

| | | | | |
|------------------------|----------------------------------|---------------------------|-----------------|-----------------------------|
| Applied BioCode | TITLE: MSDS: SA-BMB 4096-PLEX | | | |
| | DOCUMENT NO: SPC-0043 | DOCUMENT CATEGORY: SDS | REVISION: 01 | EFFECTIVE DATE: 9/7/2018 |

Author: Christina Nguyen
Department: Manufacturing
Document Category: SDS
Document Status: Current
Effective Date: Sep 7, 2018

Revision History

| Revision | Details | Effective Date |
|----------|---|----------------|
| 01 | Cross Reference Document 44-B0322 MSDS Ed. 01 | 9/7/2018 |

Reference

No records to display.

Current

| | | | | |
|-----------------|----------------------------------|---------------------------|-----------------|-----------------------------|
| Applied BioCode | TITLE: MSDS: SA-BMB 4096-PLEX | | | |
| | DOCUMENT NO: SPC-0043 | DOCUMENT CATEGORY: SDS | REVISION: 01 | EFFECTIVE DATE: 9/7/2018 |

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Streptavidin (SA) BMB 4096-Plex in Storage Buffer

Product Number: **44-B0322**
Bar Code number = XXXX

Company: **Applied BioCode Inc.**
10020 Pioneer Blvd. Ste.102
Santa Fe Springs CA 90670 USA

Telephone: 562-801-0050

Fax: 562-801-0060

2. HAZARDS IDENTIFICATION

HMIS Classification

| CAS # | Chemical Name | Health Hazard | Flammability | Physical Hazard |
|-------------------|--|---------------|--------------|-----------------|
| 7647-14-5 | Sodium chloride | 1 | 0 | 0 |
| 7447-40-7 | Potassium chloride | 1 | 0 | 0 |
| 7558-79-4 | Disodium hydrogen phosphate | 0 | 0 | 0 |
| 7778-77-0 | Potassium Dihydrogen phosphate | 0 | 0 | 0 |
| 9005-64-5 | Tween-20 | 0 | 0 | 0 |
| 2682-20-4 | ProClin-950 | | | |
| Active ingredient | Active ingredient 2-Methyl-4-isothiazolin-3-one | 3 | 0 | 0 |
| 7732-18-5 | Deionized water | 0 | 0 | 0 |
| 9013-20-1 | Streptavidin (SA) | 0 | 0 | 0 |
| 9048-46-8 | Bovine Serum Albumin | 0 | 0 | 0 |
| N/A | Streptavidin BMB | N/A | N/A | N/A |

NFPA Rating

| CAS # | Chemical Name | Health Hazard | Fire | Reactivity Hazard |
|-----------|--------------------|---------------|------|-------------------|
| 7647-14-5 | Sodium chloride | 1 | 0 | 0 |
| 7447-40-7 | Potassium chloride | 0 | 0 | 0 |

| | | | | |
|-----------------|----------------------------------|---------------------------|-----------------|-----------------------------|
| Applied BioCode | TITLE: MSDS: SA-BMB 4096-PLEX | | | |
| | DOCUMENT NO: SPC-0043 | DOCUMENT CATEGORY: SDS | REVISION: 01 | EFFECTIVE DATE: 9/7/2018 |

NFPA Rating

| CAS # | Chemical Name | Health Hazard | Fire | Reactivity Hazard |
|--------------------------------|---|---------------|------|-------------------|
| 7558-79-4 | Disodium hydrogen phosphate | 0 | 0 | 0 |
| 7778-77-0 | Potassium Dihydrogen phosphate | 0 | 0 | 0 |
| 9005-64-5 | Tween-20 | 0 | 0 | 0 |
| 2682-20-4 Active ingredient | ProClin-950 Active ingredient 2-Methyl-4-isothiazolin-3-one | 3 | 0 | 0 |
| 7732-18-5 | Deionized water | 0 | 0 | 0 |
| 9013-20-1 | Streptavidin (SA) | 0 | 0 | 0 |
| 9048-46-8 | Bovine Serum Albumin | 0 | 0 | 0 |
| N/A | Streptavidin BMB | N/A | N/A | N/A |

Potential Health

Inhalation

May be harmful if inhaled.

