



# SAFETY DATA SHEET

Manihot esculenta-Ingredient Probe qPCR Kit | Cat. No. BF-79467580

Compliant with GHS (Globally Harmonized System) · OSHA HazCom 2012 · EU REACH · GB/T 16483 / GB/T 17519

<b>Version</b>	1.0
<b>Revision Date</b>	April 1, 2026
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<b>SDS ID</b>	BF-SDS-RTPCR-001
<b>Supersedes</b>	All previous versions

## SECTION 1: IDENTIFICATION

### 1.1 Product Identifiers

<b>Product Name</b>	Manihot esculenta-Ingredient Probe qPCR Kit
<b>Catalog Number</b>	BF-79467580
<b>Brand</b>	BIOFARGO
<b>Product Type</b>	Research Reagent Kit — One-Step RT-PCR Kit
<b>CAS Number</b>	Mixture — see Section 16

### 1.2 Supplier / Manufacturer

<b>Company</b>	BIOFARGO, Inc.
<b>Address</b>	1716 E. Parham Road, Richmond, VA 23228, USA
<b>Telephone</b>	+1 (804) 529-2296
<b>Email</b>	contact@biofargo.com
<b>Website</b>	www.biofargo.com

### 1.3 Emergency Telephone Number

<b>Emergency (24 h)</b>	+1 (804) 529-2296 (BIOFARGO Technical Support)
<b>CHEMTREC (US)</b>	+1 (800) 424-9300

### 1.4 Recommended Use and Restrictions

Identified Use: For Research and Development (R&D) use only.

Uses Advised Against: Not for pharmaceutical, veterinary, household, diagnostic, food, or therapeutic use.

This is a summary SDS for a multi-component kit. Individual component SDS documents are available at [www.biofargo.com](http://www.biofargo.com). See Section 16 for kit component list.



## SECTION 2: HAZARD IDENTIFICATION

### 2.1 GHS Classification of the Mixture

Flammable Liquids	Category 4 — H227
Acute Toxicity (oral)	Not classified
Skin Irritation	Not classified
Eye Irritation	Not classified
Reproductive Toxicity	Not classified

### 2.2 GHS Label Elements

Pictogram: No GHS hazard pictogram required for Category 4 flammable liquid.

Signal Word: WARNING

#### Hazard Statements:

- H227 Combustible liquid.

#### Precautionary Statements:

##### Prevention:

- P210 Keep away from heat, sparks, open flames, and hot surfaces. No smoking.
- P280 Wear protective gloves / eye protection / face protection.

##### Response:

- P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

##### Storage:

- P403 + P235 Store in a well-ventilated place. Keep cool.

##### Disposal:

- P501 Dispose of contents and container in accordance with local regulations.

### 2.3 Hazards Not Otherwise Classified (HNOC)

- Vapors are heavier than air and may spread along floors or accumulate in low areas.
- Forms explosive air-vapor mixtures upon intense heating.
- Hazardous combustion gases or vapors may develop in a fire.

### 2.4 Health Hazards

Based on currently available information, no known health hazards are associated with this kit under normal conditions of use when handled in accordance with good laboratory practice.

### 2.5 Environmental Hazards

Based on currently available information, no known environmental hazards are associated with this product. Do not allow undiluted product or large quantities to reach groundwater, water courses, or sewage systems.

### 2.6 Other Hazards — PBT / vPvB Assessment

This mixture does not contain substances identified as PBT (Persistent, Bioaccumulative, and Toxic) or vPvB (very



Persistent and very Bioaccumulative) at concentrations  $\geq 0.1\%$ .

## SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

### 3.1 Substance / 3.2 Mixture

This product is a multi-component research reagent kit (mixture). The kit contains aqueous enzyme-buffer solutions, lyophilized oligonucleotides, and non-infectious plasmid-based control material.

Individual component composition and CAS numbers are provided in the component-level SDS documents available at [www.biofargo.com](http://www.biofargo.com). See Section 16 for kit component inventory.

The primary flammable component contributing to H227 classification is glycerol or equivalent polyol stabilizer present in enzyme storage buffers at concentrations below OSHA action levels for individual hazard classification triggers.

## SECTION 4: FIRST-AID MEASURES

### 4.1 Description of First-Aid Measures

<b>Inhalation</b>	Remove person to fresh air immediately. If symptoms persist, seek medical attention.
<b>Skin contact</b>	Remove contaminated clothing immediately. Wash affected area thoroughly with soap and water for at least 15 minutes. If irritation develops or persists, seek medical attention.
<b>Eye contact</b>	Immediately flush eyes with large amounts of water for at least 15 minutes, occasionally lifting upper and lower eyelids. Remove contact lenses if present and easy to do. Seek immediate medical attention.
<b>Ingestion</b>	Do NOT induce vomiting. Rinse mouth with water. Give 1–2 glasses of water to drink. Seek medical attention immediately. Never give anything by mouth to an unconscious person.

### 4.2 Most Important Symptoms and Effects, Acute and Delayed

No specific acute toxicity data are available for this mixture. Symptoms may include mild irritation of eyes, skin, or respiratory tract upon prolonged or repeated exposure.

### 4.3 Indication of Immediate Medical Attention and Special Treatment

Treat symptomatically. Provide product SDS to treating physician.

## SECTION 5: FIREFIGHTING MEASURES

### 5.1 Extinguishing Media

<b>Suitable</b>	Dry chemical powder, CO <sub>2</sub> , alcohol-resistant foam, dry sand
<b>Unsuitable</b>	High-volume water jet (may spread fire)

### 5.2 Special Hazards Arising from the Substance or Mixture

- Combustible liquid (Category 4). Flash point > 60 °C.
- Vapors may accumulate in low-lying areas and ignite.



