

KIT COMPONENTS

PRODUCT CODE	DESCRIPTION
FP1488001KT	Opal 570 Reagent Pack
COMPONENTS	
F P1488A	Opal 570 Reagent
DMSO0100UL	• DMSO



Product Name	Opal 570 Reagent
PKI P/N	FP1488A
Akoya p/n	OP-001003

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REVIEWED ON 11/1/2019

PRINTING DATE 11/1/2019

1 Identification

- Product identifier
- Trade name: Opal 570 Reagent
- Product number: FP1488A
- · Application of the substance I the mixture Laboratory chemicals
- Details of the supplier of the safety data sheet
- ManufacturerlSupplier: Akoya Biosciences, Inc.
 100 Campus Drive, 6th Floor Marlborough. MA 01752 USA
- *Information department:* US Technical Support 855.896.8401
- *Emergency telephone number:* If inside USA, call CHEMTREC at 1-800-424-9300 If outside USA, call CHEMTREC at 1-703-527-3887

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 H335 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*



· Signal word Danger

Hazard-determining components of labeling:
4-IODOPHENYLBORONIC ACID
Hazard statements

Toxic if swallowed.
Causes skin irritation.
Causes 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.

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Trade name: Opal 570 Reagent

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75-100%

• Classification system: • NFPA ratings (scale 0 - 4)

$$\begin{array}{c} \textbf{Health} = 2\\ \textbf{Fire} = 1\\ \textbf{Reactivity} = 0 \end{array}$$

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

4 First-aid measures

· Description of first aid measures

- 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.
- After swallowing: Do not induce vomiting; immediately call for medical help.
- 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.

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.

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.

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Safety Data Sheet acc. to OSHA HCS

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Trade name: Opal 570 Reagent

· 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.

7 Handling and storage

· Handling:

· Precautions for safe handling

Thorough 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 conditions: Keep receptacle tightly sealed.

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

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/ the preparation. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation (Contd. on page 4)



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Trade name: Opal 570 Reagent

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· 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

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

• Eye protection:



Tightly sealed goggles

Information on basic physical and	chemical properties	
General Information	I I I I I I I I I I I I I I I I I I I	
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:	189 °C (372.2 °F)	
Flash point:	95 °C (203 °F)	
Flammability (solid, gaseous):	Not determined.	
	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:	Soluble.	
Partition coefficient (n-octanol/wat	er): Not determined.	
Viscosity:		
Dynamic:	Not applicable.	



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Trade name	: Opal 570	Reagent
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Kinematic:	Not applicable.	
· Solvent content: VOC content:	0.00 %	
Solids content: • Other information	100.0 % No further relevant information available.	

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.

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.

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.
- · Ecotoxical effects: N/A
- Other information: N/A

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- · Results of PBT and vPvB assessment
- · **PBT:** Not applicable.
- · vPvB: Not applicable.
- · Other adverse effects No further relevant information available.

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.

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-IODOPHENYLBORONI 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 I MARPOL73/78 and the IBC Code	II of Not applicable.
Transport/Additional information:	
Quantity limitations	On passenger aircraft/rail: 100 kg
	On cargo aircraft only: 200 kg



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· ADR		
\cdot Excepted quantities (EQ)	Code: El	
	Maximum net quantity per inner packaging: 30 g	
	Maximum net quantity per outer packaging: 1000 g	
· IMDG		
Limited quantities (LQ)	5 kg	
Excepted quantities ($\widetilde{E}Q$)	Code: El	
	Maximum net quantity per inner packaging: 30 g	
	Maximum net quantity per outer packaging: 1000 g	
UN "Model Regulation":	UN 2811 TOXIC SOLID, ORGANIC, IODOPHENYLBORONIC ACID), 6.1, III	N.O.S. (4-

15 Regulatory information

 \cdot Safety, health and environmental regulations/legislation specific for the substance or mixture \cdot 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)

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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.

· Carcinogenic categories

· 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.

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16 Other information
The information provided in this Safety Data Sheet is based on our present knowledge, and believed to be correct at the date of publication. However, no representation is made concerning its accuracy and completeness. It is intended as guidance only, and is not to be considered a warranty or quality specification. All materials may present unknown hazards, and should be used with caution. Although certain hazards are described, we cannot guarantee that these are the only hazards which exist. Akoya Biosciences, Inc. shall not be held liable for any damage resulting from handling or from contact with the product.
• Date of preparation / last revision 11/13/2018 / -
 Abbreviations and acronyms: ADR: Accord européen 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 Inventory of Existing Commercian 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
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 2: Series to serie to serie to serie (sinch and series) – Category 2
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3



Product Name	DMSO	PAGE1/7
PKI P/N	DMSO0500UL	
Akoya p/n	DMSO0500UL	

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1 Identification

- Product identifier
- Trade name: DMSO
- Product number: DMSO0500UL
- CAS Number: 67-68-5
- EC number: 200-664-3
- · Application of the substance I the mixture Laboratory chemicals
- · Details of the supplier of the safety data sheet
- ManufacturerlSupplier: Akoya Biosciences, Inc.
 100 Campus Drive, 6th Floor Marlborough. MA 01752 USA
- *Information department:* US Technical Support 855.896.8401
- *Emergency telephone number:* If inside USA, call CHEMTREC at 1-800-424-9300 If outside USA, call CHEMTREC at 1-703-527-3887

