

SAFETY DATA SHEET

VitroView™ Senescence-Associated β-Galactosidase (SA-β-gal) Staining Kit (100-200 Tests)

SKU: VB-3049 | Manufacturer: VitroVivo Biotech LLC | SDS Version: 2.1 Revised | Issue Date: September 19, 2026 |
Supersedes: Version 2.0 (2026-09-19)

1. Identification

Product Name: VitroView™ Senescence-Associated β-Galactosidase (SA-β-gal) Staining Kit (100-200 Tests)

Product Code / SKU: VB-3049

Manufacturer: VitroVivo Biotech LLC
Address: 405 E Gude Drive, Rockville, MD 20850, USA
Phone: +1 (301) 500-0499 | Email: info@vitrovivo.com | Website: www.vitrovivo.com

Recommended Use: For research use only. Laboratory reagent for histochemical detection of senescence-associated β-galactosidase activity in cell cultures and tissue sections. Not for diagnostic or therapeutic use.

Emergency Phone: CHEMTREC (US) 1-800-424-9300, International +1-703-527-3887

Kit Components:

- VB-3049-1 Fixative Solution (0.1-5.0% Glutaraldehyde)
- VB-3049-2 X-Gal (20x) (in DMSO)
- VB-3049-3 Staining Solution (Potassium Ferrocyanide / Ferricyanide + MgCl2)
- VB-3049-4 Nuclear Fast Red Solution

2. Hazards Identification

2.1 GHS Classification of Kit as a Whole: This kit contains hazardous components. Overall classification based on most hazardous component.

2.2 Component Hazard Summary - REVISED per DMSO change:

Component	Signal Word	GHS Classification	Pictograms
VB-3049-1 Fixative Solution (Glutaraldehyde 0.1-5%)	DANGER	Acute Tox. Cat 4 H302+H332, Skin Corr. 1B H314, Eye Dam. 1 H318, Skin Sens. 1 H317, STOT SE 3 H335. At 0.1-1% Skin Sens. still applies, at >1% Skin Corr applies. At <0.5% may be downgraded to Skin Irrit/Eye Irrit but SDS keeps worst-case.	GHS05, GHS07
VB-3049-2 X-Gal (20x) in DMSO	No GHS signal word (DMSO low hazard)	DMSO CAS 67-68-5: Not classified as hazardous under GHS (Combustible liquid H227 only). X-Gal CAS 7240-90-6: Not classified. NOTE: DMSO enhances skin	None

		penetration - may carry X-Gal through skin.	
VB-3049-3 Staining Solution (Ferro/Ferricyanide + MgCl₂)	No GHS signal word	Not classified as dangerous under GHS, but EUH032: Contact with acids liberates very toxic gas (hydrogen cyanide).	None
VB-3049-4 Nuclear Fast Red Solution	DANGER	Skin Irrit. Cat 2 H315, Eye Dam. Cat 1 H318	GHS05

2.3 Label Elements:

VB-3049-1: Signal Word DANGER, H314, H318, H317, H302+H332, H335. P260, P280, P303+P361+P353, P305+P351+P338, P310.

VB-3049-2 (DMSO formulation): No hazard pictogram required. Precaution: P280 Wear gloves - DMSO facilitates absorption.

VB-3049-3: EUH032 - Do not acidify.

