

The Biotechnology Education Company ®

EDVO-Kit

# 110 Molecular Weight Determination of Proteins

See Page 3 for storage instructions.

#### **EXPERIMENT OBJECTIVE:**

The objective of this experiment module is to determine the molecular weight of a protein using SDS horizontal gel electrophoresis. Students will develop a basic understanding of protein structure and denaturation.

EDVOTEK, Inc. • 1-800-EDVOTEK • www.edvotek.com

# **Table of Contents**

	Page
Experiment Components	3
Experiment Requirements	3
Background Information	4
Experiment Procedures	
Experiment Overview and General Instructions	7
Preparing for Agarose Gel Electrophoresis	8
Conducting Agarose Gel Electrophoresis	13
Staining the Gel (Optional)	14
Size Determination of DNA Restriction Fragments	15
Study Questions	17
Instructor's Guidelines	
Notes to the Instructor and Pre-Lab Preparations	19
Quick Reference Tables	22
Avoiding Common Pitfalls	23
Experiment Results and Analysis	24
Study Questions and Answers	25
Material Safety Data Sheets	27

All components are intended for educational research only. They are not to be used for diagnostic or drug purposes, nor administered to or consumed by humans or animals.

THIS EXPERIMENT DOES NOT CONTAIN HUMAN DNA. None of the experiment components are derived from human sources.

EDVOTEK, The Biotechnology Education Company, and InstaStain are registered trademarks of EDVOTEK, Inc.. Ready-to-Load, Protein Agarose and LyphoProtein are trademarks of EDVOTEK, Inc.



The Biotechnology Education Company® • 1-800-EDVOTEK • www.edvotek.com



# **Experiment Components**

#### **Quick Reference:**

There is enough sample for 6 gels if you are using an automatic micropipet for sample delivery. Use of transfer pipets will yield fewer gels.

Reagent quantities for 6 gels are based upon the use of horizontal gel electrophoresis apparatus, Model #M12, using split trays or both halves of the standard tray.

Although the proteins in this experiment are pre-stained and can easily be visualized directly during and after electrophoresis, staining with EDVOTEK Protein InstaStain® may enhance the visibility of the bands.

#### READY-TO-LOAD PROTEIN SAMPLES FOR ELECTROPHORESIS

- A Pre-stained LyphoProtein<sup>™</sup> Gel Marker
   (Molecular Weight Standard Protein Markers)
- B Unknown Pre-stained LyphoProtein™
- C Unknown Pre-stained LyphoProtein™
- D Unknown Pre-stained LyphoProtein™

#### **REAGENTS & SUPPLIES**

- Practice Gel Loading Solution
- Protein Agarose<sup>™</sup> powder
- Tris-Glycine-SDS electrophoresis buffer (10x)
- 1 ml pipet
- 100 ml graduated cylinder (packaging for samples)
- Microtipped Transfer Pipets
- Semi-log graph paper template
- Protein InstaStain®

#### Requirements

- Horizontal gel electrophoresis apparatus
- D.C. power supply
- Waterbath
  - Recommended equipment: Visualization system (white light) Automatic micropipets with tips
- Pipet pump
- 250ml flasks
- Hot gloves
- Metric rulers
- Distilled or deionized water
- Large beaker
- Methanol (optional)
- Glacial acetic acid (optional)
- Small plastic tray or large weigh boat (optional)

EDVOTEK - The Biotechnology Education Company® 1-800-EDVOTEK • www.edvotek.com FAX: (301) 340-0582 • email: info@edvotek.com



Store proteins (A-D) at -20°C.

This experiment contains ready-to-load protein samples and reagents sufficient for 6 gels (see Quick Reference).



# **Background Information**

Proteins are a highly diversified class of biomolecules. Differences in their chemical properties, such as charge, shape, size and solubility, enables them to perform their individual, unique biological functions. These functions include enzyme catalysis, metabolic regulation, binding and transport of small molecules, gene regulation, immunological defense and cell structure. Determination of the molecular weight of a protein is of fundamental importance to its biochemical characterization. If the amino acid composition or sequence is known, the exact molecular weight can be calculated. This assumes the protein does not contain any "non-amino acid" groups (heme, zinc, covalently bonded carbohydrate, etc.) or the amount of these groups, if present, are already known. Other techniques for the determination of very accurate molecular weights include analytical ultracentrifugation and light scattering. However, these methods require large amounts of highly purified proteins and costly, sophisticated equipment. As an alternative, SDS gel electrophoresis is an easy and inexpensive method commonly used to obtain reliable estimates of protein molecular weights.

A protein can have a net negative or net positive charge, depending on its amino acid composition and specified pH environment. At certain values of pH, the molecule can be overall electrically neutral, i.e. negative and positive charges are balanced. In this case, the protein is isoelectric where the protein will not move in the electric field during electrophoresis. In the presence of an electrical field, a protein with a net charge will migrate towards the electrode of opposite charge.

Proteins exhibit many different three-dimensional shapes and folding patterns which are determined by their amino acid sequence and intracellular processing. The precise three-dimensional configuration of a protein is critical to its function. The general shapes these molecules can have are spherical, elliptical or rod-like. Proteins can consist of a single polypeptide or several polypeptides specifically associated with each other. These polypeptides can be identical, similar or completely different from one another. The number and nature of polypeptides in a protein has large effects on its mass, size and shape. Proteins that are in their normal, biologically active forms are called native.

The physical-chemical properties of proteins affect the way they migrate during gel electrophoresis. Gels used in electrophoresis (e.g. agarose, polyacrylamide) consist of microscopic pores of a defined size range that act as a molecular sieve. Only molecules with a net charge will migrate through the gel when they are in an electric field. Small molecules pass through gel pores more easily than large ones. Molecules having more of the same charge (positive or negative) than others with the same shape and size will migrate faster. Molecules of the same mass and charge can have different shapes. In this case, those with a more compact shape, like a sphere, will migrate through the gel more rapidly than those with an elongated shape, like a rod. In summary, the amount and charge (net positive or negative), the size and shape of a native protein all affect its electrophoretic migration rates. Electrophoresis of native proteins is useful in the clinical and immunological analysis of complex biological samples, such as serum.



Experiment

# **Background Information**

# DENATURATION OF PROTEIN STRUCTURES

Sodium dodecylsulfate (SDS) is a detergent which consists of a hydrocarbon chain bonded to a highly negatively charged sulfate group (Figure 1). SDS binds strongly to most proteins and causes them to unfold to a random, rod-like chain. No covalent bonds are broken in this process. Therefore, the amino acid composition and sequence remains the same. Since its specific three-dimensional shape is abolished, the protein no longer possesses biological activity. Proteins that have lost their specific folding patterns and biological activity but have intact polypeptide chains, are called denatured. Proteins which contain several polypeptide chains that are associated only by non-covalent forces will be dissociated by SDS into separate, dena-

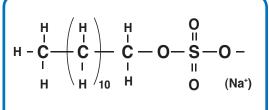
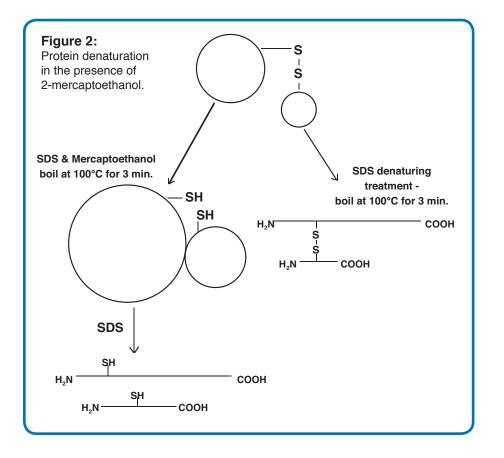


Figure 1: The chemical structure of sodium dodecylsulfate (SDS).

tured polypeptide chains. Proteins can contain covalent disulfide crosslinks bonds. These bonds are formed between two cysteine amino acid residues that can be located within the same or different polypeptide chains. High concentrations of reducing agents, such as 2-mercaptoethanol, can break disulfide bonds. This allows SDS to completely dissociate and denature the protein. Figure 2 illustrates a protein containing two different sized polypeptide chains that are cross-linked by a disulfide bond. The chains are also associated by non-covalent forces. The circles represent the native structure.







# **Background Information**

In most cases, SDS binds to proteins in a constant ratio of 1.4 grams of SDS per gram of protein. On average, the number of bound SDS molecules is half the number of amino acid residues in the polypeptide. The total negative charge of SDS is much more than the intrinsic charges of the protein. SDS efficiently masks these intrinsic charges, consequently, SDS denatured proteins are net negative since the binding of the detergent is proportional to the mass of the protein. The shapes of SDS denatured proteins are the same (rod-like). The larger the molecular weight of the protein, the longer the rod-like chain. During denaturing SDS gel electrophoresis, proteins migrate through the gel towards the positive electrode at a rate that is inversely proportional to their molecular weights. In other words, the smaller the "rod-like" denatured protein, the faster it migrates. The molecular weight of the unknown is obtained by the comparison of its position after electrophoresis to the positions of standard SDS denatured proteins electrophoresed in parallel. The molecular weights of the standard proteins have been previously determined with great accuracy by some of the methods discussed previously. After the proteins have been visualized by staining the gel with dyes, their migration distance can be measured. The log10 of the molecular weights of the standard proteins are plotted versus their migration distance, or RF. Taking the logarithm allows the data to be plotted as a straight line. The molecular weight of the unknown is then easily calculated from the standard curve.

For convenience, the proteins in this experiment have been partially "pre-stained". Protein samples have been covalently conjugated to a blue dye via certain amino acid side chains. This process causes the denaturation of the proteins. However, SDS is still required to produce the electrophoretic mobilities necessary for molecular weight determinations. The mobilities of the conjugates are different from those of the unconjugated forms in the presence of SDS. For this reason, the pre-stained standards cannot be reliably used to determine the molecular weight of unconjugated proteins run in parallel (visualized by staining the gel). The extent of labeling with dye can be variable, producing lot specific variances in apparent pre-stained molecular weights.

The protein standards in this experiment are a mixture having the following denatured molecular weights: 94,000; 67,000; 43,000; 30,000; 20,100. Note that these values are for the dye-conjugated proteins. The molecular weight values have been rounded off for convenience in graphical analysis.



# **Experiment Overview and General Instructions**

#### **EXPERIMENT OBJECTIVE:**

The objective of this experiment module is to determine the molecular weight of a protein using SDS horizontal gel electrophoresis. Students will develop a basic understanding of protein structure and denaturation.

## LABORATORY SAFETY

- 1. Gloves and goggles should be worn routinely as good laboratory practice.
- 2. Exercise extreme caution when working with equipment that is used in conjunction with the heating and/or melting of reagents.
- 3. DO NOT MOUTH PIPET REAGENTS USE PIPET PUMPS.
- 4. Exercise caution when using any electrical equipment in the laboratory.
- 5. Always wash hands thoroughly with soap and water after handling reagents or biological materials in the laboratory.

#### LABORATORY NOTEBOOK RECORDINGS:

Address and record the following in your laboratory notebook or on a separate worksheet.

#### Before starting the Experiment:

- Write a hypothesis that reflects the experiment.
- Predict experimental outcomes.

#### **During the Experiment:**

• Record (draw) your observations, or photograph the results.

#### Following the Experiment:

- Formulate an explanation from the results.
- Determine what could be changed in the experiment if the experiment were repeated.

Duplication of this document, in conjunction with use of accompanying reagents, is permitted for classroom/laboratory use only. This document, or any part, may not be reproduced or distributed for any other purpose without the written consent of EDVOTEK, Inc.

• Write a hypothesis that would reflect this change.

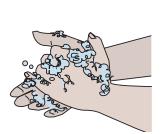
Copyright © 1989, 1992, 1994, 1997, 1998, 2000, 2004, 2007, 2009, EDVOTEK, Inc., all rights reserved.



Experiment Procedure



EVT 090703AM







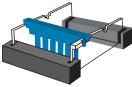
# **Preparations for Protein Agarose Gel Electrophoresis**

#### PREPARING THE GEL BED

- 1. Make sure the half gel bed is clean and dry.
- 2. Close off the open ends of the bed by using rubber dams or tape.
  - A. Using Rubber dams:
  - Place a rubber dam on each end of the bed. Make sure the rubber dam sits firmly in contact with the sides and bottom of the bed.
  - B. Taping with labeling or masking tape:



- With 3/4 inch wide tape, extend the tape over the sides and bottom edge of the bed.
- Fold extended edges of the tape back onto the sides and bottom. Press contact points firmly to form a good seal.
- 3. Place the well forming template (comb) across the bed in the first set of notches. The comb should sit firmly and evenly across the bed of the half gel.



#### CASTING THE AGAROSE GEL

The protein agarose gel concentration required for this experiment is 3.2% weight by volume. Refer to **Table A** for guidelines.

