Importance of Microcystins/Nodularins Determination

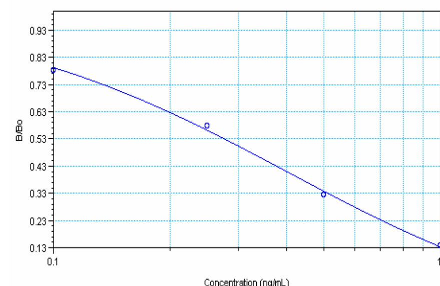
Most of the world's population relies on surface freshwaters as its primary source of drinking water. The drinking water industry is constantly challenged with surface water contaminants that must be removed to protect human health. Toxic blooms of cyanobacteria (blue-green algae) are an emerging issue in the U.S. and the world because of increased source water nutrient pollution caused by eutrophication. Microcystins and Nodularins are cyclic toxin peptides. Microcystins (several structural variants or congeners are found) have been found in fresh water throughout the world and are produced by the genus *Microcystis, Anabaena, Oscillatoria, Nostoc, Anabaenopsis,* and terrestrial *Hapalosiphon*. Nodularins are produced by the genus *Nodularia* and are found in marine and brackish water. To date, approximately 80 variants of microcystin have been isolated. The most common variant is microcystin-LR. Other common microcystin variants include LA, YR, RR, and LW.

Acute poisoning of humans and animals constitutes the most obvious problem from toxic cyanobacterial blooms, and in several cases has lead to death. These toxins mediate their toxicity by inhibiting liver function and are potent inhibitors of the serine/threonine protein phosphatases; therefore they may act as tumor promoters. To protect consumers from adverse health effects caused by these toxins, the WHO has proposed a provisional upper limit for microcystin-LR of 1.0 ppb (ng/L) in drinking water.

Human poisonings have often been suspected in the past but not confirmed due to lack of appropriate analytical techniques. In 1996, an episode of human intoxication by microcystins was first confirmed by Azevedo et al., after an outbreak of acute liver failure that resulted in the deaths of 76 patients at two dialysis centers in Caruaru, Brazil.

Performance Data

Test sensitivity:	The detection limit for this assay based on MC-LR in serum is 0.40 ppb (µg/L).
Test reproducibility:	Coefficients of variation (CVs) for standards: <10%, for samples: <15%.
Serum Recovery:	Sample recovery: 70-130%.
Selectivity	The asssay exhibits very good cross-reactivity with all cyanobacterial cyclic peptide toxin congeners tested to date.



Specificity

The cross-reactivity of the Abraxis Microcystins ELISA for various Microcystins congeners:

Compound	X-reactivity (%)
Microcystins LR	100
Microcystins LW	102
Microcystins LF	72
Microcystins YR	76
Microcystins RR	67
Microcystins LA	66
Nodularins	78
N-hemi-ADDA	38
ADDA	15
D-Phenylalanine	NR
L-Phenylalanine	NR
DL-Phenylalanine	NR

NR = no reactivity up to 1000 ppb

General Limited Warranty/Disclaimer: Abraxis LLC warrants the products manufactured by the Company, against defects and workmanship when used in accordance with the applicable instructions for a period not to extend beyond the product's printed expiration date. **Abraxis LLC makes no other warranty, expressed or implied. There is no warranty of merchantability or fitness for a particular purpose.**

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ABRAXIS

Microcystins ELISA for Serum (Microtiter Plate)

Enzyme-Linked Immunosorbent Assay for the Determination of Microcystins and Nodularins in Human Serum Samples

Product No. 522031

1. General Description

The Abraxis Microcystins ELISA for Serum is an immunoassay for the quantitative and sensitive detection of microcystins and nodularins in human serum samples. For additional serum types (canine, etc.), please see the appropriate technical bulletin. A sample preparation and dilution is required prior to analysis. Positive samples should be confirmed by HPLC, protein phosphatase assay, or other conventional methods.

NOTE: This assay is intended for Research Use Only and not for in vitro diagnostic use.