VB-3049-4: DANGER H315+H318

3. Composition / Information on Ingredients - REVISED

Component Code	Chemical Name / Active Material	CAS No.	Concentration % (w/w or w/v)	EC No.
VB-3049-1	Glutaraldehyde	111-30-8	0.1 - 5.0%	203-856-5
VB-3049-1	Water (Purified)	7732-18-5	95.0 - 99.9%	231-791-2
VB-3049-2	5-Bromo-4-chloro-3-indolyl-β-D-galactopyranoside (X-Gal)	7240-90-6	2 - 5% (20x concentrate = 20 mg/mL)	230-640-8
VB-3049-2	Dimethyl Sulfoxide (DMSO) - REVISED, was DMF	67-68-5	95 - 98%	200-664-3
VB-3049-3	Potassium Ferrocyanide Trihydrate	14459-95-1	0.1 - 5.0% - REVISED from 1-5%	237-722-2
VB-3049-3	Potassium Ferricyanide	13746-66-2	0.1 - 5.0% - REVISED from 1-5%	237-323-3
VB-3049-3	Magnesium Chloride (MgCl ₂) - REVISED, was NaCl	7786-30-3 (7791-18-6 hexahydrate)	<5%	232-094-6
VB-3049-3	Sodium Phosphate Buffer salts	7601-54-9 / 7558-79-4	<2%	231-448-7 / 231-448-7
VB-3049-4	Nuclear Fast Red (Acid Red 92 / Kernechtrot)	6409-77-4	0.1 - 1.0%	229-088-4
VB-3049-4	Aluminum Sulfate	10043-01-3	1 - 5%	233-135-0
VB-3049-4	Water	7732-18-5	94-99%	231-791-2

Note: DMSO vs DMF - DMSO is not DMF. Previous version incorrectly listed DMF CAS 68-12-2. Corrected to DMSO CAS 67-68-5 per updated formulation. DMSO is not classified as carcinogenic or reproductive toxin, unlike DMF.

4. First-Aid Measures

General: Show SDS to physician. Remove contaminated clothing.

Inhalation: VB-3049-1 (Glutaraldehyde 0.1-5%): Move to fresh air, respiratory irritation possible even at 0.1%. If sensitized, call physician. VB-3049-2 DMSO: Low inhalation toxicity, but may cause headache. Move to fresh air.

Skin Contact: VB-3049-1: Wash 15 min soap/water - corrosive at >1%, irritant/sensitizer at 0.1-1%. VB-3049-2: DMSO rapidly penetrates skin - wash immediately, may carry X-Gal. DMSO may cause garlic taste, skin irritation. VB-3049-4: Wash with soap/water.

Eye Contact: VB-3049-1 and VB-3049-4: Rinse 15+ min, remove contacts, immediately call ophthalmologist - Eye Dam. Cat 1. VB-3049-2: Rinse 15 min.

Ingestion: Rinse mouth, Do NOT induce vomiting. Call Poison Center. Glutaraldehyde corrosive if >1%. DMSO low toxicity LD50 14,500 mg/kg.

5. Fire-Fighting Measures

Suitable: Water spray, foam, dry chemical, CO2.

VB-3049-1: Combustible liquid at higher conc. At 0.1-5% water solution not flammable but may emit irritating vapors.

VB-3049-2 DMSO: Combustible liquid Cat 4 H227, flash point 89°C, autoignition 300-302°C. Produces sulfur oxides when burned.

VB-3049-3: Contact with acids liberates HCN - do NOT use acid-containing extinguishing agents. HCN extremely toxic.

Firefighters: SCBA + chemical suit.

6. Accidental Release Measures

Personal: PPE per Sec 8, ventilation, avoid breathing vapors. DMSO penetrates most gloves - use butyl or nitrile 8 mil.

Environmental: Do not enter drains. Glutaraldehyde toxic to aquatic life even at low %.

Cleanup: Absorb with sand/vermiculite. Glutaraldehyde: neutralize with sodium bisulfite. DMSO: absorb, wash with water - large water volume. Do NOT acidify VB-3049-3 spills. Collect separately.

7. Handling and Storage

Handling: Fume hood recommended for VB-3049-1 even at 0.1% due to sensitization. Avoid skin contact - DMSO enhances absorption. Do not mix VB-3049-3 with acids.

Storage: VB-3049-1: 2-8°C, 0.1-5% stable. VB-3049-2 DMSO: -20°C protected from light, hygroscopic - keep desiccated, DMSO freezes at 18.5°C - warm to dissolve. VB-3049-3: 2-8°C, keep away from acids, light. VB-3049-4: 2-8°C. Kit long term -20°C.

Incompatibilities: Acids (HCN risk for VB-3049-3), strong oxidizers, amines (glutaraldehyde), acid chlorides, phosphorus halides (DMSO).

