MATERIAL SAFETY DATA SHEET

IDENTIFICATION OF PRODUCT (SUBSTANCE) AND SUPPLIER (1):

Product Name:	**Original EIA Chromogen Reagent**
Product Number:	**31080 (1.5 mL)**
Intended Use:	This is a kit replacement component, identical to those found in the kits, which is to be used exclusively with the following Bio-Rad Laboratories kits: **GS rLAV HIV-1 EIA (Cat.# 32511, 32510, 32513)** **GS HIV-2 EIA (Cat.# 32536)**
Supplier's Name:	**Bio-Rad Laboratories, Inc.**
Address:	6565 185th Avenue NE Redmond, WA 98052-5039
Phone Number:	1-800-2-BIORAD (1-800-224-6723); or (425) 881-8300 (daytime PST)
Emergency Phone Number:	This MSDS is listed with **CHEMTREC (800) 424-9300** Use only in the event of a CHEMICAL EMERGENCY involving a SPILL, LEAK, FIRE, EXPLOSION or ACCIDENT with this product.

COMPOSITION / INFORMATION ON INGREDIENTS -- HAZARDOUS COMPONENTS (2):

This test kit should be handled only by qualified personnel trained in laboratory procedures and familiar with their potential hazards. Specific warnings are given in the instructions for use. The absence of a specific warning should not be interpreted as an indication of safety.

Component	Contents
EIA Chromogen Reagent, 1.5 mL bottle	- ≤ 1% tetramethylbenzidine [TMB – $C_{16}H_2ON_2$, CAS# 54827-17-7] in Dimethylsulfoxide (DMSO) [C_2H_6OS], CAS# 67-68-5- 4 [Irritant; R 36/38; S 24/25-26-36/37/39 (dilution ≥ 20%)].

HAZARDS IDENTIFICATION -- HAZARDOUS COMPONENTS (3):

The following information is furnished for those kit hazardous constituents that require regulatory control or disclosure at the concentration found in the kit. Note that the information here is often based on data from the chemical raw material (LD50, exposure limits, etc.). The kit contains a significantly diluted concentration in an aqueous solution; thus, the assessment below has taken hazard reduction processing into consideration when possible. The EU classification was made according to the latest editions of the EU lists and expanded upon from company and literature data.

Chemical Ingredient	Chemical Data / Information	
3,3',5,5'-Tetramethyl-benzidine Free Base [≤ 1% w/v TMB, $C_{16}H_20N_2$]	CAS# 54827-17-7 (TMB Free Base, 100%) + RTECS# DV2300000 (100%) + LD50 (ipr-mouse): 135 mg/kg (100%) + TLV and PEL: NE HMIS Codes: H=1, F=0, R=0 ++ EU Classification: None (due to dilution, > 20%); S 36 ++	EINECS/ELINCS No: 259-364-6 (100%) + Flash Point: NE LC50: NE RCRA Code: NE IATA/DOT ID: NE
	The chemical, physical and toxicological properties have not been thoroughly investigated. TMB is considered a non-carcinogenic and non-mutagenic analog of benzidine suitable as an EIA chromogen for peroxidase. The raw material supplier indicates that it may cause slight irritation by all routes of entry, but this potential is unlikely if handled appropriately with the requisite Good Laboratory Practices and Universal Precautions. Dispose of this material in accordance with local, regional and national regulations.	

Chemical Ingredient	Chemical Data / Information
Dimethyl-sulfoxide [≥ 99% v/v DMSO, C_2H_6OS]	CAS# 67-68-5 (100%) + RTECS# PV6210000 (100%) + LD50 (oral-rat): 14500 mg/kg (100%) + LC50 (inhalation-rat): 1600 mg/m ¾ hr. (100%) + PEL/TLV: NE Flash point: 188-192°F / 86.7-88.9°C (100%) + RCRA Code: NE IATA/DOT ID: NE HMIS Codes: H=1, F=2, R=0 ++ EINECS / ELINCS No: 200-644-3 (100%) + EU Classification: : Irritant (Xi) (≥ 20%); R 36/38; S 24/25-26-36/37/39 ++ Dimethyl sulfoxide (DMSO) is a skin and eye irritant that readily penetrates skin, is capable of carrying other chemicals or materials into the body, and it can be 'tasted' by most people. Recommend 'NITRILE' or other non-latex synthetic gloves when handling, as it penetrates latex immediately, carrying potentially sensitizing latex molecules into the body. Skin contact may cause bad breath, burning, stinging, transient redness, dermatitis and skin hardening. In case of contact with eyes, immediately rinse with copious water and seek medical attention. Combustible liquid; keep away from ignition sources. Ingestion of large quantities may cause nausea, vomiting, diarrhea, headache and cramps. The potential for these adverse health effects is unknown for the small volume of DMSO in this kit but unlikely if handled appropriately with the requisite Good Laboratory Practices and Universal Precautions. Dispose of this material in accordance with local, regional and national regulations.