2. Safety Instructions

The substrate solution contains tetramethylbenzidine (TMB) and the stop solution contains diluted sulfuric acid. Avoid contact of the TMB and stopping solution with skin and mucous membranes. If these reagents come in contact with skin, wash with water.

3. Storage and Stability

The Microcystins ELISA for Serum Kit should be stored in the refrigerator (4–8°C). Solutions should be allowed to reach room temperature (20-25°C) before use. Reagents may be used until the expiration date on the box. Consult state, local, and federal regulations for proper disposal of all reagents.

4. Test Principle

The test is a direct competitive ELISA which detects the presence of microcystins and nodularins in human serum. It is based on the recognition of microcystins, nodularins and their congeners by a monoclonal antibody. Microcystins, nodularins and their congeners, when present in a sample, and a microcystins-HRP analogue compete for the binding sites of anti-microcystins antibodies in solution. The microcystins antibodies are then bound by a second antibody (goat anti-mouse) immobilized on the plate. After a washing step and the addition of the substrate solution, a color signal is generated. The intensity of the blue color is inversely proportional to the concentration of the microcystins/nodularins present in the sample. The color reaction is stopped after a specified time and the color is evaluated using an ELISA reader. The concentrations of the samples are determined by interpolation using the standard curve constructed with each run.

5. Limitations of the Microcystins ELISA, Possible Test Interference

Only serum samples should be analyzed in the Microcystins Assay for Serum. Plasma samples should not be used, as interference from the clotting factors found in plasma will cause inaccurate results.

Due to the high variability of compounds that might be found in human serum samples, test interferences caused by matrix effects can not be completely excluded.

Mistakes in handling the test can also cause errors. Possible sources of such errors can include: Inadequate storage conditions of the test kit, wrong pipetting sequence or inaccurate volumes of the reagents, too long or too short incubation times during the immune and/or substrate reaction, and extreme temperatures during the test performance (lower than 10°C or higher than 30°C). The assay procedure should be performed away from direct sun light.

As with any analytical technique (GC, HPLC, etc.) positive results should be confirmed by an alternative method.

A. Materials Provided

1. Microtiter Plate coated with a second antibody (goat anti-mouse)
2. Serum Matrix Microcystins Standards (5): 0, 0.1, 0.25, 0.5, 1.0 ppb, 1 mL each
3. Serum Treatment Reagent A, 30 mL
4. Serum Treatment Reagent B, 1 mL
5. Monoclonal Anti-Microcystins in Serum Antibody Solution, 6 mL
6. Microcystins in Serum-HRP Conjugate Solution, 6 mL
7. Sample Diluent, 30 mL. Use to dilute samples (see Sample Preparation, Section C)
8. Wash Solution (5X) Concentrate, 100 mL
9. Color Solution (TMB), 16 mL
10. Stop Solution, 12 mL

B. Additional Equipment/Materials (not delivered with the test kit)

1. Micro-pipettes with disposable plastic tips (50-250 µL)
2. Multi-channel pipette (50-250 µL) or stepper pipette with plastic tips (50-250 µL)
3. Microcentrifuge Tubes
4. Microcentrifuge
5. Overhead tube rotator or equivalent
6. Glass vials with teflon-lined caps
7. Microtiter plate washer (optional)
8. Microtiter plate reader (wavelength 450 nm)

C. Sample Preparation

1. Add 500 µL of serum sample to a microcentrifuge tube.
2. Add 500 µL of Serum Treatment Reagent A.
3. Add 20 µL of Serum Treatment Reagent B. Vortex thoroughly. Mix using an overhead tube rotator for 15 minutes.
4. Centrifuge vial for 10 minutes at 10,000 g. A waxy precipitate will be visible at the bottom of the microcentrifuge tube and the supernatant should be clear (although not colorless). If the supernatant is not clear, centrifuge for an additional 10 minutes. Pipette supernatant into a clean glass vial.
5. Add 250 µL of Sample Diluent to a second clean glass vial. Add 250 µL of the treated serum to the Sample Diluent. Vortex thoroughly. The sample is then ready for analysis (see Assay Procedure, Section E).

