



KIT COMPONENTS

PRODUCT CODE	DESCRIPTION
XTM4001KT	PhenoFlamma™ 6-Plex mIHC Kit
Components	
XTR1031	10X TR1 Buffer
XTR1032	10X TR2 Buffer
XTR1041	Blocking Buffer
XTR2001	Astra Diluent
RSA4011	Mouse/Rabbit HRP 2 nd Antibody
XTD1001	Astra DAPI
XTR1021	DMSO
XTR1022	H ₂ O ₂
XTD1011	ASTRA - 480
XTD1031	ASTRA - 520
XTD3011	ASTRA - 570
XTD2051	ASTRA - 620
XTD3041	ASTRA - 690
XTD3051	ASTRA - DIG
XTA3051	ASTRA - 780 (Anti-DIG)



Safety Data Sheet

acc. to OSHA HCS

Printing date 08.12.2023

Revision 07.12.08

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

· product identification

- Trade name : TR1 Buffer, 10X
- Product Number : XTR1031
- Application of the substance / the mixture Laboratory chemicals
- Details of the supplier of the safety data sheet
- Manufacturer :

Thernovis co., Ltd
11th floor Convergence Research Building
88, Olympic-ro 43-gil, Songpa-gu, Seoul
05505, Korea

- Supplier :

BioActs Co., Ltd.
9, Cheongneung-daero 595beon-gil
Namdong-gu, Incheon
21666, Korea

- Information department :

BioActs US Technical Support

- Emergency telephone number

If inside USA, call DANIEL at 1-510-561-9916
If outside USA, call DANIEL at +82 10-7933-9584

Section 2. Hazard(s) identification

· Classification of the substance or mixture

Skin Irritation - Category 2 H315 Causes skin irritation.
Eye Irritation - Category 2A H319 Causes serious eye irritation.
Skin Sensitizer - Category 1 H317 May cause an allergic skin reaction.

- **Additional information** : For the wording of the listed H phrases refer to section 16.

· Label elements

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· Hazard pictograms



GHS07

- **Signal word** Warning
- **Hazard statements** Void

SECTION 3: Composition/information on ingredients

- **Chemical characterization : mixtures**
- **Description :** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components :**

77-86-1	2-Amino-2-(hydroxymethyl)-1,3-propanediol	1 – 2 %
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SECTION 4: First-aid measures

- **Description of first aid measure**
- **General information :** No special measures required.
- **After inhalation :** Supply fresh air and to be sure call for a doctor. In case of unconsciousness place patient stably in side position for transportation.
- **After eye contact :** Rinse opened eye for several minutes under running water.
- **After swallowing :** If symptoms persist consult doctor.
- **Information for doctor :**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents :** Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture** No further relevant information available
- **Advice for firefighters**
- **Protective equipment :** Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions** : Do not allow to enter sewers / surface or ground water.
- **Methods and material for containment and cleaning up** :
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
- **Reference to other sections**
See section 7 for information on safe handling.
See section 8 for information on personal protection equipment.
See section 13 for disposal information.
- **Protective Action Criteria for chemicals**

PAC-1 :

77-86-1	2-Amino-2-(hydroxymethyl)-1,3-propanediol	18 mg/m ³
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PAC-2 :

77-86-1	2-Amino-2-(hydroxymethyl)-1,3-propanediol	190 mg/m ³
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PAC-3 :

77-86-1	2-Amino-2-(hydroxymethyl)-1,3-propanediol	1,200 mg/m ³
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SECTION 7: Handling and storage

- **Handling** :
- **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
- **Information about protection against explosions and fires** : No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage** :
- **Requirements to be met by storerooms and containers** : No special requirements.
- **Information about storage in one common storage facility** : Not required.
- **further information about storage condition** : Keep receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical systems** : No further data; see item 7.
- **Control parameters**

• Components with limit values that require monitoring at the workplace :

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

• Exposure controls**• Personal protective equipment :****• General protective and hygienic measures :**

Keep away from food and beverages.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

• Respiratory protection :

In case of brief or low exposure use an approved cartridge filter. In case of intensive or longer exposure use SCBA.

Suitable respiratory protective device recommended.

• Protection of hands :

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ preparation.

Selection of the glove material on consideration of the penetration times, rate of diffusion and the degradation

• Material of gloves

The choice of appropriate gloves is not solely based on the material; it also involves considering additional quality indicators, which can vary from one manufacturer to another. Given that the product is a blend of several substances, it is not possible to pre-calculate the resistance of the glove material. Consequently, it needs to be assessed before application.

• Penetration time of glove material

Determining the precise breakthrough time is the responsibility of the protective glove manufacturer and should be carefully monitored.

• Eye protection :

Tightly sealed goggles

SECTION 9: Physical and chemical properties**• Information on basic physical and chemical properties**

· General Information	
· Appearance :	
Form :	Fluid
Color :	According to product specification
· Odor :	Characteristic
· Odor threshold :	Not determined.
· pH-value :	N/A
· Change in condition	
Melting point/Melting range :	Undetermined.
Boiling point/Boiling range :	100°C (212 °F)
· Flash point	Not applicable.
· Flammability (solid, gaseous) :	Not applicable.
· Decomposition temperature :	Not determined.
· Auto igniting :	Product is not selfigniting.
· Danger of explosion :	Product does not present an explosion hazard.
· Explosion limits :	
Lower :	Not determined.
Upper :	Not determined.
· Vapor pressure 20 °C :	23 hPa
· Density :	Not determined.
· Relative density	Not determined.
· Vapor density	Not applicable.
· Evaporation rate	Not applicable.
· Solubility in / Miscibility with	
Water :	Not miscible or difficult to mix
· partition coefficient (n-octanol/water) :	Not determined.
· Viscosity :	
Dynamic :	Not applicable.
Kinematic :	Not applicable.
· Solvent content :	
Water	97.0 %
VOC content :	0.00 %
· Other information	No further relevant information available.

SECTION 10: Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided** : No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials** : No further relevant information available.
- **Hazardous decomposition products** : No dangerous decomposition products known.

SECTION 11: Toxicological information

- **Information on toxicological effects**
- **Acute toxicity** :
- **Primary irritant effect** :
 - **on the skin** : Irritant to skin and mucous membranes.
 - **on the eye** : Irritating effect.
- **Sensitization** : Sensitization possible through skin contact.
- **Additional toxicological information** :
 The product shows the following dangers according to internally approved calculation methods for preparations:

Irritant

- **Carcinogenic categories**

IARC (International Agency for Research on Cancer)

None of the ingredients is listed.

NTP (National Toxicology Program)

None of the ingredients is listed.

OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

SECTION 12: Ecological Information

- **Toxicity**
- **Aquatic toxicity** : No further relevant information available.
- **Persistence and degradability** No further relevant information available.

- **Behavior in environmental systems :**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
 - **Ecotoxicological effects :** N/A
 - **Other information :** N/A
- **Results of PBT and vPvB assessment**
 - **PBT :** Not applicable.
 - **vPvB :** Not applicable.
- **Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **Waste treatment methods**
- **Recommendation :** Must be specially treated adhering to official regulations.
- **Uncleaned packagings :**
- **Recommendation :** Disposal must be made according to official regulations.

SECTION 14: Transport information

- | | |
|---|-----------------|
| · UN-Number | |
| · ADR, ADN, IMDG, IATA | not regulated |
| · UN proper shipping name | |
| · ADR, ADN, IMDG, IATA | not regulated |
| · Transport hazard class(es) | |
| · ADR, ADN, IMDG, IATA | |
| · Class | not regulated |
| · Packing group | |
| · ADR, IMDG, IATA | not regulated |
| · Environmental hazards : | Not applicable. |
| · Special precautions for user | Not applicable. |
| · Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code | Not applicable. |
| · UN "Model Regulation" : | not regulated |

SECTION 15: Regulatory information

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

· **Sara**

Section 355 (extremely hazardous substances) :

None of the ingredients is listed.

Section 313 (Specific toxic chemical listings) :

None of the ingredients is listed.

TSCA (Toxic Substances Control Act) :

77-86-1	2-Amino-2-(hydroxymethyl)-1,3-propanediol
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7732-18-5	Water
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Hazardous Air Pollutants

None of the ingredients is listed.

· **Proposition 65**

Chemicals known to cause cancer :

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for females :

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for males :

None of the ingredients is listed.

Chemicals known to cause developmental toxicity :

None of the ingredients is listed.

· **Proposition 65**

EPA (Environmental Protection Agency)

None of the ingredients is listed.

TLV (Threshold Limit Value established by ACGIH)

None of the ingredients is listed.

NIOSH-Ca (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

· **Chemical safety assessment** : A Chemical Safety Assessment has not been carried out

SECTION 16: Other information

The details presented in this Safety Data Sheet are derived from our current understanding

and are deemed accurate as of the publication date. Nevertheless, we make no assertions regarding their absolute accuracy and comprehensiveness. This information serves as guidance and should not be construed as a warranty or quality specification. Given that all materials may pose unforeseen risks, cautious handling is advised. While specific hazards are outlined, we cannot ensure that these are the sole risks associated with the product. BioActs Co., Ltd. disclaims any liability for damages arising from product handling or contact.

• **Date of preparation / last revision 08/12/2023/ ~**

• **Abbreviations and acronyms :**

ADR : Accord european sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG : International Maritime Code for Dangerous Goods

DOT : US Department of Transportation

IATA : International Air Transport Association

ACGIH : American Conference of Governmental Industrial Hygienists

EINECS : European Inventory of Existing Commercial Chemical Substances

ELINCS : European List of Notified Chemical

CAS : Chemical Abstracts Service (division of the American Chemical Society)

NFPA : National Fire Protection Association (USA)

VOC : Volatile Organic Compounds (USA, EU)

PBT : Persistent, Bioaccumulative and Toxic

vPvB : very Persistent and very Bioaccumulative

NIOSH : National Institute for Occupational Safety

OSHA : Occupational Safety & Health

TLV : Threshold Limit Value

PEL : Permissible Exposure Limit

REL : Recommended Exposure Limit



Safety Data Sheet

acc. to OSHA HCS

Printing date 08.12.2023

Revision 07.12.08

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

- **product identification**

- **Trade name** : TR2 Buffer, 10X
- **Product Number** : XTR1032
- **Application of the substance / the mixture** Laboratory chemicals
- **Details of the supplier of the safety data sheet**
- **Manufacturer** :

Theranovis co., Ltd
11th floor Convergence Research Building
88, Olympic-ro 43-gil, Songpa-gu, Seoul
05505, Korea

- **Supplier** :

BioActs Co., Ltd.
9, Cheongneung-daero 595beon-gil
Namdong-gu, Incheon
21666, Korea

- **Information department** :

BioActs US Technical Support

- **Emergency telephone number**

If inside USA, call DANIEL at 1-510-561-9916
If outside USA, call DANIEL at +82 10-7933-9584

Section 2. Hazard(s) identification

- **Classification of the substance or mixture**

Skin Irritation - Category 2 H315 Causes skin irritation.
Eye Irritation - Category 2A H319 Causes serious eye irritation.
Skin Sensitizer - Category 1 H317 May cause an allergic skin reaction.

- **Additional information** : For the wording of the listed H phrases refer to section 16.

- **Label elements**

- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

- **Hazard pictograms**



GHS07

- **Signal word** Warning
- **Hazard statements** Void

SECTION 3: Composition/information on ingredients

- **Chemical characterization : mixtures**
- **Description :** Mixture of the substances listed below with nonhazardous additions.

· **Ingredients :**

77-92-9	Citric acid	< 1 %
6132-04-3	Sodium citrate	< 1 %
9005-64-5	Polyoxyethylenesorbitan Monolaurate	< 1 %
7732-18-5	Water	75-100%

SECTION 4: First-aid measures

- **Description of first aid measure**
- **General information :** No special measures required.
- **After inhalation :** Supply fresh air and to be sure call for a doctor. In case of unconsciousness place patient stably in side position for transportation.
- **After eye contact :** Rinse opened eye for several minutes under running water.
- **After swallowing :** If symptoms persist consult doctor.
- **Information for doctor :**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents :** CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Special hazards arising from the substance or mixture** No further relevant information

available

- **Advice for firefighters**
- **Protective equipment** : Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions** : Do not allow to enter sewers / surface or ground water.
- **Methods and material for containment and cleaning up** :
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
- **Reference to other sections**
See section 7 for information on safe handling.
See section 8 for information on personal protection equipment.
See section 13 for disposal information.

- **Protective Action Criteria for chemicals**

PAC-1 :

6132-04-3	Sodium citrate	4 mg/m ³
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PAC-2 :

6132-04-3	Sodium citrate	44 mg/m ³
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PAC-3 :

6132-04-3	Sodium citrate	270 mg/m ³
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SECTION 7: Handling and storage

- **Handling** :
- **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
- **Information about protection against explosions and fires** : No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage** :
- **Requirements to be met by storerooms and containers** : No special requirements.
- **Information about storage in one common storage facility** : Not required.
- **further information about storage condition** : Keep receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical systems :** No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace :**

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **Exposure controls**
- **Personal protective equipment :**
- **General protective and hygienic measures :**

Keep away from food and beverages.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
- **Respiratory protection :**

In case of brief or low exposure use an approved cartridge filter. In case of intensive or longer exposure use SCBA.
Suitable respiratory protective device recommended.
- **Protection of hands :**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ preparation.

Selection of the glove material on consideration of the penetration times, rate of diffusion and the degradation

- **Material of gloves**

The choice of appropriate gloves is not solely based on the material; it also involves considering additional quality indicators, which can vary from one manufacturer to another. Given that the product is a blend of several substances, it is not possible to pre-calculate the resistance of the glove material. Consequently, it needs to be assessed before application.

- **Penetration time of glove material**

Determining the precise breakthrough time is the responsibility of the protective glove manufacturer and should be carefully monitored.

- **Eye protection :**



Tightly sealed goggles

SECTION 9: Physical and chemical properties**· Information on basic physical and chemical properties****· General Information****· Appearance :****Form :** Fluid**Color :** According to product specification**· Odor :** Characteristic**· Odor threshold :** Not determined.**· pH-value :** N/A**· Change in condition****Melting point/Melting range :** Undetermined.**Boiling point/Boiling range :** 100°C (212 °F)**· Flash point** Not applicable.**· Flammability (solid, gaseous) :** Not applicable.**· Decomposition temperature :** Not determined.**· Auto igniting :** Product is not selfigniting.**· Danger of explosion :** Product does not present an explosion hazard.**· Explosion limits :****Lower :** Not determined.**Upper :** Not determined.**· Vapor pressure 20 °C :** 23 hPa**· Density :** Not determined.**· Relative density** Not determined.**· Vapor density** Not applicable.**· Evaporation rate** Not applicable.**· Solubility in / Miscibility with****Water :** Not miscible or difficult to mix**· partition coefficient (n-octanol/water) :** Not determined.**· Viscosity :****Dynamic :** Not applicable.**Kinematic :** Not applicable.**· Solvent content :**

TR2 Buffer, 10X

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Water	98.5 %
VOC content :	0.00 %
Solids content :	1.0 %
· Other information	No further relevant information available.

SECTION 10: Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided :** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials :** No further relevant information available.
- **Hazardous decomposition products :** No dangerous decomposition products known.

SECTION 11: Toxicological information

- **Information on toxicological effects**
- **Acute toxicity :**
- **Primary irritant effect :**
 - **on the skin :** Irritant to skin and mucous membranes.
 - **on the eye :** Irritating effect.
- **Sensitization :** Sensitization possible through skin contact.
- **Additional toxicological information :**

The product shows the following dangers according to internally approved calculation methods for preparations:

Irritant

- **Carcinogenic categories**

IARC (International Agency for Research on Cancer)

None of the ingredients is listed.

NTP (National Toxicology Program)

None of the ingredients is listed.

OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

SECTION 12: Ecological Information

- **Toxicity**
- **Aquatic toxicity** : No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems** :
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Ecotoxicological effects** : N/A
- **Other information** : N/A
- **Results of PBT and vPvB assessment**
- **PBT** : Not applicable.
- **vPvB** : Not applicable.
- **Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **Waste treatment methods**
- **Recommendation** : Must be specially treated adhering to official regulations.
- **Uncleaned packagings** :
- **Recommendation** : Disposal must be made according to official regulations.

SECTION 14: Transport information

- | | |
|---|-----------------|
| · UN-Number | |
| · ADR, ADN, IMDG, IATA | not regulated |
| · UN proper shipping name | |
| · ADR, ADN, IMDG, IATA | not regulated |
| · Transport hazard class(es) | |
| · ADR, ADN, IMDG, IATA | |
| · Class | not regulated |
| · Packing group | |
| · ADR, IMDG, IATA | not regulated |
| · Environmental hazards : | Not applicable. |
| · Special precautions for user | Not applicable. |
| · Transport in bulk according to Annex | Not applicable. |

II of MARPOL 73/78 and the IBC Code

· UN "Model Regulation" :	not regulated
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SECTION 15: Regulatory information

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

· Sara

Section 355 (extremely hazardous substances) :

None of the ingredients is listed.

Section 313 (Specific toxic chemical listings) :

None of the ingredients is listed.

TSCA (Toxic Substances Control Act) :

77-86-1	2-Amino-2-(hydroxymethyl)-1,3-propanediol
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7732-18-5	Water
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Hazardous Air Pollutants

None of the ingredients is listed.

· Proposition 65

Chemicals known to cause cancer :

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for females :

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for males :

None of the ingredients is listed.

Chemicals known to cause developmental toxicity :

None of the ingredients is listed.

· Proposition 65

EPA (Environmental Protection Agency)

None of the ingredients is listed.

TLV (Threshold Limit Value established by ACGIH)

None of the ingredients is listed.

NIOSH-Ca (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

- **Chemical safety assessment** : A Chemical Safety Assessment has not been carried out

SECTION 16: Other information

The details presented in this Safety Data Sheet are derived from our current understanding and are deemed accurate as of the publication date. Nevertheless, we make no assertions regarding their absolute accuracy and comprehensiveness. This information serves as guidance and should not be construed as a warranty or quality specification. Given that all materials may pose unforeseen risks, cautious handling is advised. While specific hazards are outlined, we cannot ensure that these are the sole risks associated with the product. BioActs Co., Ltd. disclaims any liability for damages arising from product handling or contact.

- **Date of preparation / last revision 08/12/2023/ ~**

- **Abbreviations and acronyms :**

ADR : Accord europeen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG : International Maritime Code for Dangerous Goods

DOT : US Department of Transportation

IATA : International Air Transport Association

ACGIH : American Conference of Governmental Industrial Hygienists

EINECS : European Inventory of Existing Commercial Chemical Substances

ELINCS : European List of Notified Chemical

CAS : Chemical Abstracts Service (division of the American Chemical Society)

NFPA : National Fire Protection Association (USA)

VOC : Volatile Organic Compounds (USA, EU)

PBT : Persistent, Bioaccumulative and Toxic

vPvB : very Persistent and very Bioaccumulative

NIOSH : National Institute for Occupational Safety

OSHA : Occupational Safety & Health

TLV : Threshold Limit Value

PEL : Permissible Exposure Limit

REL : Recommended Exposure Limit

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

- **product identification**

- **Trade name : Blocking buffer, 1X**
- **Product Number : XTR1041**
- **Application of the substance I the mixture Laboratory chemicals**
- **Details of the supplier of the safety data sheet**
- **Manufacturer :**

Thernovis co., Ltd
11th floor Convergence Research Building
88, Olympic-ro 43-gil, Songpa-gu, Seoul
05505, Korea

- **Supplier :**

BioActs Co., Ltd.
9, Cheongneung-daero 595beon-gil
Namdong-gu, Incheon
21666, Korea

- **Information department :**

BioActs US Technical Support

- **Emergency telephone number**

If inside USA, call DANIEL at 1-510-561-9916
If outside USA, call DANIEL at +82 10-7933-9584

Section 2. Hazard(s) identification

- **Classification of the substance or mixture**

Skin Sens. 1 H317 May cause an allergic skin reaction.

- **Additional information :** For the wording of the listed H phrases refer to section 16.

- **Label elements**

- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

- **Hazard pictograms**



GHS07

- **Signal word** Warning
- **Hazard statements** Void

SECTION 3: Composition/information on ingredients

- **Chemical characterization : mixtures**
- **Description** : Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components :**

77-86-1	2-Amino-2-(hydroxymethyl)-1,3-propanediol	1 – 2 %
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SECTION 4: First-aid measures

- **Description of first aid measure**
- **General information** : No special measures required.
- **After inhalation** : Supply fresh air; consult doctor in case of complaints.
- **After skin contact** : If skin irritation continues, consult a doctor
- **After eye contact** : Rinse opened eye for several minutes under running water.
- **After swallowing** : If symptoms persist consult doctor.
- **Information for doctor** :
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents** : Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture** No further relevant information available
- **Advice for firefighters**
- **Protective equipment** : Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures



Safety Data Sheet

Blocking buffer, 1X

acc. to OSHA HCS

Printing date 08.12.2023

Revision 07.12.08

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions** : Do not allow to enter sewers / surface or ground water.
- **Methods and material for containment and cleaning up** :
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
- **Reference to other sections**
See section 7 for information on safe handling.
See section 8 for information on personal protection equipment.
See section 13 for disposal information.

- **Protective Action Criteria for chemicals**

PAC-1 :		
77-86-1	2-Amino-2-(hydroxymethyl)-1,3-propanediol	18 mg/m ³

PAC-2 :		
77-86-1	2-Amino-2-(hydroxymethyl)-1,3-propanediol	190 mg/m ³

PAC-3 :		
77-86-1	2-Amino-2-(hydroxymethyl)-1,3-propanediol	1,200 mg/m ³

SECTION 7: Handling and storage

- **Handling** :
- **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
- **Information about protection against explosions and fires** : No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage** :
- **Requirements to be met by storerooms and containers** : No special requirements.
- **Information about storage in one common storage facility** : Not required.
- **further information about storage condition** : None.
- **Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical systems** : No further data; see item 7.
- **Control parameters**

• Components with limit values that require monitoring at the workplace :

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

• Exposure controls**• Personal protective equipment :****• General protective and hygienic measures :**

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

• Respiratory protection :

In case of brief or low exposure use an approved cartridge filter. In case of intensive or longer exposure use SCBA.

Suitable respiratory protective device recommended.

• Protection of hands :

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ preparation.

Selection of the glove material on consideration of the penetration times, rate of diffusion and the degradation

• Material of gloves

The choice of appropriate gloves is not solely based on the material; it also involves considering additional quality indicators, which can vary from one manufacturer to another. Given that the product is a blend of several substances, it is not possible to pre-calculate the resistance of the glove material. Consequently, it needs to be assessed before application.

• Penetration time of glove material

Determining the precise breakthrough time is the responsibility of the protective glove manufacturer and should be carefully monitored.

• Eye protection : Goggles recommended during refilling**SECTION 9: Physical and chemical properties****• Information on basic physical and chemical properties****• General Information****• Appearance :**

Form :

Fluid



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Color :	According to product specification
· Odor :	Characteristic
· Odor threshold :	Not determined.
· pH-value :	N/A
· Change in condition	
Melting point/Melting range :	Undetermined.
Boiling point/Boiling range :	100°C (212 °F)
· Flash point	Not applicable.
· Flammability (solid, gaseous) :	Not applicable.
· Decomposition temperature :	Not determined.
· Auto igniting :	Product is not selfigniting.
· Danger of explosion :	Product does not present an explosion hazard.
· Explosion limits :	
Lower :	Not determined.
Upper :	Not determined.
· Vapor pressure :	Not applicable.
· Density :	Not determined.
· Relative density	Not determined.
· Vapor density	Not applicable.
· Evaporation rate	Not applicable.
· Solubility in / Miscibility with	
Water :	Not miscible or difficult to mix
· partition coefficient (n-octanol/water) :	Not determined.
· Viscosity :	
Dynamic :	Not applicable.
Kinematic :	Not applicable.
· Solvent content :	
Water	98.0 %
VOC content :	0.00 %
Solids content :	1.5 %
· Other information	No further relevant information available.

SECTION 10: Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided** : No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials** : No further relevant information available.
- **Hazardous decomposition products** : No dangerous decomposition products known.

SECTION 11: Toxicological information

- **Information on toxicological effects**
- **Acute toxicity** :
- **Primary irritant effect** :
 - **on the skin** : No irritant effect.
 - **on the eye** : No irritating effect.
- **Sensitization** : Sensitization possible through skin contact.
- **Additional toxicological information** :

The product shows the following dangerous according to internally approved calculation methods for preparations:
Irritant

- **Carcinogenic categories**

IARC (International Agency for Research on Cancer)
--

None of the ingredients is listed.

NTP (National Toxicology Program)

None of the ingredients is listed.

OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

SECTION 12: Ecological Information

- **Toxicity**



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- **Aquatic toxicity** : No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems** :
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
 - **Ecotoxicological effects** : N/A
 - **Other information** : N/A
- **Results of PBT and vPvB assessment**
 - **PBT** : Not applicable.
 - **vPvB** : Not applicable.
- **Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **Waste treatment methods**
- **Recommendation** : Must be specially treated adhering to official regulations.
- **Uncleaned packagings** :
- **Recommendation** : Disposal must be made according to official regulations.

SECTION 14: Transport information

- | | |
|---|-----------------|
| · UN-Number | |
| · ADR, ADN, IMDG, IATA | not regulated |
| · UN proper shipping name | |
| · ADR, ADN, IMDG, IATA | not regulated |
| · Transport hazard class(es) | |
| · ADR, ADN, IMDG, IATA | |
| · Class | not regulated |
| · Packing group | |
| · ADR, IMDG, IATA | not regulated |
| · Environmental hazards : | Not applicable. |
| · Special precautions for user | Not applicable. |
| · Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code | Not applicable. |



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· UN "Model Regulation" : not regulated

SECTION 15: Regulatory information

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

· Sara

Section 355 (extremely hazardous substances) :

None of the ingredients is listed.

Section 313 (Specific toxic chemical listings) :

None of the ingredients is listed.

TSCA (Toxic Substances Control Act) :

77-86-1	2-Amino-2-(hydroxymethyl)-1,3-propanediol
7647-14-5	Sodium chloride
7732-18-5	Water

Hazardous Air Pollutants

None of the ingredients is listed.

· Proposition 65

Chemicals known to cause cancer :

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for females :

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for males :

None of the ingredients is listed.

Chemicals known to cause developmental toxicity :

None of the ingredients is listed.

· Proposition 65

EPA (Environmental Protection Agency)

None of the ingredients is listed.

TLV (Threshold Limit Value established by ACGIH)

None of the ingredients is listed.



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NIOSH-Ca (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

· **Chemical safety assessment** : A Chemical Safety Assessment has not been carried out

SECTION 16: Other information

The details presented in this Safety Data Sheet are derived from our current understanding and are deemed accurate as of the publication date. Nevertheless, we make no assertions regarding their absolute accuracy and comprehensiveness. This information serves as guidance and should not be construed as a warranty or quality specification. Given that all materials may pose unforeseen risks, cautious handling is advised. While specific hazards are outlined, we cannot ensure that these are the sole risks associated with the product. BioActs Co., Ltd. disclaims any liability for damages arising from product handling or contact.

· **Date of preparation / last revision 08/12/2023/ ~**

· **Abbreviations and acronyms :**

ADR : Accord european sur le transport des marchandises dangeruses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG : International Maritime Code for Dangerous Goods

DOT : US Department of Transportation

IATA : International Air Transport Association

ACGIH : American Conference of Governmental Industrial Hygienists

EINECS : European Inventory of Existing Commercial Chemical Substances

ELINCS : European List of Notified Chemical

CAS : Chemical Abstracts Service (division of the American Chemical Society)

NFPA : National Fire Protection Association (USA)

VOC : Volatile Organic Compounds (USA, EU)

PBT : Persistent, Bioaccumulative and Toxic

vPvB : very Persistent and very Bioaccumulative

NIOSH : National Institute for Occupational Safety

OSHA : Occupational Safety & Health

TLV : Threshold Limit Value

PEL : Permissible Exposure Limit

REL : Recommended Exposure Limit

Skin Sens. 1 : Skin sensitization – Category 1



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

· product identification

- Trade name : ASTRA Diluent (amplification diluent)
- Product Number : XTR2001
- Application of the substance I the mixture Laboratory chemicals
- Details of the supplier of the safety data sheet
- Manufacturer :

Thernovis co., Ltd
11th floor Convergence Research Building
88, Olympic-ro 43-gil, Songpa-gu, Seoul
05505, Korea

- Supplier :

BioActs Co., Ltd.
9, Cheongneung-daero 595beon-gil
Namdong-gu, Incheon
21666, Korea

- Information department :

BioActs US Technical Support

- Emergency telephone number

If inside USA, call DANIEL at 1-510-561-9916
If outside USA, call DANIEL at +82 10-7933-9584

Section 2. Hazard(s) identification

· Classification of the substance or mixture

The product has been classified and is not hazardous according to the Globally Harmonized System(GHS).

· Label elements

- GHS label elements Void
- Hazard pictograms Void
- Signal word Void
- Hazard statements Void



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SECTION 3: Composition/information on ingredients

- **Chemical characterization : mixtures**
- **Description :** Mixture of the substances listed below with nonhazardous additions.

• Dangerous components :

10043-35-3	boric acid	< 1%
------------	------------	------

SECTION 4: First-aid measures

- **Description of first aid measure**
- **General information :** No special measures required.
- **After inhalation :** Supply fresh air; consult doctor in case of complaints.
- **After skin contact :** If skin irritation continues, consult a doctor
- **After eye contact :** Rinse opened eye for several minutes under running water.
- **After swallowing :** If symptoms persist consult doctor.
- **Information for doctor :**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents :** Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture** No further relevant information available
- **Advice for firefighters**
- **Protective equipment :** Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions :** Do not allow to enter sewers / surface or ground water.
- **Methods and material for containment and cleaning up :**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

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• **Reference to other sections**

See section 7 for information on safe handling.

See section 8 for information on personal protection equipment.

See section 13 for disposal information.

• **Protective Action Criteria for chemicals**

PAC-1 :

10043-35-3	Boric acid	6 mg/m ³
25322-68-3	Polyethylene glycol	30 mg/m ³
1310-73-2	Sodium Hydroxide	0.5 ppm
12209-98-2	Sodium Stannate	11 mg/m ³

PAC-2 :

10043-35-3	Boric acid	23 mg/m ³
25322-68-3	Polyethylene glycol	1,300 mg/m ³
1310-73-2	Sodium Hydroxide	5 ppm
12209-98-2	Sodium Stannate	11 mg/m ³

PAC-3 :

10043-35-3	Boric acid	830 mg/m ³
25322-68-3	Polyethylene glycol	30 mg/m ³
1310-73-2	Sodium Hydroxide	50 ppm
12209-98-2	Sodium Stannate	11 mg/m ³

dd

SECTION 7: Handling and storage

• **Handling :**

• **Precautions for safe handling**

No special measures required

• **Information about protection against explosions and fires :** No special measures required.

• **Conditions for safe storage, including any incompatibilities**

• **Storage :**

• **Requirements to be met by storerooms and containers :** No special requirements.

• **Information about storage in one common storage facility :** Not required.

• **further information about storage condition :** None.

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• **Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

• **Additional information about design of technical systems** : No further data; see item 7.

• **Control parameters**

• **Components with limit values that require monitoring at the workplace :**

10043-35-3 boric acid (< 1%)

TLV Short-term value: 6* mg/m³

Long-term value: 2* mg/m³

* as inhalable fraction

• **Exposure controls**

• **Personal protective equipment :**

• **General protective and hygienic measures :**

Keep away from food and beverages.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

• **Respiratory protection :**

In case of brief or low exposure use an approved cartridge filter. In case of intensive or longer exposure use SCBA.

