>
<td>odourless</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>not applicable</td>
</tr>
<tr>
<td>pH (8 % solution)</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>not determined</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>not applicable</td>
</tr>
<tr>
<td>Flash point</td>
<td>not applicable</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>not applicable</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>not applicable, product is not flammable</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits</td>
<td>not applicable</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>not applicable</td>
</tr>
<tr>
<td>Vapour density</td>
<td>not applicable</td>
</tr>
<tr>
<td>Bulk density (25 °C)</td>
<td>ok. 900 g/cm³</td>
</tr>
<tr>
<td>Solubility (water, 10 °C)</td>
<td>ok. 87 g/l</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>not determined</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>not applicable, product is not auto-ignition</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>185-190 °C</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>not display</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>not display</td>
</tr>
<tr>
<td>Viscosity</td>
<td>not applicable</td>
</tr>
<tr>
<td>Sublimation temperature</td>
<td>157 °C</td>
</tr>
</tbody>
</table>

9.2 Other information

sublimation temperature: 157 °C
Section 10: Stability and reactivity

10.1 Reactivity
Product is reactive. It does not undergo hazardous polymerization. See also subsections 10.4 - 10.5.

10.2 Chemical stability
The product is stable under normal conditions of storage and use.

10.3 Possibility of hazardous reactions
Reacts violently with silver and its salts, sodium hypochlorite, strong oxidants.

10.4 Conditions to avoid
Avoid sources of heat, direct sunlight and overheating. Protect from moisture.

10.5 Incompatible materials
Strong oxidants, bases, silver and its salts, sodium hypochlorite.

10.6 Hazardous decomposition products
Not known.

Section 11: Toxicological information

11.1 Information on toxicological effects

Toxicity of components

- Oxalic acid
  - LD₅₀ (ingestion, rat) 375 mg/kg
  - LD₅₀ (skin, rabbit) 20 mg/kg

- Sulphamic acid
  - LD₅₀ (ingestion, rat) 1 450 mg/kg
  - LD₅₀ (skin, rat) > 2 000 mg/kg

- Methenamine
  - LD₅₀ (ingestion, rat) 9 200 mg/kg
  - LC₅₀ (skin, rat) 2 000 mg/m³

Toxicity of mixture

- Acute toxicity
  The acute toxicity of the mixture (ATEmix) was calculated on the basis of the appropriate conversion factor contained in Table 3.1.2. Annex I to the CLP Regulation.
  - ATE₅₀ (ingestion) > 300 - < 2 000 mg/kg
  - ATE₅₀ (skin) > 1 000 - < 2 000 mg/kg

Harmful if swallowed. Harmful in contact with skin.

- Skin corrosion/irritation
  Based on available data, the classification criteria are not met.

- Serious eye damage/irritation
  Causes serious eye damage.

- Respiratory or skin sensitization
  May cause an allergic skin reaction.

- Germ cell mutagenicity
  Based on available data, the classification criteria are not met.

- Carcinogenicity
  Based on available data, the classification criteria are not met.
Reproductive toxicity
Based on available data, the classification criteria are not met.

STOT—single exposure
Based on available data, the classification criteria are not met.

STOT—repeated exposure
Based on available data, the classification criteria are not met.

Aspiration hazard
Based on available data, the classification criteria are not met.

Section 12: Ecological information

12.1 Toxicity

Toxicity of components

oxalic acid
Toxicity for fish: LC₅₀ 160 mg/l/96h
Toxicity for daphnia: EC₅₀ 162.2 mg/l/48h (Daphnia magna, OECD 202)
Toxicity for algae: 80 mg/l/8dni
Toxicity for terrestrial plants: EC₅₀ 8mM/72h

sulphamic acid
Toxicity for fish: LC₅₀ 70.3 mg/l/96h
Toxicity for daphnia: EC₅₀ 71.6 mg/l/48h (Daphnia magna)
Toxicity for algae: ErC₅₀ 48 mg/l/72h
Toxicity for algae: NOEC 18 mg/l/880h

Toxicity of mixture
Product is not classified as hazardous for the environment.

12.2 Persistence and degradability
Oxalic acid undergoes biological degradation (73% 30 days)

12.3 Bioaccumulative potential
Do not expect bioaccumulation.

oxalic acid log Po/w = -1.7
sulphamic acid log Kow = -4.3438

12.4 Mobility in soil
Product is mobil in soil. Mobility of components of the product depends on the hydrophilic and hydrophobic properties and biotic and abiotic conditions of soil, including its structure, climatic conditions, seasons and soil organisms.