The ELISA result will be multiplied by a factor of 4 to obtain the final microcystins concentration in the sample. Samples showing lower concentrations than standard 1 (0.1 ppb) should not be multiplied by the factor but should be reported as containing <0.4 ppb. Highly contaminated samples (those outside of the calibration range of the assay) must be diluted and re-analyzed.

D. Test Preparation

Micro-pipetting equipment and pipette tips for pipetting the standards and samples are necessary. We recommend using a multi-channel pipette or a stepping pipette for adding the antibody, enzyme conjugate, substrate solution, and the stop solution in order to equalize the incubation periods of the standard solutions and samples on the entire microtiter plate. Please use only the reagents and standards from one kit lot in one test, as they have been adjusted in combination. Read and understand the instructions and precautions given in this insert before proceeding.

1. Adjust the microtiter plate and the reagents to room temperature before use.
2. Remove the number of microtiter plate strips required from the foil bag. The remaining strips are stored in the foil bag and zip-locked closed. Store the remaining kit in the refrigerator (4-8°C).
3. The standard, antibody, enzyme conjugate, substrate and stop solutions are ready to use and do not require any further dilutions.
4. The wash solution is a 5X concentrated solution and must be diluted with deionized water. In a 1L container, dilute the 5X solution 1:5 (i.e. 100 mL of the 5X wash solution plus 400 mL of deionized water). The diluted solution is used to wash the microtiter wells.
5. The stop solution should be handled with care as it contains diluted H_2SO_4.

E. Assay Procedure

1. Add 100 µL of the standard solutions and treated samples into the wells of the test strips according to the working scheme given. We recommend using duplicates or triplicates.
2. Add 50 µL of the antibody solution to the individual wells successively using a multi- channel pipette or a stepping pipette. Cover the wells with parafilm or tape and mix the contents by moving the strip holder in a circular motion on the benchtop for 30 seconds. Be careful not to spill the contents. Incubate for 30 minutes at room temperature.
3. Add 50 µL of the conjugate solution to the individual wells successively using a multi- channel pipette or a stepping pipette. Cover the wells with parafilm or tape and mix the contents by moving the strip holder in a circular motion on the benchtop for 30 seconds. Be careful not to spill the contents. Incubate for 90 minutes at room temperature.
4. After incubation, remove the covering and vigorously shake the contents of the wells into a sink. Wash the strips three times using the 1X washing buffer solution. Please use at least a volume of 250 µL of washing buffer for each well and each washing step. Remaining buffer in the wells should be removed by patting the plate dry on a stack of paper towels.
5. Add 150 µL of color solution to the wells using a multi- channel pipette or a stepping pipette. Cover the wells with parafilm or tape and mix the contents by moving the strip holder in a circular motion on the benchtop for 30 seconds. Be careful not to spill the contents. Incubate for 30 minutes at room temperature. Protect the strips from sunlight.
6. Add 100 µL of stop solution to the wells in the same sequence as for the color solution using a multi- channel pipette or a stepping pipette.
7. Read the absorbance at 450 nm using a microplate ELISA photometer within 15 minutes after the addition of the stopping solution.

F. Evaluation

The evaluation of the ELISA can be performed using commercial ELISA evaluation programs (4-Parameter (preferred) or Logit/Log). For manual evaluation, calculate the mean absorbance value for each of the standards. Calculate the $\%B/B_0$ for each standard by dividing the mean absorbance value for each standard by the Zero Standard (Standard 0) mean absorbance. Construct a standard curve by plotting the $\%B/B_0$ for each standard on the vertical linear (y) axis versus the corresponding Microcystins concentration on the horizontal logarithmic (x) axis on graph paper. $\%B/B_0$ for samples will then yield levels in ppb of Microcystins by interpolation using the standard curve. These values must then be multiplied by a factor of 4 to obtain the final microcystins concentration. Samples showing lower concentrations of Microcystins compared to Standard 1 (0.1 ppb) should not be multiplied by the factor but should be reported as containing <0.4 ppb. Samples showing a higher concentration than Standard 4 (1.0 ppb) must be diluted further to obtain accurate results.