Suitable respiratory protective device recommended.

• **Protection of hands :**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ preparation.

Selection of the glove material on consideration of the penetration times, rate of diffusion and the degradation

• **Material of gloves**

The choice of appropriate gloves is not solely based on the material; it also involves considering additional quality indicators, which can vary from one manufacturer to another. Given that the product is a blend of several substances, it is not possible to pre-calculate the resistance of the glove material. Consequently, it needs to be assessed before application.

• **Penetration time of glove material**



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Determining the precise breakthrough time is the responsibility of the protective glove manufacturer and should be carefully monitored.

- **Eye protection** : Goggles recommended during refilling

SECTION 9: Physical and chemical properties

• Information on basic physical and chemical properties

• General Information

• Appearance :

Form : Fluid

Color : According to product specification

• **Odor :** Characteristic

• **Odor threshold :** Not determined.

• **pH-value :** 5.1 (0.6% solution)

• Change in condition

Melting point/Melting range : Undetermined.

Boiling point/Boiling range : 100°C (212 °F)

• **Flash point** : Not applicable.

• **Flammability (solid, gaseous) :** Not applicable.

• **Decomposition temperature :** Not determined.

• **Auto igniting :** Product is not selfigniting

• **Danger of explosion :** Product does not present an explosion hazard.

• Explosion limits :

Lower : Not determined.

Upper : Not determined.

• **Vapor pressure :** Not applicable.

• **Density :** Not determined.

• **Relative density** : Not determined.

• **Vapor density** : Not applicable.

• **Evaporation rate** : Not applicable.

• Solubility in / Miscibility with

Water : Not miscible or difficult to mix



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- **partition coefficient (n-octanol/water) :** Not determined.
- **Viscosity :**
 - Dynamic :** Not applicable.
 - Kinematic :** Not applicable.
- **Solvent content :**
 - Water** 85.0 %
 - VOC content :** 0.00 %
 - Solids content :** 14.0 %
- **Other information** No further relevant information available.

SECTION 10: Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided :** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials :** No further relevant information available.
- **Hazardous decomposition products :** No dangerous decomposition products known.

SECTION 11: Toxicological information

- **Information on toxicological effects**
- **Acute toxicity :**
- **Primary irritant effect :**
 - **on the skin :** No irritant effect.
 - **on the eye :** No irritating effect.
- **Sensitization :** No sensitizing effects known.
- **Additional toxicological information :**

The product is not subject to classification according to internally approved calculation methods for preparations :

When used and handles according to specifications, the product does not have and harmful effects according to our experience and the information provided to us.



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· Carcinogenic categories

IARC (International Agency for Research on Cancer)

None of the ingredients is listed.

NTP (National Toxicology Program)

None of the ingredients is listed.

OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

SECTION 12: Ecological Information

· Toxicity

- **Aquatic toxicity** : No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems** :
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Ecotoxicological effects** : N/A
- **Other information** : N/A
- **Results of PBT and vPvB assessment**
- **PBT** : Not applicable.
- **vPvB** : Not applicable.
- **Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **Waste treatment methods**
- **Recommendation** : Must be specially treated adhering to official regulations.
- **Uncleaned packagings** :
- **Recommendation** : Disposal must be made according to official regulations.

SECTION 14: Transport information

- **UN-Number**
- **ADR, ADN, IMDG, IATA** not regulated



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· UN proper shipping name	
· ADR, ADN, IMDG, IATA	not regulated
· Transport hazard class(es)	
· ADR, ADN, IMDG, IATA	
· Class	not regulated
· Packing group	
· ADR, IMDG, IATA	not regulated
· Environmental hazards :	not applicable.
· Special precautions for user	not applicable.
· Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	not applicable.
· UN "Model Regulation" :	not regulated

SECTION 15: Regulatory information

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

· **Sara**

Section 355 (extremely hazardous substances) :

None of the ingredients is listed.

Section 313 (Specific toxic chemical listings) :

None of the ingredients is listed.

TSCA (Toxic Substances Control Act) :

All ingredients is listed.

Hazardous Air Pollutants

None of the ingredients is listed.

· **Proposition 65**

Chemicals known to cause cancer :

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for females :

None of the ingredients is listed.



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Chemicals known to cause reproductive toxicity for males :

None of the ingredients is listed.

Chemicals known to cause developmental toxicity :

None of the ingredients is listed.

· Proposition 65

EPA (Environmental Protection Agency)

10043-35-3	boric acid	I (oral)
------------	------------	----------

TLV (Threshold Limit Value established by ACGIH)

10043-35-3	boric acid	A4
------------	------------	----

NIOSH-Ca (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

· **Chemical safety assessment** : A Chemical Safety Assessment has not been carried out

SECTION 16: Other information

The details presented in this Safety Data Sheet are derived from our current understanding and are deemed accurate as of the publication date. Nevertheless, we make no assertions regarding their absolute accuracy and comprehensiveness. This information serves as guidance and should not be construed as a warranty or quality specification. Given that all materials may pose unforeseen risks, cautious handling is advised. While specific hazards are outlined, we cannot ensure that these are the sole risks associated with the product. BioActs Co., Ltd. disclaims any liability for damages arising from product handling or contact.

· **Date of preparation / last revision 08/12/2023/ ~**

· Abbreviations and acronyms :

ADR : Accord european sur le transport des marchandises dangeruses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG : International Maritime Code for Dangerous Goods

DOT : US Department of Transportation

IATA : International Air Transport Association

ACGIH : American Conference of Governmental Industrial Hygienists

EINECS : European Inventory of Existing Commercial Chemical Substances

ELINCS : European List of Notified Chemical

CAS : Chemical Abstracts Service (division of the American Chemical Society)

NFPA : National Fire Protection Association (USA)



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VOC : Volatile Organic Compounds (USA, EU)
PBT : Persistent, Bioaccumulative and Toxic
vPvB : very Persistent and very Bioaccumulative
NIOSH : National Institute for Occupational Safety
OSHA : Occupational Safety & Health
TLV : Threshold Limit Value
PEL : Permissible Exposure Limit
REL : Recommended Exposure Limit

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

· product identification

- Trade name : Mouse/Rabbit HRP 2nd Antibody
- Product Number : RSA4011
- Application of the substance I the mixture Laboratory chemicals
- Details of the supplier of the safety data sheet
- Manufacturer :

Thernovis co., Ltd
11th floor Convergence Research Building
88, Olympic-ro 43-gil, Songpa-gu, Seoul
05505, Korea

- Supplier :

BioActs Co., Ltd.
9, Cheongneung-daero 595beon-gil
Namdong-gu, Incheon
21666, Korea

- Information department :

BioActs US Technical Support

- Emergency telephone number

If inside USA, call DANIEL at 1-510-561-9916
If outside USA, call DANIEL at +82 10-7933-9584

Section 2. Hazard(s) identification

· Classification of the substance or mixture

Skin Sens. 1 H317 May cause an allergic skin reaction.

- **Additional information** : For the wording of the listed H phrases refer to section 16.

· Label elements

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· Hazard pictograms



GHS07



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· **Signal word** Warning

· **Hazard-determining components of labelling:**

Proclin-150

· **Hazard statements**

May cause an allergic skin reaction.

· **Precautionary statements**

Avoid breathing dust/fume/gas/mist/vapors/spray

Wear protective gloves.

If skin irritation or rash occurs: Get medical advice/attention.

Specific treatment (see on this label)

Take off contaminated clothing and wash it before reuse.

Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 3: Composition/information on ingredients

· **Chemical characterization : mixtures**

· **Description :** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components :**

55965-84-9	Proclin-150	< 0.1 %
------------	-------------	---------

SECTION 4: First-aid measures

· **Description of first aid measure**

· **After inhalation :**

Supply fresh air and to be sure call for a doctor.

In case of unconsciousness place patient stably in side position for transportation.

· **After eye contact :** Rinse opened eye for several minutes under running water.

· **After swallowing :** If symptoms persist consult doctor.

· **Information for doctor :**

· **Most important symptoms and effects, both acute and delayed** No further relevant information available.

· **Indication of any immediate medical attention and special treatment needed**

No further relevant information available.



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SECTION 5: Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents** : Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture** No further relevant information available
- **Advice for firefighters**
- **Protective equipment** : Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions** : Do not allow to enter sewers / surface or ground water.
- **Methods and material for containment and cleaning up** :
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to item 13.
- **Reference to other sections**
See section 7 for information on safe handling.
See section 8 for information on personal protection equipment.
See section 13 for disposal information.
- **Protective Action Criteria for chemicals**

PAC-1 :

None of the ingredients is listed.

PAC-2 :

None of the ingredients is listed.

PAC-3 :

None of the ingredients is listed.

SECTION 7: Handling and storage

- **Handling** :
- **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.

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- **Information about protection against explosions and fires** : No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage** :
- **Requirements to be met by storerooms and containers** : No special requirements.
- **Information about storage in one common storage facility** : Not required.
- **further information about storage condition** : None.
- **Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical systems** : No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace** :
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **Exposure controls**
- **Personal protective equipment** :
- **General protective and hygienic measures** :
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
- **Respiratory protection** :
In case of brief or low exposure use an approved cartridge filter. In case of intensive or longer exposure use SCBA.
Suitable respiratory protective device recommended.
- **Protection of hands** :



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ preparation.

Selection of the glove material on consideration of the penetration times, rate of diffusion and the degradation

- **Material of gloves**

The choice of appropriate gloves is not solely based on the material; it also involves considering additional quality indicators, which can vary from one manufacturer to another. Given that the product is a blend of several substances, it is not possible to pre-calculate

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the resistance of the glove material. Consequently, it needs to be assessed before application.

• **Penetration time of glove material**

Determining the precise breakthrough time is the responsibility of the protective glove manufacturer and should be carefully monitored.

• **Eye protection** : Goggles recommended during refilling

SECTION 9: Physical and chemical properties

• **Information on basic physical and chemical properties**

• **General Information**

• **Appearance** :

Form : Fluid

Color : According to product specification

• **Odor** : Characteristic

• **Odor threshold** : Not determined.

• **pH-value** : N/A

• **Change in condition**

Melting point/Melting range : Undetermined.

Boiling point/Boiling range : 100°C (212 °F)

• **Flash point** : Not applicable.

• **Flammability (solid, gaseous)** : Not applicable.

• **Decomposition temperature** : Not determined.

• **Auto igniting** : Product is not selfigniting.

• **Danger of explosion** : Product does not present an explosion hazard.

• **Explosion limits** :

Lower : Not determined.

Upper : Not determined.

• **Vapor pressure** : Not applicable.

• **Density** : Not determined.

• **Relative density** : Not determined.

• **Vapor density** : Not applicable.

• **Evaporation rate** : Not applicable.

• **Solubility in / Miscibility with**



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Water :	Not miscible or difficult to mix
· partition coefficient (n-octanol/water) :	Not determined.
· Viscosity :	
Dynamic :	Not applicable.
Kinematic :	Not applicable.
· Solvent content :	
Water	78.0 %
VOC content :	0.00 %
Solids content :	1.5 %
· Other information	No further relevant information available.

SECTION 10: Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided :** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials :** No further relevant information available.
- **Hazardous decomposition products :** No dangerous decomposition products known.

SECTION 11: Toxicological information

- **Information on toxicological effects**
- **Acute toxicity :**
- **Primary irritant effect :**
- **on the skin :** No irritant effect.
- **on the eye :** No irritating effect.
- **Sensitization :** Sensitization possible through skin contact.
- **Additional toxicological information :**
The product shows the following dangerous according to internally approved calculation methods for preparations:
Irritant



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· Carcinogenic categories

IARC (International Agency for Research on Cancer)

None of the ingredients is listed.

NTP (National Toxicology Program)

None of the ingredients is listed.

OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

SECTION 12: Ecological Information

· Toxicity

· **Aquatic toxicity** : No further relevant information available.

· **Persistence and degradability** No further relevant information available.

· Behavior in environmental systems :

· **Bioaccumulative potential** No further relevant information available.

· **Mobility in soil** No further relevant information available.

· **Ecotoxicological effects** : N/A

· **Other information** : N/A

· Results of PBT and vPvB assessment

· **PBT** : Not applicable.

· **vPvB** : Not applicable.

· **Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

· Waste treatment methods

· **Recommendation** : Must be specially treated adhering to official regulations.

· Uncleaned packagings :

· **Recommendation** : Disposal must be made according to official regulations.

SECTION 14: Transport information

· UN-Number

· **ADR, ADN, IMDG, IATA** not regulated



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· UN proper shipping name	
· ADR, ADN, IMDG, IATA	not regulated
· Transport hazard class(es)	
· ADR, ADN, IMDG, IATA	
· Class	not regulated
· Packing group	
· ADR, IMDG, IATA	not regulated
· Environmental hazards :	Not applicable.
· Special precautions for user	Not applicable.
· Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.
· UN "Model Regulation" :	not regulated

SECTION 15: Regulatory information

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

· **Sara**

Section 355 (extremely hazardous substances) :

None of the ingredients is listed.

Section 313 (Specific toxic chemical listings) :

None of the ingredients is listed.

TSCA (Toxic Substances Control Act) :

7647-14-5	Sodium chloride
-----------	-----------------

7732-18-5	Water
-----------	-------

TSCA new (21st Century Act) : (Substance not listed)

55965-84-9	Proclin-150
------------	-------------

Hazardous Air Pollutants

None of the ingredients is listed.

· **Proposition 65**

Chemicals known to cause cancer :



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None of the ingredients is listed.
Chemicals known to cause reproductive toxicity for females :
None of the ingredients is listed.
Chemicals known to cause reproductive toxicity for males :
None of the ingredients is listed.
Chemicals known to cause developmental toxicity :
None of the ingredients is listed.
· Proposition 65
EPA (Environmental Protection Agency)
None of the ingredients is listed.
TLV (Threshold Limit Value established by ACGIH)
None of the ingredients is listed.
NIOSH-Ca (National Institute for Occupational Safety and Health)
None of the ingredients is listed.
· Chemical safety assessment : A Chemical Safety Assessment has not been carried out

SECTION 16: Other information

The details presented in this Safety Data Sheet are derived from our current understanding and are deemed accurate as of the publication date. Nevertheless, we make no assertions regarding their absolute accuracy and comprehensiveness. This information serves as guidance and should not be construed as a warranty or quality specification. Given that all materials may pose unforeseen risks, cautious handling is advised. While specific hazards are outlined, we cannot ensure that these are the sole risks associated with the product. BioActs Co., Ltd. disclaims any liability for damages arising from product handling or contact.

· Date of preparation / last revision 08/12/2023/ ~

· Abbreviations and acronyms :

ADR : Accord european sur le transport des marchandises dangereuses par Route
(European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG : International Maritime Code for Dangerous Goods

DOT : US Department of Transportation

IATA : International Air Transport Association

ACGIH : American Conference of Governmental Industrial Hygienists



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EINECS : European Inventory of Existing Commercial Chemical Substances
ELINCS : European List of Notified Chemical
CAS : Chemical Abstracts Service (division of the American Chemical Society)
NFPA : National Fire Protection Association (USA)
VOC : Volatile Organic Compounds (USA, EU)
PBT : Persistent, Bioaccumulative and Toxic
vPvB : very Persistent and very Bioaccumulative
NIOSH : National Institute for Occupational Safety
OSHA : Occupational Safety & Health
TLV : Threshold Limit Value
PEL : Permissible Exposure Limit
REL : Recommended Exposure Limit
Skin Sens. 1 : Skin sensitization – Category 1



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

· product identification

- Trade name : ATRA-DAPI
- Product Number : XTD1001
- Application of the substance / the mixture Laboratory chemicals
- Details of the supplier of the safety data sheet
- Manufacturer :
 - Theranovis co., Ltd
 - 11th floor Convergence Research Building
 - 88, Olympic-ro 43-gil, Songpa-gu, Seoul
 - 05505, Korea
- Supplier :
 - BioActs Co., Ltd.
 - 9, Cheongneung-daero 595beon-gil
 - Namdong-gu, Incheon
 - 21666, Korea
- Information department :
 - BioActs US Technical Support
- Emergency telephone number
 - If inside USA, call DANIEL at 1-510-561-9916
 - If outside USA, call DANIEL at +82 10-7933-9584

Section 2. Hazard(s) identification

· Classification of the substance or mixture

The product is classified and labeled according to the Globally Harmonized System (GHS).

