

SAFETY DATA SHEET

VitroView™ Differential Quik Stain Kit SKU No. VB-2005

According to OSHA HazCom 2012 (29 CFR 1910.1200) and GHS Rev. 9
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1. Identification

Product Name: VitroView™ Differential Quik Stain Kit

Product Code: VB-2005

Kit Components:

- VB-2005-1: Differential Quik Fixative Solution
- VB-2005-2: Differential Quik Stain Solution I
- VB-2005-3: Differential Quik Stain Solution II

Manufacturer: VitroVivo Biotech, LLC

Address: 405 E Gude Dr, Suite 214, Rockville, MD, USA

Phone: 301-500-0499

Email: info@vitrovivo.com

Website: www.vitrovivo.com

Recommended Use: For research use only. Histological rapid differential staining of blood smears, cytology specimens.

Restrictions: Not for diagnostic or therapeutic use in humans or animals. For laboratory professional use only.

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

2. Hazards Identification

2.1 Classification of the mixture (Kit):

Because the kit contains a flammable and acutely toxic component, the overall kit is classified as hazardous. Component-specific classifications apply when components are handled separately.

Component A - VB-2005-1 Fixative (Methanol ≥99%):

- Flam. Liq. 2, H225 - Highly flammable liquid and vapor
- Acute Tox. 3 (Oral, Dermal, Inhalation), H301+H311+H331 - Toxic if swallowed, in contact with skin or if inhaled
- STOT SE 1, H370 - Causes damage to organs (optic nerve, CNS)

Component B - VB-2005-2 Solution I (Eosin Y 0.1~0.5% w/v, Sodium Azide 0.05% w/v, Phosphate Buffer):

- Not classified as flammable.
- Contains Sodium Azide at 0.05%: Below GHS classification threshold for acute toxicity, but contributes EUH032 (contact with acids liberates very toxic gas) and Aquatic Acute 1 considerations. Product not classified as hazardous per OSHA at this concentration, but precautionary.
- May cause mild eye irritation.

Component C - VB-2005-3 Solution II (Methylene Blue 0.1~0.5% w/v in Phosphate Buffer):

- Not classified as hazardous at this concentration. May cause mild eye and skin irritation.

2.2 Label Elements - Kit:

Signal Word: DANGER

Hazard Pictograms: GHS02 (Flame), GHS06 (Skull and Crossbones), GHS08 (Health Hazard)

Hazard Statements:

H225 - Highly flammable liquid and vapor (from Fixative)
H301+H311+H331 - Toxic if swallowed, in contact with skin or if inhaled
H370 - Causes damage to organs
EUH032 - Contact with acids liberates very toxic gas (Sodium Azide in Solution I)

Precautionary Statements:

P210 - Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P260 - Do not breathe mist/vapors.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
P304+P340 - IF INHALED: Remove to fresh air and keep at rest.
P308+P311 - IF exposed or concerned: Call a POISON CENTER/doctor.
P403+P233 - Store in well-ventilated place. Keep container tightly closed.

2.3 Other Hazards: None identified. Sodium azide may form explosive metal azides in plumbing if flushed.

3. Composition / Information on Ingredients

Kit contains 3 separate solutions. Disclosure per component:

VB-2005-1 - Fixative Solution:

ChemicalCAS No.EC No.Concentration (% w/w or v/v)Methanol67-56-1200-659-6≥99.8%

VB-2005-2 - Solution I:

Phosphate Buffer pH 6.6 prepared from Potassium dihydrogen phosphate 7778-77-0 (0.2M stock) and Sodium Hydroxide 1310-73-2, final pH 6.6

ChemicalCAS No.Conc.Eosin Y (Acid Red 87) - CAS 17372-87-1 / disodium 15086-94-9 (vendor lists as 2353-45-9 for related salt) - per SOP 1.22 g/L17372-87-1~0.122%Sodium Azide26628-22-80.05% (0.5 g/L)Potassium Phosphate Monobasic KH₂PO₄7778-77-0~0.2% (buffer)Sodium Phosphate / Sodium Hydroxide adjusted1310-73-2 / 7558-79-4<0.1%Water7732-18-5balance to 100%

VB-2005-3 - Solution II:

ChemicalCAS No.Conc.Methylene Blue (Basic Blue 9)61-73-4 (Trihydrate 122965-43-9 per vendor)~0.11% (1.1 g/L)Potassium Phosphate Monobasic KH₂PO₄7778-77-0~0.2%Water7732-18-5balance

Note: Exact buffer preparation: Per SOP, Phosphate Buffer pH 6.6 is made by mixing 200 mL 0.2M KH₂PO₄ (27.22 g/L) + 90 mL 0.2N NaOH, diluted to final volume. Concentrations in final stains are approximately 1x buffer.