G. Working Scheme

The microtiter plate consists of 12 strips of 8 wells, which can be used individually for the test. The **standards must be run** with each test. Never use the values of standards which have been determined in a test performed previously.

Std0-Sd4: Standards

Sample 1, Sample 2, etc.: Samples

	1	2	3	4	5	6	7	8	9	10	11	12
A	Std 0	Std 4										
B	Std 0	Std 4										
C	Std 1	Sample 1										
D	Std 1	Sample 1										
E	Std 2	Sample 2										
F	Std 2	Sample 2										
G	Std 3	etc.										
H	Std 3	etc.										

H. References

(1) M. G. Weller, A. Zeck, A. Eikenberg, S. Nagata, Y. Ueno, and R. Niessner, Development of a Direct Competitive Microcystins Immunoassay of Broad Specificity. Analytical Sciences. 17, 2001, 1445-1448.

(2) Worldwide Patenting PCT WO 01/18059 A2.

(3) U.S. Patent Number 6,967,240.

(4) J. Chen, P. Xie, L. Li, and J. Xu, First Identification of the Hepatotoxic microcystins in the Serum of a Chronically Exposed Human Population Together with Indication of Hepatocellular Damage. Toxicological Sciences. 108(1), 2009, 81-89.

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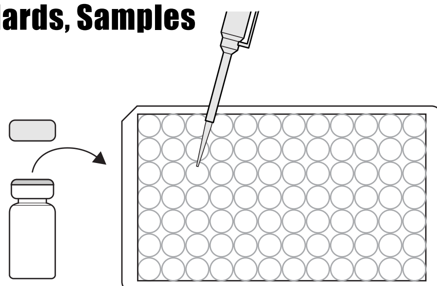
Microcystins Serum ELISA Kit, Detailed Procedure

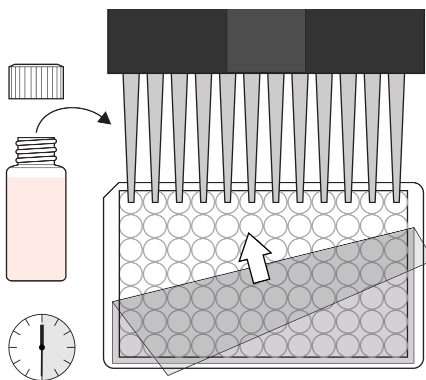
1. Addition of Standards, Samples

Add 100 uL of the standard solutions and treated samples into the wells of the test strips according to the working scheme given. We recommend using duplicates or triplicates.



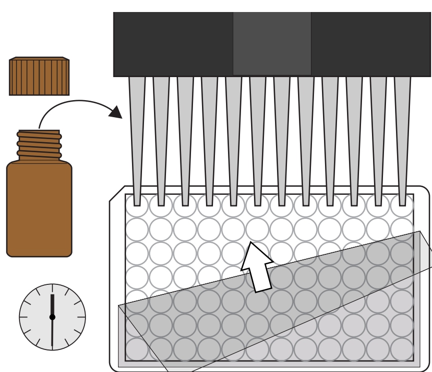
2. Addition of Antibody Solution

Add 50 uL of the Microcystin antibody solution to the individual wells successively using a multi- channel pipette. Cover the wells with parafilm or tape and mix the contents by moving the strip holder in a rapid circular motion on the benchtop. Be careful not to spill contents. Incubate the strips for 30 min. at room temperature.