· Label elements

- GHS label elements Void
- Hazard pictograms Void
- Signal word Void
- Hazard statements Void

SECTION 3: Composition/information on ingredients



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- **Chemical characterization : Mixtures**
- **Description**
Mixture of the substances listed below with nonhazardous additions.
- **Dangerous components:** Void

SECTION 4: First-aid measures

- **Description of first aid measure**
- **General information :** No special measures required.
- **After inhalation :** Supply fresh air; consult doctor in case of complaints.
- **After skin contact :** If skin irritation continues, consult a doctor.
- **After eye contact :** Rinse opened eye for several minutes under running water.
- **After swallowing :** If symptoms persist consult doctor.
- **Information for doctor :**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents :** Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture** No further relevant information available
- **Advice for firefighters**
- **Protective equipment :** Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions :** Do not allow to enter sewers / surface or ground water.
- **Methods and material for containment and cleaning up :** Pick up mechanically.
- **Reference to other sections**
See section 7 for information on safe handling.
See section 8 for information on personal protection equipment.



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See section 13 for disposal information.

• Protective Action Criteria for chemicals

PAC-1 :

None of the ingredients is listed.

PAC-2 :

None of the ingredients is listed.

PAC-3 :

None of the ingredients is listed.

SECTION 7: Handling and storage

- **Handling :**
- **Precautions for safe handling**
No special measures required.
- **Information about protection against explosions and fires :** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage :**
- **Requirements to be met by storerooms and containers :** No special requirements.
- **Information about storage in one common storage facility :** Not required.
- **further information about storage condition :** None .
- **Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical systems :** No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace :**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **Exposure controls**
- **Personal protective equipment :**
- **General protective and hygienic measures :**
The usual precautionary measures for handling chemical should be followed.
- **Respiratory protection :** Not required

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• **Protection of hands :**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ preparation.

Selection of the glove material on consideration of the penetration times, rate of diffusion and the degradation

• **Material of gloves**

The choice of appropriate gloves is not solely based on the material; it also involves considering additional quality indicators, which can vary from one manufacturer to another. Given that the product is a blend of several substances, it is not possible to pre-calculate the resistance of the glove material. Consequently, it needs to be assessed before application.

• **Penetration time of glove material**

Determining the precise breakthrough time is the responsibility of the protective glove manufacturer and should be carefully monitored.

• **Eye protection :** Not required.

SECTION 9: Physical and chemical properties

• **Information on basic physical and chemical properties**

• **General Information**

• **Appearance :**

Form : Fluid

Color : According to product specification

• **Odor :** Characteristic

• **Odor threshold :** Not determined.

• **pH-value :** N/A

• **Change in condition**

Melting point/Melting range : Undetermined.

Boiling point/Boiling range : 100 °C (212 °F)

• **Flash point** Not applicable.

• **Flammability (solid, gaseous) :** Not determined.

• **Decomposition temperature :** Not determined.



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· Auto igniting :	Product is not selfigniting.
· Danger of explosion :	Product does not present an explosion hazard.
· Explosion limits :	
Lower :	Not determined.
Upper :	Not determined.
· Vapor pressure :	Not determined.
· Density :	Not determined.
· Relative density	Not determined.
· Vapor density	Not applicable.
· Evaporation rate	Not applicable.
· Solubility in / Miscibility with	
Water :	Insoluble
· partition coefficient (n-octanol/water) :	Not determined.
· Viscosity :	
Dynamic :	Not applicable.
Kinematic :	Not applicable.
· Solvent content :	
Water :	98.6 %
VOC content :	0.00 %
Solids content :	100.0%
· Other information	No further relevant information available.

SECTION 10: Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided :** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials :** No further relevant information available.
- **Hazardous decomposition products :** No dangerous decomposition products known.



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SECTION 11: Toxicological information

· Information on toxicological effects

· Acute toxicity :

· Primary irritant effect :

· **on the skin** : No irritant effect.

· **on the eye** : No irritating effect.

· **Sensitization** : No sensitizing effect known.

· Additional toxicological information :

The product is not subject to classification according to internally approved calculation methods for preparations:

When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· Carcinogenic categories

· IARC (International Agency for Research on Cancer)

None of the ingredients is listed.

· NTP (National Toxicology Program)

None of the ingredients is listed.

· OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

SECTION 12: Ecological Information

· Toxicity

· **Aquatic toxicity** : No further relevant information available.

· **Persistence and degradability** No further relevant information available.

· Behavior in environmental systems :

· **Bioaccumulative potential** No further relevant information available.

· **Mobility in soil** No further relevant information available.

· **Ecotoxic effects** : N/A

· **Other information** : N/A

· Results of PBT and vPvB assessment

· **PBT** : Not applicable.

· **vPvB** : Not applicable.



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- **Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **Waste treatment methods**
- **Recommendation** : Must be specially treated adhering to official regulations.
- **Uncleaned packagings** :
- **Recommendation** : Disposal must be made according to official regulations.
- **Recommended cleansing agent** : Water, if necessary with cleansing agents.

SECTION 14: Transport information

- | | |
|---|-----------------|
| · UN-Number | |
| · ADR, ADN, IMDG, IATA | not regulated |
| · UN proper shipping name | |
| · ADR, ADN, IMDG, IATA | not regulated |
| · Transport hazard class(es) | |
| · ADR, ADN, IMDG, IATA | |
| · Class | not regulated |
| · Packing group | |
| · ADR, IMDG, IATA | not regulated |
| · Environmental hazards : | Not applicable. |
| · Special precautions for user | Not applicable. |
| · Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code | Not applicable. |
| · UN "Model Regulation" : | not regulated |

SECTION 15: Regulatory information

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

- **Sara**

Section 355 (extremely hazardous substances) :



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None of the ingredients is listed.	
Section 313 (Specific toxic chemical listings) :	
None of the ingredients is listed.	
TSCA (Toxic Substances Control Act) :	
7732-18-5	Water
Hazardous Air Pollutants	
None of the ingredients is listed.	
· Proposition 65	
Chemicals known to cause cancer :	
None of the ingredients is listed.	
Chemicals known to cause reproductive toxicity for females :	
None of the ingredients is listed.	
Chemicals known to cause reproductive toxicity for males :	
None of the ingredients is listed.	
Chemicals known to cause developmental toxicity :	
None of the ingredients is listed.	
· Proposition 65	
EPA (Environmental Protection Agency)	
None of the ingredients is listed.	
TLV (Threshold Limit Value established by ACGIH)	
None of the ingredients is listed.	
NIOSH-Ca (National Institute for Occupational Safety and Health)	
None of the ingredients is listed.	
· Chemical safety assessment : A Chemical Safety Assessment has not been carried out	

SECTION 16: Other information

The details presented in this Safety Data Sheet are derived from our current understanding and are deemed accurate as of the publication date. Nevertheless, we make no assertions regarding their absolute accuracy and comprehensiveness. This information serves as guidance and should not be construed as a warranty or quality specification. Given that all materials



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may pose unforeseen risks, cautious handling is advised. While specific hazards are outlined, we cannot ensure that these are the sole risks associated with the product. BioActs Co., Ltd. disclaims any liability for damages arising from product handling or contact.

• **Date of preparation / last revision 08/12/2023/ ~**

• **Abbreviations and acronyms :**

ADR : Accord european sur le transport des marchandises dangereuses par Route
(European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG : International Maritime Code for Dangerous Goods

DOT : US Department of Transportation

IATA : International Air Transport Association

ACGIH : American Conference of Governmental Industrial Hygienists

EINECS : European Inventory of Existing Commercial Chemical Substances

ELINCS : European List of Notified Chemical

CAS : Chemical Abstracts Service (division of the American Chemical Society)

NFPA : National Fire Protection Association (USA)

VOC : Volatile Organic Compounds (USA, EU)

PBT : Persistent, Bioaccumulative and Toxic

vPvB : very Persistent and very Bioaccumulative

NIOSH : National Institute for Occupational Safety

OSHA : Occupational Safety & Health

TLV : Threshold Limit Value

PEL : Permissible Exposure Limit

REL : Recommended Exposure Limit

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

· product identification

- Trade name : ASTRA-480
- Product Number : XTD1011
- Application of the substance / the mixture Laboratory chemicals
- Details of the supplier of the safety data sheet
- Manufacturer/ Supplier :
BioActs Co., Ltd.
9, Cheongneung-daero 595beon-gil
Namdong-gu, Incheon
21666, Korea
- Information department :
BioActs US Technical Support
- Emergency telephone number
If inside USA, call DANIEL at 1-510-561-9916
If outside USA, call DANIEL at +82 10-7933-9584

Section 2. Hazard(s) identification

· Classification of the substance or mixture

Acute Tox. 3	H301	Toxic if swallowed.
Skin Irrit 2	H315	Causes skin irritation.
Eye Irrit. 2A	H319	Causes serious eye irritation.
STOT SE 3	H355	May cause respiratory irritation.

- **Additional information** : For the wording of the listed H phrases refer to section 16

· Label elements

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· Hazard pictograms



GHS06



GHS07



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· **Signal word** Danger

· **Hazard-determining components of Labeling :**
4-IODOPHENYLBORONIC ACID

· **Hazard statements**
Toxic if swallowed
Causes skin irritation.
Cause serious eye irritation.
May cause respiratory irritation.

· **Precautionary statements**
If swallowed : Immediately call a poison center/doctor.
Specific treatment (see on this label).
Rinse mouth.
If in eyes : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Take off contaminated clothing and wash it before reuse.
Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 3: Composition/information on ingredients

- **Chemical characterization : mixtures**
- **Description :** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components :**

5122-99-6	4-IODOPHENYLBORONIC ACID	75-100%
-----------	--------------------------	---------

SECTION 4: First-aid measures

- **Description of first aid measure**
- **General information :**
Immediately remove any clothing soiled by the product.
In case of irregular breathing or respiratory arrest provide artificial respiration.
- **After inhalation :** In case of unconsciousness place patient stably in side position for transportation.
- **After eye contact :**
Rinse opened eye for several minutes under running water. If symptoms persis, consult a



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doctor.

- **After swallowing** : If symptoms persist consult doctor.
- **Information for doctor** :
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents** : Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture** No further relevant information available
- **Advice for firefighters**
- **Protective equipment** : Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions** : Do not allow to enter sewers / surface or ground water.
- **Methods and material for containment and cleaning up** :
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
- **Reference to other sections**
See section 7 for information on safe handling.
See section 8 for information on personal protection equipment.
See section 13 for disposal information.
- **Protective Action Criteria for chemicals**

PAC-1 :

None of the ingredients is listed.

PAC-2 :

None of the ingredients is listed.

PAC-3 :

None of the ingredients is listed.

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SECTION 7: Handling and storage

- **Handling :**
- **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
- **Information about protection against explosions and fires :** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage :**
- **Requirements to be met by storerooms and containers :** No special requirements.
- **Information about storage in one common storage facility :** Not required.
- **further information about storage condition :** Keep receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical systems :** No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace :** Not required.
- **Exposure controls**
- **Personal protective equipment :**
- **General protective and hygienic measures :**
Keep away from food and beverages.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
- **Respiratory protection :**
In case of brief or low exposure use an approved cartridge filter. In case of intensive or longer exposure use SCBA.
Suitable respiratory protective device recommended.
- **Protection of hands :**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ preparation.

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Selection of the glove material on consideration of the penetration times, rate of diffusion and the degradation

- **Material of gloves**

The choice of appropriate gloves is not solely based on the material; it also involves considering additional quality indicators, which can vary from one manufacturer to another. Given that the product is a blend of several substances, it is not possible to pre-calculate the resistance of the glove material. Consequently, it needs to be assessed before application.

- **Penetration time of glove material**

Determining the precise breakthrough time is the responsibility of the protective glove manufacturer and should be carefully monitored.

- **Eye protection :**



Tightly sealed goggles

SECTION 9: Physical and chemical properties

- **Information on basic physical and chemical properties**

- **General Information**

- **Appearance :**

Form : Solid

Color : Not determined.

- **Odor :** Characteristic

- **Odor threshold :** Not determined.

- **pH-value :** N/A

- **Change in condition**

Melting point/Melting range : Undetermined.

Boiling point/Boiling range : Undetermined.

- **Flash point** Not applicable.

- **Flammability (solid, gaseous) :** Product is not flammable.

- **Decomposition temperature :** Not determined.

- **Auto igniting :** Not determined.

- **Danger of explosion :** Product does not present an explosion hazard.

- **Explosion limits :**



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Lower :	Not determined.
Upper :	Not determined.
· Vapor pressure :	Not applicable.
· Density :	Not determined.
· Relative density	Not determined.
· Vapor density	Not applicable.
· Evaporation rate	Not applicable.
· Solubility in / Miscibility with	
Water :	Insoluble
· partition coefficient (n-octanol/water) :	Not determined.
· Viscosity :	
Dynamic :	Not applicable.
Kinematic :	Not applicable.
· Solvent content :	
VOC content :	0.00 %
Solids content :	100.0 %
· Other information	No further relevant information available.

SECTION 10: Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided :** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials :** No further relevant information available.
- **Hazardous decomposition products :** No dangerous decomposition products known.

SECTION 11: Toxicological information

- **Information on toxicological effects**
- **Acute toxicity :**



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- **Primary irritant effect :**
- **on the skin :** Irritant to skin and mucous membranes.
- **on the eye :** irritating effect.
- **Sensitization :** No sensitizing effects known.
- **Additional toxicological information :**
- **Carcinogenic categories**

• IARC (International Agency for Research on Cancer)

None of the ingredients is listed.

• NTP (National Toxicology Program)
--

None of the ingredients is listed.

• OSHA-Ca (Occupational Safety & Health Administration)
--

None of the ingredients is listed.

SECTION 12: Ecological Information

- **Toxicity**
- **Aquatic toxicity :** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems :**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Ecotoxicological effects :** N/A
- **Other information :** N/A
- **Results of PBT and vPvB assessment**
- **PBT :** Not applicable.
- **vPvB :** Not applicable.
- **Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **Waste treatment methods**
- **Recommendation :** Must be specially treated adhering to official regulations.
- **Uncleaned packagings :**
- **Recommendation :** Disposal must be made according to official regulations.

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SECTION 14: Transport information

· **UN-Number**

· **ADR** UN3287

· **IMDG, IATA** UN3288

· **UN proper shipping name**

· **ADR** 3287 TOXIC LIQUID INORGANIC, N.O.S. (4-
IODOPHENYLBORONIC ACID)

· **IMDG, IATA** TOXIC SOLID, INORGANIC, N.O.S. (4-
IODOPHENYLBORONIC ACID)

· **Transport hazard class(es)**

· **ADR, IMDG, IATA**



· **Class** 6.1 Toxic substances

· **Label** 6.1

· **Packing group**

· **ADR, IMDG, IATA** III

· **Environmental hazards :** Not applicable.

· **Special precautions for user** Warning : Toxic substances

· **Danger code (Kemler) :** 60

· **EMS Number** F-A, S-A

· **Stowage Category** A

· **Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable.

· **Transport/Additional information :**

· **Quantity limitations** On passenger aircraft/rail : 100kg
On cargo aircraft only : 200kg

· **ADR**

· **Excepted quantities (EQ)** Code : E1
Maximum net quantity per inner packaging : 30 g



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	Maximum net quantity per outer packaging : 1000 g
• IMDG	
• Limited quantities (LQ)	5 kg
• Excepted quantities (EQ)	Code : E1 Maximum net quantity per inner packaging : 30 g Maximum net quantity per outer packaging : 1000 g
• UN "Model Regulation" :	UN 3287 TOXIC LIQUID, INORGANIC, N.O.S. (4- IODOPHENYLBORONIC ACID), 61, III

SECTION 15: Regulatory information

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

• **Sara**

Section 355 (extremely hazardous substances) :

None of the ingredients is listed.

