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MATERIAL SAFETY DATA SHEET

Section 1

Product and company identification

Product name: **AzureRed Protein Gel Stain**

Supplier: Azure Biosystems, Inc
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Dublin, CA 94568
Phone: (925) 307-7127
Fax: (925) 999-8247

Section 2 Hazards identification

OSHA/HCS STATUS

This material is considered by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

EMERGENCY OVERVIEW:

Warning! Combustible liquid and vapor. Harmful if inhaled, absorbed through skin or swallowed. Causes respiratory tract, eye and skin irritation. Contains material that can cause target organ damage.

HMIS RATING	
HEALTH	2
FLAMMABILITY	2
REACTIVITY	0

NFPA RATING	
HEALTH	2
FLAMMABILITY	2
REACTIVITY	0

PRECAUTIONARY MEASURES

Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Do not eat, drink or smoke when using this product. Avoid contact with eyes, skin and clothing. Keep away from heat and flame. Keep container tightly closed. Wash thoroughly after handling.

ROUTES OF ENTRY

Dermal contact. Eye contact. Inhalation. Ingestion.

POTENTIAL ACUTE HEALTH EFFECTS

Eyes: Irritating to eyes
Skin: Toxic in contact with skin. Irritating to skin.
Inhalation: Toxic by inhalation. Irritating to respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Ingestion: Toxic if swallowed.

POTENTIAL CHRONIC HEALTH EFFECTS

Chronic Effects: Contains material that can cause target organ damage
Carcinogenicity: No known significant effects or critical hazards.
Mutagenicity: No known significant effects or critical hazards.
Teratogenicity: No known significant effects or critical hazards.
Developmental effects: No known significant effects or critical hazards.
Fertility effects: No known significant effects or critical hazards.
Target organs: Contains material which causes damage to the following organs: blood. Contains material which may cause damage to the following organs: kidneys, liver, cardiovascular system, upper respiratory tract, skin, eyes, central nervous system (CNS).
Inhalation: Adverse symptoms may include the following: respiratory tract irritation, coughing .
Ingestion: No specific data.
Skin: Adverse symptoms may include the following: irritation, redness.
Eyes: Adverse symptoms may include the following: pain or irritation, watering, redness.

MEDICAL CONDITIONS AGGRAVATED
BY OVER-EXPOSURE

Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

For additional information on toxicity, please refer to Section 11.

Section 3 Composition/Information on Ingredients

Ingredient	CAS #	%
Dimethyl sulfoxide	67-68-5	67.8
Acetonitrile	75-05-8	32.2

There are no other ingredients present which within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous according to the OSHA Hazard Communications Standard (29 CFR 1910.1200) and require reporting in this section.

Section 4 - First Aid Measures

ORAL EXPOSURE	Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
INHALATION EXPOSURE	Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
DERMAL EXPOSURE	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
EYE EXPOSURE	Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
PROTECTION OF FIRST-AIDERS	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash.

Section 5 - Fire Fighting Measures

FLASH POINT	N/A
AUTOIGNITION TEMP	N/A
FLAMMABILITY	Combustible liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.
EXTINGUISHING MEDIA	
Suitable:	Use dry chemical, CO ₂ , water spray (fog) or foam
Not suitable:	Do not use water jet.
FIREFIGHTING	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
SPECIAL EXPOSURE HAZARDS	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
HAZARDOUS COMBUSTION PRODUCTS	Decomposition products may include the following materials: carbon dioxide, carbon monoxide, nitrogen oxides, sulfur oxides.

Section 6 - Accidental Release Measures

PERSONAL PRECAUTIONS	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
ENVIRONMENTAL PRECAUTIONS	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
METHODS FOR CLEANING UP	Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.
SMALL SPILL	Stop leak without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

Section 7 - Handling and Storage

HANDLING

Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measure against electrostatic discharges. To avoid fire or explosion dissipate static electricity during transfer by ground and bonding container and equipment before transferring material empty containers retain product residue and be hazardous. Do not reuse container.

STORAGE

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from light at -15°C to -25°C, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8 - Exposure Controls / PPE

Components	CAS-No	Exposure Limits		Basis
Dimethyl sulfoxide	67-68-5	TWA	250 ppm 8 hour(s)	AIHA WEEL (United States, 1/2009)
Acetonitrile	75-05-8	TWA	20 ppm 8 hour(s) Absorbed through skin	ACGIH TLV (United States, 2/2010)
		TWA	34 mg/m ³ 10 hour(s)	NIOSH REL (United States, 6/2009)
		TWA	20 ppm 10 hours	NIOSH REL (United States, 6/2009)
		TWA	70 mg/m ³ 8 hour(s)	OSHA PEL (United States, 11/2006)
		TWA	40 ppm 8 hour(s)	OSHA PEL (United States, 11/2006)
		STEL	105 mg/m ³ 15 minute(s)	OSHA PEL 1989 (United States, 3/1989)
		STEL	60 ppm 15 minute(s)	OSHA PEL 1989 (United States, 3/1989)
		TWA	70 mg/m ³ 8 hour(s)	OSHA PEL 1989 (United States, 3/1989)
		TWA	40 ppm 8 hour(s)	OSHA PEL 1989 (United States, 3/1989)

RECOMMENDED MONITORING PROCEDURES If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

ENGINEERING MEASURES

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory:

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hand:

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye:

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin:

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Environmental Exposure Controls:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

GENERAL HYGIENE MEASURES:

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate

techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 9 - Physical and chemical properties

Physical State: Liquid
 Flash Point: Closed cup: 61 to 93.3°C (141.8 to 199.9°F)
 Color: Purple
 Odor: Ethereal (slight)
 Volatility: >99% (w/w)
 VOC: 100% (w/w)
 Solubility: N/A

Section 10 - Stability and Reactivity

STABILITY: This product is stable.
 MATERIALS TO AVOID Reactive or incompatible with the following materials: oxidizing materials
 HAZARDOUS DECOMPOSITION PRODUCTS Under normal conditions of storage use, hazardous reactions will not occur
 CONDITIONS OF REACTIVITY Highly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat. Not considered to be a product presenting a risk of explosion.