Skin

May be harmful if adsorbed through skin.

Eyes

May causes eye irritation.

Ingestion

May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

| CAS No. | Chemical Name | EC-No. EINECS | Concentration |
|--------------------------------|--|------------------|----------------------------------|
| 7647-14-5 | Sodium chloride | 231-598-3 | 0.8 % |
| 7447-40-7 | Potassium chloride | 231-211-8 | 0.02 % |
| 7558-79-4 | Disodium hydrogen phosphate | 231-448-7 | 0.144 % |
| 7778-77-0 | Potassium dihydrogen phosphate | 231-449-2 | 0.024 % |
| 9005-64-5 | Tween-20 | EC-607 | 0.05 % |
| 2682-20-4 Active ingredient | ProClin-950 Active ingredient- 2-Methyl-4-isothiazolin-3-one | 220-239-6 | 0.1 % |
| 7732-18-5 | Deionized water | 231-791-2 | >97 % |
| 9013-20-1 | Streptavidin (SA) | N/A | N/A |
| 9048-46-8 | Bovine Serum Albumin | 232-936-2 | 1% |
| N/A | Streptavidin BMB | N/A | >50K in 1.5 mL Storage buffer |

| | | | | |
|-----------------|----------------------------------|---------------------------|-----------------|-----------------------------|
| Applied BioCode | TITLE: MSDS: SA-BMB 4096-PLEX | | | |
| | DOCUMENT NO: SPC-0043 | DOCUMENT CATEGORY: SDS | REVISION: 01 | EFFECTIVE DATE: 9/7/2018 |

4. FIRST AID MEASURES

General Advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Remove person/s from exposure or dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing give artificial respiration. Consult a physician.

In case of eye contact

Flush eyes with water as precaution.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires apply water from as far as possible.

Special protective equipment for fire-fighters

Wear self contained breathing apparatus for firefighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation.

Environmental precautions

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

Methods and materials for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapor or mist.

Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the buildup of electrostatic charge.

| | | | | |
|-----------------|----------------------------------|---------------------------|-----------------|-----------------------------|
| Applied BioCode | TITLE: MSDS: SA-BMB 4096-PLEX | | | |
| | DOCUMENT NO: SPC-0043 | DOCUMENT CATEGORY: SDS | REVISION: 01 | EFFECTIVE DATE: 9/7/2018 |

Conditions for safe storage

Keep container tightly closed in refrigerator at 2-8 °C. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Sodium chloride

Contains no substances with occupational exposure limit values.

Potassium chloride

No OSHA Vacated PELs are listed for this chemical.

Disodium hydrogen phosphate

Safety shower and eye bath. Mechanical exhaust required.
No OSHA Vacated PELs are listed for this chemical.

Potassium dihydrogen phosphate

Use adequate ventilation to keep airborne concentrations low.
No OSHA Vacated PELs are listed for this chemical.

Tween-20

Contains no substances with occupational exposure limit value.

ProClin-950

Face shields, full-face respirator(US), Gloves, Goggles, multipurpose combination respirator cartridge (US) type ABEK(EN14387) respirator filter.
No occupational exposure limits established.

Streptavidin

Not a hazardous substance or mixture.

Bovine Serum Albumin

Not a hazardous substance or mixture.

Streptavidin BMB

Streptavidin BMB is highly cross-linked Bisphenol-A Novolac epoxy resin,
The Streptavidin BMB are suspended in Storage Buffer. The risk is minimum.
Handling with gloves, goggles and protective clothing.

| | | | | |
|-----------------|----------------------------------|---------------------------|-----------------|-----------------------------|
| Applied BioCode | TITLE: MSDS: SA-BMB 4096-PLEX | | | |
| | DOCUMENT NO: SPC-0043 | DOCUMENT CATEGORY: SDS | REVISION: 01 | EFFECTIVE DATE: 9/7/2018 |

No occupational exposure limits established.

