SAFETY DATA SHEET

Zulu

Revision Date 26-Sep-2018
Publish Date 26-Sep-2018

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

1.1. Product identifier

Zulu

Pure substance/mixture Mixture

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

Recommended Use Fungicide
Uses advised against No information available

1.3. Details of the supplier of the safety data sheet

Supplier Address ADAMA Agricultural Solutions UK Ltd
Unit 15, Thatcham Business Village Colthrop Way,
Thatcham Berkshire RG19 4LW, UK : 01635 860555
Fax: 01635 861555

For further information, please contact

Email address ukenquiries@adama.com

1.4. Emergency telephone number

Emergency Telephone National Chemical Emergency Centre (UK):
Tel: 01865 407333 (24 hours)

Section 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Acute toxicity - Oral Category 4 - (H302)
Acute toxicity - Inhalation Category 4 - (H332)
(Dusts/Mists)
Serious eye damage/eye irritation Category 2 - (H319)
Reproductive Toxicity Category 2 - (H361d)
Acute aquatic toxicity Category 1 - (H400)
Hazardous to the Aquatic Category 1 - (H410)
Environment - Chronic Hazard

2.2. Label elements
Labeling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms

![Hazard pictograms]

Signal word Warning

Hazard Statements

H302 - Harmful if swallowed
H319 - Causes serious eye irritation
H332 - Harmful if inhaled
H361d - Suspected of damaging the unborn child
H410 - Very toxic to aquatic life with long lasting effects

Precautionary Statements

P102 - Keep out of reach of children
P201 - Obtain special instructions before use
P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
P270 - Do not eat, drink or smoke when using this product
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P304 + P351 + P338 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P501 - Dispose of contents/container to an approved waste disposal plant

EU Specific Hazard Statements

EUH401 - To avoid risks to human health and the environment, comply with the instructions for use
EUH208 - Contains Isopyrazam. May produce an allergic reaction

Additional phrases for PPP

SP1 - Do not contaminate water with the product or its container (Do not clean application equipment near surface water/Avoid contamination via drains from farmyards and roads).

2.3. Other hazards

No information available

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixture

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Weight-%</th>
<th>CAS No</th>
<th>EC No</th>
<th>Index No</th>
<th>Classification according to Regulation (EC) No. 1272/2008 (CLP)</th>
<th>M-Factor</th>
<th>REACH Registration Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopyrazam</td>
<td>11-15</td>
<td>881685-58-1</td>
<td>632-619-2</td>
<td>-</td>
<td>Skin Sens. 1B (H317) Repr. 2 (H361d) Aquatic Acute 1 (H400)</td>
<td>M=1</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Aquatic Chronic 1 (H410)</td>
<td>M=10</td>
<td></td>
</tr>
<tr>
<td>Reaction mass of N,N-Dimethyloctan-1-amide and N,N-Dimethyledecan-1-amide</td>
<td>40-45</td>
<td>N/A</td>
<td>909-125-3</td>
<td>-</td>
<td>Skin Irrit. 2 (H315) Eye Dam. 1 (H318)</td>
<td>01-2119974115-37-0001</td>
<td></td>
</tr>
<tr>
<td>Benzenesulfonic acid, C10-13-(linear)alkyl derivs., calcium salt</td>
<td>1-2</td>
<td>N/A</td>
<td>932-231-6</td>
<td>-</td>
<td>Skin Irrit. 2 (H315) Eye Dam. 1 (H318) Aquatic Chronic 3 (H412)</td>
<td>01-2119560592-37-XXXX</td>
<td></td>
</tr>
<tr>
<td>2-Ethylhexan-1-ol</td>
<td>1-2</td>
<td>104-76-7</td>
<td>203-234-3</td>
<td>-</td>
<td>Acute Tox. 4 (H332) Skin Irrit. 2 (H315)</td>
<td>01-2119487289-20</td>
<td></td>
</tr>
</tbody>
</table>
Section 4: FIRST AID MEASURES

4.1. Description of first aid measures

General advice
In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible). First aider: Pay attention to self-protection!

Inhalation
Remove to fresh air. If breathing is irregular or stopped, administer artificial respiration. Call a physician.

Skin Contact
Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. If symptoms persist, call a physician.

Eye contact
Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eye wide open while rinsing. Call a physician immediately.

Ingestion
Rinse mouth. Drink plenty of water. Call a physician immediately.

Self-protection of the first aider
Use personal protective equipment as required.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms
None known

4.3. Indication of any immediate medical attention and special treatment needed

Note to physicians
Treat symptomatically.

Section 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing media

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

Unsuitable Extinguishing Media
No information available.

5.2. Special hazards arising from the substance or mixture

No specific hazard known.

5.3. Advice for firefighters

In the event of fire, wear self-contained breathing apparatus
In the event of fire and/or explosion do not breathe fumes.
6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions
Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Use personal protective equipment as required.

For emergency responders
Use personal protection recommended in Section 8.

6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

6.3. Methods and material for containment and cleaning up

Take up mechanically, placing in appropriate containers for disposal.