1. Use a 400ml flask to prepare the agarose solution.

A large beaker is required to prevent the solution from boiling over during heating.

Using a beaker, measure and add the distilled water as indicated in Table
 A. Do not add 10x buffer yet at this step. The salts in the buffer tend to cause the agarose solution to boil over.

## Table A: Guidelines for Preparing Individual 3.2% Protein Agarose Gels

EDVOTEK Model #	Approximate Gel Bed Dimensions (W x L)	Amt of Protein Agarose	Volume of Distilled Water	Melt agarose in before adding 1	Volume of Buffer (10x)	Total Volume
M6 or M36	7 x 7 cm	0.96 gm	27 ml	0 x	3.0 ml	30 ml
M12	7 x 14 cm	1.92 gm	54 ml	tilled water bulffer.	6.0 ml	60 ml



This high percent agarose

will boil over if not

monitored. Keep a close

eye on the agarose as it is

being melted.

Experiment

# <sub>ment</sub> 110

# **Preparations for Protein Agarose Gel Electrophoresis**

- 2. Add the required amount of Protein Agarose powder. Swirl to disperse clumps.
- 3. With a marking pen, indicate the level of the solution volume on the outside of the flask.
- 4. Heat the mixture to dissolve the agarose powder. The final solution should appear transparent.
  - A. Microwave method:
  - Cover flask with plastic wrap to minimize evaporation.
  - Heat the mixture on High for 1 minute.
  - Gently swirl the mixture and heat on high until all the agarose is dissolved. Use short bursts to avoid boiling over.
  - The mixture should become viscous and transparent with little or no particles of undissolved agarose.
  - B. Hot plate or burner method:
  - Cover the flask with foil to prevent excess evaporation.
  - Place the flask in a large beaker filled with water to avoid burning the slurry by direct exposure to heat.
  - Heat the mixture to boiling over a burner with occasional gentle swirling. Boil until all the agarose is dissolved.

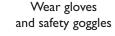
#### DO NOT ALLOW AGAROSE TO BOIL OVER.

#### DO NOT LEAVE THE MIXTURE UNATTENDED DURING HEATING.

This agarose causes rapid and vigorous boiling. Initially, the mixture will form a large head of fine bubbles that will rise quickly. When this happens, use hot gloves and remove the beaker from the heat. Let the bubbles subside, swirl briefly, and heat the beaker again. Do this several times until the mixture boils evenly.

5. Cool the protein agarose solution to 70°C with occasional gentle swirling to promote even dissipation of heat. If detectable evaporation has occurred, add distilled water to bring the solution up to the original volume as marked on the flask in step 3.





# Useful Hint!

Experiment Procedure

At high altitudes, it is necessary to use a microwave oven to reaching boiling temperatures.

After adding SDS, avoid vigorous swirling to minimize bubbling.



DO NOT POUR BOILING HOT AGAROSE INTO THE BED. Hot agarose solution may irreversibly warp the bed.

70°C



## **Preparations for Protein Agarose Gel Electrophoresis**

#### After the gel is cooled to 70°C:

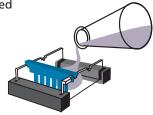
- 6. Add the buffer concentrate (10x) as specified in Table A to the cooled agarose solution.
- 7. Gently swirl to mix. Try to avoid creating excess bubbles.

If using rubber dams, go to step 9. If using tape, continue with step 8.

- 8. Seal the interface of the bed and tape to prevent the agarose solution from leaking.
  - Use a transfer pipet to deposit a small amount of cooled agarose.
  - Wait approximately 2-3 minutes for the agarose to solidify.
- 9. Pour the cooled agarose solution into the bed. Make sure the bed is on a level surface.
- 10. Allow the gel to completely solidify. It will become firm and cool to the touch.



The same 10x <sup>1</sup> <sup>1</sup> concentrated buffer is used for preparing the agarose gel buffer and the chamber buffer. SDS is added to the gel after it is melted.





Experiment

<sub>ment</sub> 11(

# **Preparations for Protein Agarose Gel Electrophoresis**

#### PREPARING THE SOLIDIFIED GEL FOR ELECTROPHORESIS

- 1. Carefully remove the rubber dams or tape.
- 2. Remove the comb by slowly pulling it straight up. Do this carefully and evenly to prevent tearing the sample wells. The comb may be more difficult to remove than lower percentage agarose gels generally prepared for DNA electrophoresis.
- 3. Inspect the wells by viewing the gel from the edge nearest the wells. If some of the wells are ripped through their bottoms or sides, do not use them when loading samples.
- 4. Place the gel in the electrophoresis chamber, properly oriented, centered and level on the platform.
- 5. Fill the chamber of the electrophoresis apparatus with the required volume of diluted buffer as outlined in **Table B**.
- 6. The gel is now ready for electrophoresis.

Table B: Electrophoresis (Chamber) Buffer									
EDVOTEK Model #	Concentrated Buffer (10x)	Distilled Water =	Total Volume						
M6 +	30 ml	270 ml	300 ml						
M12	40 ml	360 ml	400 ml						
M36	100 ml	900 ml	1000 ml						



## NOTE:

This 3.2% Protein Agarose gel is very sturdy and hard.



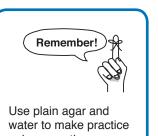
Duplication of this document, in conjunction with use of accompanying reagents, is permitted for classroom/laboratory use only. This document, or any part, may not be reproduced or distributed for any other purpose without the written consent of EDVOTEK, Inc. Copyright © 1989,1992,1994,1997,1998, 2000, 2004, 2007, 2009, EDVOTEK, Inc., all rights reserved. EVT 090703AM Experiment Procedure

# **U** Experiment

# Practice Gel Loading

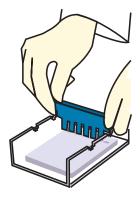
#### **Quick Reference:**

If you are using an automatic micropipet, deliver 20 microliters to the sample well. If using transfer pipets, load the sample well until it is full.



water to make practice gels - save the agarose for the experiment. EDVOTEK® experiments which involve electrophoresis contain practice gel loading solution. If your students are unfamiliar with loading samples in agarose gels, it is suggested that they practice sample delivery techniques before performing the electrophoresis part of an experiment. Using the EDVOTEK system, sample delivery can be performed by using either an automatic micropipet, or disposable microtipped transfer pipets.

Casting of a separate practice gel is highly recommended. One suggested activity for practice gel loading is outlined below:



- 1. Cast a gel with the maximum number of wells and place it under the buffer in an electrophoresis apparatus chamber. (Use plain agar and water to make the practice gels- save the agarose for the experiment.)
- 2. Let students practice delivering the practice gel loading solution to the sample wells.
- 3. If students need more practice, remove the practice gel loading solution by squirting buffer into the wells with a transfer pipet.
- 4. When students are finished practicing, replace the practice gel with a fresh gel and continue with the experiment.

The practice gel loading solution will become diluted in the buffer and will not interfere with the experiment.



Duplication of this document, in conjunction with use of accompanying reagents, is permitted for classroom/laboratory use only. This document, or any part, may not be reproduced or distributed for any other purpose without the written consent of EDVOTEK, Inc. Copyright © 1989,1992,1994,1997,1998, 2000, 2004, 2007, 2009, EDVOTEK, Inc., all rights reserved. EVT 090703AM

**Experiment Procedure** 

#### Experiment

# **Conducting Agarose Gel Electrophoresis**

This experiment requires a 3.2% Protein Agarose gel. Make sure the electrophoresis apparatus leads reach the power source before loading samples. Do not move the apparatus after the samples are loaded because movement of the unit will cause samples to spill out of the wells.

#### LOADING PRE-STAINED PROTEIN SAMPLES

- 1. Bring a beaker of water, covered with aluminum foil, to a boil. Remove from heat.
- Make sure resuspended tubes are tightly capped and thawed. The bottom of the tubes should be pushed through the foil and immersed in the boiling water for 3-4 minutes. The tubes should be kept suspended by the foil.
- 3. While the samples are still warm, load 20µl of each sample in tubes A D into the wells in consecutive order.

#### **RUNNING THE GEL**

1. After the samples are loaded, carefully snap the cover down onto the electrode terminals.

Make sure that the negative and positive indicators on the cover and apparatus chamber are properly oriented.

- 2. Insert the plug of the black wire into the black input of the power source (negative input). Insert the plug of the red wire into the red input of the power source (positive input).
- Set the power source at the required voltage and run the electrophoresis for the length of time as determined by your instructor. See Table C for time and voltage guidelines.

When current is flowing properly, you should see bubbles forming on the electrodes.

- 4. After the electrophoresis is completed, turn off the power, unplug the power source, disconnect the leads and remove the cover.
- 5. Transfer the gel to a white light box to enhance visualization of the pre-stained protein bands.
- 6. If the measurements cannot be done shortly after the electrophoresis is completed, you may wish to stain and/or preserve the gel by performing the steps which follow.

#### **Reminders:**

During electrophoresis, the protein samples migrate through the agarose gel towards the positive electrode. Before loading the samples, make sure the gel is properly oriented in the apparatus chamber.

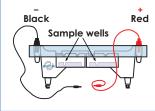
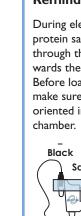




Table	• C :	ne and oltage
Volts	Recomme	ended Time
VOILS	Minimum	Optimal
125	30 min	45 min
70	40 min	1.5 hrs
50	60 min	2.0 hrs



Duplication of this document, in conjunction with use of accompanying reagents, is permitted for classroom/laboratory use only. This document, or any part, may not be reproduced or distributed for any other purpose without the written consent of EDVOTEK, Inc. Copyright © 1989,1992,1994,1997,1998, 2000, 2004, 2007, 2009, EDVOTEK, Inc., all rights reserved. EVT 090703AM



Experiment Procedure

# **Staining the Gel (Optional)**

Although the proteins in this experiment are pre-stained and can easily be visualized directly during and after electrophoresis, staining with EDVOTEK® Protein InstaStain® may enhance the visibility of the bands.

#### STAINING WITH PROTEIN INSTASTAIN® IN ONE EASY STEP

Protein agarose gels can be stained with Protein InstaStain® cards in one easy step.

- 1. After electrophoresis, submerge the gel in a small tray with 100 ml of fixative solution. (Use enough solution to cover the gel.)
- 2. Gently float a sheet of Protein InstaStain® with the stain side (blue) in the liquid. Cover the gel to prevent evaporation.
- 3. Gently agitate on a rocking platform for 1-3 hours or overnight.
- After staining, Protein bands will appear as dark blue bands against a light background and will be ready for photography.
   NO DESTAINING IS REQUIRED.
- 5. If the gel is too dark, destain in several changes of fresh destain solution until the appearance and contrast of the protein bands against the background improves.

#### Storing the Gel

For long term storage, the gel should be stored in a mixture of 50 ml of distilled water containing 6 ml of acetic acid and 3 ml of glycerol overnight.

#### Fixative/Destaining Solution for each gel (100ml)

- 50 ml Methanol
- 10 ml Glacial Acetic Acid
- 40 ml Distilled Water



# Size Determination of DNA Restriction Fragments

The first step for determining the molecular weight of the "unknown" protein polypeptides is to determine the migration distances of the fragments generated after electrophoresis. The molecular weight of the "unknowns" will be extrapolated by graphing their migration distances relative to Sample A, Prestained Lyophilized Protein Gel Markers (Standard markers), for which the molecular weight of each fragment is known.

- 1. Measure and record the distance traveled in the agarose gel by each Standard marker. In each case, measure from the lower edge of the sample well to the lower end of each band. Record the distance traveled in centimeters (to the nearest millimeter).
- 2. Label the semi-log graph paper:
  - A. Label the non-logarithmic horizontal x-axis "Migration Distance" in centimeters at equal intervals.
  - B. Label the logarithmic vertical y-axis "Molecular Weight".

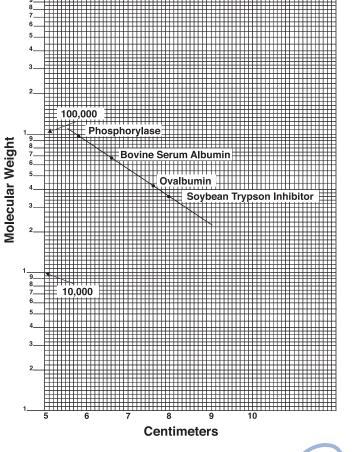
Choose your scales so that the data points are well spread out. Assume the first cycle on the y-axis represents 1,000 to 10,000, the second cycle represents 10,000 to 100,000, and the third cycle 100,000 to 1,000,000.

- 3. For each Standard marker, plot the measured migration distance on the x-axis versus its molecular weight on the y-axis.
- 4. Draw the best average straight line through all the points.

The line should have approximately equal numbers of points scattered on each side of the line. Some points may be right on the line (see example at left).