Personal protective equipment

Respiratory protection

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Impervious clothing, Flame retardant antistatic protective clothing, the type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific work place.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

| | |
|-------|---------------|
| Form | liquid, clear |
| Color | colorless |

Safety data

| | |
|------------------------------|---------------------------------------|
| pH | ~ 7.89 (varied) |
| Melting point/freezing point | ~ 0 °C |
| Boiling point | ~ 100 °C |
| Flash point | not available |
| Ignition temperature | not available |
| Lower explosion limit | not available |
| Upper explosion limit | not available |
| Vapor pressure | not available |
| Density | not available |
| Water solubility | Amino BMB suspended in storage buffer |

| | | | | |
|-----------------|----------------------------------|---------------------------|-----------------|-----------------------------|
| Applied BioCode | TITLE: MSDS: SA-BMB 4096-PLEX | | | |
| | DOCUMENT NO: SPC-0043 | DOCUMENT CATEGORY: SDS | REVISION: 01 | EFFECTIVE DATE: 9/7/2018 |

10. STABILITY AND REACTIVITY

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

Not known under normal storage condition.

Conditions to avoid

Incompatible materials, excess heat

Materials to avoid

Streptavidin BMB is not compatible with acid. Barcode may be bleached out in acidic pH less than 5.0 under extended period.

Hazardous decomposition products

Other decomposition products - no data available. Hazardous decomposition products formed under fire conditions. – None known.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50

CAS # 7647-14-5

Oral, mouse: LD50=4gm/kg

Oral, rat: LD50=3000 mg/kg

CAS # 7447-40-7

Oral, mouse: LD50=1500 mg/kg

Oral, rat: LD50=2600 mg/kg

CAS # 7558-79-4

Oral, mouse: LD50=N/A

Oral, rat: LD50= 17 gm/kg

CAS # 7778-77-0

Oral, mouse: LD50=N/A

Oral, rat: LD50=N/A

CAS # 9005-64-5

| | | | | |
|-----------------|----------------------------------|---------------------------|-----------------|-----------------------------|
| Applied BioCode | TITLE: MSDS: SA-BMB 4096-PLEX | | | |
| | DOCUMENT NO: SPC-0043 | DOCUMENT CATEGORY: SDS | REVISION: 01 | EFFECTIVE DATE: 9/7/2018 |

Oral, mouse: LD50=>33 gm/kg
Oral, rat: LD50= 40,554 mg/kg

CAS # 2682-20-4

Oral, mouse: LD50=N/A
Oral, rat: LD50= 3600 mg/kg

CAS # 9013-20-1

No data available

CAS # 9048-46-8

No data available

Streptavidin BMB is Streptavidin modified highly cross-linked Bisphenol-A Novolac epoxy resin. Its toxicity should be much lower than SU-8. For reference only,

SU-8 Acute oral toxicity: LD50-oral-rat, LD50>2000 mg/kg
Acute dermal toxicity: LD50-rabbit, LD50>2000 mg/Kg
Acute inhalation toxicity: LC50-rat, LC50>5mg/L

Inhalation LC50

CAS # 7647-14-5

Inhalation, rat: LC50=>42 gm/m3/1H

CAS # 7447-40-7

May cause respiratory tract irritation

CAS # 7558-79-4

May cause respiratory tract irritation

CAS # 7778-77-0

May cause respiratory tract irritation

CAS # 9005-64-5

May cause respiratory tract irritation

CAS # 2682-20-4

May be harmful after inhalation and irritate the respiratory tract.

CAS # 9013-20-1

No data available

| | | | | |
|-----------------|----------------------------------|---------------------------|-----------------|-----------------------------|
| Applied BioCode | TITLE: MSDS: SA-BMB 4096-PLEX | | | |
| | DOCUMENT NO: SPC-0043 | DOCUMENT CATEGORY: SDS | REVISION: 01 | EFFECTIVE DATE: 9/7/2018 |

CAS # 9048-46-8

No data available

Skin corrosion/irritation

CAS # 7647-14-5

Skin, rabbit: LD50 = > 10 gm/kg

CAS # 7447-40-7

May cause skin irritation

CAS # 7558-79-4

May be harmful if absorbed through skin. May cause skin irritation.