Section 313 (Specific toxic chemical listings) :

None of the ingredients is listed.

TSCA (Toxic Substances Control Act) :

None of the ingredients is listed.

TSCA new (21st Century Act) : (Substances not listed)

5122-99-6	4-IODOPHENYLBORONIC ACID
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Hazardous Air Pollutants

None of the ingredients is listed.

• **Proposition 65**

Chemicals known to cause cancer :

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for females :

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for males :



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None of the ingredients is listed.
Chemicals known to cause developmental toxicity :
None of the ingredients is listed.
· Proposition 65
EPA (Environmental Protection Agency)
None of the ingredients is listed.
TLV (Threshold Limit Value established by ACGIH)
None of the ingredients is listed.
NIOSH-Ca (National Institute for Occupational Safety and Health)
None of the ingredients is listed.
· Chemical safety assessment : A Chemical Safety Assessment has not been carried out

SECTION 16: Other information

The details presented in this Safety Data Sheet are derived from our current understanding and are deemed accurate as of the publication date. Nevertheless, we make no assertions regarding their absolute accuracy and comprehensiveness. This information serves as guidance and should not be construed as a warranty or quality specification. Given that all materials may pose unforeseen risks, cautious handling is advised. While specific hazards are outlined, we cannot ensure that these are the sole risks associated with the product. BioActs Co., Ltd. disclaims any liability for damages arising from product handling or contact.

· Date of preparation / last revision 08/12/2023/ ~

· Abbreviations and acronyms :

ADR : Accord european sur le transport des marchandises dangeruses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG : International Maritime Code for Dangerous Goods

DOT : US Department of Transportation

IATA : International Air Transport Association

ACGIH : American Conference of Governmental Industrial Hygienists

EINECS : European Inventory of Existing Commercial Chemical Substances

ELINCS : European List of Notified Chemical

CAS : Chemical Abstracts Service (division of the American Chemical Society)

VOC : Volatile Organic Compounds (USA, EU)

PBT : Persistent, Bioaccumulative and Toxic



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vPvB : very Persistent and very Bioaccumulative

NIOSH : National Institute for Occupational Safety

OSHA : Occupational Safety & Health

TLV : Threshold Limit Value

PEL : Permissible Exposure Limit

REL : Recommended Exposure Limit

Acute Tox. 3 : Acute toxicity – Category 3

Skin Irrit. 2 : Skin corrosion/irritation – Category 2

Eye Irrit. 2A : Serious eye damage / eye irritation – Category 2A

STOT SE 3 : Specific target organ toxicity (single exposure) – Category 3

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

· product identification

- Trade name : ASTRA-520
- Product Number : XTD1031
- Application of the substance / the mixture Laboratory chemicals
- Details of the supplier of the safety data sheet
- Manufacturer/ Supplier :
BioActs Co., Ltd.
9, Cheongneung-daero 595beon-gil
Namdong-gu, Incheon
21666, Korea
- Information department :
BioActs US Technical Support
- Emergency telephone number
If inside USA, call DANIEL at 1-510-561-9916
If outside USA, call DANIEL at +82 10-7933-9584

Section 2. Hazard(s) identification

· Classification of the substance or mixture

Acute Tox. 3	H301	Toxic if swallowed.
Skin Irrit 2	H315	Causes skin irritation.
Eye Irrit. 2A	H319	Causes serious eye irritation.
STOT SE 3	H355	May cause respiratory irritation.

- **Additional information** : For the wording of the listed H phrases refer to section 16

· Label elements

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· Hazard pictograms



GHS06



GHS07

- **Signal word** Danger



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· **Hazard-determining components of Labeling :**

4-IODOPHENYLBORONIC ACID

· **Hazard statements**

Toxic if swallowed

Causes skin irritation.

Cause serious eye irritation.

May cause respiratory irritation.

· **Precautionary statements**

If swallowed : Immediately call a poison center/doctor.

Specific treatment (see on this label).

Rinse mouth.

If in eyes : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

Take off contaminated clothing and wash it before reuse.

Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 3: Composition/information on ingredients

· **Chemical characterization : mixtures**

· **Description :** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components :**

5122-99-6	4-IODOPHENYLBORONIC ACID	75-100%
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SECTION 4: First-aid measures

· **Description of first aid measure**

· **General information :**

Immediately remove any clothing soiled by the product.

In case of irregular breathing or respiratory arrest provide artificial respiration.

· **After inhalation :** In case of unconsciousness place patient stably in side position for transportation.

· **After eye contact :**

Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.



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- **After swallowing** : If symptoms persist consult doctor.
- **Information for doctor** :
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents** :
CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Special hazards arising from the substance or mixture** No further relevant information available
- **Advice for firefighters**
- **Protective equipment** : Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions** : Do not allow to enter sewers / surface or ground water.
- **Methods and material for containment and cleaning up** :
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
- **Reference to other sections**
See section 7 for information on safe handling.
See section 8 for information on personal protection equipment.
See section 13 for disposal information.
- **Protective Action Criteria for chemicals**

PAC-1 :

None of the ingredients is listed.

PAC-2 :

None of the ingredients is listed.

PAC-3 :

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None of the ingredients is listed.

SECTION 7: Handling and storage

- **Handling :**
- **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
- **Information about protection against explosions and fires :** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage :**
- **Requirements to be met by storerooms and containers :** No special requirements.
- **Information about storage in one common storage facility :** Not required.
- **further information about storage condition :** Keep receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical systems :** No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace :** Not required.
- **Exposure controls**
- **Personal protective equipment :**
- **General protective and hygienic measures :**
Keep away from food and beverages.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
- **Respiratory protection :**
In case of brief or low exposure use an approved cartridge filter. In case of intensive or longer exposure use SCBA.
Suitable respiratory protective device recommended.
- **Protection of hands :**



Protective gloves

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The glove material has to be impermeable and resistant to the product/ the substance/ preparation.

Selection of the glove material on consideration of the penetration times, rate of diffusion and the degradation

• **Material of gloves**

The choice of appropriate gloves is not solely based on the material; it also involves considering additional quality indicators, which can vary from one manufacturer to another. Given that the product is a blend of several substances, it is not possible to pre-calculate the resistance of the glove material. Consequently, it needs to be assessed before application.

• **Penetration time of glove material**

Determining the precise breakthrough time is the responsibility of the protective glove manufacturer and should be carefully monitored.

• **Eye protection :**



Tightly sealed goggles

SECTION 9: Physical and chemical properties

• **Information on basic physical and chemical properties**

• **General Information**

• **Appearance :**

Form : Solid

Color : Not determined.

• **Odor :** Characteristic

• **Odor threshold :** Not determined.

• **pH-value :** N/A

• **Change in condition**

Melting point/Melting range : Undetermined.

Boiling point/Boiling range : Undetermined.

• **Flash point** Not applicable.

• **Flammability (solid, gaseous) :** Product is not flammable.

• **Decomposition temperature :** Not determined.

• **Auto igniting :** Not determined.



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· Danger of explosion :	Product does not present an explosion hazard.
· Explosion limits :	
Lower :	Not determined.
Upper :	Not determined.
· Vapor pressure :	Not applicable.
· Density :	Not determined.
· Relative density	Not determined.
· Vapor density	Not applicable.
· Evaporation rate	Not applicable.
· Solubility in / Miscibility with	
Water :	Insoluble
· partition coefficient (n-octanol/water) :	Not determined.
· Viscosity :	
Dynamic :	Not applicable.
Kinematic :	Not applicable.
· Solvent content :	
VOC content :	0.00 %
Solids content :	100.0 %
· Other information	No further relevant information available.

SECTION 10: Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided :** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials :** No further relevant information available.
- **Hazardous decomposition products :** No dangerous decomposition products known.

SECTION 11: Toxicological information



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- **Information on toxicological effects**

- **Acute toxicity :**

- **Primary irritant effect :**

- **on the skin :** Irritant to skin and mucous membranes.

- **on the eye :** irritating effect.

- **Sensitization :** No sensitizing effects known.

- **Additional toxicological information :**

The product shows the following dangers according to internally approved calculation methods for preparations :

Toxic

Irritant

- **Carcinogenic categories**

IARC (International Agency for Research on Cancer)
None of the ingredients is listed.

NTP (National Toxicology Program)
None of the ingredients is listed.

OSHA-Ca (Occupational Safety & Health Administration)
None of the ingredients is listed.

SECTION 12: Ecological Information

- **Toxicity**

- **Aquatic toxicity :** No further relevant information available.

- **Persistence and degradability** No further relevant information available.

- **Behavior in environmental systems :**

- **Bioaccumulative potential** No further relevant information available.

- **Mobility in soil** No further relevant information available.

- **Ecotoxic effects :** N/A

- **Other information :** N/A

- **Results of PBT and vPvB assessment**

- **PBT :** Not applicable.

- **vPvB :** Not applicable.

- **Other adverse effects** No further relevant information available.

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SECTION 13: Disposal considerations

- **Waste treatment methods**
- **Recommendation** : Must be specially treated adhering to official regulations.
- **Uncleaned packagings** :
- **Recommendation** : Disposal must be made according to official regulations.

SECTION 14: Transport information

- **UN-Number**
- **ADR, IMDG, IATA** UN2811
- **UN proper shipping name**
- **ADR** 2811 TOXIC SOLID, ORGANIC, N.O.S (4-
IODOPHENYLBORONIC ACID)
- **IMDG, IATA** TOXIC SOLID, ORGANIC, N.O.S. (4-
IODOPHENYLBORONIC ACID)
- **Transport hazard class(es)**
- **ADR, IMDG, IATA**
-  6
- **Class** 6.1 Toxic substances
- **Label** 6.1
- **Packing group**
- **ADR, IMDG, IATA** III
- **Environmental hazards** : Not applicable.
- **Special precautions for user** Warning : Toxic substances
- **Danger code (Kemler)** : 60
- **EMS Number** F-A, S-A
- **Stowage Category** A
- **Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not applicable.
- **Transport/Additional information** :



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• Quantity limitations	On passenger aircraft/rail : 100kg On cargo aircraft only : 200kg
• ADR	
• Excepted quantities (EQ)	Code : E1 Maximum net quantity per inner packaging : 30 g Maximum net quantity per outer packaging : 1000 g
• IMDG	
• Limited quantities (LQ)	5 kg
• Excepted quantities (EQ)	Code : E1 Maximum net quantity per inner packaging : 30 g Maximum net quantity per outer packaging : 1000 g
• UN "Model Regulation" :	UN 2811 TOXIC SOLID, ORGANIC, N.O.S (4- IODOPHENYLBORONIC ACID), 61, III

SECTION 15: Regulatory information

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

• **Sara**

Section 355 (extremely hazardous substances) :

None of the ingredients is listed.

Section 313 (Specific toxic chemical listings) :

None of the ingredients is listed.

TSCA (Toxic Substances Control Act) :

None of the ingredients is listed.

TSCA new (21st Century Act) : (Substances not listed)

5122-99-6	4-IODOPHENYLBORONIC ACID
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Hazardous Air Pollutants

None of the ingredients is listed.

• **Proposition 65**

Chemicals known to cause cancer :

None of the ingredients is listed.



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Chemicals known to cause reproductive toxicity for females :

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for males :

None of the ingredients is listed.

Chemicals known to cause developmental toxicity :
--

None of the ingredients is listed.

• **Proposition 65**

EPA (Environmental Protection Agency)
--

None of the ingredients is listed.

TLV (Threshold Limit Value established by ACGIH)

None of the ingredients is listed.

NIOSH-Ca (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

• **Chemical safety assessment** : A Chemical Safety Assessment has not been carried out

SECTION 16: Other information

The details presented in this Safety Data Sheet are derived from our current understanding and are deemed accurate as of the publication date. Nevertheless, we make no assertions regarding their absolute accuracy and comprehensiveness. This information serves as guidance and should not be construed as a warranty or quality specification. Given that all materials may pose unforeseen risks, cautious handling is advised. While specific hazards are outlined, we cannot ensure that these are the sole risks associated with the product. BioActs Co., Ltd. disclaims any liability for damages arising from product handling or contact.

• **Date of preparation / last revision 08/12/2023/ ~**

• **Abbreviations and acronyms :**

ADR : Accord european sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG : International Maritime Code for Dangerous Goods

DOT : US Department of Transportation

IATA : International Air Transport Association

ACGIH : American Conference of Governmental Industrial Hygienists

EINECS : European Inventory of Existing Commercial Chemical Substances



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ELINCS : European List of Notified Chemical
CAS : Chemical Abstracts Service (division of the American Chemical Society)
VOC : Volatile Organic Compounds (USA, EU)
PBT : Persistent, Bioaccumulative and Toxic
vPvB : very Persistent and very Bioaccumulative
NIOSH : National Institute for Occupational Safety
OSHA : Occupational Safety & Health
TLV : Threshold Limit Value
PEL : Permissible Exposure Limit
REL : Recommended Exposure Limit
Acute Tox. 3 : Acute toxicity – Category 3
Skin Irrit. 2 : Skin corrosion/irritation – Category 2
Eye Irrit. 2A : Serious eye damage / eye irritation – Category 2A
STOT SE 3 : Specific target organ toxicity (single exposure) – Category 3

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Printing date 08.12.2023

Revision 07.12.08

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

· product identification

- Trade name : ASTRA-570
- Product Number : XTD3011
- Application of the substance / the mixture Laboratory chemicals
- Details of the supplier of the safety data sheet
- Manufacturer/ Supplier :
BioActs Co., Ltd.
9, Cheongneung-daero 595beon-gil
Namdong-gu, Incheon
21666, Korea
- Information department :
BioActs US Technical Support
- Emergency telephone number
If inside USA, call DANIEL at 1-510-561-9916
If outside USA, call DANIEL at +82 10-7933-9584

Section 2. Hazard(s) identification

· Classification of the substance or mixture

Acute Tox. 3	H301	Toxic if swallowed.
Skin Irrit 2	H315	Causes skin irritation.
Eye Irrit. 2A	H319	Causes serious eye irritation.
STOT SE 3	H355	May cause respiratory irritation.

- **Additional information** : For the wording of the listed H phrases refer to section 16

· Label elements

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· Hazard pictograms



GHS06



GHS07



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· **Signal word** Danger

· **Hazard-determining components of Labeling :**
4-IODOPHENYLBORONIC ACID

· **Hazard statements**
Toxic if swallowed
Causes skin irritation.
Cause serious eye irritation.
May cause respiratory irritation.

· **Precautionary statements**
If swallowed : Immediately call a poison center/doctor.
Specific treatment (see on this label).
Rinse mouth.
If in eyes : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Take off contaminated clothing and wash it before reuse.
Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 3: Composition/information on ingredients

- **Chemical characterization : mixtures**
- **Description :** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components :**

5122-99-6	4-IODOPHENYLBORONIC ACID	75-100%
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SECTION 4: First-aid measures

- **Description of first aid measure**
- **General information :**
Immediately remove any clothing soiled by the product.
In case of irregular breathing or respiratory arrest provide artificial respiration.
- **After inhalation :** In case of unconsciousness place patient stably in side position for transportation.
- **After eye contact :**



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Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

- **After swallowing** : If symptoms persist consult doctor.
- **Information for doctor** :
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents** :
CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Special hazards arising from the substance or mixture** No further relevant information available
- **Advice for firefighters**
- **Protective equipment** : Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions** : Do not allow to enter sewers / surface or ground water.
- **Methods and material for containment and cleaning up** :
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
- **Reference to other sections**
See section 7 for information on safe handling.
See section 8 for information on personal protection equipment.
See section 13 for disposal information.
- **Protective Action Criteria for chemicals**

PAC-1 :

None of the ingredients is listed.

PAC-2 :



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None of the ingredients is listed.

PAC-3 :

None of the ingredients is listed.