6.4. Reference to other sections

Other Information
See also section 8, 13

Section 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Advice on safe handling
Use only with adequate ventilation.

General Hygiene Considerations
Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place.

7.3. Specific end use(s)

Risk Management Methods (RMM)
The information required is contained in this Material Safety Data Sheet.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>European Union</th>
<th>United Kingdom</th>
<th>France</th>
<th>Spain</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Ethylhexan-1-ol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>104-76-7</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Austria</th>
<th>Switzerland</th>
<th>Poland</th>
<th>Norway</th>
<th>Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Ethylhexan-1-ol</td>
<td>Skin</td>
<td>STEL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>104-76-7</td>
<td>STEL 100 ppm</td>
<td>STEL 540 mg/m³</td>
<td>STEL: 20 ppm</td>
<td>STEL: 320 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STEL 540 mg/m³</td>
<td>TWA: 50 ppm</td>
<td>TWA: 20 ppm</td>
<td>TWA: 160 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TWA: 270 mg/m³</td>
<td>TWA: 110 mg/m³</td>
<td>TWA: 110 mg/m³</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8.2. Exposure controls
Engineering Controls
Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye/face protection
Tight sealing safety goggles.

Hand Protection
Gloves made of plastic or rubber.

Body Protection
Suitable protective clothing.

Respiratory protection
In case of insufficient ventilation, wear suitable respiratory equipment.

General Hygiene Considerations
Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls
No information available.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Method</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical state</td>
<td>Liquid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>brown to orange</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td>Not determined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>4.6-5.6</td>
<td>CIPAC MT 31.2</td>
<td>solution (1 %)</td>
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<tr>
<td>Melting point/freezing point</td>
<td>No data available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boiling point/boiling range</td>
<td>No data available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flash point °C</td>
<td>86-96</td>
<td>EEC A.9</td>
<td></td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not Applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not Applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper/lower flammability or</td>
<td>No data available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>explosive limits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapor pressure kPa</td>
<td>No data available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vapor density</td>
<td>No data available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative density</td>
<td>0.904-1.004</td>
<td>OECD 114</td>
<td></td>
</tr>
<tr>
<td>Solubility(ies) mg/l</td>
<td>No data available</td>
<td></td>
<td></td>
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<tr>
<td>Partition Coefficient (n-octanol/water) Log Pow</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autoignition temperature °C</td>
<td>220-230</td>
<td>EEC A.15</td>
<td></td>
</tr>
<tr>
<td>Decomposition temperature °C</td>
<td>No data available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kinematic viscosity mm2/s 40 °C</td>
<td>5.87</td>
<td>EEC A.5</td>
<td></td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not an explosive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No data available</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9.2. Other information

| Bulk density g/ml               |                             |                  |                   |
| Surface tension mN/m            | Not Applicable              |                  |                   |

9.3. Other information

| Vapor pressure kPa              | No data available           |                  |                   |
| Flammability (solid, gas)       | Not Applicable              |                  |                   |
| Upper/lower flammability or     | No data available           |                  |                   |
| explosive limits                |                             |                  |                   |
| Autoignition temperature °C     | 220-230                     | EEC A.15         |                   |
| Decomposition temperature °C    | No data available           |                  |                   |
| Kinematic viscosity mm2/s 40 °C | 5.87                        | EEC A.5          |                   |

Section 10: STABILITY AND REACTIVITY

10.1. Reactivity
No data available.

10.2. Chemical stability
Stable under normal conditions.
10.3. Possibility of hazardous reactions

None under normal processing.

10.4. Conditions to avoid

Heat, flames and sparks.

10.5. Incompatible materials

No information available.

10.6. Hazardous decomposition products

None under normal use conditions.

Section 11: TOXICOLOGY INFORMATION

11.1. Information on toxicological effects

Acute toxicity

<table>
<thead>
<tr>
<th></th>
<th>Values</th>
<th>Species</th>
<th>Method</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral LD50 mg/kg</td>
<td>1750</td>
<td>Rat</td>
<td>OECD 425</td>
<td></td>
</tr>
<tr>
<td>Dermal LD50 mg/kg</td>
<td>&gt;5000</td>
<td>Rat</td>
<td>OECD 402</td>
<td></td>
</tr>
<tr>
<td>Inhalation LC50 mg/l/4h</td>
<td>&gt;2.71</td>
<td>Rat</td>
<td>OECD 403</td>
<td></td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Non-irritating to the skin</td>
<td>Rabbit</td>
<td>OECD 404</td>
<td></td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Irritating to eyes</td>
<td>Rabbit</td>
<td>OECD 405</td>
<td></td>
</tr>
<tr>
<td>Respiratory/skin sensitization</td>
<td>Not a skin sensitizer</td>
<td>Guinea pig</td>
<td>OECD 406</td>
<td></td>
</tr>
</tbody>
</table>