- 5. Measure the migration distance of each of the "unknown" proteins.
- 6. Using the graph of the Standard markers, determine the molecular weight of each "unknown".
- 7. Find the migration distance of the unknown protein on the x-axis. Then draw a vertical line from that point until the standard graph line is intersected.
- 8. From the point of intersection, draw a second line horizontally to the y-axis and determine the apparent molecular weight of the protein polypeptide.

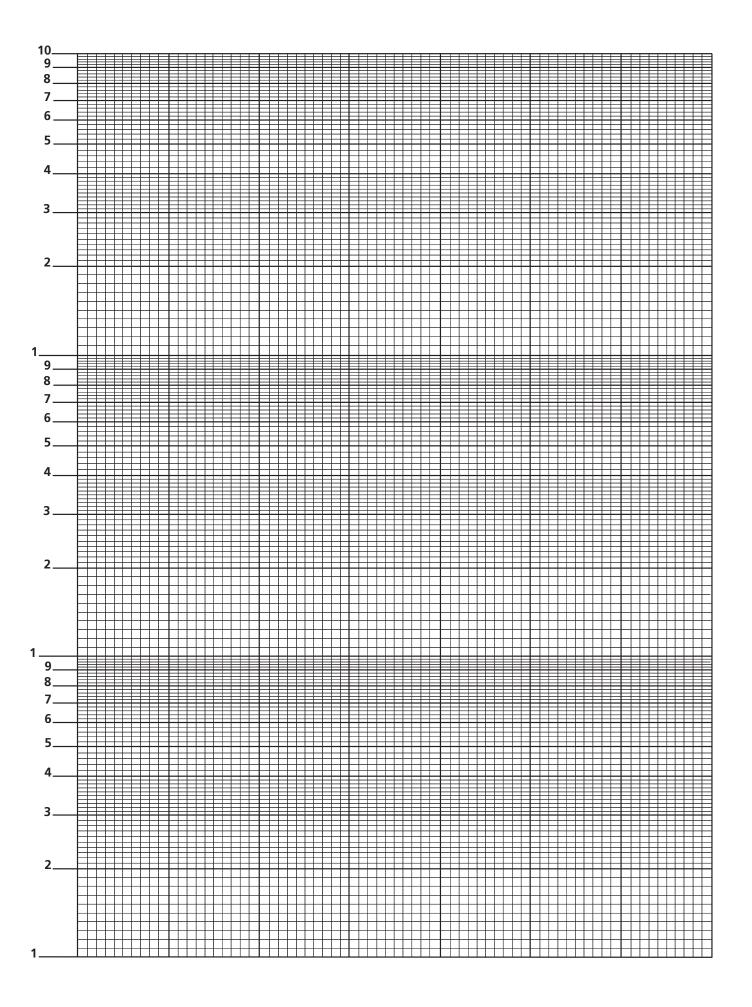
The assignment of molecular weight for proteins separated by agarose gel electrophoresis has a  $\pm 10\%$  margin of error.





Duplication of this document, in conjunction with use of accompanying reagents, is permitted for classroom/laboratory use only. This document, or any part, may not be reproduced or distributed for any other purpose without the written consent of EDVOTEK, Inc. Copyright © 1989,1992,1994,1997,1998, 2000, 2004, 2007, 2009, EDVOTEK, Inc., all rights reserved. EVT 090703AM

Experiment



**Material Safety Data Sheets** Full-size (8.5 x 11") pdf copy of MSDS is available at www. edvotek.com or by request.

										Experimen	
					Section V - Reactivity	Data					
	Mav be used	aterial Safety Data S to comply with OSHA's Hazar	cheet d Communication	n	Stability	Unstable		Conditions to Avoid			
EDVOTEK.		CFR 1910.1200 Standard mu specific requirements.			Incompatibility Strong exidizing agents						
	Strong oxidizing agents Hazardous Decomposition or Byproducts										
IDENTITY (As Used on Label and List) Sodium Dodecyl S	Herendeus		Carbor	n monoxide, carbon of Conditions to Avoid	lioxide, sulf	ur oxides					
Section I		Hazardous Polymerization	May Occur Will Not Occur	X	None						
Manufacturer's Name	51-5990	Section VI - Health H			1						
EDVOTEK, Inc.		Route(s) of Entry:	Inhalation Yes	n?	Skin? Yes		Ingestion?				
Address (Number, Street, City, State,	Zip Code)	Data Duar and	(301) 2	51-5990	Health Hazards (Acute and C	Chronic)	cause ir	ritation to eyes, ears	and nose	Ies	
14676 Rothgeb Drive		Date Prepared 08/04/0	9		Carcinogenicity:	NTP?	cause n	IARC Monogra		OSHA Regulation?	
Rockville, MD 20850		Signature of Preparer (option	nal)					No data		Convertegulation	
Costion II Hozardova Ingrad		Signs and Symptoms of Exposure Respiratory tract: burning sensisation, coughing, wheezing, laryngitis, shortness of breath, & headache									
Section II - Hazardous Ingred Hazardous Components [Specific Chemical Identity; Common Name(s)]		Medical Conditions General	ly Aggravated by	Exposu	ire No data						
Chemical Identity; Common Name(s)] Lauryl Sulfate, Sodium	OSHA No o			% (Optional) o data	Emergency First Aid Proced	lures		110 data			
C12H26O4S	100		o data 14	ouata	Flush skin/eyes with larg	e amounts of wat	ter. If ir	nhaled, remove to fre	sh air.		
CAS# 151-21-3					Section VII - Precauti	ons for Safe	Hand	lling and Use			
Section III - Physical/Chemica	al Charact	eristics			Steps to be Taken in case M	aterial is Release	ed for S	pilled			
Boiling Point	No data	Specific Gravity (H <sub>2</sub> 0 = 1	)	No data	Evacuate area. Wear material and burn in						
Vapor Pressure (mm Hg.)	No data	Melting Point		No data	Waste Disposal Method						
	Na data	Evaporation Rate			Observe all federal, sta	ite, and local laws	s.				
Vapor Density (AIR = 1)	No data	(Butyl Acetate = 1)		No data	Precautions to be Taken in H	-	-				
Solubility in Water Solubl	e				Wear protective ge	ar. Avoid contact	t/inhalat	tion.			
Appearance and Odor Clear I	iquid, no odo	r			Other Precautions						
Section IV - Physical/Chemic	ol Charao	aviation			Strong sensitiz						
Flash Point (Method Used)	al Charact	Flammable Limits	LEL	UEL	Section VIII - Control						
No dat	a		No data	No data	Respiratory Protection (Spe	спу туре)	NIOSH	/MSHA approved re	<u>^</u>		
Extinguishing Media Water spray, car	bon dioxide, o	try chemical powder, alcoho	ol or polymer fo	am	Ventilation	Local Exhaust		No		Chem. fume hood	
Special Fire Fighting Procedures					Protective Gloves	Mechanical (Ger	neral)	No Eye Protec	tion	None	
Wear S	SCBA and pro	tective clothing to prevent of	contact with ski	n & eyes.		rubber		Lyeriolec	Splash	proof googles	
Unusual Fire and Explosion Hazards					Other Protective Clothing or Equipment     Rubber boots						
May emit toxic fume	es.				Work/Hygienic Practices	A	Avoid pr	rolonged or repeated	exsposure.		
					Section V - Reactivity		1		1		
	M	aterial Safety Data S	Sheet		Stability Unstable Conditions to Avoid						
EDVOTEK.		to comply with OSHA's Hazar CFR 1910.1200 Standard mu			Stable X None						
		specific requirements.			Incompatibility None						
IDENTITY (As Used on Label and List)		Note: Blank spaces ar applicable, or no inform	e not permitted. If	any item is not	Hazardous Decomposition or Byproducts None hazardous						
Protein Agarose		applicable, or no inform be marked to indicate t	hation is available, hat.	the space must	Hazardous May Occur Conditions to Avoid						
Section I		Emergency Telephone Nu	mbor		Polymerization	Will Not Occur	Х	None			
Manufacturer's Name		Emergency relephone Nu	(301) 2	51-5990	Section VI - Health H						
EDVOTEK, Inc. Address (Number, Street, City, State,	Zip Code)	Telephone Number for inform	nation	51-5990	Route(s) of Entry:	Inhalatio Yes	n?	Skin? Yes		Ingestion? Yes	
		Date Prepared	(301) 2	51-5990	Health Hazards (Acute and Chronic) Inhalation: No data available Ingestion: acute large amts cause of flatulence & rarelyfecal impaction Skin: no data						
14676 Rothgeb Drive Rockville, MD 20850		08/04/0			Carcinogenicity:	NTP?		IARC Monogra		OSHA Regulation?	
		Signature of Preparer (option	nal)		None, on FDA li Signs and Symptoms of Exp		substanc	ces & generally reco	gnized as sat	fe	
Section II - Hazardous Ingred	ients/Iden	tify Information			No data available						
Hazardous Components [Specific Chemical Identity; Common Name(s)]	OSHA		Other Limits ecommended	% (Optional)	Medical Conditions Generally Aggravated by Exposure No data available except as listed above						
This product contains no hazardo				// (Optional)	Emergency First Aid Proce						
Communication Standard.					Treat symptomatically and	supportively					
Section III - Physical/Chemica	ol Charact	oriation			Section VII - Precaut						
					Steps to be Taken in case M						
Boiling Point	65°C	Specific Gravity (H <sub>2</sub> 0 = 1	)	No data	· · · ·	nd place in suital	ble cont	ainers for reclamation	on or disposa	al	
Vapor Pressure (mm Hg.)	No data	Melting Point		No data	Waste Disposal Method Normal solid waste dispos	al					
Vapor Density (AIR = 1)	No data	Evaporation Rate (Butyl Acetate = 1)		No data	Precautions to be Taken in I	Handling and Sto	ring				
Solubility in Water Souli	uble-hot, inse	oluble-cold			None						
Appearance and Odor White	e powder, no	odor			Other Precautions None						
Section IV - Physical/Chemic	al Charact				Section VIII - Control	Measures					
Flash Point (Method Used) Not de	termined	Flammable Limits	LEL No data	UEL No data	Respiratory Protection (Spe	a sife ( Trus s)	m. cartr	idge respirator with	full facenieo	e, organic vapor cart .	
		carbon dioxide, halon or			Ventilation	Local Exhaust		2 in 1997	Special	p	
Special Eiro Eightige Decedures						Mechanical (Ge	neral)	Gen. dilution vent.	Other		
Special Fire Fighting Procedures Negligible fire hazar	d when expo	sed to heat or flame			Protective Gloves	Yes		Eye Prote	ction Splas	h proof goggles	
Linusual Fire and Evolution Linusual	-				Other Protective Clothing or	Equipment	Imnervi	ious clothing to prev			
Unusual Fire and Explosion Hazards None					Work/Hygienic Practices None						