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. • Additional information: For the wording of the listed H phrases refer to section 16. · Label elements · GHS label elements The substance is classified and labeled according to the Globally Harmonized System (GHS). · Hazard pictograms GHS07 · Signal word Warning · Hazard statements Causes skin irritation. Causes serious eye irritation. · Precautionary statements Wash thoroughly after handling. Wear protective gloves / eye protection / face protection. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. *Continue rinsing.* If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. If eye irritation persists: Get medical advice/attention. (Contd. on page 2) US



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PKI P/N	DMSO0500UL
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· Classification system: · NFPA ratings (scale 0 - 4)



3 Composition/information on ingredients

- · Chemical characterization: Substances
- · CAS No. Description
- 67-68-5 dimethyl sulfoxide
- Identification number(s)
- EC number: 200-664-3

4 First-aid measures

- · Description of first aid measures
- · 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.
- Indication of any immediate medical attention and special treatment needed No further relevant information available.

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.

6 Accidental release measures

· Personal precautions, protective equipment and emergency procedures Not required.

- · Environmental precautions:
- Dilute with plenty of water.

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.

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150 ppm

290 ppm

1,800 ppm

Trade name: DMSO

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• Protective Action Criteria for Chemicals

• PAC-1:

· PAC-2:

· PAC-3:

7 Handling and storage

· Handling:

- · Precautions for safe handling
- Store in cool, dry place in tightly closed receptacles.
- No special precautions are necessary if used correctly.
- · 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 conditions: Keep receptacle tightly sealed.
- Specific end use(s) No further relevant information available.

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:

67-68-5 dimethyl sulfoxide (75-100%)

WEEL Long-term value: 250 ppm

· 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: Suitable respiratory protective device recommended.
- Protection of hands:



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Selection of the glove material on consideration of the penetration times, rates 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.

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· Penetration time of glove material

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

• Eye protection:



Tightly sealed goggles

Information on basic physical and o	chemical properties	
· General Information		
Appearance: Form:	Fluid	
Form: Color:	Colorless	
Odor:	Odorless	
Odor threshold:	Not determined.	
pH-value:	N/A	
Change in condition		
Melting point/Melting range:	18.45 °C (65.2 °F)	
Boiling point/Boiling range:	189 °C (372.2 °F)	
Flash point:	95 °C (203 °F)	
Flammability (solid, gaseous):	Not applicable.	
Ignition temperature:	270 °C (518 °F)	
Decomposition temperature:	Not determined.	
Auto igniting:	Not determined.	
Danger of explosion:	Product does not present an explosion hazard.	
Explosion limits:		
Lower:	1.8 Vol %	
Upper:	63 Vol %	
Vapor pressure at 20 °C (68 °F):	2.5 hPa (1.9 mm Hg)	
Density at 20 °C (68 °F):	1.1 g/cm ³ (9.1795 lbs/gal)	
Relative density	Not determined.	
Vapor density	Not determined.	
Evaporation rate	Not determined.	
Solubility in / Miscibility with		
Water:	Fully miscible.	
· Partition coefficient (n-octanol/water): Not determined.		
Viscosity:		
Dynamic at 20 °C (68 °F):	198 mPas	
Kinematic:	Not determined.	
Organic solvents: VOC content:	100.0 % 100.00 %	



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Akova n/n	

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Trade name: DMSO

• Other information

No further relevant information available.

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.

11 Toxicological information

· Information on toxicological effects

• Acute toxicity:

· LD/LC50 values that are relevant for classification:

67-68-5 dimethyl sulfoxide

Oral LD50 14,500 mg/kg (rat)

· 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)

Substance is not listed.

· NTP (National Toxicology Program)

Substance is not listed.

OSHA-Ca (Occupational Safety & Health Administration)

Substance is not listed.

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.

• Ecotoxical effects: N/A

• Other information: N/A

· Results of PBT and vPvB assessment

• **PBT:** Not applicable.

· vPvB: Not applicable.

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	Product Name	DMSO
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• Other adverse effects No further relevant information available.

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.

4 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 MARPOL73/78 and the IBC Code	II of Not applicable.
· UN "Model Regulation":	not regulated

15 Regulatory information

 \cdot Safety, health and environmental regulations/legislation specific for the substance or mixture \cdot 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 listed.

· Proposition 65

· Chemicals known to cause cancer:

Substance is not listed.

Chemicals known to cause reproductive toxicity for females:

Substance is not listed.

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• Chemicals known to cause reproductive toxicity for males:

Substance is not listed.

· Chemicals known to cause developmental toxicity:

Substance is not listed.

· Carcinogenic categories

· 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.

16 Other information

The information provided in this Safety Data Sheet is based on our present knowledge, and believed to be correct at the date of publication. However, no representation is made concerning its accuracy and completeness. It is intended as guidance only, and is not to be considered a warranty or quality specification. All materials may present unknown hazards, and should be used with caution. Although certain hazards are described, we cannot guarantee that these are the only hazards which exist. Akoya Biosciences, Inc. shall not be held liable for any damage resulting from handling or from contact with the product.

· Date of preparation / last revision 11/13/2018 / -

• Abbreviations and acronyms: ADR: Accord européen 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 CAS: Chemical Abstracts Service (division of the American Chemical Society) NFPA: National Fire Protection Association (USA) VOC: Volatile Organic Compounds (USA, EU) LC50: Lethal concentration, 50 percent LD50: Lethal dose, 50 percent 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 Irrit. 2: Skin corrosion/irritation - Category 2 Eye Irrit. 2A: Serious eye damage/eye irritation - Category 2A