12.5 Results of PBT and vPvB assessment
Substances contained in the product are not assessed as PBT or vPvB.

12.6 Other adverse effects
The mixture is not classified as hazardous for the ozone layer. Other harmful effects of particular components of the mixture on the environment (e.g.: endocrine disrupting, the impact on the global warming) should be considered.

Section 13: Disposal considerations

13.1 Waste treatment methods
Disposal methods for the product: disposal in accordance with the local legislation. Store residues in original containers. If it is possible, recycling is preferred. Waste code should be given in the place of waste formation.

Disposal methods for used packing: reuse/recycle/liquidate empty containers in accordance with the legislation in force. Only containers completely empty can be recycled.

**Section 14: Transport information**

14.1 UN number
Not applicable, product is not classified as dangerous during transportation.

14.2 UN proper shipping name
Not applicable.

14.3 Transport hazard class(es)
Not applicable.

14.4 Packing group
Not applicable.

14.5 Environmental hazards
Not applicable.

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.

**Section 15: Regulatory information**

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


15.2 Chemical safety assessment
Chemical safety assessment is not required for mixture.
### Section 16: Other information

Full text of indicated H phrases mentioned in section 3

<table>
<thead>
<tr>
<th>H228</th>
<th>Flammable solid.</th>
</tr>
</thead>
<tbody>
<tr>
<td>H302</td>
<td>Harmful if swallowed.</td>
</tr>
<tr>
<td>H312</td>
<td>Harmful in contact with skin.</td>
</tr>
<tr>
<td>H315</td>
<td>Causes skin irritation.</td>
</tr>
<tr>
<td>H317</td>
<td>May cause an allergic skin reaction.</td>
</tr>
<tr>
<td>H318</td>
<td>Causes serious eye damage.</td>
</tr>
<tr>
<td>H319</td>
<td>Causes serious eye irritation.</td>
</tr>
<tr>
<td>H412</td>
<td>Harmful to aquatic life with long lasting effects.</td>
</tr>
</tbody>
</table>

**Clarification of aberrations and acronyms**

Knowledge acquisition methods:

- **Acute Tox. 4** Acute toxicity cat. 4
- **Eye Dam. 1** Serious eye damage cat. 1
- **Eye Irrit. 2** Eye irritation cat. 2
- **Skin Irrit. 2** Skin irritation cat. 2
- **Flam Sol. 2** Flammable solid cat. 2
- **Aquatic Chronic 3** Chronic hazardous to the aquatic environment, cat. 3
- **Skin Sens 1** Skin sensitization cat. 1
- **PBT** Persistent, Bioaccumulative and Toxic substance
- **vPvB** Very Persistent, very Bioaccumulative substance
- **STEL** Short Term Exposure Limit
- **TWA** Total Weighted Average (permissible exposure limit; Occupational Safety and Health Administration)

**Trainings**

Before commencing working with the product, the user should learn the Health & Safety regulations, regarding handling chemicals, and in particular, undergo a proper workplace training.

**Key literature references and sources of data**

This SDS was prepared on the basis of sheets of the individual components, literature data, online databases as well as our knowledge and experience, taking into account current legislation.

**Methods of evaluating information which was used for the purpose of classification acc. Regulation (EC) no 1272/2008 as amended**

- **Acute Tox. 4 H302** calculation method
- **Acute Tox. 4 H312** calculation method
- **Skin Sens 1 H317** calculation method
- **Eye Dam. 1 H318** calculation method

**Other data**

- **Version:** 3.0/EN
- **Date of update:** 20.12.2018
- **Changes:** sections: 1-16
- **Composed by:** mgr Magdalena Skoneczna (on the basis of producer’s data).
- **Safety Data Sheet made by:** „THETA” Technical Consulting

**This SDS annuls and replaces all previous versions.**

The information above is based on a current available data concerning the product, but also on the experience and knowledge in this field of the producer. They are neither a quality description of the product nor a guarantee of particular features. They are to be treated as aid to safety in transport, storage and usage of the product. That does not free the user from the responsibility of improper usage of the information above and also of improper compliance with the law norms in the field.