Material Safety Data Sheet: Pangaea Booster

1. Identification of the substance/preparation and company/undertaking:

1.1 Product identifier

Trade Name:	Pangaea Booster
UFI	4P80-P0Y2-K00A-NH4U
Product type:	Plant Protection Adjuvant
Formulation type:	Liquid

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

Recommended Uses:	Adjuvant for use with authorised plant protection products.

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier:	Pangaea Biosciences Limited St John's Innovation Centre Cowley Road, Cambridge CB4 OWS England
E-mail:	info@pangaeabiosciences.com
Telephone:	+44 (0) 1603 617459

1.4 Emergency telephone No's

Healthcare professionals	0870-600-6266 [UK National Poisons Control Information Service (NPIS) Centre]
Public & First Responders	For 24 hour emergency information contact CareChem 01865 407 333

2. Hazards Identification

2.1. Classification of the substance or mixture.

The product is classified as hazardous pursuant to the provisions set forth in Directives 67/548/EEC and 1999/45/EC and/or EC Regulation 1272/2008 (CLP) (and subsequent amendments and supplements). The product thus requires a safety datasheet that complies with the provisions of EC regulation 1907/2006 and subsequent amendments.
Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

2.1.1. Regulation 1272/2008 (CLP) and following amendments and adjustments.

Hazard classification and indication:
Eye damage 1 H318
Aquatic Chronic 1 H410
Aquatic Acute 1 H400

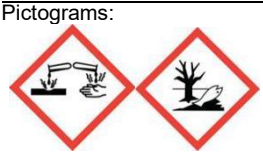
2.1.2 Additional Information

The full wording of the Hazard (H) phrases is given in section16 of the sheet.

2.2. Label elements.

Hazard labelling pursuant to EC Regulation 1272/2008 (CLP) and subsequent amendments and supplements.

Pictograms:



Signal Word: Danger

Hazard statements:

H318 Causes serious eye damage
H410 Very Toxic to aquatic life with long lasting effects.

Precautionary statements:

P280 Wear protective gloves/eye protection/face protection.
P305+351+338 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 or doctor/physician.
P273 Avoid release to the environment
P391 Collect spillage
P501 Dispose of contents/container in accordance to national regulations

Contains: Sodium Dialkysulfosuccinate

2.3 Other Hazards.

Information not available.

3. Composition/Information on Ingredients:

3.1. Substances.
Information not relevant.

3.2. Mixtures.

Contains the following substances which add to the final hazard classification given in section 2.2

Identification	Conc.%	Classification 1272/2008 (CLP)
Piperonyl Butoxide CAS nº.: 51-03-6 EC nº.: 200-076-7	20-90%	Aquatic Acute 1 H400 Aquatic Chronic 1 H410
Sodium Dialkysulfosuccinate CAS nº.: 577-11-7 EC nº.: 209-406-4	3-10	Eye Dam. 1 H318, Skin Irrit. 2 H315
2,6-di-tert-butyl-p-cresol CAS N°:128-37-0 EC nº: 204-881-4	1-10	Aquatic Acute 1 H400 M=1, Aquatic Chronic 1 H410

The full wording of the hazard (H) phrases is given in section 16 of the sheet.

4. First Aid Measures

4.1 Description of first aid measures.
EYES: Irrigate copiously with clean, fresh water for at least 15 minutes. Seek medical advice IMMEDIATELY.
SKIN: Wash immediately with plenty of water. Remove contaminated clothing. If irritation persists, seek medical attention. Wash contaminated clothing before using them again.
INHALATION: Remove to open air. If breathing is irregular, seek medical advice.
INGESTION: Obtain immediate medical attention. Induce vomiting only if indicated by the doctor. Never give anything by mouth to an unconscious person.

4.2. Most important symptoms and effects, both acute and delayed.
For symptoms and effects caused by the contained substances see chap. 11.

4.3. Indication of any immediate medical attention and special treatment needed.
Follow doctor's orders.

5. Fire-fighting measures:

5.1. Extinguishing media.
SUITABLE EXTINGUISHING MEDIA

The extinction equipment should be of the conventional kind: carbon dioxide, foam, powder and nebulised water.
EXTINGUISHING MEDIA WHICH SHALL NOT BE USED FOR SAFETY REASONS
None in particular.

5.2. Special hazards arising from the substance or mixture.
HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE
Do not breathe combustion products (carbon oxide, toxic pyrolysis products, etc.)

5.3 Advice for Firefighters.
GENERAL INFORMATION
Use jets of water to cool the containers to prevent product decomposition and the development of substances potentially hazardous for health. Always wear full fire prevention gear. Collect extinguishing water to prevent it from draining into the sewer system. Dispose of contaminated water used for extinction and the remains of the fire according to applicable regulations.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS

Hardhat with visor, fireproof, clothing (fireproof jacket and trousers with straps around arms, legs and waist), work gloves (fireproof, cut proof and dielectric), a depressurised mask with facemask covering the whole of the operator'sface or a self-respirator (self-protector) in the event of large quantities of fume.