**Material Safety Data Sheets** Full-size (8.5 x 11") pdf copy of MSDS is available at www. edvotek.com or by request.

Experiment

Hatarial Cafata Data Chaot												
Material Safety Data Sheet May be used to comply with OSHA's Hazard Communication					Section V - Reactivity Data							
		1910.1200. Standard mu specific requirements.			Stability	Unstable Stability		Conditions to A	void			
							Х	None				
IDENTITY (As Used on Label and List)		Note: Bla	nk spaces are not per	mitted. If any item is not	Incompatiblity (Materials Hazardous Decompositi	on or Puproducto		lizing agents				
Tris-Glycine-SDS Buffer		applicable, be marked	or no information is to indicate that.	available, the space must	Hazardous	May Occur	arbon mo	noxide, carbo	n dioxide, sul	fur oxides.		
Section I					Polymenzation	Will Not Occur	x	None				
Manufacturer's Name EDVOTEK		Emergency Tel 301-251-59	lephone Numbe 90	r	Section VI - Health Hazard Data							
Address (Number, Street, City, State, and ZIP Coon 14676 Rothgeb Drive	ie)	Telephone Num 301-251-599	nber for informa	tion	Route(s) of Entry: Inhalation? Skin? Ingestion? Yes Yes Yes							
		Date Prepared	1		Health Hazards (Acute and Chronic)							
Rockville, MD 20850		Cignoture of Dro	08/04/09	\ \	Irritating to eyes, mucous membranes and upper respiratory tract. Chronic exposure may cause lung damage or pulmonary sensitization resulting in hyperactive airway dysfunction.							
		Signature of Pre	eparer (optional	)	Carcinogenicity:	NTP?	IARC M	onographs?	OSH	A Regulation?		
Section II - Hazardous Ingredients/Ide	ntity Informa	ation			Not known	No data	No	data	N	No data		
Hazardous Components Other Limits (Specific Chemical Identity; Common Name(s)) OSHA PEL ACGIH TLV Recommended % Optional					Signs and Symptoms of	Exposure						
Lyl Sulfate, Sodium No data No data No data No data					Respiratory tract: burn	ng sensation, cough		zing, laryngiti	is, shortness o	f breath, headache, nausea		
					Medical Conditions Ger No data	erally Aggravated by	Exposure					
					Emergency and First Aid							
					Flush skin/eyes w/	large amounts of wa	ter. Inha	ed: remove to	o fresh air.			
Section III - Physical/Chemical Chara	cteristics		0		Ingestion: Give la	•		Do not induc	e vomiting.			
Boiling Point	No data	Specific Gravity (H20 =	= 1)	No data	Section VII - Precautio Steps to Be Taken in ca	-		4				
Vapor Pressure (mm Hg.)	No data	Melting Point		No data	Steps to be Taken in ca	e material is nelease	Evacuate	area. Wear S	SCBA, rubber	boots and rubber gloves.		
Vapor Density (AIR =1)	No data	Evaporation Rate (Butyl Acetate =1)		No data		ve material and bur	n in chem	ical incinerate	or equipped w	/ afterburner & scrubber.		
Solubility in Water Soluble					Waste Disposal Method	Oserve all federa	ıl, state, a	nd local laws.				
Appearance and Odor												
Clear liquid, no odor Section IV - Fire and Explosion Haza	rd Doto				Precautions to be Taken	in Handling and Stor	ing Wear	protective gea	ar. Avoid cont	tact/inhalation.		
	iu Dala	N.D = No data Flammable Limits	LEL N.	D UEL N.D								
Extinguishing Media			LEE N.	D OLL N.D	Other Precautions	Strong sensitizer						
Water spray, C	arbon dioxide	e, dry chemical powder	, alcohol or po	olymer foam	Section VIII - Control Measures							
Special Fire Fighting Procedures Wear SC	BA and prote	ctive clothing to preven	nt contact w/ s	kin and eyes.	Respiratory Protection (Specify Type) NIOSH/MSHA approved respirator							
					Ventilation	Local Exhaust	No			ecial Chem. fume hood		
Unusual Fire and Explosion Hazards	May emit tox	ic fumes.			Protective Gloves Rub	Mechanical (Gene	ral) No		Oth Eye Protectio			
					Other Protective Clothin		ubber boo	te	_,	<sup>11</sup> Splash proof goggles		
					Work/Hygenic Practices Avoid prolonged or repeated exposure.							
						1 0		*				
	Mot	orial Safaty Data	Shoot		Section V - Read			0	An Anneld			
M	ay be used to	erial Safety Data comply with OSHA's Haz	ard Communica	ation	Section V - Read	Unstable	v	Conditions				
EDVOTEK. Mate	ay be used to	comply with OSHA's Haz R 1910.1200 Standard r	ard Communica nust be consult	ation ed for	Stability		X	Conditions				
EDVOTEK. Sta	ay be used to	comply with OSHA's Haz	ard Communica nust be consult	ation ed for	Stability	Unstable Stable		_	ne			
IDENTITY (As Used on Label and List)	ay be used to	comply with OSHA's Haz R 1910.1200 Standard r specific requirements	are not permitted	ed for	Stability	Unstable Stable	Stro	No ng oxidizing a	ne agents	ide, Sulfur oxides		
IDENTITY (As Used on Label and List) Protein InstaStain	ay be used to	comply with OSHA's Haz R 1910.1200 Standard r specific requirements	are not permitted	ed for	Stability	Unstable Stable	Stro	No ng oxidizing a	ne agents , Carbon diox	ide, Sulfur oxides		
IDENTITY (As Used on Label and List) Protein InstaStain	ay be used to indard. 29 CF	comply with OSHA's Haz R 1910.1200 Standard r specific requirements Note: Blank spaces applicable, or no info be marked to indicat	zard Communic: must be consult , are not permitted ormation is availa te that.	ed for	Stability Incompatibility Hazardous Decomposit Hazardous Polymerization	Unstable Stable ion or Byproducts May Occur Will Not Occ	Stro Carb	No ng oxidizing a oon monoxide Conditions	ne agents , Carbon diox	ide, Sulfur oxides		
IDENTITY (As Used on Label and List) Protein InstaStain Section I Manufacturer's Name	ay be used to indard. 29 CF	comply with OSHA's Haz R 1910.1200 Standard r specific requirements	zard Communic: must be consult are not permittee primation is availa te that.	ed for	Stability Incompatibility Hazardous Decomposit Hazardous Polymerization Section VI - Hea	Unstable Stable ion or Byproducts May Occur Will Not Occ Ith Hazard Dat	Stro Carb	No ng oxidizing a oon monoxide Conditions	ne agents , Carbon diox s to Avoid	ide, Sulfur oxides		
IDENTITY (As Used on Label and List) Protein InstaStain Section I Manufacturer's Name EDVOTEK, Inc.	ay be used to Indard. 29 CF	comply with OSHA's Haz R 1910.1200 Standard r specific requirements Note: Blank spaces applicable, or no info be marked to indicat	rard Communic: nust be consult are not permitteo ormation is availa te that.	d for . If any item is not ble, the space must ) 251-5990	Stability Incompatibility Hazardous Decomposit Hazardous Polymerization	Unstable Stable ion or Byproducts May Occur Will Not Occ Ulth Hazard Dat Inha	Stro Carb cur X ation?	No ng oxidizing a oon monoxide Conditions N	ne agents , Carbon diox s to Avoid ione Skin?	ide, Sulfur oxides Ingestion? Yes		
IDENTITY (As Used on Label and List) Protein InstaStain Section I Manufacture's Name EDVOTEK, Inc. Address (Number, Street, City, State, Zip	ay be used to Indard. 29 CF E Code)	comply with OSHA's Haz R 1910.1200 Standard r specific requirements Nota: Blank spaces applicable, or to info be marked to indicat mergency Telephone N elephone Number for info	rard Communic: nust be consult are not permitteo ormation is availa te that.	ed for 1. If any item is not ble, the space must	Stability Incompatibility Hazardous Decomposit Hazardous Polymerization Section VI - Hea Route(s) of Entry: Health Hazards (Acu	Unstable Stable May Occur Will Not Occ Ilth Hazard Dai Inha E and Chronic) Ir	Stro Carb cur X ation? s ritating to	No ng oxidizing a kon monoxide Conditions N Ye eyes, skin, m	ne agents , Carbon diox s to Avoid ione Skin? s ucous membr	Ingestion?		
IDENTITY (As Used on Label and List) Protein InstaStain Section I Manufacturer's Name EDVOTEK, Inc. Address (Number, Street, City, State, Zip 14676 Rothgeb Drive	ay be used to Indard. 29 CF E Code)	comply with OSHA's Haz R 1910.1200 Standard r specific requirements Note: Blank spaces applicable, or no info be marked to indicat	ard Communic: must be consult are not permitted method is availate that. Number (301 ormation (301	d for . If any item is not ble, the space must ) 251-5990	Stability Incompatibility Hazardous Decomposi Hazardous Polymerization <b>Section VI - Hea</b> Route(s) of Entry: Health Hazards (Acu Chronic exposure m	Unstable Stable ion or Byproducts Will Not Occ Uth Hazard Dat Inhai Ye e and Chronic) Ir ny cause lung dama;	Stro Carb our X ation? s ritating to ge or puln	No ng oxidizing a oon monoxide Conditions N Conditions N Ye eyes, skin, m nonary sensitiz	ne agents , Carbon diox s to Avoid ione Skin? Succus membr zation	Ingestion? Yes anes and upper respirator		
IDENTITY (As Used on Label and List) Protein InstaStain Section I Manufacture's Name EDVOTEK, Inc. Address (Number, Street, City, State, Zip	ay be used to indard. 29 CF Code)	comply with OSHA's Haz R 1910.1200 Standard r specific requirements applicable, or no into be marked to indicat imergency Telephone N elephone Number for info	ard Communic: must be consult are not permitter ormation is availate that. Number (301 ormation (301	d for . If any item is not ble, the space must ) 251-5990	Stability Incompatibility Hazardous Decomposit Hazardous Polymerization Section VI - Hea Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity:	Unstable Stable Stable May Occur Will Not Occ Will Not Occ Ith Hazard Dai Inha Ye e and Chronic) Ir ty cause lung damag NT No da	Stro Cart our X ation? s ritating to ge or puln P?	No ng oxidizing a oon monoxide Conditions N Conditions N Ye eyes, skin, m nonary sensitiz	ne agents , Carbon diox s to Avoid ione Skin? s ucous membr zation Monographs?	Ingestion? Yes anes and upper respirator		
IDENTITY (As Used on Label and List) Protein InstaStain Section I Manufacturer's Name EDVOTEK, Inc. Address (Number, Street, City, State, Zip 14676 Rothgeb Drive Rockville, MD 20850	A be used to indard. 29 CF	vith OSHA's Haz R 1910.1200 Standard r specific requirements specific requirements Note: Blank spaces applicable, or no info be marked to indicat imergency Telephone N elephone Number for info vate Prepared 08/04/09 ignature of Preparer (opt	ard Communic: must be consult are not permitter ormation is availate that. Number (301 ormation (301	d for . If any item is not ble, the space must ) 251-5990	Stability Incompatibility Hazardous Decomposit Hazardous Polymerization <b>Section VI - Hea</b> Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms	Unstable Stable Stable May Occur Will Not Occ Ith Hazard Dai Inhai Ye e and Chronic) Ir ny cause lung dama; Not Not of Exposure	Stro Carb sur X ation? s s cor puln p? ta	No ng oxidizing a on monoxide Conditions N Ye eyes, skin, m nonary sensitiz IARC I No da	ne agents , Carbon diox s to Avoid one Skin? s ucous membr zation Monographs? tta	Ingestion? Yes anes and upper respirator OSHA Regulatio No data		
IDENTITY (As Used on Label and List) Protein InstaStain Section I Manufacturer's Name EDVOTEK, Inc. Address (Number, Street, City, State, Zip 14676 Rothgeb Drive Rockville, MD 20850 Section II - Hazardous Ingredier	A be used to indard. 29 CF	vith OSHA's Haz R 1910.1200 Standard r specific requirements specific requirements Note: Blank spaces applicable, or no info be marked to indicat imergency Telephone N elephone Number for info vate Prepared 08/04/09 ignature of Preparer (opt	ard Communic: must be consult are not permittee ormation is availate te that. Number (301 ormation (301	d for . If any item is not ble, the space must ) 251-5990	Stability Incompatibility Hazardous Decomposit Hazardous Polymerization Section VI - Hea Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms Respiratory tract: 1 Medical Conditions C	Unstable Stable Stable May Occur Will Not Occ Ith Hazard Dat Inha Ye e and Chronic) IT ay cause lung damag NT No da of Exposure urning sensation. C	Stro Cart Sur X ation? s ritating to ge or puln P? ta Coughing,	No ng oxidizing a oon monoxide Conditions N Conditions N Ye eyes, skin, m ionary sensiti IARC I No da wheezing, lar	ne agents , Carbon diox s to Avoid one Skin? s ucous membr zation Monographs? tta	Ingestion? Yes anes and upper respirator		
IDENTITY (As Used on Label and List) Protein InstaStain Section I Manufacturer's Name EDVOTEK, Inc. Address (Number, Street, City, State, Zip 14676 Rothgeb Drive Rockville, MD 20850	A be used to indard. 29 CF Code)	comply with OSHA's Haz R 1910.1200 Standard r specific requirements specific requirements be marked to indicat imergency Telephone N elephone Number for info bate Prepared 08/04/09 ignature of Preparer (opt y Information	ard Communic: must be consult are not permitter ormation is availate that. Number (301 ormation (301	ed for 1. If any item is not ble, the space must ) 251-5990 ) 251-5990	Stability Incompatibility Hazardous Decomposit Hazardous Polymerization <b>Section VI - Hea</b> Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms Respiratory tract: I Medical Conditions C No data	Unstable Stable Stable May Occur Will Not Occ <b>alth Hazard Dai</b> Inhai Ye e and Chronic). Ir ay cause lung damag Not di of Exposure urning sensation. C tenerally Aggravate	Stro Cart Sur X ation? s ritating to ge or puln P? ta Coughing,	No ng oxidizing a oon monoxide Conditions N Conditions N Ye eyes, skin, m ionary sensiti IARC I No da wheezing, lar	ne agents , Carbon diox s to Avoid one Skin? s ucous membr zation Monographs? tta	Ingestion? Yes anes and upper respirator OSHA Regulatio No data		
IDENTITY (As Used on Label and List) Protein InstaStain Section I Manufacturer's Name EDVOTEK, Inc. Address (Number, Street, City, State, Zip 14676 Rothgeb Drive Rockville, MD 20850 Section II - Hazardous Ingredier Hazardous Components [Specific Chemical Identity: Common Name(s)] Methanol (Methyl Alcohol) 200ppm 2	Code)	Comply with OSHA's Haz R 1910.1200 Standard r specific requirements specific requirements Nota: Blank spaces applicable, or no info be marked to indicat imergency Telephone N elephone Number for info vate Prepared 08/04/09 ignature of Preparer (opt y Information EL ACGIH TLV	are not permittee must be consult are not permittee ormation is availa te that. Number (301 ormation (301 tional)	ed for 1. If any item is not ble, the space must ) 251-5990 ) 251-5990	Stability Incompatibility Hazardous Decomposit Hazardous Polymerization <b>Section VI - Hea</b> Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms Respiratory tract: I Medical Conditions C No data Emergency First Aid Flush skin/eyes w	Unstable Stable Stable May Occur Will Not Occ Ith Hazard Dal Inha Correct Correct e and Chronic Correct ty cause lung damay No di of Exposure urning sensation. Correct ienerally Aggravate Procedures large amounts of w.	Stro Cart ation? s ritating to ge or puln P? tta Coughing, d by Expo ater. If in	No ng oxidizing a oon monoxide Condition: N Condition: N Yee eyes, skin, m onary sensiti IARC No da wheezing, lar sure	ne igents , Carbon diox s to Avoid one Skin? s ucous membr zation Wonographs? tta	Ingestion? Yes anes and upper respirator OSHA Regulatio No data		
