

SAFETY DATA SHEET

Date: April 10, 2018

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: NucSpot Live 488, 1000X in DMSO
Catalog Number: 40081-T or 40081
Unit Size: 10 uL or 50 uL
Manufacturer/Supplier: Biotium, Inc.
46117 Landing Parkway, Fremont, CA 94538, USA
Phone: 1-510-265-1027, Fax: 1-510-265-1352
Web: <http://www.biotium.com>

Use as laboratory reagent. For research use only. Not for food, drug, household, or cosmetic use.

2. HAZARDS IDENTIFICATION**GHS Classification****Signal word**

Warning

Health hazards

None

Physical Hazards

GHS Physical Hazard 1 - Flammable

GHS Physical Hazard Category 4

Hazard statements

H227 - Combustible liquid

Precautionary statements

P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P370 + P378 - In case of fire, use water/water spray/water jet/carbon dioxide/sand/foam/alcohol resistant foam/chemical powder for extinction

WHMIS classification

Flammable liquids, category 4

Classification according to Regulation (EC) No 1272/2008[CLP] None**Classification according to Directive 1999/45/EC** None**HMIS Classification**

Health hazard: 1

Flammability: 2

Physical hazards: 0

NFPA Rating

Health hazard: 1

Fire: 2

Reactivity Hazard: 0

Labeling according to Regulation (EC) No 1272/2008[CLP]**Hazard pictogram** None**Signal word** None**Hazard statements** None**Precautionary statements** None

3. COMPOSITION/INFORMATION ON INGREDIENTS

Name	CAS No.	EC No.	Index No.	Weight %	Classification according to 67/548/EEC	Classification according to regulation (EC)No1278/2008
DMSO	67-68-5	200-664-3	-	>99%	-	None

4. FIRST-AID MEASURES

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

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

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

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

5. FIREFIGHTING MEASURES

Suitable extinguishing media

Carbon dioxide, dry chemical extinguishers, foam extinguishers or water.

Special protective equipment for firefighters

Wear self contained breathing apparatus for firefighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Avoid breathing vapors, mist or gas. Remove all sources of ignition.

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. Soak up spilled substance with inert absorbent material. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid inhalation of vapor or mist.

Avoid direct contact with substance.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.

Store at 4 °C.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Substance: Dimethylsulfoxide

CAS no. 67-68-5

Country	Austria	Belgium	Denmark	European Union	France	Germany
Limit value, 8hours	160mg/m3	-	160mg/m3	-	-	160mg/m3
Limit value, short term	-	-	320mg/m3	-	-	320mg/m3

Country	Hungary	Italy	Poland	Spain	Sweden	Netherlands	Switzerland
Limit value, 8hours	-	-	-	-	160mg/m3	-	160mg/m3
Limit value, short term	-	-	-	-	500mg/m3	-	320mg/m3

Country	United Kingdom	USA-NIOSH	USA-OSHA	Australia	Canada	Japan	South Korea
Limit value, 8hours		-	-	-	-	-	-
Limit value, short term		-	-	-	-	-	-

Personal protective equipment

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.

Respiratory protection

Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Eye protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

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

Chemical Name	NucSpot Live 488, 1000X in DMSO
Appearance	Liquid
Odor	No information available
Odor threshold	No information available
pH	No information available
Melting point/freezing point	No information available
Boiling point	No information available
Flash point	No information available
Evaporate rate	No information available
Flammability	No information available
Explosive limits	No information available
Vapor pressure	No information available
Vapor density	No information available
Relative density	No information available
Solubility	Water soluble
Partition coefficient:n-octanol/water	No information available
Auto-ignition temperature	No information available
Decomposition temperature	No information available
Viscosity	No information available
Explosive properties	No information available
Oxidizing properties	No information available

10. STABILITY AND REACTIVITY**Chemical stability**

Stable under recommended storage conditions.

Possibility of hazardous reactions

No data available

Conditions to avoid

Heat, flames and sparks.