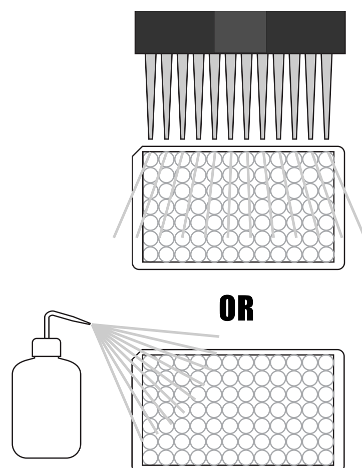
3. Addition of Enyzme Conjugate

Add 50 uL of the enzyme conjugate to the individual wells successively using a multi- channel pipette or a stepping pipette. Cover the wells with parafilm or tape and mix the contents by moving the strip holder in a rapid circular motion on the benchtop. Be careful not to spill contents. Incubate the strips for 90 min. at room temperature.



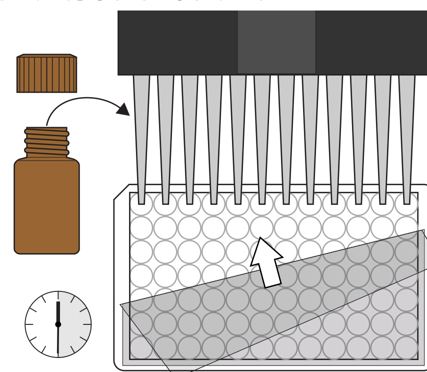
4. Washing of Plates

After incubation, remove the covering and vigorously shake the contents of the wells into a sink. Wash the strips three times with a multi-channel pipette or wash bottle using the diluted 1X washing buffer solution. Please use at least a volume of 250 uL of washing buffer for each well and each washing step. Remaining buffer in the wells should be removed by patting the plate dry on a stack of paper towels.



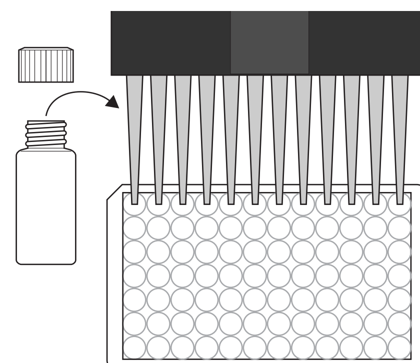
5. Addition of Substrate/Color Solution

Add 150 uL of substrate/color solution to the individual wells successively using a multi-channel pipette or a stepping pipette. Cover the wells with parafilm or tape and mix the contents by moving the strip holder in a rapid circular motion on the benchtop. Be careful not to spill contents. Incubate the strips for 30 min. at room temperature.



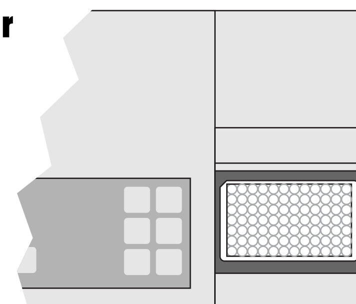
6. Addition of Stopping Solution

Add 100 uL of stop solution to the wells in the same sequence as for the substrate solution using a multi- channel pipette or a stepping pipette.



7. Measurement of Color

Read the absorbance at 450 nm using a microplate ELISA reader. Calculate results.



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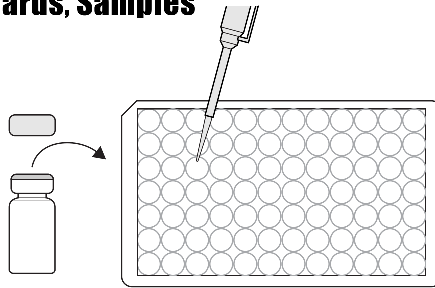
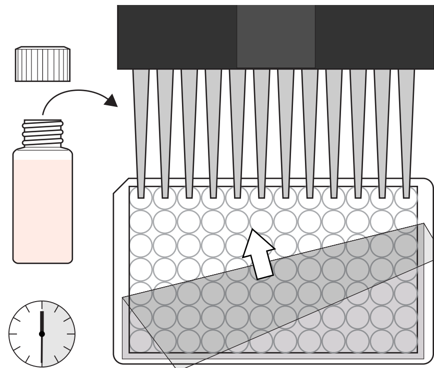
1. Addition of Standards, Samples

Add 100 uL of standard solutions and treated samples.