IDENTITY (As Used on Label and List) Protein InstaStain Section I Manufacturer's Name EDVOTEK, Inc. Address (Number, Street, City, State, Zip 14676 Rothgeb Drive Rockville, MD 20850 Section II - Hazardous Ingredier Hazardous Components [Specific Chemical Identity; Common Name(s)]	Code)	Comply with OSHA's Haz R 1910.1200 Standard r specific requirements specific requirements Nota: Blank spaces applicable, or no info be marked to indicat imergency Telephone N elephone Number for info vate Prepared 08/04/09 ignature of Preparer (opt y Information EL ACGIH TLV	are not permittee must be consult are not permittee ormation is availa te that. Number (301 ormation (301 tional)	ed for 1. If any item is not ble, the space must ) 251-5990 ) 251-5990	Stability Incompatibility Hazardous Decomposit Hazardous Polymerization <b>Section VI - Hea</b> Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms Respiratory tract: I Medical Conditions C No data Emergency First Aid Flush skin/eyes w of water or milk. E	Unstable Stable Stable May Occur Will Not Occ Ith Hazard Dal Inha Creand Chronicy is and Chron	Stro Cart sur X ation? s ritating to ge or puln P? ta coughing, d by Expo ater. If in ng.	No ng oxidizing a oon monoxide Condition: N Condition: N ve eyes, skin, m nonary sensitii IARC I No da wheezing, lar suure	ne igents , Carbon diox s to Avoid one Skin? s ucous membr zation Monographs? ta : : : : : : : : : : : : :	Ingestion? Yes anes and upper respirator OSHA Regulatio No data ness of breath, headache		
IDENTITY (As Used on Label and List) Protein InstaStain Section I Manufacturer's Name EDVOTEK, Inc. Address (Number, Street, City, State, Zip 14676 Rothgeb Drive Rockville, MD 20850 Section II - Hazardous Ingredier Hazardous Components [Specific Chemical Identity: Common Name(s)] Methanol (Methyl Alcohol) 200ppm 2	Code) T Code) Code) T C Code) T C S A Code) C C Code) C Code) C Code) C Code) C Code) C Code) C Code) C C C C C C C C C C C C C	comply with OSHA's Haz R 1910.1200 Standard r specific requirements specific requirements Nota: Blank spaces applicable, or no info be marked to indicat imergency Telephone N elephone Number for info bate Prepared 08/04/09 ignature of Preparer (opt y Information EL ACGIH TLV idata 90%-100%	are not permittee must be consult are not permittee ormation is availa te that. Number (301 ormation (301 tional)	ed for 1. If any item is not ble, the space must ) 251-5990 ) 251-5990	Stability Incompatibility Hazardous Decomposit Hazardous Polymerization Section VI - Hee Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms Respiratory tract: I Medical Conditions C No data Emergency First Aid Flush skin/eyes w/ of water or milk. E Section VII - Pre	Unstable Stable Stable May Occur Will Not Occ Oth Hazard Dal Inha Ye e and Chronic) Ir hy cause lung dama Ye of Exposure urning sensation. C ienerally Aggravate Procedures large amounts of w o not induce vomiti cautions for S	Stro Carb Sur X ation? s ritating to ge or puln P? ta Coughing, d by Expc ater. If in ng. afe Har	No ng oxidizing a on monoxide Condition: N Condition: N Vé eyes, skin, m IARC I No da wheezing, lar issure haled, remove	ne igents , Carbon diox s to Avoid one Skin? s ucous membr zation Monographs? ta : : : : : : : : : : : : :	Ingestion? Yes anes and upper respirator OSHA Regulatio No data ness of breath, headache		
IDENTITY (As Used on Label and List) Protein InstaStain Section I Manufacturer's Name EDVOTEK, Inc. Address (Number, Street, City, State, Zip 14676 Rothgeb Drive Rockville, MD 20850 Section II - Hazardous Ingredier Hazardous Components [Specific Chemical Identity, Common Name(s)] Methanol (Methyl Alcohol) 200ppm 2 CH3OH	Character	Comply with OSHA's Has R 1910.1200 Standard r specific requirements specific requirements Nota: Blank spaces applicable, or to info be marked to indicat intergency Telephone N elephone Number for info tate Prepared 08/04/09 ignature of Preparer (opt y Information EL ACGIH TLV idata 90%-100%	ard Communic: must be consult are not permittee ormation is availate te that. Number (301 ormation (301 ional) Other Limits Recommende	d for . If any item is not ble, the space must ) 251-5990 ) 251-5990 d % (Optional)	Stability Incompatibility Hazardous Decomposit Polymerization Section VI - Hea Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms Respiratory tract: I Medical Conditions C No data Emergency First Aid Flush skin/eyes w/ of water or milk. E Steps to be Taken in	Unstable Stable May Occur Will Not Occ Ith Hazard Dat Inha Page and Chronic) Ir No de of Exposure urning sensation. C ienerally Aggravate Procedures large amounts of w. o not induce vomiti iccautions for S case Material is Rel	Stro Cart ation? s ritating to ge or pulm P? tta coughing, d by Expo ater. If in ng. <b>afe Har</b> eased for	No ang oxidizing a on monoxide Condition: N Condition: N Ye eyes, skin, monary sensiti IARC No da wheezing, lar sure haled, remove dling and Spilled	ne igents , Carbon diox s to Avoid one Skin? Skin? Skin? Skin? s uecous membr zation Monographs? tta c to fresh air.	Ingestion? Yes anes and upper respirator OSHA Regulatio No data ness of breath, headache		
EDVOTEK. Sta IDENTITY (As Used on Label and List) Protein InstaStain Section I Manufacturer's Name EDVOTEK, Inc. Address (Number, Street, City, State, Zip 14676 Rothgeb Drive Rockville, MD 20850 Section II - Hazardous Ingredier Hazardous Components [Specific Chemical Identity: Common Name(s)] Methanol (Methyl Alcohol) 200ppm 2 CH3OH Section III - Physical/Chemical ( Boling Point	Character	comply with OSHA's Haz R 1910.1200 Standard r specific requirements specific requirements Nota: Blank spaces applicable, or no info be marked to indicat imergency Telephone N elephone Number for info bate Prepared 08/04/09 ignature of Preparer (opt y Information EL ACGIH TLV idata 90%-100%	ard Communic: must be consult are not permittee ormation is availate te that. Number (301 ormation (301 ional) Other Limits Recommende	ed for 1. If any item is not ble, the space must ) 251-5990 ) 251-5990	Stability Incompatibility Hazardous Decomposit Hazardous Polymerization Section VI - Hea Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms Respiratory tract: 1 Medical Conditions C No data Emergency First Aid Flush skin/eyes w/ of water or milk. E Section VII - Pre Steps to be Taken in Evacuate area. We chemical incinerate	Unstable Stable Stable May Occur Will Not Occ Ith Hazard Dai Ye e and Chronic) IT No di of Expoure urning sensation. C ienerally Aggravate Procedures large amounts of w, o not induce vomiti cautions for S case Material is Rel rr SCBA, rubber bo equipped w/ an after	Stro Cart ation? s ritating to ge or puln P? tta coughing, d by Expo ater. If in ng. afe Har eased for ots and ru	No ng oxidizing at on monoxide Condition: No Condition: No ve eyes, skin, m nonary sensitii IARC I No da wheezing, lar sure haled, remove barled, remove Spilled Spilled	ne igents , Carbon diox s to Avoid one Skin? Skin? Skin? Skin? s uecous membr zation Monographs? tta c to fresh air.	Ingestion? Yes anes and upper respiratory OSHA Regulatio No data ness of breath, headache Ingestion: give large amo		
IDENTITY (As Used on Label and List) Protein InstaStain Section I Manufacturer's Name EDVOTEK, Inc. Address (Number, Street, City, State, Zip 14676 Rothgeb Drive Rockville, MD 20850 Section II - Hazardous Ingredier Hazardous Components [Specific Chemical Identity: Common Name(s)] Methanol (Methyl Alcohol) 200ppm 2 CH3OH Section III - Physical/Chemical ( Boiling Point Vapor Pressure (mm Hq.)	Code) T Code) T Code) T C Code) T C Code) T C Code) C Code) C Code) C Code) C Code) C C Code) C C C C C C C C C C C C C	Comply with OSHA's Has R 1910.1200 Standard r specific requirements specific requirements Nota: Blank spaces applicable, or to info be marked to indicat intergency Telephone N elephone Number for info tate Prepared 08/04/09 ignature of Preparer (opt y Information EL ACGIH TLV idata 90%-100%	ard Communic: must be consult are not permittee ormation is availate te that. Number (301 ormation (301 ional) Other Limits Recommende	d for . If any item is not ble, the space must ) 251-5990 ) 251-5990 d % (Optional)	Stability Incompatibility Hazardous Decomposit Polymerization Section VI - Hea Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms Respiratory tract: I Medical Conditions C No data Emergency First Aid Flush skin/eyes w/ of water or milk. E Steps to be Taken in Steps to be Taken in Steps to be Taken in Steps to be Taken in Steps to be Taken in	Unstable Stable Stable May Occur Will Not Occ Ith Hazard Dat Inha e and Chronic) Ir No da of Exposure urming sensation. C enerally Aggravate Procedures large amounts of w. o not induce vomiti scase Material is Rel ar SCBA, rubber bo requipped w/ an aftr od	Stro Cart a ation? s ritating to g or puln P? ta coughing, d by Expc ater. If in ng. <b>afe Har</b> eased for tots and ru erburner a	No ng oxidizing at on monoxide Condition: No Condition: No ve eyes, skin, m nonary sensitii IARC I No da wheezing, lar sure haled, remove barled, remove Spilled Spilled	ne igents , Carbon diox s to Avoid one Skin? Skin? Skin? Skin? s uecous membr zation Monographs? tta c to fresh air.	Ingestion? Yes anes and upper respiratory OSHA Regulatio No data ness of breath, headache Ingestion: give large amo		
IDENTITY (As Used on Label and List) Protein InstaStain Section I Manufacturer's Name EDVOTEK, Inc. Address (Number, Street, City, State, Zip 14676 Rothgeb Drive Rockville, MD 20850 Section II - Hazardous Ingredier Hazardous Components [Specific Chemical Identity: Common Name(s)] Methanol (Methyl Alcohol) 200ppm 2 CH3OH Section III - Physical/Chemical ( Boiling Point Vapor Pressure (mm Hg.)	Character 65°C 6000 65°C 6000 6	comply with OSHA's Has R 1910.1200 Standard r specific requirements specific requirements index Burk spaces ipplicable, or to info be marked to indicat imergency Telephone N elephone Number for info hate Prepared 08/04/09 ignature of Preparer (opt y Information EL ACGIH TLV data 90%-100% istics Specific Gravity (H <sub>2</sub> 0 = Melting Point Evaporation Rate	ard Communic: must be consult are not permittee ormation is availate te that. Number (301 ormation (301 ional) Other Limits Recommende	d for . If any item is not bie, the space must ) 251-5990 ) 251-5990 d % (Optional) 	Stability Incompatibility Hazardous Decomposit Hazardous Polymerization Section VI - Hea Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms Respiratory tract: 1 Medical Conditions C No data Emergency First Aid Flush skin/eyes w/ of water or milk. E Section VII - Pre Steps to be Taken in Evacuate area. We chemical incinerate	Unstable Stable Stable May Occur Will Not Occ Ith Hazard Dat Inha e and Chronic) Ir No da of Exposure urming sensation. C enerally Aggravate Procedures large amounts of w. o not induce vomiti scase Material is Rel ar SCBA, rubber bo requipped w/ an aftr od	Stro Cart a ation? s ritating to g or puln P? ta coughing, d by Expc ater. If in ng. <b>afe Har</b> eased for tots and ru erburner a	No ng oxidizing a on monoxide Condition: N Condition: N Ve eyes, skin, m nonary sensitii IARC I No da wheezing, lar sure haled, remove barled, remove Spilled Spilled	ne igents , Carbon diox s to Avoid one Skin? Skin? Skin? Skin? s uecous membr zation Monographs? tta c to fresh air.	Ingestion? Yes anes and upper respiratory OSHA Regulatio No data ness of breath, headache Ingestion: give large amo		
IDENTITY (As Used on Label and List) Protein InstaStain Section I Manufacturer's Name EDVOTEK, Inc. Address (Number, Street, City, State, Zip 14676 Rothgeb Drive Rockville, MD 20850 Section II - Hazardous Ingredier Hazardous Components [Specific Chemical Identity: Common Name(s)] Methanol (Methyl Alcohol) 200ppm 2 CH3OH Section III - Physical/Chemical C Boiling Point Vapor Pressure (mm Hg.) Vapor Density (AIR = 1)	Code) T Code) T Code) T C T C C C C C C C C C C C C C	comply with OSHA's Has R 1910.1200 Standard r specific requirements specific requirements applicable, or no info be marked to indicat imergency Telephone N elephone Number for info bate Prepared 08/04/09 ignature of Preparer (opt y Information EL ACGIH TLV data 90%-100% Specific Gravity (H <sub>2</sub> 0 = Melting Point	ard Communic: must be consult are not permittee ormation is availate te that. Number (301 ormation (301 ional) Other Limits Recommende	ed for . If any item is not ble, the space must ) 251-5990 ) 251-5990 d % (Optional) d .79	Stability Incompatibility Hazardous Decomposil Hazardous Polymerization Section VI - Hea Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms Respiratory tract: I Medical Conditions C No data Emergency First Aid Flush skin/yes w/ of water or milk. E Steps to be Taken in Staps to be Taken in Exacute area. We chemical incinerate Waste Disposal Mett Observe all federal Precautions to be Tal	Unstable Stable Stable May Occur Will Not Occ Ith Hazard Dat Inha e and Chronic) Ir yo cause lung damag Ye e and Chronic) Ir yo cause lung damag Ye e and Chronic) Ir No da of Exposure urming sensation. C denerally Aggravate Procedures large amounts of w o not induce vomiti scase Material is Rel ar SCBA, rubber bo requipped w/ an aftr od state, and local law ten in Handling and	Stro Cart aur X ation? s coughing., d by Expcc d by Expcc d by Expcc ater. If in ng. afe Hau eased for tots and runrer a s. Storing	No ng oxidizing a on monoxide Condition: N Condition: N Ve eyes, skin, m nonary sensitii IARC I No da wheezing, lar sure haled, remove barled, remove Spilled Spilled	ne igents , Carbon diox s to Avoid one Skin? Skin? Skin? Skin? s uecous membr zation Monographs? tta c to fresh air.	Ingestion? Yes anes and upper respiratory OSHA Regulatio No data ness of breath, headache Ingestion: give large amo		