8. Exposure Controls / Personal Protection - REVISED

Component	OSHA PEL / TWA	ACGIH TLV	Engineering Controls
Glutaraldehyde CAS 111-30-8 (0.1-5%)	Ceiling 0.2 ppm	Ceiling 0.05 ppm sensitizer A4	Fume hood, local exhaust
Dimethyl Sulfoxide CAS 67-68-5 (REVISED)	No OSHA PEL, WEEL TWA 250 ppm	No TLV established, WEEL 250 ppm	General ventilation, fume hood for concentrate
Potassium Ferrocyanide / Ferricyanide	Not established	Not established	General ventilation
Previous: DMF CAS 68-12-2 - REMOVED	10 ppm TWA (skin) - REMOVED	5 ppm TWA - REMOVED	No longer applicable - formulation now DMSO

PPE REVISED: DMSO penetrates natural rubber, latex, PVC. Use butyl rubber 0.3mm or nitrile 0.4mm minimum for VB-3049-2. Eyes: Safety goggles + face shield for VB-3049-1 (>1%) and VB-3049-4. Glutaraldehyde: butyl gloves required. Respiratory: Not normally required for DMSO, but use organic vapor cartridge for glutaraldehyde if ventilation insufficient.

9. Physical and Chemical Properties - REVISED

Property	VB-3049-1 Fixative 0.1-5%	VB-3049-2 X-Gal in DMSO REVISED	VB-3049-3 Staining Soln	VB-3049-4 Nuclear Fast Red
Appearance	Clear colorless liquid	Clear to yellowish solution	Clear yellow liquid	Red to dark red liquid
Odor	Pungent aldehydic (milder at 0.1%)	Almost odorless, slight garlic/sulfur	Odorless	Odorless
pH	3-5	N/A	6.5-7.5	2-4
Flash Point	Not flammable (water solution)	89°C (DMSO) H227	Not applicable	Not applicable
Freezing Point	~0°C	18.5°C (DMSO freezes)	0°C	0°C
Solubility	Miscible	Miscible, hygroscopic	Soluble	Soluble

10. Stability and Reactivity

Reactivity: VB-3049-3: Acids liberate HCN. VB-3049-2 DMSO: Reacts violently with strong oxidizers, acid chlorides, phosphorus halides, may form explosive mixtures.

Stability: Stable under recommended storage. DMSO hygroscopic, absorbs water. X-Gal light sensitive.

Conditions to Avoid: Heat, light (X-Gal), acids (VB-3049-3), strong oxidizers (DMSO), freezing-thawing for glutaraldehyde at low conc may cause polymerization.

Decomposition: CO, CO₂, sulfur oxides (from DMSO), nitrogen oxides, HCN (from VB-3049-3 + acid), bromine/chlorine compounds.

11. Toxicological Information - REVISED for DMSO

VB-3049-1 Glutaraldehyde 0.1-5% CAS 111-30-8: At 0.1-1% classification may be Skin Irrit. 2 H315, Eye Irrit. 2 H319, Skin Sens. 1 H317. At >1% Skin Corr. 1B H314 Eye Dam 1 H318. Oral LD50 134 mg/kg, Inhalation LC50 0.48 mg/L/4H. Sensitizer even at 0.1%.

VB-3049-2 REVISED: X-Gal CAS 7240-90-6 LD50 >5000 mg/kg low tox. DMSO CAS 67-68-5 LD50 oral rat 14500 mg/kg, dermal 40000 mg/kg, inhalation LC50 40250 mg/m³/4H low toxicity. Not mutagenic, not carcinogenic. However skin penetration enhancer - may increase toxicity of dissolved X-Gal. Eye: slight irritant. NOT reprotoxic unlike DMF.

Previous DMF toxicity REMOVED: DMF was Acute Tox 4, Repr Tox 1B H360D, IARC 2A, Prop 65. DMSO does NOT carry these classifications - significant downgrade in hazard.

VB-3049-3 Potassium Ferrocyanide Trihydrate 0.1-5% CAS 14459-95-1 LD50 oral rat 6390 mg/kg. Ferricyanide CAS 13746-66-2 LD50 2970 mg/kg. Low toxicity neutral, EUH032 critical.

VB-3049-3 MgCl₂ CAS 7786-30-3 LD50 oral rat 2800 mg/kg, irritant.