4. First Aid Measures

4.1 General: Show this SDS to medical personnel. Remove contaminated clothing immediately.

Inhalation: Remove to fresh air. If breathing difficult, give oxygen. If symptoms persist, call POISON CENTER. Methanol inhalation may cause delayed optic nerve damage.

Skin Contact: Take off immediately all contaminated clothing. Rinse skin with water/shower for at least 15 min. For methanol: Call physician. For Solution I/II: Wash with soap and water. If irritation occurs, get medical advice.

Eye Contact: Rinse cautiously with water for at least 15 minutes. Remove contact lenses if present and easy to do. Get medical attention.

Ingestion: DO NOT induce vomiting. For methanol ingestion, even small amounts can cause blindness/death. Rinse mouth, call POISON CENTER immediately. For azide ingestion, may cause hypotension, headache. Treat symptomatically.

4.2 Most important symptoms/effects: Methanol: headache, dizziness, nausea, visual disturbances, metabolic acidosis, blindness. Eosin Y: mild irritation. Methylene Blue in high doses may cause nausea, confusion. Sodium

azide: headache, hypotension.

4.3 Immediate medical attention: For methanol exposure, administer fomepizole or ethanol antidote per hospital protocol if ingestion/inhalation significant.

5. Firefighting Measures

5.1 Extinguishing media: For VB-2005-1 (Methanol): CO₂, dry chemical, alcohol-resistant foam, water spray (fog). Do NOT use solid water jet.

For Solutions I & II (aqueous): Not flammable, use media appropriate for surrounding fire.

5.2 Special hazards: Fixative is highly flammable. Vapors may form explosive mixtures with air. May travel to ignition source. Combustion may produce carbon oxides. Sodium azide in Solution I may decompose above 275°C releasing toxic nitrogen oxides, hydrazoic acid.

5.3 Advice for firefighters: Wear self-contained breathing apparatus, full protective suit. Cool closed containers with water spray. Prevent runoff from entering drains.

6. Accidental Release Measures

6.1 Personal precautions: Evacuate area. Ensure adequate ventilation. Eliminate ignition sources. Wear PPE per Section 8. Avoid breathing vapors/mist.

6.2 Environmental precautions: Do not let enter drains/sewers/waterways. Sodium azide is very toxic to aquatic life. Methanol is harmful to aquatic environment in large quantities. Notify authorities if large spill enters water.

6.3 Methods for containment/cleanup:

- Small spill (Fixative): Absorb with inert material (sand, vermiculite), collect in sealed, labeled flammable waste container, ventilate.
- Solutions I/II: Absorb with absorbent material, wash area with plenty of water. Collect for disposal.
- Do NOT flush azide-containing solution down drain with acid or copper/lead pipes - risk of HN₃ gas and explosive azides. Decontaminate with 10% sodium hydroxide or commercial azide deactivator before drain disposal if allowed by local rules.

6.4 Reference: See Sections 8 and 13.

7. Handling and Storage

7.1 Precautions for safe handling: Handle in accordance with good industrial hygiene and safety practice. Use only in well-ventilated area, preferably in fume hood for fixative. Avoid contact with eyes, skin, clothing. Avoid inhalation. No eating, drinking, smoking in work area. Wash hands after handling. Keep away from acids for Solution I.

7.2 Conditions for safe storage:

- VB-2005-1 Fixative: Store at RT per SOP (15-25°C) in original white HDPE bottle (250 mL), tightly closed, in flammable cabinet, away from oxidizers, acids, ignition sources. Ground containers when transferring.
- VB-2005-2 Solution I: Store at RT (15-25°C) per SOP? SOP says RT for eosin? Actually SOP: RT, white HDPE bottle (250). Shelf life 12 months. Keep tightly closed, protected from light.
- VB-2005-3 Solution II: Store in refrigerator (2-8°C) in acid-cleaned brown bottle per SOP. Protect from light. Stable 3 months per SOP (manufacturer extended shelf life may be 12 months for kit - follow lot label). Do not freeze.

7.3 Specific end uses: Laboratory reagent for differential staining.

8. Exposure Controls / Personal Protection

8.1 Control parameters:

- Methanol (67-56-1): OSHA PEL TWA 200 ppm (260 mg/m³), STEL 250 ppm. ACGIH TLV TWA 200 ppm, STEL 250 ppm, Skin, BEI. NIOSH IDLH 6000 ppm.