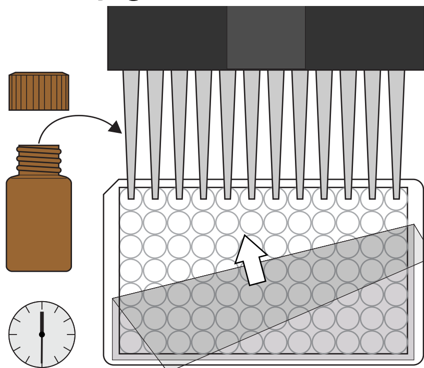
2. Addition of Antibody Solution

Add 50 uL of the antibody solution. Cover and mix for 30 seconds by rotating on benchtop. Incubate for 30 minutes at room temperature.



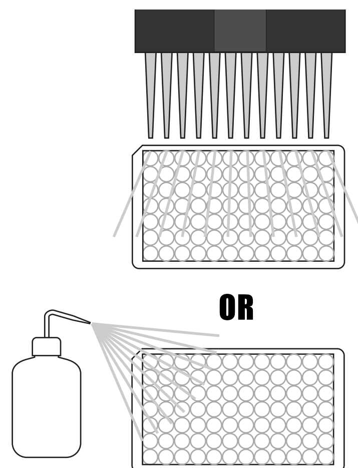
3. Addition of Enyzme Conjugate

Add 50 uL of enzyme conjugate. Cover and mix for 30 seconds by rotating on benchtop. Incubate for 90 minutes at room temperature.



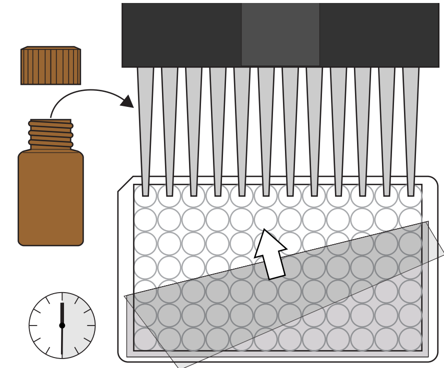
4. Washing of Plates

Wash the plates three times with 250 uL of diluted 1X washing buffer.



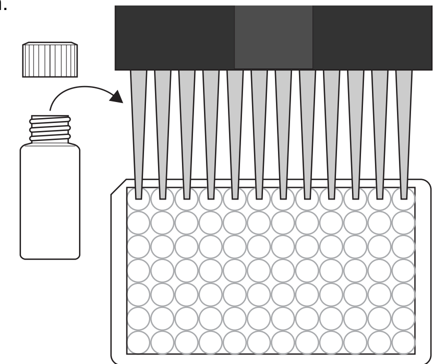
5. Addition of Substrate/Color Solution

Add 150 uL of substrate/color solution. Incubate 30 minutes at room temperature and away from direct sunlight.



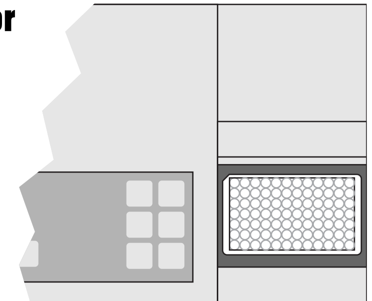
6. Addition of Stopping Solution

Add 100 uL of stop solution.



7. Measurement of Color

Read the absorbance at 450 nm. Calculate results.



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Safety Data Sheet

Section 1: Product and Company Identification

1.1 Product Identifiers:
Product Name: Microcystins/Nodularins (Serum), ELISA Kit
Product Code: 522031
1.2 Identified Use: Determination of Microcystins/Nodularins in samples. **Restrictions on Use:** For research use only.
1.3 Company: Abraxis, Inc., 124 Railroad Drive**,** Warminster, PA 18974 USA**,** info@abraxiskits.com +1(215) 357-3911, FAX +1(215) 357-5232
1.4 Emergency Telephone Number: +1(215) 357-3911