Materials to avoid

No data available

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides

Other decomposition products - No data available

11. TOXICOLOGICAL INFORMATION**Acute toxicity DMSO****Oral LD50** Rat - 14,500 mg/kg**Inhalation LC50** Inhalation - rat - 4 h - 40250 ppm**Dermal LD50** Rabbit - > 5,000 mg/kg**Other information on acute toxicity** No data available**Skin corrosion/irritation** No data available**Serious eye damage/eye irritation** No data available**Respiratory or skin sensitization** No data available**Germ cell mutagenicity** Salmonella typhimurium assay (Ames test): negative (+/- activation),
DMSO is used as a neutral solvent in the Ames mutagen test**Carcinogenicity**

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

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity Not considered to be directly embryotoxic and has been shown to be a successful cryoprotectant for mammalian semen and embryos**Specific target organ toxicity - single exposure (Globally Harmonized System)**

No data available

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

No data available

Aspiration hazard

No data available

Potential health effects**Inhalation** May be harmful if inhaled. May cause respiratory tract irritation.**Ingestion** May be harmful if swallowed.**Skin** May be harmful if absorbed through skin. May cause skin irritation.**Eyes** May cause eye irritation.**Additional Information**

RTECS: PV6210000 (DMSO)

12. ECOLOGICAL INFORMATION

Toxicity DMSO The LC50(96hrs) for ten species of fish range from 32500 to 43000ppm
Persistence and degradability No information available
Biodegradation No information available
Mobility in soil No information available
Results of PBT and vPvB assessment No information available
Other adverse effects No information available
Additional information No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Product

This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber by a licensed disposal company.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

IATA, IMDG, DOT (US), TDG Not dangerous goods during transportation
UN number None
UN proper shipping name None
Transport hazard class None
Packing group None
Environmental hazards None
Transport in bulk according to Annex II of MARPOL 73/78 and IBC Code None
Special precaution for user None

15. REGULATION INFORMATION

US Federal Regulations

US Toxic Substances Control Act (TSCA): Not listed

SARA 302: No chemicals were found.

SARA 313: No chemicals were found.

SARA 311/312 Hazards: DMSO : fire hazard, chronic health hazard

Acute Health Hazard: Yes

Chronic Health Hazard: No

Fire Hazard: Yes

Sudden Release of Pressure Hazard: No

Reactive Hazard: No

WHMIS Hazard Class Flammable liquids, category 4

16. OTHER INFORMATION

Classification according to Regulation (EC) Nr. 1272/2008
Refer to section 2 and section 3

Prepared by: Regulatory Department
Biotium Inc.

Version no. 2

Revision date (Initials)	4/10/18 (LR)
Reason for revision	Application of WHMIS labeling requirements

The information provided above is believed to be correct to our best knowledge, but does not purport to be all inclusive, and shall be used only as a guide. This material is sold for research purposes only and is not required to appear on the TSCA inventory. It is not intended for food, drug, household, agricultural or cosmetic use. Its use must be supervised by a technically qualified individual experienced in handling potentially hazardous chemicals. Biotium shall not be held liable for any damage resulting from handling or contact with the above product.

SAFETY DATA SHEET

Date: April 10, 2018

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Verapamil HCl, 100 mM in DMSO
Catalog Number: 99836-20uL, 99836-100uL
Unit Size: 20 uL or 100 uL
Manufacturer/Supplier: Biotium, Inc.
46117 Landing Parkway, Fremont, CA 94538, USA
Phone: 1-510-265-1027, Fax: 1-510-265-1352
Web: <http://www.biotium.com>

Use as laboratory reagent. For research use only. Not for food, drug, household, or cosmetic use.

2. HAZARDS IDENTIFICATION**GHS Classification****Signal word** Danger**Health hazards**Acute toxicity, Oral (Category 3), H301
Acute aquatic toxicity (Category 2), H401
Chronic aquatic toxicity (Category 2), H411**Physical hazards**GHS Physical Hazard 1 - Flammable
GHS Physical Hazard Category 4**Hazard statements**H227 Combustible liquid
H301 Toxic if swallowed
H401 / H411 Toxic to aquatic life with long lasting effects**Precautionary statements**P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P280 Wear protective gloves/protective clothing/eye protection/face protection
P370 + P378 In case of fire, use water/water spray/water jet/carbon dioxide/sand/foam/alcohol resistant foam/chemical powder for extinction
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P273 Avoid release to the environment.
P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/doctor. Rinse mouth.
P391 Collect spillage.
P405 Store locked up.
P501 Dispose of contents/ container to an approved waste disposal plant.**WHMIS classification**

Flammable liquids, category 4

GHS hazard pictogram

Classification according to Regulation (EC) No 1272/2008[CLP]