VB-3049-4 Nuclear Fast Red CAS 6409-77-4 Skin Irrit 2 Eye Dam 1.

12. Ecological Information

Glutaraldehyde 0.1-5%: Still toxic to aquatic life - LC50 fish 10 mg/L, EC50 daphnia 5 mg/L. At 0.1% toxicity reduced but still harmful. Do not discharge.

DMSO CAS 67-68-5 REVISED: LC50 fish >34000 mg/L, EC50 daphnia 24600 mg/L, low aquatic toxicity, readily biodegradable, not bioaccumulative. Much less ecotoxic than DMF.

DMF ecotox REMOVED: DMF LC50 fish >7000 mg/L.

Ferrocyanide: Low toxicity but can decompose to cyanide under UV/acidic conditions - avoid release.

13. Disposal Considerations - REVISED

Glutaraldehyde 0.1-5%: At >0.1% still hazardous due to sensitization. Neutralize with bisulfite before disposal. At <1% may be drain disposable after neutralization per local rules but check.

DMSO: Not RCRA hazardous (unlike DMF U112). Can be incinerated. Absorbed material can be disposed as non-halogenated solvent waste. Do NOT mix with chlorinated waste.

VB-3049-3: Keep alkaline, DO NOT acidify, label CYANIDE - DO NOT ACIDIFY.

General: Follow federal/state/local. Incineration in approved chemical incinerator.

14. Transport Information

Regulation	Classification - REVISED	Notes
DOT (US)	Not regulated as dangerous goods for this kit with DMSO formulation	DMSO not regulated; previous DMF would have been regulated. Glutaraldehyde at 0.1-5% below DOT corrosive threshold for limited quantity
IATA	Not restricted - DMSO formulation	
IMDG	Not regulated	

15. Regulatory Information - REVISED

TSCA: All components including DMSO CAS 67-68-5 listed.

SARA Title III: Glutaraldehyde CAS 111-30-8 SARA 311/312. DMSO NOT SARA 313 reportable (DMF was reportable - removed).

California Prop 65: WARNING REMOVED for VB-3049-2 - DMSO not listed, DMF was listed as carcinogen. No Prop 65 warning required for DMSO formulation (unless other components trigger).

CERCLA RQ: None at kit conc.

OSHA HazCom: Complies 29 CFR 1910.1200. Major hazard reduction due to DMF -> DMSO substitution.

REACH: Glutaraldehyde SVHC sensitizer. DMSO not SVHC.

Massachusetts RTK: DMSO listed.

16. Other Information

SDS Prepared By: VitroVivo Biotech LLC EHS Department - 405 E Gude Drive, Rockville, MD 20850

Revision Summary Version 2.1: REVISED per updated formulation: 1) VB-3049-2 solvent changed from N,N-Dimethylformamide (DMF) CAS 68-12-2 to Dimethyl Sulfoxide (DMSO) CAS 67-68-5 - hazard downgrade, removed Repr Tox 1B H360D, Carc IARC 2A, Prop 65. 2) VB-3049-1 concentration changed from 1.0-5.0% to 0.1-5.0% - updated hazard explanation for range. 3) VB-3049-3 concentrations changed from 1-5% to 0.1-5% for both ferro/ferricyanide, buffer salt

changed from NaCl to MgCl₂ CAS 7786-30-3. 4) Address updated to 405 E Gude Drive. 5) Updated flash point, toxicity, ecotoxicity, disposal, transport, regulatory sections to reflect DMSO.

NFPA Ratings REVISED: VB-3049-1 Health 3->2 at 0.1% to 3 at 5% Flammability 0 Reactivity 0; VB-3049-2 DMSO Health 1 Flammability 2 Reactivity 0 (was Health 2 Flam 2); VB-3049-3 Health 1 Flam 0 React 1; VB-3049-4 Health 2 Flam 0 React 0

Key Legend: EUH032 = Contact with acids liberates very toxic gas, DMSO = Dimethyl Sulfoxide CAS 67-68-5 EC 200-664-3, DMF = N,N-Dimethylformamide CAS 68-12-2 REMOVED

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