6. Accidental release measures:

6.1. Personal precautions, protective equipment and emergency procedures.
Use breathing equipment if fumes or powders are released into the air.

6.2. Environmental precautions.
The product must not penetrate the sewers, surface water, ground water and neighbouring areas.

6.3. Methods and material for containment and cleaning up.
Confine using earth or inert material. Collect as much material as possible and eliminate the rest using jets of water. Contaminated material should be disposed of in compliance with the provisions set forth in point 13.

6.4. Reference to other sections.
Any information on personal protection and disposal is given in sections 8 and 13.

7. Handling and storage:

7.1. Precautions for safe handling.
Do not smoke while handling and use.

7.2. Conditions for safe storage, including any incompatibilities.
Store in a well-ventilated place, keep far away from sources of heat, bright flames and sparks and other sources of ignition.

7.3. Specific end use(s).
Information not available

8. Exposure controls/Personal protection:

8.1. Control parameters.
Information not available.

8.2. Exposure controls.

As the use of adequate technical equipment must always take priority over personal protection equipment, make sure that the workplace is well aired through effective local aspiration or bad air vent.
HAND PROTECTION
Protect hands with category I (ref. Directive 89/686/EEC and standard EN 374) work gloves, such as those in latex, PVC or equivalent. The following should be considered when choosing work glove material: degradation, breakage times and permeation. Work glove resistance to preparations should be checked before use, as it can be unpredictable. Gloves limit depends on the duration of exposure.
SKIN PROTECTION
Wear category I professional long sleeved overalls and safety footwear (ref. Directive 89/686/CEE and standard EN 344). Wash body with soap and water after removing overalls.
RESPIRATORY PROTECTION
If the threshold value for one or more of the substances present in the preparation for daily exposure in the workplace or to a fraction established by the company's prevention and protection service is exceeded, wear a mask with an B or universal filter, the class (1,2 or 3) of which must be chosen according to the limit concentration of use (ref. standard EN 141).
The use of breathing protection equipment, such as masks with organic vapour and dust/mist cartridges, is necessary

in the absence of technical measures limiting work exposure. The protection provided by masks is in any case limited.
If the substance in question is odourless or its olfactory threshold is higher than the relative exposure limit and in the event of an emergency, or when exposure levels are unknown or the concentration of oxygen in the workplace is less than 17%volume, wear self-contained, open-circuit compressed air breathing apparatus (ref. standard EN 137) or fresh air hose breathing apparatus for use with full mask, half mask or mouthpiece (ref. standard EN 138).
EYE PROTECTION
Use of protective airtight goggles (ref. standard EN 166) recommended.

9. Physical and chemical properties:

The boiling point has been measured at the pressure of 278 Pa.

9.1. Information on basic physical and chemical properties.

Appearance	oily liquid
Colour	pale yellow
Odour	slightly aromatic
Odour threshold	Not available
pH	6.2
Melting or freezing point	<-10°C
Boiling point	203°C
Distillation range	Not available
Flash point	179.2°C
Evaporation rate	Not available
Flammability of solids and gases	Not flammable
Lower inflammability limit	Not available
Upper inflammability limit	Not available
Lower explosive limit	Not applicable
Upper explosive limit	Not applicable
Vapour pressure	$2{,}11 \times 10^{-7}$hPa (60°C)
Vapour density	Not available
Specific gravity	1.058g/ml (20°C)
Solubility	Soluble in all common organic solvents (n0hexane, toluene, 1,2-dichloroethane, 2-propanol, acetone, ethyl acetate), including mineral oils
Partition coefficient: n-octanol/water	Log Pow = 4.8
Ignition temperature	265°C
Decomposition temperature	>300°C
Viscosity	28.7mPa s (20°C)
Reactive Properties	Non-Oxidising

9.2. Other Information

Molecular weight	338.43
Solubility in water	28.9mg/l (20°C)

10. Stability and reactivity:

10.1. Reactivity
There are no particular risks of reaction with other substances in normal conditions of use.

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

10.3 Possibility of hazardous reactions.
No hazardous reactions are foreseeable in normal conditions of use and storage.

10.4. Conditions to avoid
None in particular, however the usual precautions used for chemical products should be respected.

10.5. Incompatible materials.
Information not available.

10.6 Hazardous decomposition products.
In the event of thermal decomposition or fire, vapours potentially dangerous to health may be released.

11. Toxicological information:

The mixture must be handled carefully according to good industrial practices.