Section 2: Hazard(s) Identification

2.1 Classification of the mixture:
GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Eye irritation (Category 2A), H319 Causes serious eye irritation
HMIS Rating: Health hazard: 2, Chronic Health Hazard: , Flammability: 0, Physical Hazard 0
NFPA Rating: Health hazard: 2, Fire Hazard: 0, Reactivity Hazard: 0
2.2 GHS Label elements, including precautionary statements:
Pictogram(s)

Signal word: Warning
Hazard statement(s):
H319 Causes serious eye irritation.
Precautionary statement(s):
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/eye protection/face protection.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/attention.
2.3 Hazards not otherwise classified (HNOC) or not covered by GHS: None known.
2.4 Unknown acute toxicity: None known.

Section 3: Composition / Information on Ingredients

3.2 Mixtures: Mixture of the hazardous substance(s) listed below, with nonhazardous additions.
Hazardous component(s):
Name and Synonym(s): Calcium chloride
Formula: $CaCl_2$ Molecular weight: 110.98 g/mol CAS No.: 10043-52-4 EC-No.: 233-140-8
Classification: Eye Irritation 2A; H319
Percentage in Mixture: Trade Secret / CBI
For full text of H-Statements mentioned in this Section, see Section 2.

Section 4: First Aid Measures

4.1 Description of first aid measures: 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: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
If swallowed: Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
4.2 Most important symptoms and effects, both acute and delayed: The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11
4.3 Indication of any immediate medical attention and special treatment needed: No data available. Treat symptomatically.

Section 5: Fire-fighting Measures

5.1 Suitable extinguishing media: Water spray, alcohol-resistant foam, dry chemical or carbon dioxide
5.2 Special hazards arising from the substance or mixture: Hydrogen chloride gas, Calcium oxide

5.3 Advice for firefighters: Wear self-contained breathing apparatus for fire-fighting if necessary.
5.4 Further information: No data available

Section 6: Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures: Use personal protective equipment (see section 8). Avoid dust formation. Avoid breathing vapors, mist, dust, or gas. Ensure adequate ventilation.
6.2 Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
6.3 Methods and materials for containment and cleaning up: Contain spillage. Solids (if applicable): Pick up and arrange disposal without creating dust. Sweep up and shovel. Liquids (if applicable): Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.
6.4 Reference to other sections: For information on safe handling see section 7.
For information on personal protection see section 8.
For information on disposal see section 13.

Section 7: Handling and Storage

7.1 Precautions for safe handling: See section 2. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Do not eat, drink, or smoke in work area.
7.2 Precautions for safe storage: Keep container(s) tightly closed in a dry, well-ventilated place. Moisture sensitive.
7.3 Specific end use(s): Other than use(s) specified in section 1, no other uses are stipulated.

Section 8: Exposure Controls / Personal Protection

8.1 Control parameters:
Component(s) with workplace control parameters
Contains no substances with occupational exposure limit values.
8.2 Exposure controls:
Appropriate engineering controls: Provide adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Keep away from food and beverages.
Personal protective equipment
Eye protection: Safety glasses with side-shields. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).
Skin protection: Handle with chemical resistant 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: For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
Body protection: Lightweight, protective clothing to prevent skin exposure. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Section 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties of mixture
Appearance: Liquid
Odor: Characteristic
Odor Threshold: No data available
pH: No data available
Melting point/freezing point: No data available
Initial boiling point and boiling range: No data available
Flash point: No data available
Evaporation rate: No data available
Flammability (solid, gas): No data available
Upper/lower flammability or explosive limits No data available
Vapor pressure: No data available
Vapor density: No data available
Relative density: No data available
Water solubility: No data available
Partition coefficient: n-octanol/water: No data available
Auto-ignition temperature: No data available

Decomposition temperature: No data available
Viscosity: No data available
Explosive properties: No data available
Oxidizing properties: No data available
9.2 Other information: No data available

Section 10: Stability and Reactivity

10.1 Reactivity: No data available
10.2 Chemical stability: Stable under recommended storage conditions.
10.3 Possibility of hazardous reactions: No data available
10.4 Conditions to avoid: Exposure to moisture may affect product quality.
10.5 Incompatible materials: Strong acids, borane/boron oxides, zinc, calcium oxide, methyl vinyl ether. Calcium chloride is attacked by bromine trifluoride.
10.6 Hazardous decomposition products: No data available. In the event of fire: see section 5.