IDENTITY (As Used on Label and List) Protein InstaStain Section I Manufacturer's Name EDVOTEK, Inc. Address (Number, Street, City, State, Zip 14676 Rothgeb Drive Rockville, MD 20850 Section II - Hazardous Ingredier Hazardous Components [Specific Chemical Identity: Common Name(s)] Methanol (Methyl Alcohol) 200ppm 2 CH3OH Section III - Physical/Chemical ( Boiling Point Vapor Pressure (mm Hg.)	Code) T Code) T T Code) T T T T T T T T T T T T T	comply with OSHA's Has R 1910.1200 Standard r specific requirements specific requirements index Burk spaces ipplicable, or to info be marked to indicat imergency Telephone N elephone Number for info hate Prepared 08/04/09 ignature of Preparer (opt y Information EL ACGIH TLV data 90%-100% istics Specific Gravity (H <sub>2</sub> 0 = Melting Point Evaporation Rate	ard Communic: must be consult are not permittee ormation is availate te that. Number (301 ormation (301 ional) Other Limits Recommende	d for . If any item is not bie, the space must ) 251-5990 ) 251-5990 d % (Optional) 	Stability Incompatibility Hazardous Decomposit Hazardous Decomposit Polymerization Section VI - Hea Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms Respiratory tract: 1 Medical Conditions C No data Emergency First Aid Flush skin/eyes w/ of water or milk. E Section VII - Pre Steps to be Taken in Evacuate area. We chemical incinerat Waste Disposal Metf Observe all federal	Unstable Stable Stable May Occur Will Not Occ Ith Hazard Dat Inha e and Chronic) Ir yo cause lung damag Ye e and Chronic) Ir yo cause lung damag Ye e and Chronic) Ir No da of Exposure urming sensation. C denerally Aggravate Procedures large amounts of w o not induce vomiti scase Material is Rel ar SCBA, rubber bo requipped w/ an aftr od state, and local law ten in Handling and	Stro Cart aur X ation? s coughing., d by Expcc d by Expcc d by Expcc ater. If in ng. afe Hau eased for tots and runrer a s. Storing	No ng oxidizing a on monoxide Condition: N Condition: N Ve eyes, skin, m nonary sensitii IARC I No da wheezing, lar sure haled, remove barled, remove Spilled Spilled	ne igents , Carbon diox s to Avoid one Skin? Skin? Skin? Skin? s uecous membr zation Monographs? tta c to fresh air.	Ingestion? Yes anes and upper respiratory OSHA Regulatio No data ness of breath, headache Ingestion: give large amo		
EDVOTEK. Sta      IDENTITY (As Used on Label and List)     Protein InstaStain      Section I      Manufacturer's Name     EDVOTEK, Inc.      Address (Number, Street, City, State, Zip     14676 Rothgeb Drive     Rockville, MD 20850      Section II - Hazardous Ingredier Hazardous Components [Specific     Chemical Identity: Common Name(s)]      Methanol (Methyl Alcohol) 200pm 2      CH3OH      Section III - Physical/Chemical (     Boiling Point     Vapor Pressure (mm Hg.)      Vapor Density (AIR = 1)      Solubility in Water     Complete (1009	ay be used to indard. 29 CF           Code)         T           T         T           C <t< td=""><td>comply with OSHA's Has R 1910.1200 Standard r specific requirements specific requirements applicable, or no info be marked to indicat imergency Telephone N elephone Number for info tate Prepared 08/04/09 ignature of Preparer (opt y Information EL ACGIH TLV data 90%-100% Specific Gravity (H<sub>2</sub>0 = Melting Point Evaporation Rate (Butyl Acetate = 1)</td><td>ard Communic: must be consult are not permittee ormation is availate te that. Number (301 ormation (301 ional) Other Limits Recommende</td><td>d for . If any item is not bie, the space must ) 251-5990 ) 251-5990 d % (Optional) </td><td>Stability Incompatibility Hazardous Decomposi Hazardous Decomposi Polymerization Section VI - Hea Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms Respiratory tract: 1 Medical Conditions C Mo data Emergency First Aid Flush skin/eyes w/ of water or milk. E Steps to be Taken in Evacute area. We chemical incinerate Waste Disposal Mett Observe all federal Precautions to be Tal Wear protective ge Other Precautions</td><td>Unstable Stable Stable May Occur Will Not Occ Ith Hazard Dat Inha e and Chronic) Ir yo cause lung damag Ye e and Chronic) Ir yo cause lung damag Ye e and Chronic) Ir No da of Exposure urming sensation. C denerally Aggravate Procedures large amounts of w o not induce vomiti scase Material is Rel ar SCBA, rubber bo requipped w/ an aftr od state, and local law ten in Handling and</td><td>Stro Cart aur X ation? s coughing., d by Expcc d by Expcc d by Expcc ater. If in ng. afe Hau eased for tots and runr a s. Storing</td><td>No ng oxidizing a on monoxide Condition: N Condition: N Ve eyes, skin, m nonary sensitii IARC I No da wheezing, lar sure haled, remove barled, remove Spilled Spilled</td><td>ne igents , Carbon diox s to Avoid one Skin? Skin? Skin? Skin? s uecous membr zation Monographs? tta c to fresh air.</td><td>Ingestion? Yes anes and upper respiratory OSHA Regulatio No data ness of breath, headache Ingestion: give large amo</td></t<>	comply with OSHA's Has R 1910.1200 Standard r specific requirements specific requirements applicable, or no info be marked to indicat imergency Telephone N elephone Number for info tate Prepared 08/04/09 ignature of Preparer (opt y Information EL ACGIH TLV data 90%-100% Specific Gravity (H <sub>2</sub> 0 = Melting Point Evaporation Rate (Butyl Acetate = 1)	ard Communic: must be consult are not permittee ormation is availate te that. Number (301 ormation (301 ional) Other Limits Recommende	d for . If any item is not bie, the space must ) 251-5990 ) 251-5990 d % (Optional) 	Stability Incompatibility Hazardous Decomposi Hazardous Decomposi Polymerization Section VI - Hea Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms Respiratory tract: 1 Medical Conditions C Mo data Emergency First Aid Flush skin/eyes w/ of water or milk. E Steps to be Taken in Evacute area. We chemical incinerate Waste Disposal Mett Observe all federal Precautions to be Tal Wear protective ge Other Precautions	Unstable Stable Stable May Occur Will Not Occ Ith Hazard Dat Inha e and Chronic) Ir yo cause lung damag Ye e and Chronic) Ir yo cause lung damag Ye e and Chronic) Ir No da of Exposure urming sensation. C denerally Aggravate Procedures large amounts of w o not induce vomiti scase Material is Rel ar SCBA, rubber bo requipped w/ an aftr od state, and local law ten in Handling and	Stro Cart aur X ation? s coughing., d by Expcc d by Expcc d by Expcc ater. If in ng. afe Hau eased for tots and runr a s. Storing	No ng oxidizing a on monoxide Condition: N Condition: N Ve eyes, skin, m nonary sensitii IARC I No da wheezing, lar sure haled, remove barled, remove Spilled Spilled	ne igents , Carbon diox s to Avoid one Skin? Skin? Skin? Skin? s uecous membr zation Monographs? tta c to fresh air.	Ingestion? Yes anes and upper respiratory OSHA Regulatio No data ness of breath, headache Ingestion: give large amo		
EDVOTEK. Sta      IDENTITY (As Used on Label and List)     Protein InstaStain      Section I      Manufacturer's Name     EDVOTEK, Inc.      Address (Number, Street, City, State, Zip     14676 Rothgeb Drive     Rockville, MD 20850      Section II - Hazardous Ingredier Hazardous Components [Specific     Chemical Identity, Common Name(s)]      Methanol (Methyl Alcohol) 200ppm 2     CH3OH      Section III - Physical/Chemical (     Boiling Point     Vapor Pressure (mm Hg.)      Vapor Density (AIR = 1)      Solubility in Water     Complete (1009      Appearance and Odor	Code) T Code) Code) C C C C C C C C C C C C C	comply with OSHA's Has R 1910.1200 Standard r specific requirements specific requirements applicable, or no inte be marked to indicat mergency Telephone N elephone Number for info bate Prepared 08/04/09 ignature of Preparer (opt y Information EL ACGIH TLV 1 data 90%-100% istics Specific Gravity (H <sub>2</sub> 0 = Melting Point Evaporation Rate (Butyl Acetate = 1) o odor	ard Communic: must be consult are not permittee ormation is availate te that. Number (301 ormation (301 ional) Other Limits Recommende	d for . If any item is not bie, the space must ) 251-5990 ) 251-5990 d % (Optional) 	Stability Incompatibility Hazardous Decomposit Hazardous Decomposit Polymerization Section VI - Hea Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms Respiratory tract: It Medical Conditions C No data Emergency First Aid Flush skin/eyes w/ of water or milk. E Steps to be Taken in Evacuate area. We chemical incinerate Waste Disposal Metf Observe all federal Precautions to be Tal Wear protective ge	Unstable Stable Stable May Occur Will Not Occ Ith Hazard Dat Inha e and Chronic) Ir yo cause lung damag Ye e and Chronic) Ir yo cause lung damag Ye e and Chronic) Ir No da of Exposure urming sensation. C denerally Aggravate Procedures large amounts of w o not induce vomiti scase Material is Rel ar SCBA, rubber bo requipped w/ an aftr od state, and local law ten in Handling and	Stro Cart aur X ation? s coughing., d by Expcc d by Expcc d by Expcc ater. If in ng. afe Hau eased for tots and runr a s. Storing	No ng oxidizing a on monoxide Condition: N Condition: N Ve eyes, skin, m nonary sensitii IARC I No da wheezing, lar sure haled, remove barled, remove Spilled Spilled	ne igents , Carbon diox s to Avoid one Skin? Skin? Skin? Skin? s uecous membr zation Monographs? tta c to fresh air.	Ingestion? Yes anes and upper respiratory OSHA Regulatio No data ness of breath, headache Ingestion: give large amo		
EDVOTEK. State     IDENTITY (As Used on Label and List)     Protein InstaStain     Section I     Manufacturer's Name     EDVOTEK, Inc.     Address (Number, Street, City, State, Zip     14676 Rothgeb Drive     Rockville, MD 20850     Section II - Hazardous Ingredier     Hazardous Components [Specific     Chemical Identity: Common Name(s)]     Methanol (Methyl Alcohol) 200ppm 2     CH3OH     Section III - Physical/Chemical     Golding Point     Vapor Pressure (mm Hg.)     Yapor Lensity (AIR = 1)     Solubility in Water     Complete (1009     Appearance and Odor     chemical bound     Section IV - Physical/Chemical	ay be used to indard. 29 CF           Code)         T           T         T           C         T	comply with OSHA's Has R 1910.1200 Standard r specific requirements specific requirements applicable, or no info be marked to indicat imergency Telephone N elephone Number for info be marked to indicat mergency Telephone N elephone Number for info be marked to indicat mergency Telephone N elephone Number for info (Buther Prepared 08/04/09 ignature of Preparer (opt y Information EL ACGIH TLV data 90%-100% Specific Gravity (H <sub>2</sub> 0 = Melting Point Evaporation Rate (Butyl Acetate = 1) o odor istics	are communic: must be consult are not permittee ormation is availa te that. Number (301 ormation (301 dional) Other Limits Recommende	d for . If any item is not ble, the space must ) 251-5990 ) 251-5990 d % (Optional) d % (Optional) 	Stability Incompatibility Hazardous Decomposi Hazardous Decomposi Polymerization Section VI - Hea Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms Respiratory tract: 1 Medical Conditions C Modata Emergency First Aid Flush skin/eyes w/ of water or milk. E Steps to be Taken in Evacuate area. We chemical incinerat Waste Disposal Meth Observe all federal Precautions to be Tal Wear protective ge Other Precautions Strong sensitizer Section VIII - Cc	Unstable Stable Stable May Occur Will Not Occ Inth Hazard Dat Inha Proceed and Chronicy Ir ay cause lung damag Ye e and Chronicy Ir ny cause lung damag Ye a cause lung damag Ye of Exposure urning sensation. C ienerally Aggravate Procedures large amounts of w. o not induce vomiti cautions for S case Material is Rel ar SCBA, rubber bo requipped w/ an afte od state, and local law ten in Handling and r. Avoid contact/in	Stro Cart a a ation? s s cloughing, g or puln b g or puln cloughing, g ato ater. If in ng. afe Hau asea for a dro the stro s a dro s s s s s s s s s s s s s s s s s s s	No ng oxidizing a on monoxide Condition: N Condition: N Ve eyes, skin, m nonary sensitii IARC I No da wheezing, lar sure haled, remove barled, remove Spilled Spilled	ne igents , Carbon diox s to Avoid one Skin? Skin? Skin? Skin? s uecous membr zation Monographs? tta c to fresh air.	Ingestion? Yes anes and upper respiratory OSHA Regulatio No data ness of breath, headache Ingestion: give large amo		