CAS # 7778-77-0

May cause skin irritation. Low hazard for usual industrial handling.

CAS # 9005-64-5

Skin-Human-Mild skin irritation- 3d

CAS # 2682-20-4:

ProClin 950 is a potential sensitizer by skin contact; prolonged or repeated exposure may cause rash occurs.

CAS # 9013-20-1

No data available

CAS # 9048-46-8

No data available

Serious eye damage/eye irritation

CAS # 7647-14-5

Eyes-rabbit-Mild eye irritation-Draize Test

CAS # 7447-40-7

Draize test, rabbit, eye: 500 mg/24H Mild

CAS # 7558-79-4

Draize test, rabbit, eye: 500 mg/24H Mild

CAS # 7778-77-0

May cause eye irritation

| | | | | |
|-----------------|----------------------------------|---------------------------|-----------------|-----------------------------|
| Applied BioCode | TITLE: MSDS: SA-BMB 4096-PLEX | | | |
| | DOCUMENT NO: SPC-0043 | DOCUMENT CATEGORY: SDS | REVISION: 01 | EFFECTIVE DATE: 9/7/2018 |

CAS # 9005-64-5

May cause eye irritation

CAS # 2682-20-4

Irritation of the skin. Danger of skin absorption. May lead to hypersensitivity.

CAS # 9013-20-1

No data available

CAS # 9048-46-8

No data available

Respiratory or skin sensitization

CAS # 7647-14-5

May cause respiratory tract irritation

CAS # 7447-40-7

May cause respiratory tract irritation

CAS # 7558-79-4

May cause respiratory tract irritation

CAS # 7778-77-0

May cause respiratory tract irritation

CAS # 9005-64-5

May cause respiratory tract irritation

CAS # 2682-20-4

May cause respiratory tract irritation

CAS # 9013-20-1

No data available

CAS # 9048-46-8

No data available

Germ cell mutagenicity

CAS # 7647-14-5

No data available

CAS # 7447-40-7

| | | | | |
|-----------------|----------------------------------|---------------------------|-----------------|-----------------------------|
| Applied BioCode | TITLE: MSDS: SA-BMB 4096-PLEX | | | |
| | DOCUMENT NO: SPC-0043 | DOCUMENT CATEGORY: SDS | REVISION: 01 | EFFECTIVE DATE: 9/7/2018 |

Unscheduled DNA Synthesis: Oral, rat= 1500 ug/kg

Mutation in Mouse Lymphocyte= 2048 mg/L

DNA Damage in Hamster Ovary= 260 mmol/L

Cytogenetic Analysis in Hamster Lung= 12 gm/L

CAS # 7558-79-4

No data available

CAS # 7778-77-0

No data available

CAS # 9005-64-5

No data available

CAS # 2682-20-4

No data available

CAS # 9013-20-1

No data available

CAS # 9048-46-8

No data available

Carcinogenicity

CAS # 7647-14-5

not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

CAS # 7447-40-7:

not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

CAS # 7558-79-4:

not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

CAS # 7778-77-0:

not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

CAS # 9005-64-5:

not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

CAS # 2682-20-4:

No data available

| | | | | |
|-----------------|----------------------------------|---------------------------|-----------------|-----------------------------|
| Applied BioCode | TITLE: MSDS: SA-BMB 4096-PLEX | | | |
| | DOCUMENT NO: SPC-0043 | DOCUMENT CATEGORY: SDS | REVISION: 01 | EFFECTIVE DATE: 9/7/2018 |

CAS # 7732-18-5:

not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

CAS # 9013-20-1

No data available

CAS # 9048-46-8

No data available

Reproductive toxicity

CAS # 7647-14-5

No data available

CAS # 7447-40-7

No data available

CAS # 7558-79-4

No data available

CAS # 7778-77-0

No data available

CAS # 9005-64-5

Adverse reproductive effects have occurred in experimental animals.

CAS # 2682-20-4

No data available

CAS # 9013-20-1

No data available

CAS # 9048-46-8

No data available

Specific target organ toxicity - single exposure (Globally Harmonized System)

CAS # 7647-14-5

No data available

CAS # 7447-40-7

Target Organs: Eyes.