- Sodium Azide (26628-22-8): OSHA PEL Ceiling 0.3 mg/m³ as HN₃, 0.1 ppm. ACGIH TLV Ceiling 0.29 mg/m³, 0.11 ppm.
- Methylene Blue / Eosin Y: No established OELs. Treat as nuisance dust.

8.2 Engineering controls: Use adequate general or local exhaust ventilation to keep vapor concentrations below PEL. Use eyewash station and safety shower.

8.3 Personal Protective Equipment:

- Eyes: Safety glasses with side shields or chemical goggles, per OSHA 29 CFR 1910.133.
- Hands: Nitrile gloves ≥0.11 mm thickness, breakthrough time >480 min for methanol. Replace if contaminated.
- Body: Lab coat, chemical-resistant apron when handling large volumes.
- Respiratory: Not required under normal use with ventilation. If vapor exceeds limits, use NIOSH-approved respirator with organic vapor cartridge. For spills, use self-contained breathing apparatus.

9. Physical and Chemical Properties

VB-2005-1 Fixative: Appearance: Clear colorless liquid. Odor: Alcohol-like. Odor threshold ~ 2000 ppm. pH: Not applicable. Boiling point: 64.7°C. Flash point: 11°C (closed cup). Flammability: Highly flammable. Vapor pressure: 128 hPa @20°C. Vapor density: 1.11 (air=1). Solubility: Miscible with water. Specific gravity: 0.791. Autoignition: 385°C.

VB-2005-2 Solution I: Appearance: Pink-red to orange solution. Odor: Odorless. pH: 6.6 ±0.2. Boiling point: ~100°C. Flash point: Not flammable. Solubility: Fully miscible with water. Density: ~1.0 g/mL.

VB-2005-3 Solution II: Appearance: Dark blue solution. Odor: Odorless. pH: 6.6 ±0.2. Boiling point: ~100°C. Flash point: Not flammable. Density: ~1.0 g/mL.

10. Stability and Reactivity

10.1 Reactivity: Fixative: Reacts violently with strong oxidizers, acids, alkali metals. Solution I containing azide reacts with acids to produce highly toxic hydrazoic acid (HN₃) and with heavy metals (Pb, Cu) to form explosive metal azides.

10.2 Chemical stability: Stable under recommended storage conditions per SOP (Fixative 12 months RT, Solution I 12 months RT, Solution II 3 months refrigerated - use lot expiry).

10.3 Possibility of hazardous reactions: See above. Azide + acid = toxic gas. Methanol + oxidizers = fire/explosion.

10.4 Conditions to avoid: Heat, flames, sparks, static discharge, direct sunlight, incompatible materials.

10.5 Incompatible materials: Strong oxidizers, acids, acid chlorides, anhydrides, alkali metals, copper, lead, brass.

10.6 Hazardous decomposition products: Carbon monoxide, carbon dioxide, nitrogen oxides, hydrazoic acid from azide.

11. Toxicological Information

11.1 Acute toxicity:

- Methanol: Oral LD₅₀ rat 5628 mg/kg, Dermal LD₅₀ rabbit 15800 mg/kg, Inhalation LC₅₀ rat 4h 64000 ppm. Human minimal lethal dose ~ 60-240 mL, blindness at 10 mL.
- Sodium Azide: Oral LD₅₀ rat 27 mg/kg, Dermal LD₅₀ rabbit 20 mg/kg. Highly toxic.
- Eosin Y: Oral LD₅₀ rat >2000 mg/kg, low toxicity. May cause skin sensitization in rare cases.
- Methylene Blue: Oral LD₅₀ rat 1180 mg/kg. IV low dose therapeutic; high dose may cause methemoglobinemia.

Skin corrosion/irritation: Methanol: irritating. Eosin Y and Methylene Blue at use concentrations: mild irritant.

Eye damage/irritation: Methanol causes serious eye irritation/damage. Eosin Y and Methylene Blue may cause transient irritation/staining.

Sensitization: Not expected to be sensitizer at these concentrations.

Germ cell mutagenicity / Carcinogenicity: No component classified as carcinogen per IARC/NTP/OSHA at use concentrations. Note SOP caution 'possible carcinogen' likely refers to eosin/methylene blue historical concern; current IARC: Eosin not classified, Methylene Blue Group 2B? Actually not classified as carcinogenic per OSHA.

Reproductive toxicity: Methanol suspected developmental toxicity at high doses. Methylene Blue may cause fetal risk if high systemic exposure in pregnancy.