SECTION 7: Handling and storage

- **Handling :**
- **Precautions for safe handling**
Through dedusting
Ensure good ventilation/exhaustion at the workplace.
- **Information about protection against explosions and fires :** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage :**
- **Requirements to be met by storerooms and containers :** No special requirements.
- **Information about storage in one common storage facility :** Not required.
- **further information about storage condition :** Keep receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical systems :** No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace :** Not required.
- **Exposure controls**
- **Personal protective equipment :**
- **General protective and hygienic measures :**
Keep away from food and beverages.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
- **Respiratory protection :**
In case of brief or low exposure use an approved cartridge filter. In case of intensive or longer exposure use SCBA.
Suitable respiratory protective device recommended.
- **Protection of hands :**

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acc. to OSHA HCS

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Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ preparation.

Selection of the glove material on consideration of the penetration times, rate of diffusion and the degradation

• **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application..

• **Penetration time of glove material**

Determining the precise breakthrough time is the responsibility of the protective glove manufacturer and should be carefully monitored.

• **Eye protection :**



Tightly sealed goggles

SECTION 9: Physical and chemical properties

• **Information on basic physical and chemical properties**

• **General Information**

• **Appearance :**

Form : Solid

Color : Not determined.

• **Odor :** Characteristic

• **Odor threshold :** Not determined.

• **pH-value :** N/A

• **Change in condition**

Melting point/Melting range : Undetermined.

Boiling point/Boiling range : Undetermined.

• **Flash point** Not applicable.



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· Flammability (solid, gaseous) :	Product is not flammable.
· Decomposition temperature :	Not determined.
· Auto igniting :	Not determined.
· Danger of explosion :	Product does not present an explosion hazard.
· Explosion limits :	
Lower :	Not determined.
Upper :	Not determined.
· Vapor pressure :	Not applicable.
· Density :	Not determined.
· Relative density	Not determined.
· Vapor density	Not applicable.
· Evaporation rate	Not applicable.
· Solubility in / Miscibility with	
Water :	Insoluble
· partition coefficient (n-octanol/water) :	Not determined.
· Viscosity :	
Dynamic :	Not applicable.
Kinematic :	Not applicable.
· Solvent content :	
VOC content :	0.00 %
Solids content :	100.0 %
· Other information	No further relevant information available.

SECTION 10: Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided :** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials :** No further relevant information available.



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· **Hazardous decomposition products** : No dangerous decomposition products known.

SECTION 11: Toxicological information

· Information on toxicological effects

· Acute toxicity :

· Primary irritant effect :

· **on the skin** : Irritant to skin and mucous membranes.

· **on the eye** : irritating effect.

· **Sensitization** : No sensitizing effects known.

· Additional toxicological information :

The product shows the following dangers according to internally approved calculation methods for preparations :

Toxic

Irritant

· Carcinogenic categories

IARC (International Agency for Research on Cancer)

None of the ingredients is listed.

NTP (National Toxicology Program)

None of the ingredients is listed.

OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

SECTION 12: Ecological Information

· Toxicity

· **Aquatic toxicity** : No further relevant information available.

· **Persistence and degradability** No further relevant information available.

· Behavior in environmental systems :

· **Bioaccumulative potential** No further relevant information available.

· **Mobility in soil** No further relevant information available.

· **Ecotoxicological effects** : N/A

· **Other information** : N/A

· Results of PBT and vPvB assessment

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- **PBT** : Not applicable.
- **vPvB** : Not applicable.
- **Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **Waste treatment methods**
- **Recommendation** : Must be specially treated adhering to official regulations.
- **Uncleaned packagings** :
- **Recommendation** : Disposal must be made according to official regulations.

SECTION 14: Transport information

- | | |
|---|---|
| · UN-Number | |
| · ADR, IMDG, IATA | UN2811 |
| · UN proper shipping name | |
| · ADR | 2811 TOXIC SOLID, ORGANIC, N.O.S (4-
IODOPHENYLBORONIC ACID) |
| · IMDG, IATA | TOXIC SOLID, ORGANIC, N.O.S. (4-
IODOPHENYLBORONIC ACID) |
| · Transport hazard class(es) | |
| · ADR, IMDG, IATA | |
|  | |
| · Class | 6.1 Toxic substances |
| · Label | 6.1 |
| · Packing group | |
| · ADR, IMDG, IATA | III |
| · Environmental hazards : | Not applicable. |
| · Special precautions for user | Warning : Toxic substances |
| · Danger code (Kemler) : | 60 |
| · EMS Number | F-A, S-A |



Safety Data Sheet

acc. to OSHA HCS

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· Stowage Category	A
· Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.
· Transport/Additional information :	
· Quantity limitations	On passenger aircraft/rail : 100kg On cargo aircraft only : 200kg
· ADR	
· Excepted quantities (EQ)	Code : E1 Maximum net quantity per inner packaging : 30 g Maximum net quantity per outer packaging : 1000 g
· IMDG	
· Limited quantities (LQ)	5 kg
· Excepted quantities (EQ)	Code : E1 Maximum net quantity per inner packaging : 30 g Maximum net quantity per outer packaging : 1000 g
· UN "Model Regulation" :	UN 2811 TOXIC SOLID, ORGANIC, N.O.S (4- IODOPHENYLBORONIC ACID), 61, III

SECTION 15: Regulatory information

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

· Sara

Section 355 (extremely hazardous substances) :

None of the ingredients is listed.

Section 313 (Specific toxic chemical listings) :

None of the ingredients is listed.

TSCA (Toxic Substances Control Act) :

None of the ingredients is listed.

TSCA new (21st Century Act) : (Substances not listed)

5122-99-6

4-IODOPHENYLBORONIC ACID



Safety Data Sheet

acc. to OSHA HCS

Printing date 08.12.2023

Revision 07.12.08

Hazardous Air Pollutants

None of the ingredients is listed.

· Proposition 65

Chemicals known to cause cancer :

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for females :

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for males :

None of the ingredients is listed.

Chemicals known to cause developmental toxicity :

None of the ingredients is listed.

· Proposition 65

EPA (Environmental Protection Agency)

None of the ingredients is listed.

TLV (Threshold Limit Value established by ACGIH)

None of the ingredients is listed.

NIOSH-Ca (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

· **Chemical safety assessment** : A Chemical Safety Assessment has not been carried out

SECTION 16: Other information

The details presented in this Safety Data Sheet are derived from our current understanding and are deemed accurate as of the publication date. Nevertheless, we make no assertions regarding their absolute accuracy and comprehensiveness. This information serves as guidance and should not be construed as a warranty or quality specification. Given that all materials may pose unforeseen risks, cautious handling is advised. While specific hazards are outlined, we cannot ensure that these are the sole risks associated with the product. BioActs Co., Ltd. disclaims any liability for damages arising from product handling or contact.

· **Date of preparation / last revision 08/12/2023/ ~**

· **Abbreviations and acronyms :**

ADR : Accord european sur le transport des marchandises dangeruses par Route (European



Safety Data Sheet

acc. to OSHA HCS

Printing date 08.12.2023

Revision 07.12.08

Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG : International Maritime Code for Dangerous Goods

DOT : US Department of Transportation

IATA : International Air Transport Association

ACGIH : American Conference of Governmental Industrial Hygienists

EINECS : European Inventory of Existing Commercial Chemical Substances

ELINCS : European List of Notified Chemical

CAS : Chemical Abstracts Service (division of the American Chemical Society)

VOC : Volatile Organic Compounds (USA, EU)

PBT : Persistent, Bioaccumulative and Toxic

vPvB : very Persistent and very Bioaccumulative

NIOSH : National Institute for Occupational Safety

OSHA : Occupational Safety & Health

TLV : Threshold Limit Value

PEL : Permissible Exposure Limit

REL : Recommended Exposure Limit

Acute Tox. 3 : Acute toxicity – Category 3

Skin Irrit. 2 : Skin corrosion/irritation – Category 2

Eye Irrit. 2A : Serious eye damage / eye irritation – Category 2A

STOT SE 3 : Specific target organ toxicity (single exposure) – Category 3

Safety Data Sheet

acc. to OSHA HCS

Printing date 08.12.2023

Revision 07.12.08

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

· product identification

- Trade name : ASTRA-620
- Product Number : XTD2051
- Application of the substance / the mixture Laboratory chemicals
- Details of the supplier of the safety data sheet
- Manufacturer/ Supplier :
BioActs Co., Ltd.
9, Cheongneung-daero 595beon-gil
Namdong-gu, Incheon
21666, Korea
- Information department :
BioActs US Technical Support
- Emergency telephone number
If inside USA, call DANIEL at 1-510-561-9916
If outside USA, call DANIEL at +82 10-7933-9584

Section 2. Hazard(s) identification

· Classification of the substance or mixture

Acute Tox. 3	H301	Toxic if swallowed.
Skin Irrit 2	H315	Causes skin irritation.
Eye Irrit. 2A	H319	Causes serious eye irritation.
STOT SE 3	H355	May cause respiratory irritation.

- **Additional information** : For the wording of the listed H phrases refer to section 16

· Label elements

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· Hazard pictograms



GHS06



GHS07



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· **Signal word** Danger

· **Hazard-determining components of Labeling :**
4-IODOPHENYLBORONIC ACID

· **Hazard statements**
Toxic if swallowed.
Causes skin irritation.
Cause serious eye irritation.
May cause respiratory irritation.

· **Precautionary statements**
If swallowed : Immediately call a poison center/doctor.
Specific treatment (see on this label).
Rinse mouth.
If in eyes : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Take off contaminated clothing and wash it before reuse.
Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 3: Composition/information on ingredients

- **Chemical characterization : mixtures**
- **Description :** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components :**

5122-99-6	4-IODOPHENYLBORONIC ACID	75-100%
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SECTION 4: First-aid measures

- **Description of first aid measure**
- **General information :**
Immediately remove any clothing soiled by the product.
In case of irregular breathing or respiratory arrest provide artificial respiration.
- **After inhalation :** In case of unconsciousness place patient stably in side position for transportation.
- **After eye contact :**



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Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

- **After swallowing** : If symptoms persist consult doctor.
- **Information for doctor** :
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents** :
CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Special hazards arising from the substance or mixture** No further relevant information available
- **Advice for firefighters**
- **Protective equipment** : Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions** : Do not allow to enter sewers / surface or ground water.
- **Methods and material for containment and cleaning up** :
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
- **Reference to other sections**
See section 7 for information on safe handling.
See section 8 for information on personal protection equipment.
See section 13 for disposal information.
- **Protective Action Criteria for chemicals**

PAC-1 :

None of the ingredients is listed.

PAC-2 :



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None of the ingredients is listed.

PAC-3 :

None of the ingredients is listed.

SECTION 7: Handling and storage

- **Handling :**
- **Precautions for safe handling**
Through dedusting
Ensure good ventilation/exhaustion at the workplace.
- **Information about protection against explosions and fires :** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage :**
- **Requirements to be met by storerooms and containers :** No special requirements.
- **Information about storage in one common storage facility :** Not required.
- **further information about storage condition :** Keep receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical systems :** No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace :** Not required.
- **Exposure controls**
- **Personal protective equipment :**
- **General protective and hygienic measures :**
Keep away from food and beverages.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
- **Respiratory protection :**
In case of brief or low exposure use an approved cartridge filter. In case of intensive or longer exposure use SCBA.
Suitable respiratory protective device recommended.
- **Protection of hands :**

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acc. to OSHA HCS

Printing date 08.12.2023

Revision 07.12.08



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ preparation.

Selection of the glove material on consideration of the penetration times, rate of diffusion and the degradation

• Material of gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

• Penetration time of glove material

Determining the precise breakthrough time is the responsibility of the protective glove manufacturer and should be carefully monitored.

• Eye protection :



Tightly sealed goggles

SECTION 9: Physical and chemical properties

• Information on basic physical and chemical properties

• General Information

• Appearance :

Form : Solid

Color : Not determined.

• **Odor :** Characteristic

• **Odor threshold :** Not determined.

• **pH-value :** N/A

• Change in condition

Melting point/Melting range : Undetermined.

Boiling point/Boiling range : Undetermined.

• **Flash point** Not applicable.



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acc. to OSHA HCS

Printing date 08.12.2023

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· Flammability (solid, gaseous) :	Product is not flammable.
· Decomposition temperature :	Not determined.
· Auto igniting :	Not determined.
· Danger of explosion :	Product does not present an explosion hazard.
· Explosion limits :	
Lower :	Not determined.
Upper :	Not determined.
· Vapor pressure :	Not applicable.
· Density :	Not determined.
· Relative density	Not determined.
· Vapor density	Not applicable.
· Evaporation rate	Not applicable.
· Solubility in / Miscibility with	
Water :	Insoluble
· partition coefficient (n-octanol/water) :	Not determined.
· Viscosity :	
Dynamic :	Not applicable.
Kinematic :	Not applicable.
· Solvent content :	
VOC content :	0.00 %
Solids content :	100.0 %
· Other information	No further relevant information available.

SECTION 10: Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided :** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials :** No further relevant information available.



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· **Hazardous decomposition products** : No dangerous decomposition products known.

SECTION 11: Toxicological information

· Information on toxicological effects

· Acute toxicity :

· Primary irritant effect :

· **on the skin** : Irritant to skin and mucous membranes.

· **on the eye** : irritating effect.

· **Sensitization** : No sensitizing effects known.

· Additional toxicological information :

The product shows the following dangers according to internally approved calculation methods for preparations :

Toxic

Irritant

· Carcinogenic categories

IARC (International Agency for Research on Cancer)

None of the ingredients is listed.

NTP (National Toxicology Program)

None of the ingredients is listed.

OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

SECTION 12: Ecological Information

· Toxicity

· **Aquatic toxicity** : No further relevant information available.

· **Persistence and degradability** No further relevant information available.

· Behavior in environmental systems :

· **Bioaccumulative potential** No further relevant information available.

· **Mobility in soil** No further relevant information available.

· **Ecotoxicological effects** : N/A

· **Other information** : N/A

· Results of PBT and vPvB assessment

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- **PBT** : Not applicable.
- **vPvB** : Not applicable.
- **Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **Waste treatment methods**
- **Recommendation** : Must be specially treated adhering to official regulations.
- **Uncleaned packagings** :
- **Recommendation** : Disposal must be made according to official regulations.

SECTION 14: Transport information

- | | |
|---|---|
| · UN-Number | |
| · ADR, IMDG, IATA | UN2811 |
| · UN proper shipping name | |
| · ADR | 2811 TOXIC SOLID, ORGANIC, N.O.S (4-
IODOPHENYLBORONIC ACID) |
| · IMDG, IATA | TOXIC SOLID, ORGANIC, N.O.S. (4-
IODOPHENYLBORONIC ACID) |
| · Transport hazard class(es) | |
| · ADR, IMDG, IATA | |
|  | |
| · Class | 6.1 Toxic substances |
| · Label | 6.1 |
| · Packing group | |
| · ADR, IMDG, IATA | III |
| · Environmental hazards : | Not applicable. |
| · Special precautions for user | Warning : Toxic substances |
| · Danger code (Kemler) : | 60 |
| · EMS Number | F-A, S-A |



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acc. to OSHA HCS

Printing date 08.12.2023

Revision 07.12.08

· Stowage Category	A
· Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.
· Transport/Additional information :	
· Quantity limitations	On passenger aircraft/rail : 100kg On cargo aircraft only : 200kg
· ADR	
· Excepted quantities (EQ)	Code : E1 Maximum net quantity per inner packaging : 30 g Maximum net quantity per outer packaging : 1000 g
· IMDG	
· Limited quantities (LQ)	5 kg
· Excepted quantities (EQ)	Code : E1 Maximum net quantity per inner packaging : 30 g Maximum net quantity per outer packaging : 1000 g
· UN "Model Regulation" :	UN 2811 TOXIC SOLID, ORGANIC, N.O.S (4- IODOPHENYLBORONIC ACID), 61, III

SECTION 15: Regulatory information

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

· Sara

Section 355 (extremely hazardous substances) :

None of the ingredients is listed.