Cause eye irritation. May cause chemical conjunctivitis.

| | | | | |
|-----------------|----------------------------------|---------------------------|-----------------|-----------------------------|
| Applied BioCode | TITLE: MSDS: SA-BMB 4096-PLEX | | | |
| | DOCUMENT NO: SPC-0043 | DOCUMENT CATEGORY: SDS | REVISION: 01 | EFFECTIVE DATE: 9/7/2018 |

CAS # 7558-79-4

No data available

CAS # 7778-77-0

No data available

CAS # 9005-64-5

None known

CAS # 2682-20-4

No data available

CAS # 9013-20-1

No data available

CAS # 9048-46-8

No data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)

CAS # 7647-14-5

No data available

CAS # 7447-40-7

No data available

CAS # 7558-79-4

No data available

CAS # 7778-77-0

No data available

CAS # 9005-64-5

No data available

CAS # 2682-20-4

No data available

CAS # 9013-20-1

No data available

CAS # 9048-46-8

No data available

| | | | | |
|-----------------|----------------------------------|---------------------------|-----------------|-----------------------------|
| Applied BioCode | TITLE: MSDS: SA-BMB 4096-PLEX | | | |
| | DOCUMENT NO: SPC-0043 | DOCUMENT CATEGORY: SDS | REVISION: 01 | EFFECTIVE DATE: 9/7/2018 |

Aspiration hazard

No data available

Signs and Symptoms of Exposure

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

Additional Information

12. ECOLOGICAL INFORMATION

CAS # 7647-14-5

Toxicity to fish

LC50-Lepomis macrochirus (Bluegill)-1,294.6 mg/l-96 h

NOEC-Pimephales promelas (fathead minnow)-4,000 mg/l-7 d

Toxicity to daphnia and other aquatic invertebrates

NOEC-Daphnia- 1,500 mg/l – 7 d

LC50- Daphnia magna (Water flea)- 1,661 mg/l – 48 h

CAS # 7447-40-7

No data available

CAS # 7558-79-4

No data available

CAS # 7778-77-0

No data available

CAS # 9005-64-5

Toxicity to fish LC50-other fish-350 mg/l-24 h

CAS # 2682-20-4

Do not allow to enter waters, waste water or soil. Highly toxic for aquatic organisms.

Due to the small size of 1.5 mL vial and the low concentration of hazardous ingredient in this product, risks are estimated to be minor.

CAS # 9013-20-1

No data available

CAS # 9048-46-8

No data available

| | | | | |
|-----------------|----------------------------------|---------------------------|-----------------|-----------------------------|
| Applied BioCode | TITLE: MSDS: SA-BMB 4096-PLEX | | | |
| | DOCUMENT NO: SPC-0043 | DOCUMENT CATEGORY: SDS | REVISION: 01 | EFFECTIVE DATE: 9/7/2018 |

Persistence and degradability

Bioaccumulative potential

No data available

Mobility in soil

No data available

PBT and vPvB assessment

No data available

Other adverse effects

No data available

13. DISPOSAL CONSIDERATION

Product

Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION DOT (US)

UN number:

Proper shipping name:

Reportable Quantity (RQ):

Marine pollutant:

Poison Inhalation Hazard:

IMDG

UN number:

Packing group:

EMS-No:

Marine pollutant:

IATA

UN number: n/a

15. REGULATORY INFORMATION

OSHA Hazards

| | | | | |
|-----------------|----------------------------------|---------------------------|-----------------|-----------------------------|
| Applied BioCode | TITLE: MSDS: SA-BMB 4096-PLEX | | | |
| | DOCUMENT NO: SPC-0043 | DOCUMENT CATEGORY: SDS | REVISION: 01 | EFFECTIVE DATE: 9/7/2018 |

16. OTHER INFORMATION

The above information is believed to be correct but does not claim to be all complete and shall be used only as a guide. The information in this document is based on our present knowledge and is applicable to the product with regard to appropriate safety precautions. Applied BioCode Inc. shall not be held liable for any damage resulting from handling or from contact with the above product.

Current