STOT: Methanol causes STOT SE 1 (CNS, optic nerve).

12. Ecological Information

Ecotoxicity:

- Methanol: LC50 fish 15400 mg/L (96h), EC50 Daphnia >10000 mg/L, low bioaccumulation, readily biodegradable.
- Sodium Azide: Very toxic to aquatic life. LC50 fish 0.8 mg/L (96h), EC50 Daphnia 0.4 mg/L. Avoid release. In Solution I at 0.05% (500 mg/L) the product itself is diluted but still harmful if released undiluted in bulk.
- Eosin Y: LC50 fish >100 mg/L, may cause coloration of water, inhibits photosynthesis at high concentration.
- Methylene Blue: Toxic to aquatic life with long lasting effects at high concentration; LC50 fish ~ 18 mg/L.

Persistence and degradability: Methanol readily biodegradable (99% 28d). Eosin Y and Methylene Blue not readily biodegradable but photodegradable.

Bioaccumulative potential: Not expected to bioaccumulate (log Kow methanol -0.77, sodium azide low).

Mobility in soil: Highly soluble in water.

13. Disposal Considerations

13.1 Waste treatment: Dispose in accordance with federal, state, local regulations (40 CFR 262).

- Fixative (Methanol): RCRA ignitable waste D001 and toxic U154. Collect as hazardous flammable waste, incinerate in approved facility.
- Solutions I & II: Contain low-level dyes and sodium azide. Do NOT pour down drain without treatment. Deactivate azide before disposal: treat with 10% NaOH + sodium nitrite or commercial azide destroyer, or collect as hazardous waste. Avoid contact with metal plumbing.
- Kit packaging: Empty bottles may retain residue. Triple rinse, offer for recycling if decontaminated, otherwise dispose as chemical waste.

13.2 Contaminated packaging: Dispose as unused product.

14. Transport Information

DOT (US):

- For Kit containing Methanol (>24%): UN1230, Methanol, 3 (6.1), PG II, Limited Quantity exception may apply if inner bottles <100 mL? Per SOP bottle 250 mL - Kit must be shipped as UN1230. For individual Fixative bottle: UN1230.
- Solutions I & II alone: Not regulated as dangerous goods (aqueous, non-flammable, low azide).

IATA: UN1230 Methanol, Class 3 (6.1), PG II, Flammable liquid toxic.

Packing instruction: 364/352. ERG 131.

IMDG: UN1230 METHANOL, 3 (6.1), PG II, Marine Pollutant No, EmS F-E S-D.

Special precautions: Keep away from heat. Ensure closures tight.

15. Regulatory Information

15.1 US Federal:

- OSHA 29 CFR 1910.1200: Hazardous per methanol content.
- TSCA: All components listed.
- CERCLA RQ: Methanol 5000 lbs, Sodium Azide 1000 lbs.
- SARA 311/312: Fire, Acute health, Chronic health (methanol). SARA 313: Methanol (CAS 67-56-1) reportable if >1%. Sodium Azide reportable.
- RCRA: See Section 13.

15.2 State Right-to-Know: Methanol listed in CA, MA, NJ, PA. Sodium Azide listed.

15.3 California Prop 65: Methanol listed as developmental toxin. Warning may be required if product exposes to methanol.

15.4 EU / International: REACH: All components pre-registered. CLP classification per Section 2.

15.5 Chemical Inventories: EINECS/ELINCS, DSL/NDL, ENCS, IECSC listed.

16. Other Information

NFPA Ratings (Fixative): Health 1? Actually methanol NFPA Health 1, Flammability 3, Instability 0. For Solutions I/II: Health 1, Flammability 0, Instability 0.

HMIS Ratings: Fixative: H1* F3 PH0 (*chronic). Solutions: H1 F0 PH0.

Full text of H-statements per Section 2-3:

H225 Highly flammable liquid and vapor

H301 Toxic if swallowed

H311 Toxic in contact with skin

H331 Toxic if inhaled

H370 Causes damage to organs

H302 Harmful if swallowed

H319 Causes serious eye irritation

H400 Very toxic to aquatic life

Disclaimer: The information provided in this Safety Data Sheet is correct to the best of our knowledge at date of publication. It is designed as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as warranty or quality specification. User must ensure suitability for own purpose. For research use only.

References: OSHA HazCom 2012, GHS Rev9, ECHA C&L; Inventory, Sigma-Aldrich SDS for Methanol, Sodium Azide, Eosin Y, Methylene Blue, CHEM-IMPEX MSDS.