SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND THE COMPANY/UNDERTAKING

1.1 Product Identifiers
Product name: Cowpea mosaic virus (CPMV) virus-like particles (VLPs)
IUPAC name: -
Product Number: LES-P0001-CPMV-eVLP
CAS number: -
REACH No.: A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

1.2 Applications of the product
For research use only

1.3 Supplier of the safety data sheet
Company: Leaf Expression Systems Ltd
Building 7, Zone 2
Norwich Research Park
Colney Lane
Colney
Norwich, NR4 7UJ
United Kingdom
Telephone: +44 (0) 1603 859379
E-mail address: info@leafexpressionsystems.com

1.4 Emergency telephone number
Emergency Phone Number: +44 (0) 1603 859379

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008
Not a hazardous substance or mixture according to EC-directives 67/548/EEC or 1999/45/EC.

2.2 Label elements
The product does not need to be labelled in accordance with EC directive or respective national laws.

2.3 Other hazards
None identified

3. COMPOSITION/INFORMATION ON INGREDIENTS

Cowpea mosaic virus like particles are expressed recombinantly in a plant-based expression system. Sample is of biological origin and is presented as a lyophilized solid in a plastic vial. Each vial contains not more than 10 mg.

Additional components present: 10 mM sodium phosphate pH 7.4, 10 Sodium Phosphate, pH 7.5, 175 mM Trehalose Dihydrate

4. FIRST AID MEASURES

If inhaled: Remove person to fresh air, seek medical advice if breathing becomes difficult.
In case skin contact: Wash off with soap and water.
In case of eye contact: Flush eyes with water, as a precaution.
If swallowed: Rinse mouth with water.
5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Not available

5.3 Special protective equipment for fire-fighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions
Use standard laboratory practices and appropriate personal protective equipment (including nitrile gloves) to prevent contamination of skin, eyes and personal clothing. Avoid breathing dust, vapors or mist. Ensure adequate ventilation.

6.2 Environmental Precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Pick up using inert absorbent material and arrange for safe disposal. Keep in suitable, closed containers for disposal

6.4 Reference to other sections
For disposal recommendations see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapor or mist of reconstituted materials.
For precautions see section 2.2.

7.2 Conditions for safe storage
Recommended storage temperature for lyophilized materials: +4 °C short term; -20 to -80 °C long term. Store in a cool, dry place. Once reconstituted, store at +4 °C and keep upright to prevent leakage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Engineering controls
General industrial hygiene practice. Ensure adequate ventilation. Use in a fume hood where applicable. Ensure laboratory is equipped with a safety shower and eye wash station.

Personal protective equipment

Respiratory protection
Respiratory protection is not required. In case of inadequate ventilation, use a suitable respirator. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as CEN (EU) or NIOSH (US).

Hand protection
Handle with gloves. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN374 derived from it. Gloves should be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid contact of skin with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye Protection
Wear suitable eye protection that has been tested and approved under appropriate government standards such as EN166 (EU) or NIOSH (US).

Skin and body protection
Wear a laboratory coat or similar suitable protective clothing as protection against spillages or contamination. Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved.
9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Form: powder, (lyophilised)</td>
</tr>
<tr>
<td>Odour</td>
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</tr>
<tr>
<td>Odour Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>pH 7.5</td>
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<tr>
<td>Melting point</td>
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<tr>
<td>Flash point</td>
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<tr>
<td>Evaporation rate</td>
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<tr>
<td>Flammability (solid)</td>
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</tr>
<tr>
<td>Decomposition temperature</td>
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<tr>
<td>Ignition Temperature</td>
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<tr>
<td>Lower explosion limit</td>
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<tr>
<td>Upper explosion limit</td>
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<tr>
<td>Vapour pressure</td>
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<tr>
<td>Vapour density</td>
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<tr>
<td>Water solubility</td>
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<td>Relative density</td>
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<tr>
<td>Viscosity</td>
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<tr>
<td>Partition coefficient: n-octanol/water</td>
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</tr>
<tr>
<td>Oxidizing properties</td>
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</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions

Reactivity
No data available

Conditions to avoid
Avoid heat and freeze thaw cycles

Materials to avoid
Strong oxidizing agents, strong reducing agents, strong acids/alkalis

Hazardous decomposition products
No data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity
No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available
Germ cell mutagenicity
No Data available

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

Reproductive Toxicity
No data available

Aspiration hazard
No data available

Potential health effects
Inhalation None
Ingestion None
Skin None
Eyes None

Signs and symptoms of exposure
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Additional Information
No data available

12. ECOLOGICAL INFORMATION
Toxicity
No data available

Persistence and degradability
Degradates easily

Bio accumulative potential
Low

Mobility in soil
No data available

PBT and vPvB assessment
No data available

Other adverse effects
No data available

13. DISPOSAL CONSIDERATIONS
Product
Observe all applicable national, regional, or local environmental regulations.

Contaminated packaging
Dispose of as unused product

Special precautions
Dispose of small amounts of spilled material as described in section 6.3. Avoid dispersal of spilt material to soil and drains.

14. TRANSPORT INFORMATION
ADR/RID ADN/ADNR IMDG IATA/DOT:
Non-hazardous for transport.

UN-Number/ UN proper shipping / Transport hazard class/ Packaging group/ Environmental/ Special precautions for users:
Does not meet the criteria for classification as hazardous for transport.
15. REGULATORY INFORMATION
This safety datasheet complies with the regulations of Regulation (EC) No. 1907/2006.

16. OTHER INFORMATION
None

Last update: 27th March 2020
Prepared by: Leaf Expression Systems Ltd

Leaf Systems International Ltd (trading as Leaf Expression Systems Ltd) shall not be held liable for any damage resulting from handling or from contact with the above product. Although the information, opinions and recommendations contained in this Safety Data Sheet are compiled from sources believed to be reliable, we accept no responsibility for the accuracy, sufficiency, or reliability or for any loss or injury resulting from the use of the information.

The final determination of suitability of any material is the sole responsibility of the user. A full risk assessment should always be undertaken before using a new chemical or biological substance within a laboratory setting. Always consult with your local safety advisor and follow the appropriate local and national safety legislature.

This product should only be handled in appropriately equipped and authorized facilities by scientists that are suitably qualified and experienced. The absence of a specific warning does mean that no hazard exists. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist. All materials may present unknown hazards and should be used with caution.