Chronic toxicity

Germ cell mutagenicity

Chemical Name

Isopyrazam : Not classified

Carcinogenicity

Chemical Name

Isopyrazam : Not Carcinogenic

Reproductive toxicity

Chemical Name

Isopyrazam : H361d - Suspected of damaging the unborn child

STOT - single exposure

Chemical Name

Isopyrazam : No data available

STOT - repeated exposure

Chemical Name

Isopyrazam : No data available

Aspiration hazard

Chemical Name

Isopyrazam : No data available

Section 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Aquatic toxicity
Zulu - FNG56932-44 Revision Date 26-Sep-2018

<table>
<thead>
<tr>
<th>Acute toxicity</th>
<th>Values</th>
<th>Species</th>
<th>Method</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish 96-hour LC50 mg/l</td>
<td>0.32</td>
<td>Oncorhynchus mykiss</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea 48-hour EC50 mg/l</td>
<td>0.35</td>
<td>Daphnia magna</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Algae 72-hour EC50 mg/l</td>
<td>14</td>
<td>P. subcapitata</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other plants EC50 mg/l</td>
<td></td>
<td></td>
<td></td>
<td>No data available</td>
</tr>
</tbody>
</table>

Terrestrial Toxicity
Birds Oral LD50 mg/kg
Chemical Name
Isopyrazam : >2000 C. virginianus Acute toxicity

Bees Oral LD50 μg/bee
Chemical Name
Isopyrazam : ... No data available

12.2. Persistence and degradability

Abiotic Degradation
Water DT50 days
Chemical Name
Isopyrazam : 21d Not persistent in water

Soil DT50 days
Chemical Name
Isopyrazam : 70d SFO Not persistent in soil

Biodegradation
Chemical Name
Isopyrazam : Not readily biodegradable

12.3. Bioaccumulative potential

Partition Coefficient (n-octanol/water) Log Pow
Chemical Name
Isopyrazam : 4.1 OECD 107 pH 7.3 ; 25 °C

Bioconcentration factor (BCF)
Chemical Name
Isopyrazam : 441 Based on whole fish

12.4. Mobility in soil

Adsorption/Desorption
Chemical Name
Isopyrazam : 2416 Koc

12.5. Results of PBT and vPvB assessment
The components in this formulation do not meet the criteria for classification as PBT or vPvB

12.6. Other adverse effects
No information available.

Section 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods
Waste from residues/unused products
Disposal should be in accordance with applicable regional, national and local laws and regulations.
Contaminated packaging
Improper disposal or reuse of this container may be dangerous and illegal.

Other Information
Waste codes should be assigned by the user based on the application for which the product was used.

Section 14: TRANSPORTATION INFORMATION

IMDG/IMO
14.1 UN/ID No * 3082
14.2 Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Isopyrazam)
14.3 Hazard Class 9
14.4 Packing Group III
14.5 Marine pollutant Yes
14.6 Special precautions for user

RID/ADR
14.1 UN/ID No * 3082
14.2 Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Isopyrazam)
14.3 Hazard Class 9
14.4 Packing Group III
14.5 Environmental hazard Yes
14.6 Special precautions for user
14.7 Tunnel restriction code -

ICAO/IATA
14.1 UN/ID No * 3082
14.2 Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Isopyrazam)
14.3 Hazard Class 9
14.4 Packing Group III
14.5 Environmental hazard Yes
14.6 Special precautions for user
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not Applicable

* Note: UN3077 & UN3082 – These products may be transported as non-dangerous goods under the special provisions of IMDG Code 2.10.2.7; ADR SP375 and ICAO/IATA A197 when packed in single or inner packaging of up to 5L for liquids or 5 kg or less for solids.

Section 15: REGULATORY INFORMATION

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

15.2. Chemical safety assessment
A chemical safety assessment according to regulation (EC) No. 1907/2006 is not required. A risk assessment was performed according to directive (EC) No. 91/414 or according to regulation (EC) No. 1107/2009.

Section 16: OTHER INFORMATION
Full text of H-Statements referred to under sections 2 and 3
H302 - Harmful if swallowed
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H318 - Causes serious eye damage
H319 - Causes serious eye irritation
H332 - Harmful if inhaled
H351d - Suspected of damaging the unborn child
H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects
H412 - Harmful to aquatic life with long lasting effects

List of Acronyms
ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road
ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
CAS Number - Chemical Abstracts Service number
EC Number - EINECS and ELINCS Number
EINECS - European Inventory of Existing Commercial Substances
ELINCS - European List of notified Chemical Substances
IATA - International Air Transport Association
ICAO-TI - Technical Instructions for the Safe Transport of Dangerous Goods by Air
IMDG - International Maritime Dangerous Goods
LC50 - Lethal Concentration to 50% of a test population
LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose)
OECD - Organization for Economic Co-operation and Development
PBT - Persistent, Bioaccumulative and Toxic substance
RID - Regulations concerning the International Carriage of Dangerous Goods by Rail
STOT - Specific Target Organ Toxicity
vPvB - Very Persistent and Very Bioaccumulative

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

Revision Note
Changes made to the last version are labeled with this sign ***.

Disclaimer
The information provided in this Material 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.

End of Safety Data Sheet