Section 11: Toxicological Information

11.1 Information on toxicological effects
To the best of our knowledge, the chemical, physical, and toxicological properties of this product have not been thoroughly investigated.
Acute toxicity (Calcium chloride, CAS No. 10043-52-4)**:**

Inhalation No data available
Ingestion LD50 Oral - rat - 2,301 mg/kg (OECD Test Guideline 401)
Skin contact Skin – rabbit. Result: No skin irritation
Eye contact Eyes – rabbit. Result: Moderate eye irritation (OECD Test Guideline 405)
Respiratory or skin sensitization No data available
Aspiration hazard No data available

Mutagenicity No data available
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.
Teratogenicity (Calcium chloride, CAS No. 10043-52-4)**:** Rat – Unscheduled DNA synthesis
Reproductive/fertility toxicity: No data available
Specific target organ toxicity, single exposure No data available
Specific target organ toxicity, repeated exposure: No data available
Additional information (Calcium chloride, CAS No. 10043-52-4) RTECS: EV9800000 No data available.

Section 12: Ecological Information

12.1 Toxicity (Calcium chloride, CAS No. 10043-52-4)**:** Toxicity to fish LC50 - Lepomis macrochirus - 10,650 mg/l - 96 h; Toxicity to daphnia and other aquatic invertebrates EC50 - *Daphnia magna* (Water flea) - 2,400 mg/l - 48 h (OECD Test Guideline 202)
12.2 Persistence and degradability: No data available
12.3 Bioaccumulative potential: No data available
12.4 Mobility in soil: No data available
12.5 Results of PBT and vPvB assessment: No data available
12.6 Other adverse effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Section 13: Disposal Considerations

13.1 Waste treatment methods
Product: Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.
Contaminated packaging: All waste must be handled and disposed according to local, state, and federal regulations.
Refer to sections 7 and 8 for safe handling guidance.

Section 14: Transport Information

DOT, IMDG, IATA: Not dangerous goods.

Section 15: Regulatory Information

SARA Title III, Section 302 Components: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA Title III, Section 313 Components: This material does not contain any chemical components with known CAS numbers that exceed the threshold (DeMinimis) reporting levels established by SARA Title III, Section 313.
SARA 311/312 Hazards: Calcium chloride, CAS No. 10043-52-4: Acute Health Hazard
State Right-to-Know
Massachusetts: No components are subject to the Massachusetts Right to Know Act.
Pennsylvania: Calcium chloride, CAS No. 10043-52-4
New Jersey: Calcium chloride, CAS No. 10043-52-4
California Prop. 65 Components: This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

Section 16: Other information

This information is based on our present knowledge. While Abraxis , Inc. believes that the data contained herein are factual and the opinions expressed represent a best effort to present accurate information, the data are not to be taken as a warranty or representation for which Abraxis , Inc. assumes legal responsibility. The information shall not be taken as being all-inclusive and is to be used only as a guide. The data are offered solely for the user's consideration, investigation, and verification. These suggestions should not be confused with either state, municipal, or insurance requirements, or with national safety codes and constitute no warranty. Any use of these data and information must be determined by the user to be in accordance with applicable federal, state, and local regulations.

All materials and mixtures may present unknown hazards and should be used with caution. Since Abraxis , Inc. cannot control the methods, volumes, or conditions of use of this product, Abraxis , Inc. shall not be held liable for any damages or losses resulting from the handling or from contact with the product as described herein. An individual technically qualified to handle potentially hazardous chemicals must supervise the use of this material. This product is sold for research use only. It is not for any human or animal therapeutic or clinical diagnostic use.

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Changes from previous version: Abraxis, LLC changed to Abraxis, Inc.