\+ The Kit Concentration was not tested; the values refer to the solution concentration as tested, designated by percentage within parentheses.
++ The Kit Concentration was tested or the values given were estimated for the general diagnostic laboratory usage of the kit reagent dilution.
NE = Not Established or Unknown (unable to locate data).
Abbreviations for component HMIS hazard ratings are as follows: H=Health, F=Flammability, R=Reactivity

EMERGENCY FIRST AID MEASURES (4):

Health Effects:	Symptoms of overexposure may include irritation. Skin contact may cause bad breath, burning, stinging, transient redness, dermatitis and skin hardening.
Eye Contact:	Flush eyes with copious water for at least 15 minutes. Ensure adequate flushing by separating the eyelids with fingers while flushing with water. OBTAIN MEDICAL ATTENTION.
Skin Contact:	Remove contaminated clothing. Flush skin with copious water and wash affected area with soap and water.
Inhalation:	This aqueous product is not expected to be a significant inhalation hazard. Treat symptomatically and supportively.
If Swallowed:	If ingested, wash out mouth thoroughly with water, provided the person is conscious, and OBTAIN MEDICAL ATTENTION. Call a physician or the local poison control center. Treat symptomatically and supportively. If vomiting occurs, keep head lower than hips to prevent aspiration.

FIREFIGHTING MEASURES (5):

Extinguishing Media:	Use extinguishing media appropriate for the surrounding fire.
Special Firefighting Procedures	Conventional firefighting full protective equipment (with NIOSH-approved self-contained breathing apparatus) and procedures appropriate for the surrounding fire should be sufficient.

ACCIDENTAL RELEASE MEASURES (6):

- Avoid direct contact with skin, eyes, mucous membranes and clothing by wearing appropriate lab personal protective equipment (PPE) including gloves, lab coat and eye/face protection.

- In the event of a hazardous material spill, contain the spill if it is safe to do so, immediately move to a safe area, safely remove any contaminated clothing and isolate the hazard area. Ensure that appropriate spill cleanup materials and PPE are available and used.
- Follow established laboratory policy and applicable OSHA/WISHA hazardous material spill guidelines for appropriate spill response and cleanup. Wear appropriate PPE.
- Absorb the spill with appropriate inert materials (e.g. spill pillows, absorbent pads, etc.) and secure in an appropriate, labeled, sealed container. Clean the spill area with water and wipe dry.
- Material used to absorb the spill may require hazardous material waste disposal. Chemical/laboratory wastes must be handled and discarded in accordance with all local, regional and national regulations.

HANDLING AND STORAGE INFORMATION (7):

Handling:	This test kit should be handled only by qualified personnel trained in laboratory procedures and familiar with their potential hazards. Follow proper Good Laboratory Practices and safety guidelines for handling chemical laboratory hazards. Wear appropriate personal protective equipment (PPE) including gloves, lab coat or equivalent and eye/face protection. Avoid splashing, spills and the generation of aerosols. Refer to Section 8 for more specifics. Consult with your Environmental Health & Safety Office for assistance.
Storage:	Store the kit components as specified on the product label and/or in the product instructions provided with the test kit.

Read and follow all the precautions and warnings in the kit product instructions. Refer to the package insert for additional product information.

EXPOSURE CONTROL / PERSONAL PROTECTION MEASURES (8):

The following personal protective equipment (PPE) is recommended to prevent hazardous materials from reaching the user's work or street clothes, skin, mouth, mucous membranes and eyes, under normal conditions of use and for the time during which the protective equipment is utilized:

Ventilation:	Adequate lab ventilation is required.
Eye Protection:	Wear ANSI approved safety glasses, goggles or face shield with safety glasses or goggles. Contact lenses should not be worn when handling lab hazards.
Protective Gloves:	Suitable gloves must be worn at all times when handling kit reagents or patient samples to provide skin protection from splash and intermittent contact. Synthetic gloves such as nitrile, neoprene and vinyl are recommended because they are sturdy, effective and contain no natural latex ingredients associated with latex glove allergic reactions. Disposable (single use) gloves should be changed often and never reused. Wash hands thoroughly after removing gloves.
Protective Clothing:	Wear a lab coat, clinic jacket, gown, apron and/or smock.
Other:	All personal protective equipment should be removed before leaving the work area and placed in an appropriately designated area or container for storage, processing, decontamination or disposal.
Note:	According to the OSHA Bloodborne Pathogens Standard (29 CFR 1910.1030), Universal Precautions apply. Exposure limit values and health hazard data were given in Section 3. Environmental controls are included in the following sections.