Acute Toxicity: Inhalation, Category 3
Acute Toxicity: Oral, Category 3
Acute Toxicity: Skin, Category 3
Skin Corrosion/Irritation, Category 2
Serious Eye Damage/Eye Irritation, Category 2
Target Organ Systemic Toxicity (single exposure), Category 3
Aquatic Toxicity (Chronic), Category 3
Effects on or via Lactation

Classification according to Directive 1999/45/EC

T: Toxic
Risk Phrases: R23/24/25, R36/37/38, R52/53

Labelling according to Regulation (EC) No 1272/2008[CLP]**Hazard pictogram**

Signal word Danger

Hazard statements

H331: Toxic if inhaled.
H301: Toxic if swallowed.
H311: Toxic in contact with skin.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H335: May cause respiratory irritation.
H412: Harmful to aquatic life with long lasting effects
H360: May damage fertility or the unborn child
H362: May cause harm to breast-fed children

Precautionary statements

P201: Obtain special instructions before use.
P202: Do not handle until all safety precautions have been read and understood
P260: Do not breathe dust/fume/gas/mist/vapours/spray
P263: Avoid contact during pregnancy/while nursing.
P264: Wash {hands} thoroughly after handling.
P270: Do not eat, drink or smoke when using this product
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P281: Use personal protective equipment as required.
P361+364: Take off immediately all contaminated clothing and wash it before reuse.
P362+364: Take off contaminated clothing and wash it before reuse.
P273: Avoid release to the environment.
P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P301+310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P308+P313: IF exposed or concerned: Get medical advice/attention
P330: Rinse mouth.
P302+352: IF ON SKIN: Wash with plenty of soap and water.
P312: Call a POISON CENTER/doctor if you feel unwell.
P332+313: If skin irritation occurs, get medical advice/attention.
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+313: If eye irritation persists, get medical advice/attention.
P309+311: Call a POISON CENTER or doctor/physician if exposed or you feel unwell.

P405: Store locked up.
P501: Dispose of contents/container to hazardous waste.

HMIS Classification

Health hazard: 3
Flammability: 2
Physical hazards: 0

NFPA Rating

Health hazard: 3
Fire: 2
Reactivity Hazard: 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Name	CAS No.	EC No.	Index No.	Weight %	Classification according to 67/548/EEC	Classification according to regulation (EC)No1278/2008
Verapamil HCl	152-11-4	205-800-5	--	25%	T: R23/24/25, R36/37/38, R52/53	Acute Toxicity: Inhalation, Category 3 Acute Toxicity: Oral, Category 3 Acute Toxicity: Skin, Category 3 Skin Corrosion/Irritation, Category 2 Serious Eye Damage/Eye Irritation, Category 2 Target Organ Systemic Toxicity (single exposure), Category 3 Aquatic Toxicity (Chronic), Category 3
DMSO	67-68-5	200-664-3	--	75%	--	--

4. FIRST-AID MEASURES

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

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

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

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

5. FIREFIGHTING MEASURES

Suitable extinguishing media

Carbon dioxide, dry chemical extinguishers, foam extinguishers or water.

Special protective equipment for firefighters

Wear self contained breathing apparatus for firefighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Avoid breathing vapors, mist or gas. Remove all sources of ignition.

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. Soak up spilled substance with inert absorbent material. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid inhalation of vapor or mist.
 Avoid direct contact with substance.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.
 Store at 4 °C.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Substance: Dimethylsulfoxide

CAS no. 67-68-5

Country	Austria	Belgium	Denmark	European Union	France	Germany
Limit value, 8hours	160mg/m3	-	160mg/m3	-	-	160mg/m3
Limit value, short term	-	-	320mg/m3	-	-	320mg/m3

Country	Hungary	Italy	Poland	Spain	Sweden	Netherlands	Switzerland
Limit value, 8hours	-	-	-	-	160mg/m3	-	160mg/m3
Limit value, short term	-	-	-	-	500mg/m3	-	320mg/m3

Country	United Kingdom	USA-NIOSH	USA-OSHA	Australia	Canada	Japan	South Korea
Limit value, 8hours	-	-	-	-	-	-	-
Limit value, short term	-	-	-	-	-	-	-

Personal protective equipment

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.