Piperonyl Butoxide
Acute Oral Toxicity: LD50 (Rat): 4750mg/Kg bw (male)- 76220mg/kg bw (female)
Acute Dermal Toxicity: LD50 (rabbit):>2000 mg/Kg bw
Acute Inhalatory Toxicity: LC50 (rat): >5.9mg/L (4h)
Corrosion: Non-corrosive.

Eye and Dermal irritation: Non-irritating.
Skin Sensitisation: Non-sensitising.
Long-term toxicity: Non-teratogenic, non-mutagenic, non-carcinogenic, non-toxic to reproduction.

12. Ecological information:

This product is dangerous for the environment and highly toxic for aquatic organisms.

12.1. Toxicity

Piperonyl Butoxide
LC50 (96h): 3,94mg/L Cyprinodon vareiegatus (fish)
IC50 (72h): 2.09mg/L Selenastrum capricomutum (algae)
EC50 (48h): 0.51mg/L Daphnia magna (aquatic invertebrates)

12.2. Persistence and degradability
The substance is not readily biodegradable.

12.3. Bioaccumalative potential
BCF: 91-260-380

12.4. Mobility in soil
The substance has a low-to moderate potential of mobility in soil.

12.5. Results of PBT and vPvB assessment
All data indicate that the substance do not have these properties and is therefore not considered to be a PBT or vPvB.

12.6 Other adverse effects
None.

13. Disposal considerations:

13.1. Waste treatment methods

Reuse, when possible. Product residues should be considered special hazardous waste. The hazard level of waste containing this product should be evaluated according to applicable regulations.
Disposal must be performed through an authorised waste management firm, in compliance with national and local regulations.
CONTAMINATED PACKAGING
Contaminated packaging must be recovered or disposed of in compliance with national waste management regulations.

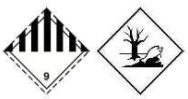
14. Transport information:

These goods must be transported by vehicles authorised to the carriage of dangerous goods according to the provisions set out in the current edition of the Code of Internatiol Carriage of Dangerous Goods by Road (ADR) and inall the applicable national regulations.

These goods must be packed in their original packagings or in packagings made of materials resistant to their content and not reacting dangerously with it. People loading and unloading dangerous goods must be trained on all the rsiks deriving from these substances and on all actions that must be taken in case of emergency situations.

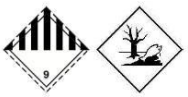
Road and rail transport:

ADR/RID Class:	9	UN:	3082
Packing Group:	III		
Label:	9		
Nr. Kemler:	90		
Proper Shipping Name:	Environmentally Hazardous Substance, Liquid, N.O.S (Contains Piperonyl Butoxide)		



Carriage by Sea (shipping):

IMO class:	9	UN:	3082
Packing Group:	III		
Label:	9		
EMS:	F-A, S-F		
Marine Pollutant:	YES		
Proper Shipping Name:	Environmentally Hazardous Substance, Liquid, N.O.S. (Contains Piperonyl Butoxide)		



Transport by air:

IATA:	9	UN:	3082
Packing Group:	III		
Label:	9		
Special Instructions:	A97, A158		
Proper Shipping Name:	Environmentally Hazardous Substance, Liquid, N.O.S (Contains Piperonyl Butoxide)		

15. Regulatory information:

Safety, health and environmental regulations/legislation specific for the substance or mixture
This Safety Data Sheet has been prepared in accordance with the retained UK version of Regulation (EC) No 1907/2006 (UK REACH), including the requirements of Annex II as amended by Commission Regulation (EU) 2020/878.
Classification and labelling are in accordance with the Great Britain CLP Regulation, which is based on Regulation (EC) No 1272/2008 as retained in UK law.
The product is also subject to national legislation including the Control of Substances Hazardous to Health (COSHH) Regulations 2002, and, where applicable, the Control of Pesticides Regulations (COPR) 1986.

15.1 Chemical safety assessment.

A Chemical Safety Assessment (CSA) has not been carried out for this mixture by the supplier The information in this SDS, therefore, is based on available hazard data and operational experience. Users should perform their own risk assessments and implement appropriate handling controls in accordance with UK regulations (e.g. COSHH) when using this product.

16. Other information:

Text of Hazard (H) indications mentioned in section 2-3 of the sheet:

Full text of H-statements:
H318: Causes serious eye damage
H319: Causes serious eye irritation
H335: May cause respiratory irritation
H400: Very toxic to aquatic life
H410: Very toxic to aquatic life with long lasting effects
Abbreviations:
CAS, CLP, REACH, UFI, PBT, vPvB, SDS, COPR

Disclaimer:
This SDS reflects the most current information at the time of issue. Users are responsible for compliance and risk assessments.