Section 313 (Specific toxic chemical listings) :

None of the ingredients is listed.

TSCA (Toxic Substances Control Act) :

None of the ingredients is listed.

TSCA new (21st Century Act) : (Substances not listed)

5122-99-6

4-IODOPHENYLBORONIC ACID



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acc. to OSHA HCS

Printing date 08.12.2023

Revision 07.12.08

Hazardous Air Pollutants

None of the ingredients is listed.

· Proposition 65

Chemicals known to cause cancer :

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for females :

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for males :

None of the ingredients is listed.

Chemicals known to cause developmental toxicity :

None of the ingredients is listed.

· Proposition 65

EPA (Environmental Protection Agency)

None of the ingredients is listed.

TLV (Threshold Limit Value established by ACGIH)

None of the ingredients is listed.

NIOSH-Ca (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

· **Chemical safety assessment** : A Chemical Safety Assessment has not been carried out

SECTION 16: Other information

The details presented in this Safety Data Sheet are derived from our current understanding and are deemed accurate as of the publication date. Nevertheless, we make no assertions regarding their absolute accuracy and comprehensiveness. This information serves as guidance and should not be construed as a warranty or quality specification. Given that all materials may pose unforeseen risks, cautious handling is advised. While specific hazards are outlined, we cannot ensure that these are the sole risks associated with the product. BioActs Co., Ltd. disclaims any liability for damages arising from product handling or contact.

· **Date of preparation / last revision 08/12/2023/ ~**

· **Abbreviations and acronyms :**

ADR : Accord european sur le transport des marchandises dangeruses par Route (European



Safety Data Sheet

acc. to OSHA HCS

Printing date 08.12.2023

Revision 07.12.08

Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG : International Maritime Code for Dangerous Goods

DOT : US Department of Transportation

IATA : International Air Transport Association

ACGIH : American Conference of Governmental Industrial Hygienists

EINECS : European Inventory of Existing Commercial Chemical Substances

ELINCS : European List of Notified Chemical

CAS : Chemical Abstracts Service (division of the American Chemical Society)

VOC : Volatile Organic Compounds (USA, EU)

PBT : Persistent, Bioaccumulative and Toxic

vPvB : very Persistent and very Bioaccumulative

NIOSH : National Institute for Occupational Safety

OSHA : Occupational Safety & Health

TLV : Threshold Limit Value

PEL : Permissible Exposure Limit

REL : Recommended Exposure Limit

Acute Tox. 3 : Acute toxicity – Category 3

Skin Irrit. 2 : Skin corrosion/irritation – Category 2

Eye Irrit. 2A : Serious eye damage / eye irritation – Category 2A

STOT SE 3 : Specific target organ toxicity (single exposure) – Category 3

Safety Data Sheet

acc. to OSHA HCS

Printing date 08.12.2023

Revision 07.12.08

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

· product identification

- Trade name : ASTRA-690
- Product Number : XTD3041
- Application of the substance / the mixture Laboratory chemicals
- Details of the supplier of the safety data sheet
- Manufacturer/ Supplier :
BioActs Co., Ltd.
9, Cheongneung-daero 595beon-gil
Namdong-gu, Incheon
21666, Korea
- Information department :
BioActs US Technical Support
- Emergency telephone number
If inside USA, call DANIEL at 1-510-561-9916
If outside USA, call DANIEL at +82 10-7933-9584

Section 2. Hazard(s) identification

· Classification of the substance or mixture

Acute Tox. 3	H301	Toxic if swallowed.
Skin Irrit 2	H315	Causes skin irritation.
Eye Irrit. 2A	H319	Causes serious eye irritation.
STOT SE 3	H355	May cause respiratory irritation.

- **Additional information** : For the wording of the listed H phrases refer to section 16

· Label elements

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· Hazard pictograms



GHS06



GHS07

- **Signal word** Danger



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· **Hazard-determining components of Labeling :**

4-IODOPHENYLBORONIC ACID

· **Hazard statements**

Toxic if swallowed

Causes skin irritation.

Cause serious eye irritation.

May cause respiratory irritation.

· **Precautionary statements**

If swallowed : Immediately call a poison center/doctor.

Specific treatment (see on this label).

Rinse mouth.

If in eyes : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

Take off contaminated clothing and wash it before reuse.

Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 3: Composition/information on ingredients

· **Chemical characterization : mixtures**

· **Description :** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components :**

5122-99-6	4-IODOPHENYLBORONIC ACID	75-100%
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SECTION 4: First-aid measures

· **Description of first aid measure**

· **General information :**

Immediately remove any clothing soiled by the product.

In case of irregular breathing or respiratory arrest provide artificial respiration.

· **After inhalation :** In case of unconsciousness place patient stably in side position for transportation.

· **After eye contact :**

Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.



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acc. to OSHA HCS

Printing date 08.12.2023

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- **After swallowing** : If symptoms persist consult doctor.
- **Information for doctor** :
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents** :
CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Special hazards arising from the substance or mixture** No further relevant information available
- **Advice for firefighters**
- **Protective equipment** : Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions** : Do not allow to enter sewers / surface or ground water.
- **Methods and material for containment and cleaning up** :
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
- **Reference to other sections**
See section 7 for information on safe handling.
See section 8 for information on personal protection equipment.
See section 13 for disposal information.
- **Protective Action Criteria for chemicals**

PAC-1 :

None of the ingredients is listed.

PAC-2 :

None of the ingredients is listed.

PAC-3 :



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acc. to OSHA HCS

Printing date 08.12.2023

Revision 07.12.08

None of the ingredients is listed.

SECTION 7: Handling and storage

- **Handling :**
- **Precautions for safe handling**
Through dedusting
Ensure good ventilation/exhaustion at the workplace.
- **Information about protection against explosions and fires :** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage :**
- **Requirements to be met by storerooms and containers :** No special requirements.
- **Information about storage in one common storage facility :** Not required.
- **further information about storage condition :** Keep receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical systems :** No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace :** Not required.
- **Exposure controls**
- **Personal protective equipment :**
- **General protective and hygienic measures :**
Keep away from food and beverages.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.
- **Respiratory protection :**
In case of brief or low exposure use an approved cartridge filter. In case of intensive or longer exposure use SCBA.
Suitable respiratory protective device recommended.
- **Protection of hands :**

Safety Data Sheet

acc. to OSHA HCS

Printing date 08.12.2023

Revision 07.12.08



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ preparation.

Selection of the glove material on consideration of the penetration times, rate of diffusion and the degradation

• Material of gloves

The choice of appropriate gloves is not solely based on the material; it also involves considering additional quality indicators, which can vary from one manufacturer to another. Given that the product is a blend of several substances, it is not possible to pre-calculate the resistance of the glove material. Consequently, it needs to be assessed before application.

• Penetration time of glove material

Determining the precise breakthrough time is the responsibility of the protective glove manufacturer and should be carefully monitored.

• Eye protection :



Tightly sealed goggles

SECTION 9: Physical and chemical properties

• Information on basic physical and chemical properties

• General Information

• Appearance :

Form : Solid

Color : According to product specification

• **Odor :** Characteristic

• **Odor threshold :** Not determined.

• **pH-value :** N/A

• Change in condition

Melting point/Melting range : Undetermined.

Boiling point/Boiling range : Undetermined.

• **Flash point** Not applicable.



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acc. to OSHA HCS

Printing date 08.12.2023

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· Flammability (solid, gaseous) :	Product is not flammable.
· Decomposition temperature :	Not determined.
· Auto igniting :	Product is not selfigniting
· Danger of explosion :	Product does not present an explosion hazard.
· Explosion limits :	
Lower :	Not determined.
Upper :	Not determined.
· Vapor pressure :	Not applicable.
· Density :	Not determined.
· Relative density	Not determined.
· Vapor density	Not applicable.
· Evaporation rate	Not applicable.
· Solubility in / Miscibility with	
Water :	Insoluble
· partition coefficient (n-octanol/water) :	Not determined.
· Viscosity :	
Dynamic :	Not applicable.
Kinematic :	Not applicable.
· Solvent content :	
VOC content :	0.00 %
Solids content :	100.0 %
· Other information	No further relevant information available.

SECTION 10: Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided :** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials :** No further relevant information available.
- **Hazardous decomposition products :** No dangerous decomposition products known.



Safety Data Sheet

acc. to OSHA HCS

Printing date 08.12.2023

Revision 07.12.08

SECTION 11: Toxicological information

· Information on toxicological effects

· Acute toxicity :

· Primary irritant effect :

· **on the skin** : Irritant to skin and mucous membranes.

· **on the eye** : irritating effect.

· **Sensitization** : No sensitizing effects known.

· Additional toxicological information :

The product shows the following dangers according to internally approved calculation methods for preparations :

Toxic

Irritant

· Carcinogenic categories

IARC (International Agency for Research on Cancer)

None of the ingredients is listed.

NTP (National Toxicology Program)

None of the ingredients is listed.

OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

SECTION 12: Ecological Information

· Toxicity

· **Aquatic toxicity** : No further relevant information available.

· **Persistence and degradability** No further relevant information available.

· Behavior in environmental systems :

· **Bioaccumulative potential** No further relevant information available.

· **Mobility in soil** No further relevant information available.

· **Ecotoxicological effects** : N/A

· **Other information** : N/A

· Results of PBT and vPvB assessment

· **PBT** : Not applicable.

· **vPvB** : Not applicable.

Safety Data Sheet

acc. to OSHA HCS

Printing date 08.12.2023


Revision 07.12.08

· **Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **Waste treatment methods**
- **Recommendation** : Must be specially treated adhering to official regulations.
- **Uncleaned packagings** :
- **Recommendation** : Disposal must be made according to official regulations.

SECTION 14: Transport information

- **UN-Number**
- **ADR, IMDG, IATA** UN2811
- **UN proper shipping name**
- **ADR** 2811 TOXIC SOLID, ORGANIC, N.O.S (4-
IODOPHENYLBORONIC ACID)
- **IMDG, IATA** TOXIC SOLID, ORGANIC, N.O.S. (4-
IODOPHENYLBORONIC ACID)
- **Transport hazard class(es)**
- **ADR, IMDG, IATA**
-  **Class** 6.1 Toxic substances
- **Label** 6.1
- **Packing group**
- **ADR, IMDG, IATA** III
- **Environmental hazards** : Not applicable.
- **Special precautions for user** Warning : Toxic substances
- **Danger code (Kemler)** : 60
- **EMS Number** F-A, S-A
- **Stowage Category** A
- **Transport in bulk according to** Not applicable.



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Annex II of MARPOL 73/78 and the IBC Code	
·Transport/Additional information :	
· Quantity limitations	On passenger aircraft/rail : 100kg On cargo aircraft only : 200kg
· ADR	
· Excepted quantities (EQ)	Code : E1 Maximum net quantity per inner packaging : 30 g Maximum net quantity per outer packaging : 1000 g
· IMDG	
· Limited quantities (LQ)	5 kg
· Excepted quantities (EQ)	Code : E1 Maximum net quantity per inner packaging : 30 g Maximum net quantity per outer packaging : 1000 g
· UN "Model Regulation" :	UN 2811 TOXIC SOLID, ORGANIC, N.O.S (4- IODOPHENYLBORONIC ACID), 61, III

SECTION 15: Regulatory information

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

· Sara

Section 355 (extremely hazardous substances) :

None of the ingredients is listed.

Section 313 (Specific toxic chemical listings) :

None of the ingredients is listed.

TSCA (Toxic Substances Control Act) :

None of the ingredients is listed.

TSCA new (21st Century Act) : (Substances not listed)

5122-99-6

4-IODOPHENYLBORONIC ACID

Hazardous Air Pollutants

None of the ingredients is listed.



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· Proposition 65

Chemicals known to cause cancer :

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for females :

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for males :

None of the ingredients is listed.

Chemicals known to cause developmental toxicity :

None of the ingredients is listed.

· Proposition 65

EPA (Environmental Protection Agency)

None of the ingredients is listed.

TLV (Threshold Limit Value established by ACGIH)

None of the ingredients is listed.

NIOSH-Ca (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

· **Chemical safety assessment** : A Chemical Safety Assessment has not been carried out

SECTION 16: Other information

The details presented in this Safety Data Sheet are derived from our current understanding and are deemed accurate as of the publication date. Nevertheless, we make no assertions regarding their absolute accuracy and comprehensiveness. This information serves as guidance and should not be construed as a warranty or quality specification. Given that all materials may pose unforeseen risks, cautious handling is advised. While specific hazards are outlined, we cannot ensure that these are the sole risks associated with the product. BioActs Co., Ltd. disclaims any liability for damages arising from product handling or contact.

· **Date of preparation / last revision 08/12/2023/ ~**

· Abbreviations and acronyms :

ADR : Accord european sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG : International Maritime Code for Dangerous Goods

DOT : US Department of Transportation



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IATA : International Air Transport Association
ACGIH : American Conference of Governmental Industrial Hygienists
EINECS : European Inventory of Existing Commercial Chemical Substances
ELINCS : European List of Notified Chemical
CAS : Chemical Abstracts Service (division of the American Chemical Society)
VOC : Volatile Organic Compounds (USA, EU)
PBT : Persistent, Bioaccumulative and Toxic
vPvB : very Persistent and very Bioaccumulative
NIOSH : National Institute for Occupational Safety
OSHA : Occupational Safety & Health
TLV : Threshold Limit Value
PEL : Permissible Exposure Limit
REL : Recommended Exposure Limit
Acute Tox. 3 : Acute toxicity – Category 3
Skin Irrit. 2 : Skin corrosion/irritation – Category 2
Eye Irrit. 2A : Serious eye damage / eye irritation – Category 2A
STOT SE 3 : Specific target organ toxicity (single exposure) – Category 3

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

· product identification

- Trade name : ASTRA-DIG
- Product Number : XTD3051
- Application of the substance / the mixture Laboratory chemicals
- Details of the supplier of the safety data sheet

- Manufacturer/ Supplier :

BioActs Co., Ltd.

9, Cheongneung-daero 595beon-gil

Namdong-gu, Incheon

21666, Korea

- Information department :

BioActs US Technical Support

- Emergency telephone number

If inside USA, call DANIEL at 1-510-561-9916

If outside USA, call DANIEL at +82 10-7933-9584

Section 2. Hazard(s) identification

· Classification of the substance or mixture

Skin Irrit. 2	H315	Causes skin irritation.
Eye Irrit. 2A	H319	Causes serious eye irritation.
STOT SE 3	H355	May cause respiratory irritation.

- **Additional information** : For the wording of the listed H phrases refer to section 16

· Label elements

- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· Hazard pictograms



GHS07

- **Signal word** Danger

- **Hazard-determining components of Labeling** :



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4-Hydroxyphenylethylamine

• **Hazard statements**

Causes skin irritation.

Cause serious eye irritation.

May cause respiratory irritation.

• **Precautionary statements**

Avoid breathing dust/fume/gas/mist/vapors/spray

Wear protective gloves / eye protection / face protection.

IF INHALED : Remove person to fresh air and keep comfortable for breathing.

If in eyes : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

Call a poison center/doctor if you feel unwell.

Dispose of contents/container in accordance with local/regional/national/international regulations.

SECTION 3: Composition/information on ingredients

• **Chemical characterization : substances**

• **Description :**

51-67-2 4-Hydroxyphenylethylamine

SECTION 4: First-aid measures

• **Description of first aid measure**

• **General information :**

Immediately remove any clothing soiled by the product.

• **After inhalation :** In case of unconsciousness place patient stably in side position for transportation.

• **After eye contact :**

Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

• **After swallowing :** If symptoms persist consult doctor.

• **Information for doctor :**

• **Most important symptoms and effects, both acute and delayed** No further relevant information available.



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· Indication of any immediate medical attention and special treatment needed

No further relevant information available.