Respiratory protection

Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Eye protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

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

Chemical Name	Verapamil HCl, 10 mM in DMSO
Appearance	Liquid
Odor	No information available

Odor threshold	No information available
pH	No information available
Melting point/freezing point	No information available
Boiling point	No information available
Flash point	No information available
Evaporate rate	No information available
Flammability	No information available
Explosive limits	No information available
Vapor pressure	No information available
Vapor density	No information available
Relative density	No information available
Solubility	Water soluble
Partition coefficient:n-octanol/water	No information available
Auto-ignition temperature	No information available
Decomposition temperature	No information available
Viscosity	No information available
Explosive properties	No information available
Oxidizing properties	No information available

10. STABILITY AND REACTIVITY

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

No data available

Conditions to avoid

Heat, flames and sparks.

Materials to avoid

No data available

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides

Other decomposition products - No data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Verapamil (hydrochloride) - Toxicity Data: Oral TDLO (woman): 58 mg/kg; Oral TDLO (woman): 14.4 mg/kg; Oral TDLO (woman): 72 mg/kg/14H (intermittent); Oral TDLO (man): 89 mg/kg; Oral TDLO (man): 26 mg/kg; Oral LDLO (man): 3.429 mg/kg; Oral LDLO (man): 103 mg/kg; Oral LD50 (rat): 150 mg/kg; Oral LD50 (mouse): 163 mg/kg; Subcutaneous LD50 (rat): 107 mg/kg; Subcutaneous LD50 (mouse): 68 mg/kg

Skin corrosion/irritation no data available

Serious eye damage/eye irritation no data available

Respiratory or skin sensitization no data available

Germ cell mutagenicity

Salmonella typhimurium assay (Ames test): negative (+/- activation),
DMSO is used as a neutral solvent in the Ames mutagen test

Carcinogenicity

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

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity Not considered to be directly embryotoxic and has been shown to be a successful cryoprotectant for mammalian semen and embryos

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

no data available

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

no data available

Aspiration hazard

no data available

Potential health effects

Inhalation May be harmful if inhaled. May cause respiratory tract irritation.

Ingestion May be harmful if swallowed.

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

Eyes May cause eye irritation.

Additional Information

RTECS:

KQ6300000 (Verapamil HCl)

PV6210000 (DMSO)

12. ECOLOGICAL INFORMATION

Toxicity

DMSO: LC50 (96 hrs) for ten species of fish range from 32500 to 43000 ppm

Verapamil: LC50 (96 hrs) Oncorhynchus mykiss (rainbow trout) - 2.72 mg/L

EC50 (48 hrs) Daphnia magna (Water flea) - 7.04 mg/L

Persistence and degradability no information available

Biodegradation no information available

Mobility in soil no information available

Results of PBT and vPvB assessment no information available

Other adverse effects no information available

Additional information no information available

13. DISPOSAL CONSIDERATIONS

Do not dispose product directly into sewage. Consult local state or national regulation for proper disposal.

14. TRANSPORT INFORMATION

IATA, IMDG, DOT (US), TDG Not dangerous goods during transportation

UN number 2810

UN proper shipping name Toxic liquids, n.o.s.

Transport hazard class 6.1 Toxic material.

Packing group III

Environmental hazards none

Transport in bulk according to Annex II of MARPOL 73/78 and IBC Code N/A

Special precaution for user None

15. REGULATION INFORMATION

US Federal Regulations

US Toxic Substances Control Act (TSCA): Not listed

SARA 302: No chemicals were found.
SARA 313: No chemicals were found.
SARA 311/312 Hazards: DMSO : fire hazard, chronic health hazard
Acute Health Hazard: Yes
Chronic Health Hazard: No
Fire Hazard: Yes
Sudden Release of Pressure Hazard: No
Reactive Hazard: No

WHMIS Hazard Class Flammable liquids, category 4

16. OTHER INFORMATION

Classification according to Regulation (EC) Nr. 1272/2008
Refer to section 2 and section 3

Prepared by: Regulatory Department
 Biotium Inc.
Version no. 2
Revision date (Initials) 4/10/18 (LR)
Reason for revision Application of WHMIS labeling requirements

The information provided above is believed to be correct to our best knowledge, but does not purport to be all inclusive, and shall be used only as a guide. This material is sold for research purposes only and is not required to appear on the TSCA inventory. It is not intended for food, drug, household, agricultural or cosmetic use. Its use must be supervised by a technically qualified individual experienced in handling potentially hazardous chemicals. Biotium shall not be held liable for any damage resulting from handling or contact with the above product.