EDVOTEK. Sta      IDENTITY (As Used on Label and List)     Protein InstaStain      Section I      Manufacturer's Name     EDVOTEK, Inc.      Address (Number, Street, City, State, Zip     14676 Rothgeb Drive     Rockville, MD 20850      Section II - Hazardous Ingredier Hazardous Components [Specific     Chemical Identity, Common Name(s)]      Methanol (Methyl Alcohol) 200ppm 2     CH3OH      Section III - Physical/Chemical (     Boiling Point     Vapor Pressure (mm Hg.)      Vapor Density (AIR = 1)      Solubility in Water     Complete (1009      Appearance and Odor	Code) T Code) T T Code) T T C T T T T T T T T T T T T T	comply with OSHA's Has R 1910.1200 Standard r specific requirements specific requirements applicable, or no inte be marked to indicat mergency Telephone N elephone Number for info bate Prepared 08/04/09 ignature of Preparer (opt y Information EL ACGIH TLV 1 data 90%-100% istics Specific Gravity (H <sub>2</sub> 0 = Melting Point Evaporation Rate (Butyl Acetate = 1) o odor	ard Communic: must be consult are not permittee ormation is availate te that. Number (301 ormation (301 ional) Other Limits Recommende	d for . If any item is not bie, the space must ) 251-5990 ) 251-5990 d % (Optional) 	Stability Incompatibility Hazardous Decomposi Hazardous Decomposi Polymerization Section VI - Hea Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptome Respiratory tract: 1 Medical Conditions C No data Emergency First Aid Flush skin/eyes w/ of water or milk. E Section VII - Pref Steps to be Taken in Evacuate area. We chemical incinerat Waste Disposal Metf Observe all federal Precautions to be Tal Wear protective ge Other Precautions Strong sensitizer	Unstable Stable Stable May Occur Will Not Occ Inth Hazard Dat Inha Proceed and Chronicy Ir ay cause lung damag Ye e and Chronicy Ir ny cause lung damag Ye a cause lung damag Ye of Exposure urning sensation. C ienerally Aggravate Procedures large amounts of w. o not induce vomiti cautions for S case Material is Rel ar SCBA, rubber bo requipped w/ an afte od state, and local law ten in Handling and r. Avoid contact/in	Stro Cart a a atton? s coughing. g e or puln P? ta a coughing. a ter. If in ng. afe Han s. Storing halation.	No and oxidizing at a contract of the second	ne igents , Carbon diox s to Avoid one Skin? Skin? Skin? Skin? s uecous membr zation Monographs? tta c to fresh air.	Ingestion? Yes anes and upper respirator: OSHA Regulatio No data ness of breath, headache Ingestion: give large amo		
EDVOTEK star     IDENTITY (As Used on Label and List)     Protein InstaStain     Section I     Manufacturer's Name     EDVOTEK, Inc.     Address (Number, Street, City, State, Zip     14676 Rothgeb Drive     Rockville, MD 20850     Section II - Hazardous Ingredier     Hazardous Components [Specific     Chemical Identity: Common Name(s)]     Methanol (Methyl Alcohol) 200ppm 2     CH3OH     Section III - Physical/Chemical     Boiling Point     Vapor Pressure (mm Hg.)     Yapor Density (AIR = 1)     Solubility in Water     Complete (1009     Appearance and Odor     chemical bound     Section IV - Physical/Chemical     Flash Point (Method Used)     (closed cup) 12 <sup>on</sup>	ay be used to indard. 29 CF           Code)         T           T         T           C         T           C         T           C         T           C         T           C         T           C         T           C         T           C         T           C         T           C         T           C         T           C         T	comply with OSHA's Has R 1910.1200 Standard r specific requirements specific requirements applicable, or no info be marked to indicat imergency Telephone N elephone Number for info vate Prepared 08/04/09 ignature of Preparer (opt y Information EL ACGIH TLV data 90%-100% istics Specific Gravity (H <sub>2</sub> 0 = Melting Point Evaporation Rate (Butyl Acetate = 1) o odor istics Flammable Limits	are not permittee must be consult are not permittee ormation is availa te that. Number (301 ormation (301 dional) Other Limits Recommende	d for . If any item is not ble, the space must ) 251-5990 ) 251-5990 d % (Optional) d % (Optional) d % (Action UEL 36%	Stability Incompatibility Hazardous Decomposi Hazardous Decomposi Hazardous Polymerization Section VI - Hea Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms Respiratory tract: 1 Medical Conditions C Modata Emergency First Aid Flush skin/eyes w/ of water or milk. E Steps to be Taken in Evacuate area. We chemical incinerat Waste Disposal Meth Observe all federal Precautions to be Tal Wear protective ge Other Precautions Strong sensitizer Section VIII - Cc	Unstable Stable Stable May Occur Will Not Occ Inth Hazard Dat Inha Proceed and Chronicy Ir ay cause lung damag Ye e and Chronicy Ir ny cause lung damag Ye a cause lung damag Ye of Exposure urning sensation. C ienerally Aggravate Procedures large amounts of w. o not induce vomiti cautions for S case Material is Rel ar SCBA, rubber bo requipped w/ an afte od state, and local law ten in Handling and r. Avoid contact/in	Stro Cart a atton? s coughing. g or puln P? ta ater. If in ng. afe Han s. Storing halation.	No and oxidizing at a contract of the second	ne igents , Carbon diox s to Avoid one Skin? s uccous membr zation Monographs? ta c to fresh air.	Ingestion? Yes anes and upper respirator: OSHA Regulatio No data ness of breath, headache Ingestion: give large amo psorptive material and bur		
EDVOTEK star     IDENTITY (As Used on Label and List)     Protein InstaStain     Section I     Manufacturer's Name     EDVOTEK, Inc.     Address (Number, Street, City, State, Zip     14676 Rothgeb Drive     Rockville, MD 20850     Section II - Hazardous Ingredier     Hazardous Components [Specific     Chemical Identity: Common Name(s)]     Methanol (Methyl Alcohol) 200ppm 2     CH3OH     Section III - Physical/Chemical (     Boiling Point     Vapor Pressure (mm Hg.)     Yapor Density (AIR = 1)     Solubility in Water     Complete (1009     Appearance and Odor     chemical bound     Section IV - Physical/Chemical     Flash Point (Method Used)	ay be used to indard. 29 CF           Code)         T           T         T           C         T           C         T           C         T           C         T           C         T           C         T           C         T           C         T           C         T           C         T           C         T           C         T	comply with OSHA's Has R 1910.1200 Standard r specific requirements specific requirements applicable, or no info be marked to indicat imergency Telephone N elephone Number for info be marked to indicat mergency Telephone N elephone Number for info be marked to indicat mergency Telephone N elephone Number for info (Buther Prepared 08/04/09 ignature of Preparer (opt y Information EL ACGIH TLV data 90%-100% Specific Gravity (H <sub>2</sub> 0 = Melting Point Evaporation Rate (Butyl Acetate = 1) o odor istics	are not permittee must be consult are not permittee ormation is availa te that. Number (301 ormation (301 dional) Other Limits Recommende	d for . If any item is not ble, the space must ) 251-5990 ) 251-5990 d % (Optional) d % (Optional) d % (Action UEL 36%	Stability Incompatibility Hazardous Decomposit Hazardous Decomposit Polymerization Section VI - Hea Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms Respiratory tract: It Medical Conditions C No data Emergency First Aid Flush skin/eyes w/ of water or milk. E Steps to be Taken in Evacuate area. We chemical incinerate Waste Disposal Metf Observe all federal Precautions to be Tal Wear protective ge Other Precautions Strong sensitizer Section VIII - Cc Respiratory Protectic	Unstable Stable Stable May Occur Will Not Occ Ith Hazard Dat Inha Ye e and Chronic) IT ay cause lung damag Ye urning sensation. C ienerally Aggravate Procedures large amounts of w o not induce vomiti cautions for S case Material is Rel ar sCBA, rubber bo o not induce vomiti cautions for S case Material is Rel ar sCBA, rubber bo scase Material is Rel ar sCBA, rubber bo scase Material is Rel at a sCBA, rubber bo scase Material is Rel ar scase ar s	Stro Cart a a attion? s coughing, g or puln b coughing, g at attion? f it a a to coughing, g a to a to coughing, g a to coughing, s a to coughing, f a a to coughing, f a a to coughing, f a to coughing t a to to to to to to to to to to to to to	No on monoxide on monoxide Conditions No on monoxide Conditions No on monoxide events, skin, monary sensititi IARC I No da wheezing, lar suure haled, remove haled, remove haled, remove spiller gloves, nd scrubber.	ne igents , Carbon diox s to Avoid one Skin? s ucous membr zation Monographs? ta c to fresh air. I Use Mop up w/ ab	Ingestion? Yes anes and upper respirator. OSHA Regulatio No data ness of breath, headache Ingestion: give large amo osorptive material and bur osorptive material and bur r		
EDVOTEK. State     IDENTITY (As Used on Label and List)     Protein InstaStain     Section I     Manufacturer's Name     EDVOTEK, Inc.     Address (Number, Street, City, State, Zip     14676 Rothgeb Drive     Rockville, MD 20850     Section II - Hazardous Ingredier     Hazardous Components [Specific     Chemical Identity, Common Name(s)]     Methanol (Methyl Alcohol) 200pm 2     CH3OH     Section III - Physical/Chemical G     Boiling Point     Vapor Density (AIR = 1)     Solubility in Water     Complete (1009     Appearance and Odor     chemical bound     Section IV - Physical/Chemical     Flash Point (Method Used)     (closed cup) 12%     Extinguishing Media     Use alcohol foan     Special Fire Fighting Procedures	Code) T Code) T Code) T C T C T C T C T C T C T C T C T C T C T C T C T C T C C C C C C C C C C C C C	comply with OSHA's Has R 1910.1200 Standard r specific requirements applicable, or no info be marked to indicat imergency Telephone N elephone Number for info bate Prepared 08/04/09 ignature of Preparer (opt value Prepared 08/04/04/09 ignature of Preparer (opt value Prepared 08/04/09 ignature of Preparer (opt value Prepared 08/04/09 ignature of Preparer (opt value Preparer (opt value Preparer (opt value Preparer (opt value Preparer (opt value Preparer (opt value Preparer (opt val	ard Communic: must be consult are not permitted ormation is availate te that. Number (301 ormation (301 ional) Other Limits Recommende	d for . If any item is not ble, the space must ) 251-5990 ) 251-5990 d % (Optional) d % (Optional) d % (Action UEL 36%	Stability Incompatibility Hazardous Decomposit Hazardous Decomposit Polymerization Section VI - Hea Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms Respiratory tract: It Medical Conditions C No data Emergency First Aid Flush skin/eyes w/ of water or milk. E Steps to be Taken in Evacuate area. We chemical incinerate Waste Disposal Metf Observe all federal Precautions to be Tal Wear protective ge Other Precautions Strong sensitizer Section VIII - Cc Respiratory Protectic	Unstable Stable Stable May Occur Will Not Occ Ith Hazard Dat Inha Very Course Inha Chronic) If ay cause lung damag of Exposure urning sensation. C ienerally Aggravate Procedures large amounts of w. o not induce vomiti cautions for S case Material is Rel ar SCBA, rubber bo case Material	Stro Cart a a attion? s coughing, g or puln b coughing, g at attion? f it a a to coughing, g a to a to coughing, g a to coughing, s a to coughing, f a a to coughing, f a a to coughing, f a to coughing t a to to to to to to to to to to to to to	No ang oxidizing a on monoxide on monoxide Condition: N Ve eyes, skin, m nonary sensiti ARC No da wheezing, lar sure condling and Spilled bber gloves, nd scrubber. //MSHA appro No No No	ne igents , Carbon diox s to Avoid one Skin? Suecous membr zation Monographs? tta to fresh air. I Use Mop up w/ ab	Ingestion? Yes anes and upper respirator: OSHA Regulatio No data ness of breath, headache Ingestion: give large amo sorptive material and bur		
EDVOTEK star IDENTITY (As Used on Label and List) Protein InstaStain Section I Manufacturer's Name EDVOTEK, Inc. Address (Number, Street, City, State, Zip 14676 Rothgeb Drive Rockville, MD 20850 Section II - Hazardous Ingredier Hazardous Components [Specific Chemical Identity: Common Name(s)] Methanol (Methyl Alcohol) 200ppm 2 CH3OH Section III - Physical/Chemical ( Boiling Point Vapor Pressure (mm Hg.) Vapor Density (AIR = 1) Solubility in Water Appearance and Odor chemical bound Section IV - Physical/Chemical Flash Point (Method Used) (closed cup) 12 <sup>-1</sup> Extinguishing Media Use alcohol foam	Code) T Code) T Code) T C T C S S C C C C C C C C C C C C C	comply with OSHA's Has         R 1910.1200 Standard r         specific requirements         applicable, or no info         be marked to indicat         imergency Telephone N         elephone Number for info         vate Prepared         08/04/09         ignature of Preparer (opt         y Information         EL       ACGIH TLV         data 90%-100%         istics         Specific Gravity (Hg0 =         Melting Point         Evaporation Rate         (Butyl Acetate = 1)         o odor         cal or carbon dioxide         ositive pressure mode	are not permittee must be consult (301 must be consult (301 mation is availa ie that. (301 mation (301 consult) Other Limits Recommende = 1)	d for . If any item is not ble, the space must ) 251-5990 ) 251-5990 d % (Optional) d % (Optional) d % (Action UEL 36% / be ineffective)	Stability Incompatibility Hazardous Decomposit Hazardous Decomposit Hazardous Polymerization Section VI - Hea Route(s) of Entry: Health Hazards (Acu Chronic exposure m Carcinogenicity: Signs and Symptoms Respiratory tract: I Medical Conditions C Medical Conditions C Medical Conditions C Steps to be Taken in Evacute area. We chemical incinerate Waste Disposal Mett Observe all federal Precautions to be Talk Wear protective ge Other Precautions Strong sensitizer Section VIII - CC Respiratory Protectic Ventilation	Unstable Stable Stable May Occur Will Not Occ Ith Hazard Dat Inha Ye e and Chronic) IT ay cause lung damag Ye of Exposure urning sensation. C ienerally Aggravate Procedures large amounts of w. o not induce vomiti cautions for S case Material is Rel ar SCBA, rubber bo caguipped w/ an aft od state, and local law ten in Handling and ir. Avoid contact/in mtrol Measure in (Specify Type) Local Exhau Mechanical Rubber	Stro Cart and Cart attano? s attano? s coughing, coughing, coughing, coughing, coughing, ata attano? s coughing, coughing, coughing, ata attano? s attano? s s Storing s NIOSH ist	No ang oxidizing a on monoxide on monoxide Condition: N Ve eyes, skin, m nonary sensiti ARC No da wheezing, lar sure dling and Spilled bber gloves, nd scrubber. //MSHA appro No No	ne igents , Carbon diox s to Avoid one Skin? s ucous membr zation Monographs? ta ta ta to fresh air. Use Mop up w/ ab oved respirator Sper Oth Oth	Ingestion? Yes anes and upper respirator. OSHA Regulatio No data ness of breath, headache Ingestion: give large amo sorptive material and bur psorptive material and bur r cial Chem fume hood ner None		