Section 11 - Toxicological Information

ACUTE TOXICITY

Product/Ingredient Name	Result	Species	Dose	Exposure
Dimethyl sulfoxide	LC50 Inhalation Vapor	Rat	>1600 mg/m ³	4 hours
	LC50 Dermal	Rat	40000 mg/kg	
	LC50 Oral	Rat	14.5 g/kg	
Acetonitrile	LC50 Inhalation Gas	Rat	17100 ppm	4 hours
	LC50 Dermal	Rabbit	980 mg/kg	
	LC50 Oral	Rat	2460 mg/kg	

Conclusion/Summary N/A

SENSITIZER

Conclusion/Summary N/A

CLASSIFICATION

Product/Ingredient Name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Acetonitrile	A4	-	D	-	-	-

Section 12 - Ecological Information

ENVIRONMENTAL EFFECTS No known significant effects or critical hazards.

AQUATIC ECOTOXICITY

Product/Ingredient Name	Test	Result	Species	Exposure
Dimethyl sulfoxide	-	Acute LC50 25000 ppm Fresh water	Daphnia-Water flea- <i>Daphnia magna</i> (neonate – < 24 hours)	48 hours
	-	Acute LC50 3400000 µg/L Fresh water	Fish-Fathead-minnow- <i>Pimephales promelas</i> (31 days – 15.8 mm to 0.062 g)	96 hours
Acetonitrile	-	Acute LC50 3600000 µg/L Fresh water	Daphnia-Water flea- <i>Daphnia magna</i> (< 24 hours)	48 hours
	-	Acute LC50 > 100000 µg/L Fresh water	Fish-Fathead-minnow- <i>Pimephales promelas</i> (Juvenile, Fledgling, Hatchling, Weaning – 0.2 to 0.5g)	96 hours

Conclusion/Summary N/A

BIODEGRADABILITY Not available

Conclusion/Summary**N/A**

OTHER ADVERSE EFFECTS

No known significant effects or critical hazards.

Section 13 - Disposal Considerations

WASTE DISPOSAL:

The generation of waste should be avoided or minimized wherever possible. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7 and Section 8 for additional handling information and protection of employees.

Section 14 - Transport Information

INTERNATIONAL TRANSPORT REGULATIONS Not classified

Section 15 - Regulatory Information

HCS Classification	Combustible liquid	
	Toxic material	
	Irritating material	
	Target organ effects	
US FEDERAL REGULATIONS		
TSCA 4(a) final test rules	Acetonitrile	
TSCA 8(a) PAIR	Acetonitrile	
TSCA 8(a) IUR exempt/Partial exemption	Not determined	
United States inventory (TSCA 8b)	All components are listed or exempted	
SARA 302/304/311/312 extremely hazardous substances	No products were found	
SARA 302/304 emergency planning and notification	No products were found	
SARA 302/304/311/312 hazardous chemicals	Dimethyl sulfoxide; Acetonitrile	
SARA 311/312 MSDS distribution - chemical inventory - hazard identification	Dimethyl sulfoxide: Immediate (acute) health hazard, Delayed (chronic) health hazard; Acetonitrile: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard	
Clean Water Act (CWA) 307	Acetonitrile	
Clean Water Act (CWA) 311	No products were found	
Clean Air Act (CAA) 112 regulated flammable substances	No products were found	
Clean Air Act (CAA) 112 regulated toxic substances	No products were found	
Clean Air Act (CAA) 112(b) hazardous air pollutants (HAPs)	Listed	
Clean Air Act (CAA) 602 Class I Substances	Not listed	
Clean Air Act (CAA) 602 Class II Substances	Not listed	
DEA List I Chemicals (precursor)	Not listed	

chemicals)		
DEA List II Chemicals (precursor chemicals)	Not listed	

SARA 313	Product name	CAS number	Concentration
Form R-Reporting requirements	Acetonitrile	75-05-8	32.2
Supplier notification	Acetonitrile	75-05-8	32.2

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

STATE REGULATIONS	
Massachusetts	The following components are listed: Acetonitrile
New York	The following components are listed: Acetonitrile
New Jersey	The following components are listed: Dimethyl sulfoxide; Acetonitrile
Pennsylvania	The following components are listed: Acetonitrile
California prop. 65	Not listed
UNITED STATES INVENTORY (TSCA 8B)	
All components are listed or exempted	
INTERNATIONAL REGISTRIES	
Australia inventory (AICS)	All components are listed or exempted
China inventory (IESCS)	All components are listed or exempted
Japan inventory	All components are listed or exempted
Korea inventory	All components are listed or exempted
New Zealand inventory of chemicals (NZIoC)	All components are listed or exempted
Philippines inventory (PICCS)	All components are listed or exempted
CHEMICAL WEAPONS CONVENTION LIST SCHEDULE I CHEMICALS	Not listed
CHEMICAL WEAPONS CONVENTION LIST SCHEDULE II CHEMICALS	Not listed
CHEMICAL WEAPONS CONVENTION LIST SCHEDULE III CHEMICALS	Not listed

Section 16 Other information

For R&D use only. Not for drug, household or other uses.

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.