SECTION 5: Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents** : Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture** No further relevant information available
- **Advice for firefighters**
- **Protective equipment** : Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions** : Do not allow to enter sewers / surface or ground water.
- **Methods and material for containment and cleaning up** :
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
- **Reference to other sections**
See section 7 for information on safe handling.
See section 8 for information n personal protection equipment.
See section 13 for disposal information.
- **Protective Action Criteria for chemicals**

PAC-1 :

None of the ingredients is listed.

PAC-2 :

None of the ingredients is listed.

PAC-3 :

None of the ingredients is listed.

SECTION 7: Handling and storage

- **Handling** :

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• **Precautions for safe handling**

Ensure good ventilation/exhaustion at the workplace.

• **Information about protection against explosions and fires** : No special measures required.

• **Conditions for safe storage, including any incompatibilities**

• **Storage :**

• **Requirements to be met by storerooms and containers** : No special requirements.

• **Information about storage in one common storage facility** : Not required.

• **further information about storage condition** : Keep receptacle tightly sealed.

• **Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

• **Additional information about design of technical systems** : No further data; see item 7.

• **Control parameters**

• **Components with limit values that require monitoring at the workplace** : Not required.

• **Exposure controls**

• **Personal protective equipment :**

• **General protective and hygienic measures :**

Keep away from food and beverages.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

• **Respiratory protection :**

In case of brief or low exposure use an approved cartridge filter. In case of intensive or longer exposure use SCBA.

Suitable respiratory protective device recommended.

• **Protection of hands :**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ preparation.

Selection of the glove material on consideration of the penetration times, rate of diffusion and the degradation

• **Material of gloves**

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The choice of appropriate gloves is not solely based on the material; it also involves considering additional quality indicators, which can vary from one manufacturer to another. Given that the product is a blend of several substances, it is not possible to pre-calculate the resistance of the glove material. Consequently, it needs to be assessed before application.

• **Penetration time of glove material**

Determining the precise breakthrough time is the responsibility of the protective glove manufacturer and should be carefully monitored.

• **Eye protection :**



Tightly sealed goggles

SECTION 9: Physical and chemical properties

• **Additional information**

• **Information on basic physical and chemical properties**

• **General Information**

• **Appearance :**

Form : Solid

Color : Not determined.

• **Odor :** Characteristic

• **Odor threshold :** Not determined.

• **pH-value :** N/A

• **Change in condition**

Melting point/Melting range : Undetermined.

Boiling point/Boiling range : Undetermined.

• **Flash point** Not applicable.

• **Flammability (solid, gaseous) :** Product is not flammable.

• **Decomposition temperature :** Not determined.

• **Auto igniting :** Not determined.

• **Danger of explosion :** Product does not present an explosion hazard.

• **Explosion limits :**

Lower : Not determined.



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Upper :	Not determined.
· Vapor pressure :	Not applicable.
· Density :	Not determined.
· Relative density	Not determined.
· Vapor density	Not applicable.
· Evaporation rate	Not applicable.
· Solubility in / Miscibility with	
Water :	Insoluble
· partition coefficient (n-octanol/water) :	Not determined.
· Viscosity :	
Dynamic :	Not applicable.
Kinematic :	Not applicable.
· Solvent content :	
VOC content :	0.00%
Solids content :	100.0%
· Other information	No further relevant information available.

SECTION 10: Stability and reactivity

- **Reactivity** No further relevant information available
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided :** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials :** No further relevant information available.
- **Hazardous decomposition products :** No dangerous decomposition products known.

SECTION 11: Toxicological information

- **Information on toxicological effects**
- **Acute toxicity :**
- **Primary irritant effect :**
- **on the skin :** Irritant to skin and mucous membranes.



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- **on the eye** : irritating effect.
- **Sensitization** : No sensitizing effects known.
- **Additional toxicological information** :

- **Carcinogenic categories**

IARC (International Agency for Research on Cancer)
Substance is not listed.
NTP (National Toxicology Program)
Substance is not listed.
OSHA-Ca (Occupational Safety & Health Administration)
Substance is not listed.

SECTION 12: Ecological Information

- **Toxicity**
- **Aquatic toxicity** : No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems** :
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Ecotoxicological effects** : N/A
- **Other information** : N/A
- **Results of PBT and vPvB assessment**
- **PBT** : Not applicable.
- **vPvB** : Not applicable.
- **Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **Waste treatment methods**
- **Recommendation** : Must be specially treated adhering to official regulations.
- **Uncleaned packagings** :
- **Recommendation** : Disposal must be made according to official regulations.

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SECTION 14: Transport information	
· UN-Number	
· ADR, ADN, IMDG, IATA	Not regulated
· UN proper shipping name	
· ADR, ADN, IMDG, IATA	Not regulated
· Transport hazard class(es)	
· ADR, ADN, IMDG, IATA	
· Class	Not regulated
· Packing group	
· ADR, IMDG, IATA	Not regulated
· Environmental hazards :	Not applicable.
· Special precautions for user	Not applicable.
· Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable.
· UN "Model Regulation" :	Not regulated

SECTION 15: Regulatory information	
· Safety, health and environmental regulations/legislation specific for the substance or mixture	
· Sara	
Section 355 (extremely hazardous substances) :	
Substance is not listed.	
Section 313 (Specific toxic chemical listings) :	
Substance is not listed.	
TSCA (Toxic Substances Control Act) :	
Substance is not listed.	
TSCA new (21 st Century Act) : (Substances not listed)	
51-67-2	4-Hydroxyphenylethylamine
Hazardous Air Pollutants	
Substance is not listed.	
· Proposition 65	



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Chemicals known to cause cancer :
Substance is not listed.
Chemicals known to cause reproductive toxicity for females :
Substance is not listed.
Chemicals known to cause reproductive toxicity for males :
Substance is not listed.
Chemicals known to cause developmental toxicity :
Substance is not listed.
· Proposition 65
EPA (Environmental Protection Agency)
Substance is not listed.
TLV (Threshold Limit Value established by ACGIH)
Substance is not listed.
NIOSH-Ca (National Institute for Occupational Safety and Health)
Substance is not listed.
· Chemical safety assessment : A Chemical Safety Assessment has not been carried out

SECTION 16: Other information

The details presented in this Safety Data Sheet are derived from our current understanding and are deemed accurate as of the publication date. Nevertheless, we make no assertions regarding their absolute accuracy and comprehensiveness. This information serves as guidance and should not be construed as a warranty or quality specification. Given that all materials may pose unforeseen risks, cautious handling is advised. While specific hazards are outlined, we cannot ensure that these are the sole risks associated with the product. BioActs Co., Ltd. disclaims any liability for damages arising from product handling or contact.

· **Date of preparation / last revision 08/12/2023/ ~**

· **Abbreviations and acronyms :**

ADR : Accord european sur le transport des marchandises dangeruses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG : International Maritime Code for Dangerous Goods

DOT : US Department of Transportation

IATA : International Air Transport Association



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ACGIH : American Conference of Governmental Industrial Hygienists
EINECS : European Inventory of Existing Commercial Chemical Substances
ELINCS : European List of Notified Chemical
CAS : Chemical Abstracts Service (division of the American Chemical Society)
VOC : Volatile Organic Compounds (USA, EU)
PBT : Persistent, Bioaccumulative and Toxic
vPvB : very Persistent and very Bioaccumulative
NIOSH : National Institute for Occupational Safety
OSHA : Occupational Safety & Health
TLV : Threshold Limit Value
PEL : Permissible Exposure Limit
REL : Recommended Exposure Limit
Acute Tox. 3 : Acute toxicity – Category 3
Skin Irrit. 2 : Skin corrosion/irritation – Category 2
Eye Irrit. 2A : Serious eye damage / eye irritation – Category 2A
STOT SE 3 : Specific target organ toxicity (single exposure) – Category 3



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

· product identification

- Trade name : ATRA-780
- Product Number : XTA3051
- Application of the substance I the mixture Laboratory chemicals
- Details of the supplier of the safety data sheet
- Manufacturer :

Theranovis co., Ltd
11th floor Convergence Research Building
88, Olympic-ro 43-gil, Songpa-gu, Seoul
05505, Korea

- Supplier :

BioActs Co., Ltd.
9, Cheongneung-daero 595beon-gil
Namdong-gu, Incheon
21666, Korea

- Information department :

BioActs US Technical Support

- Emergency telephone number

If inside USA, call DANIEL at 1-510-561-9916
If outside USA, call DANIEL at +82 10-7933-9584

Section 2. Hazard(s) identification

· Classification of the substance or mixture

The product is classified and labeled according to the Globally Harmonized System (GHS).

· Label elements

- GHS label elements Void
- Hazard pictograms Void
- Signal word Void
- Hazard statements Void

SECTION 3: Composition/information on ingredients



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- **Chemical characterization : Mixtures**
- **Description**
Mixture of the substances listed below with nonhazardous additions.
- **Dangerous components:** Void

SECTION 4: First-aid measures

- **Description of first aid measure**
- **General information :** No special measures required.
- **After inhalation :** Supply fresh air; consult doctor in case of complaints.
- **After skin contact :** If skin irritation continues, consult a doctor.
- **After eye contact :** Rinse opened eye for several minutes under running water.
- **After swallowing :** If symptoms persist consult doctor.
- **Information for doctor :**
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents :** Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture** No further relevant information available
- **Advice for firefighters**
- **Protective equipment :** Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions :** Do not allow to enter sewers / surface or ground water.
- **Methods and material for containment and cleaning up :** Pick up mechanically.
- **Reference to other sections**
See section 7 for information on safe handling.
See section 8 for information on personal protection equipment.

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See section 13 for disposal information.

• **Protective Action Criteria for chemicals**

PAC-1 :		
26628-22-8	Sodium azide	0.026 mg/m ³
PAC-2 :		
26628-22-8	Sodium azide	0.29 mg/m ³
PAC-3 :		
26628-22-8	Sodium azide	5.3 mg/m ³

SECTION 7: Handling and storage

- **Handling :**
- **Precautions for safe handling** No special measures required.
- **Information about protection against explosions and fires :** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage :**
- **Requirements to be met by storerooms and containers :** No special requirements.
- **Information about storage in one common storage facility :** Not required.
- **further information about storage condition :** None .
- **Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical systems :** No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace :**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **Exposure controls**
- **Personal protective equipment :**
- **General protective and hygienic measures :**
The usual precautionary measures for handling chemical should be followed.
- **Respiratory protection :** Not required
- **Protection of hands :**

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Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ preparation.

Selection of the glove material on consideration of the penetration times, rate of diffusion and the degradation

• Material of gloves

The choice of appropriate gloves is not solely based on the material; it also involves considering additional quality indicators, which can vary from one manufacturer to another. Given that the product is a blend of several substances, it is not possible to pre-calculate the resistance of the glove material. Consequently, it needs to be assessed before application.

• Penetration time of glove material

Determining the precise breakthrough time is the responsibility of the protective glove manufacturer and should be carefully monitored.

• Eye protection : Not required.

SECTION 9: Physical and chemical properties

• Information on basic physical and chemical properties

• General Information

• Appearance :

Form : Solid

Color : According to product specification

• **Odor :** Characteristic

• **Odor threshold :** Not determined.

• **pH-value :** N/A

• Change in condition

Melting point/Melting range : Undetermined.

Boiling point/Boiling range : Undetermined.

• **Flash point** Not applicable.

• **Flammability (solid, gaseous) :** Not determined.

• **Decomposition temperature :** Not determined.

• **Auto igniting :** Product is not selfigniting.



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· Danger of explosion :	Product does not present an explosion hazard.
· Explosion limits :	
Lower :	Not determined.
Upper :	Not determined.
· Vapor pressure :	Not applicable.
· Density :	Not determined.
· Relative density	Not determined.
· Vapor density	Not applicable.
· Evaporation rate	Not applicable.
· Solubility in / Miscibility with	
Water :	Insoluble
· partition coefficient (n-octanol/water) :	Not determined.
· Viscosity :	
Dynamic :	Not applicable.
Kinematic :	Not applicable.
· Solvent content :	
VOC content :	0.00 %
Solids content :	100.0%
· Other information	No further relevant information available.

SECTION 10: Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided :** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials :** No further relevant information available.
- **Hazardous decomposition products :** No dangerous decomposition products known.

SECTION 11: Toxicological information



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• **Information on toxicological effects**

• **Acute toxicity :**

• **LD/LC50 values that are relevant for classification :**

26628-22-8 Sodium azide

Oral	LD50	27 mg/kg (rat)
Dermal	LD50	20 mg/kg (rat)

• **Primary irritant effect :**

• **on the skin :** No irritant effect.

• **on the eye :** No irritating effect.

• **Sensitization :** No sensitizing effect known.

• **Additional toxicological information :**

The product is not subject to classification according to internally approved calculation methods for preparations:

When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

• **Carcinogenic catagories**

• **IARC (International Agency for Research on Cancer)**

None of the ingredients is listed.

• **NTP (National Toxicology Program)**

None of the ingredients is listed.

• **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

SECTION 12: Ecological Information

• **Toxicity**

• **Aquatic toxicity :** No further relevant information available.

• **Persistence and degradability** No further relevant information available.

• **Behavior in environmental systems :**

• **Bioaccumulative potential** No further relevant information available.

• **Mobility in soil** No further relevant information available.

• **Ecotoxic effects :** N/A

• **Other information :** N/A

• **Results of PBT and vPvB assessment**

• **PBT :** Not applicable.



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- **vPvB** : Not applicable.
- **Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **Waste treatment methods**
- **Recommendation** : Must be specially treated adhering to official regulations.
- **Uncleaned packagings** :
- **Recommendation** : Disposal must be made according to official regulations.

SECTION 14: Transport information

- | | |
|---|-----------------|
| · UN-Number | |
| · ADR, ADN, IMDG, IATA | not regulated |
| · UN proper shipping name | |
| · ADR, ADN, IMDG, IATA | not regulated |
| · Transport hazard class(es) | |
| · ADR, ADN, IMDG, IATA | |
| · Class | not regulated |
| · Packing group | |
| · ADR, IMDG, IATA | not regulated |
| · Environmental hazards : | Not applicable. |
| · Special precautions for user | Not applicable. |
| · Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code | Not applicable. |
| · UN "Model Regulation" : | not regulated |

SECTION 15: Regulatory information

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

· Sara

Section 355 (extremely hazardous substances) :



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26628-22-8	Sodium azide
Section 313 (Specific toxic chemical listings) :	
26628-22-8	Sodium azide
TSCA (Toxic Substances Control Act) :	
9048-46-8	Bovine Serum Albumin
26628-22-8	Sodium azide
Hazardous Air Pollutants	
None of the ingredients is listed.	
• Proposition 65	
Chemicals known to cause cancer :	
None of the ingredients is listed.	
Chemicals known to cause reproductive toxicity for females :	
None of the ingredients is listed.	
Chemicals known to cause reproductive toxicity for males :	
None of the ingredients is listed.	
Chemicals known to cause developmental toxicity :	
None of the ingredients is listed.	
• Proposition 65	
EPA (Environmental Protection Agency)	
None of the ingredients is listed.	
TLV (Threshold Limit Value established by ACGIH)	
26628-22-8	Sodium azide
NIOSH-Ca (National Institute for Occupational Safety and Health)	
None of the ingredients is listed.	
• Chemical safety assessment : A Chemical Safety Assessment has not been carried out	

SECTION 16: Other information

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• **Date of preparation / last revision 08/12/2023/ ~**

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(European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG : International Maritime Code for Dangerous Goods

DOT : US Department of Transportation

IATA : International Air Transport Association

ACGIH : American Conference of Governmental Industrial Hygienists

EINECS : European Inventory of Existing Commercial Chemical Substances

ELINCS : European List of Notified Chemical

CAS : Chemical Abstracts Service (division of the American Chemical Society)

NFPA : National Fire Protection Association (USA)

VOC : Volatile Organic Compounds (USA, EU)

PBT : Persistent, Bioaccumulative and Toxic

vPvB : very Persistent and very Bioaccumulative

NIOSH : National Institute for Occupational Safety

OSHA : Occupational Safety & Health

TLV : Threshold Limit Value

PEL : Permissible Exposure Limit

REL : Recommended Exposure Limit