**Material Safety Data Sheets** Full-size (8.5 x 11") pdf copy of MSDS is available at www. edvotek.com or by request.

												Experi	ment	
	M	Material Safety Data Sheet			Section V - Reactivit Stability	Unstable	1	Condit	tions to Avoid					
EDVOTEK.	May be used	to com	comply with OSHA's Hazard Communication FR 1910.1200 Standard must be consulted for			orability	Stable	Х	-	None				
		s	specific requirements.			Incompatibility Strong oxidizing agents								
IDENTITY (As Used on Label and List)			Note: Blank spaces ar applicable, or no inform	e not permitted. If	any item is not	Hazardous Decomposition or	Byproducts C	arbon m	nonoxide	ə, carbon di	oxide, sul	fur oxides		
Protein Samples Section I	ed on Label and List) Protein Samples Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space mus be marked to indicate that.					Hazardous Polymerization	May Occur		Condi	itions to Avoid				
Manufacturer's Name		Emergency Telephone Number (301) 251-5990				Section VI - Health	Will Not Occur Hazard Data	r X		None				
EDVOTEK, Inc.	EDVOTEK, Inc.					Route(s) of Entry:	Inhalat	ion?		Skin?		Ingestion?		
Address (Number, Street, City, State, Zip Code) 14676 Rothgeb Drive Rockville, MD 20850			(301) 251-599			Health Hazards (Acute and Chronic) May cause irritation to eyes, ears and nose.								
			08/04/09			Carcinogenicity:	NTP	-		RC Monogra		OSHA Regulat	ion?	
	Signature of Preparer (optional)						Signs and Symptoms of Exposure							
Section II - Hazardous Ingredients/Identify Information						Respiratory tract: burning Medical Conditions Generation					ortness of l	breath, & headache	2	
Hazardous Components [Specific Other Limits Chemical Identity; Common Name(s)] OSHA PEL ACGIH TLV Recommended % (Optional)						Emergency First Aid Proce		-,		No data				
Lauryl Sulfate, Sodium C12H26O4S	No d	ata	No data No	data	No data	Flush skin/eyes with large	e amounts of wat							
CAS # 151-21-3						Ingestion: give large amo					g.			
Section III - Physical/Chemic						Steps to be Taken in case Evacuate area . Wear SCI and burn in chemical incine					with absorr	otive material		
Boiling Point	No data	Spe	ecific Gravity (H <sub>2</sub> 0 = 1	)	No data		erator equipped	with after	burner a	nd scrubber.				
Vapor Pressure (mm Hg.)	No data No data		Iting Point		No data	Waste Disposal Method Observe all federal, state	e, and local laws.							
Vapor Density (AIR = 1) Solubility in Water	no dala		utyl Acetate = 1)		No data	Precautions to be Taken in	Handling and S	toring						
Solu	ible					Wear protective gear. Other Precautions	Avoid contact/inl	halation.						
Appearance and Odor Clea	ar liquid, char	acteris	stic, disagreeable o	dor		Strong sensitizer								
Section IV - Physical/Chemic	al Charac	_		LEL	UEL	Section VIII - Contro	ol Measures							
Flash Point (Method Used) No dat	ta	Flan	mmable Limits	No data	No data	Respiratory Protection (Sp	pecify Type)	NIOS	H/MSHA	approved re	spirator			
Extinguishing Media Water spray, o	carbon dioxid	e, dry	chemical powder, a	lcohol or poly	mer foam	Ventilation	Local Exhaust		No			hem. fume hood		
Special Fire Fighting Procedures						Protective Gloves	Mechanical (G	ieneral)	No	Evo Broto		lone		
Wear SCBA and protective clothing to prevent contact with skin.														
Unusual Fire and Explosion Hazards						Other Protective Clothing or Equipment Rubber boots								
May emit to	xic fumes					Work/Hygienic Practices Avoid prolonged or repeated exposure								
a	м	atoria	al Safety Data S	hoot		Section V - Reactivit	Unstable	-	Conditi	ions to Avoid				
<b>EDVOTEK</b> .	May be used	to comp CFR 19	ply with OSHA's Hazard 910.1200 Standard mus	d Communicatior	n or	Stability         Unstable         Conditions to Avoid           Stable         X         None								
		s	pecific requirements.			Incompatibility None								
IDENTITY (As Used on Label and List)			Note: Blank spaces are applicable, or no inform	e not permitted. If ation is available,	any item is not the space must	Hazardous Decomposition or Byproducts Sulfur oxides, and bromides								
Practice Gel Loa Section I	aing Solutio	on I	be marked to indicate the	nat.		Hazardous May Occur Conditions to Avoid								
Manufacturer's Name		Emer	rgency Telephone Nu	mber (301) 2	51-5990	Section VI - Health Hazard Data								
EDVOTEK, Inc.	Zin Code)	Teleph	hone Number for inform	ation		Route(s) of Entry:	Inhalati	ion?	Yes	Skin?	Yes	Ingestion?	Yes	
Address (Number, Street, City, State,	Zip Gode)	Date F	Prepared	. ,	51-5990	Health Hazards (Acute and				May cause ir	ritation. N	lo data available fo	or	
14676 Rothgeb Drive Rockville, MD 20850		Olarad	08/04/0			Carcinogenicity: NTP? IARC Monographs? OSHA Regulation?						on?		
		Signal	ture of Preparer (option	iai)		No data available           Signs and Symptoms of Exposure         May cause skin or eye irritation								
Section II - Hazardous Ingred		tify Ir		ther Limits		Medical Conditions Genera	-		-	lone reported	1			
Hazardous Components [Specific Chemical Identity; Common Name(s)]			ACGIH TLV Re	commended	% (Optional)									
This product contains no hazardous r Standard.	naterials as de	tined b	y the OSHA Hazard	Communication	1	Treat symptomatically and supportively. Rinse contacted area with copious amounts of water.								
Section III - Physical/Chemic	al Charact	eristi	cs			Section VII - Precau				nd Use				
Boiling Point	No data		ecific Gravity (H <sub>2</sub> 0 = 1)	)	No data	Steps to be Taken in case I Wear eye and skin prot				with water.				
Vapor Pressure (mm Hg.)	No data		Iting Point	·	No data	Waste Disposal Method								
Vapor Density (AIR = 1)	No data		aporation Rate ityl Acetate = 1)		No data	Observe all federal, state, and local regulations.								
Solubility in Water Soluble		(Du	ly Acetale = 1)			Precautions to be Taken in Avoid eye and skin cor	0	oring						
Appearance and Odor Blue liqu	uid, no odor					Other Precautions None								
Section IV - Physical/Chemic	al Charact	teristi	ics			Section VIII - Contro	Measures							
Flash Point (Method Used) No data		Flam	nmable Limits	LEL No data	UEL No data	Respiratory Protection (Sp								
Extinguishing Media Dry chemical,	, carbon dioxid	de, wate	er spray or foam			Ventilation	Local Exhaust		١	Yes	Special	None		
Special Fire Fighting Procedures Us	e agents suital	ole for t	type of surrounding fi	re. Keep upwi	nd, avoid	Protective Gloves	Mechanical (G	eneral)	7	Yes	Other	None		
breathing hazardous sulfur oxides an	nd bromides. V	Wear SO	CBA.				Yes			Eye Protec	aUII	Splash proof go	ggies	
Unusual Fire and Explosion Hazards	Unknown					Other Protective Clothing o	or ⊨quipment	None r	equired					
. Unknown					Work/Hygienic Practices Avoid eye and skin contact									