PHYSICAL AND CHEMICAL PROPERTIES (9):

Appearance:	Aqueous yellowish liquid.
Fire Hazard:	Although the component has not been tested for fire and explosion data, the small volume of DMSO in the component and some of the kit packaging materials may burn under fire conditions.
Flash Point:	The ≥ 99% DMSO in this component is approximately 188-192°F / 86.7-88.9°C (data for 100% DMSO).
Auto Igniting:	Product is not known to be self-igniting.
Danger of Explosion:	Product is not known to present an explosion hazard.
Boiling Point:	Not established. Melting Point: Not established.
Solubility:	Miscible in water.
pH:	Not established.
Specific gravity:	Approximately 1.1.

No other standard characteristics applicable to the identification or hazards of the component are known.

STABILITY AND REACTIVITY INFORMATION (10):

Stability:	Stable under ordinary conditions of use and storage.
Conditions and Materials to Avoid:	None known when used as intended.
Hazardous Decomposition Products:	May release toxic oxides of carbon, nitrogen and sulfur or toxic hydrogen chloride gas.
Hazardous Polymerization:	Has not been reported to occur.

TOXICOLOGICAL INFORMATION -- GENERAL COMPOSITE (11):

Refer to Section 3 for the kit component concentrations. The composite toxicological information for this product is:

Acute Health Effects

Toxicity: May be detrimental in contact with eyes; in case of contact with eyes, immediately rinse with copious water and seek medical attention.

Primary Irritant Effect: Irritating to eyes and skin.

Other Acute Health Effects: DMSO readily penetrates skin and is capable of carrying other chemicals or materials into the body and it can be 'tasted' by most people.

Chronic Toxicity

Sensitization: No sensitization effect known.

Carcinogenicity: No carcinogenic effect known.

Reproductive Hazard: No reproductive toxic effect known.

Additional Toxicological Information: The chemical, physical and toxicological properties have not been thoroughly investigated.

ECOLOGICAL INFORMATION (12):

No data found.

DISPOSAL CONSIDERATIONS (13):

Disposal of hazardous and/or laboratory wastes, product or packaging must be conducted in accordance with all applicable local, regional and national regulations. This section specifies the general and United States RCRA requirements. Processing, use or contamination of this kit component may change waste management requirements and options. Contact your Environmental Health & Safety Office for your specific disposal procedures.

Recommended Product and/or Packaging Disposal:

Dispose of product and packaging waste in accordance with all applicable local, regional and national regulations.

TRANSPORT INFORMATION (14):

Shipping and disposal of product and packaging waste must be conducted in accordance with all applicable local, regional and national regulations. Processing, use or contamination of this kit component may change shipping requirements and options. Contact your Environmental Health and Safety Office for your specific shipping procedures.

Recommended Unused Product Multi-Modal Transportation: No known transport restrictions.

REGULATORY INFORMATION (15):

Composite HMIS Rating: Health: 1 Flammability: 0 Reactivity: 0

California Proposition 65: The product does not contain listed substances.

Carcinogenicity Categories: No component, mixture or constituent has been classified as a carcinogen by NTP (National Toxicity Program), IARC (International Agency for Research on Cancer), TLV-CAR (Threshold Limit Value established by ACGIH) or OSHA.

WHMIS Classification: This MSDS contains the required information in accordance with the WHMIS hazard classification criteria for this product.

Markings according to European guidelines: This product has been classified and labeled in accordance with applicable European Community (EC) Directives (refer to 1999/45/EC, 2001/59/EC and 2001/60/EC).

Hazard Designation of Composite Product: Xi: IRRITANT 

Hazard Determining Substance(s) of Labeling: (rated under 1999/45/EC unless otherwise specified):

≥ 20% Dimethylsulfoxide (DMSO), EINECS/ELINCS No: 200-664-3, CAS# 67-68-5 [Xi: Irritant; R 36/38; S 24/25-26-36/37/39].

Risk Phrases:

R 36/38	Irritating to eyes and skin.

Safety Phrases:

S 24/25	Avoid contact with skin and eyes.
S 26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 36/37/39	Wear suitable protective clothing, gloves and eye/face protection.

OTHER INFORMATION (16):

This test kit should be handled only by qualified personnel trained in laboratory procedures and familiar with their potential hazards. Specific warnings are given in the instructions for use. The absence of a specific warning should not be interpreted as an indication of safety.

This revision: Changed *Genetic Systems* in kit names to *GS*, reviewed existing information and made minor updates.

Contact for general information:

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