- Hazardous decomposition products may include CO, CO<sub>2</sub>, and nitrogen oxides.

### 5.3 Advice for Firefighters

- Wear self-contained breathing apparatus (SCBA) and full protective gear.
- Cool containers exposed to fire with water spray.
- Prevent fire-fighting water from contaminating drainage or waterways.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1 Personal Precautions, PPE, and Emergency Procedures

- Evacuate personnel from affected area.
- Wear appropriate PPE: nitrile gloves, safety glasses, and lab coat.
- Eliminate all ignition sources if spill is significant.

### 6.2 Environmental Precautions

- Prevent entry into drains, sewers, and waterways.
- Report significant spills to local environmental authorities as required.

### 6.3 Methods and Materials for Containment and Cleaning Up

- Absorb with inert absorbent material (vermiculite, dry sand, or paper towels).
- Transfer to suitable, labeled waste containers for disposal.
- Clean contaminated surface with water. Allow area to ventilate.

### 6.4 Reference to Other Sections

See Section 8 for personal protection. See Section 13 for disposal guidance.

## SECTION 7: HANDLING AND STORAGE

### 7.1 Precautions for Safe Handling

- Handle in a well-ventilated laboratory area.
- Keep away from open flames, hot surfaces, and all sources of ignition.
- Take precautionary measures against static discharge when handling larger quantities.
- Avoid contact with eyes, skin, and clothing.
- Wash hands and exposed skin thoroughly after handling.
- Change contaminated clothing immediately.

### 7.2 Conditions for Safe Storage

<b>Recommended temperature</b>	2–8 °C (refrigerator)
<b>Container type</b>	Original manufacturer containers, tightly sealed
<b>Special conditions</b>	Store away from heat, light, and incompatible materials
<b>Storage class (TRGS 510)</b>	10 — Combustible liquids



<b>Incompatibilities</b>	Strong oxidizing agents, strong acids, strong bases
<b>Shelf life</b>	See product label or 12 months from date of manufacture

### 7.3 Specific End Uses

For Research and Development use only. Refer to the product manual for detailed handling and usage instructions.

## SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

### 8.1 Control Parameters

No OSHA PEL, ACGIH TLV, or NIOSH REL have been established for this product or its individual components at the concentrations present in this kit.

### 8.2 Appropriate Engineering Controls

- Handle in a laboratory equipped with general and local exhaust ventilation.
- Provide eyewash station and emergency shower in the work area.
- Standard laboratory biosafety practices should be followed.

### 8.3 Individual Protection Measures / PPE

<b>Eye / Face protection</b>	Safety glasses with side shields; chemical splash goggles if splash risk exists
<b>Skin / Hand protection</b>	Nitrile or latex examination gloves (0.1 mm minimum thickness)
<b>Body protection</b>	Laboratory coat; flame-resistant lab coat if working near ignition sources
<b>Respiratory protection</b>	Not required under normal conditions of use. Use NIOSH-approved respirator if ventilation is inadequate.
<b>General hygiene</b>	Do not eat, drink, or smoke in areas where this product is used. Wash hands before breaks and after use.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on Basic Physical and Chemical Properties

<b>Appearance</b>	Clear to slightly opaque aqueous solution (liquid components); white lyophilized powder (primer-probe component)
<b>Odor</b>	Odorless to slightly characteristic
<b>Odor threshold</b>	Not determined
<b>pH</b>	7.0–8.5 (aqueous components)
<b>Melting point / Freezing point</b>	Not applicable (mixture)
<b>Boiling point</b>	≥ 100 °C (aqueous components)
<b>Flash point</b>	> 60 °C (estimated; Category 4 flammable liquid)
<b>Evaporation rate</b>	Similar to water



<b>Flammability (solid, gas)</b>	Not applicable
<b>Upper/Lower flammability limits</b>	Not determined
<b>Vapor pressure</b>	Similar to water at ambient temperature
<b>Vapor density</b>	> 1 (air = 1) for glycerol-containing components
<b>Relative density</b>	~1.0–1.1 g/mL
<b>Solubility</b>	Fully miscible with water
<b>Partition coefficient (log Pow)</b>	Not applicable (mixture)
<b>Auto-ignition temperature</b>	Not determined
<b>Decomposition temperature</b>	Not determined
<b>Viscosity</b>	Low viscosity liquid

## 9.2 Other Information

Detailed physical and chemical data for individual components are available in component-specific SDS documents at [www.biofargo.com](http://www.biofargo.com).

## SECTION 10: STABILITY AND REACTIVITY

### 10.1 Reactivity

No dangerous reactions known under conditions of normal storage and use.

### 10.2 Chemical Stability

Stable under recommended storage conditions (2–8 °C, dry environment, original sealed containers).

### 10.3 Possibility of Hazardous Reactions

No hazardous polymerization will occur.

### 10.4 Conditions to Avoid

- Excessive heat (> 60 °C), open flames, and ignition sources.
- Prolonged exposure to light.
- Repeated freeze-thaw cycling (may reduce enzyme activity).

### 10.5 Incompatible Materials

- Strong oxidizing agents (e.g., permanganates, peroxides, chlorates).
- Strong acids (pH < 3) or strong bases (pH > 11).
- Heavy metal ions (may inhibit enzyme activity).

### 10.6 Hazardous Decomposition Products

- Under fire conditions: carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>).
- Under normal conditions: none known.

## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1 Information on Toxicological Effects



<b>Acute toxicity (oral)</b>	No data available for mixture. Components not expected to be acutely toxic at concentrations present.
<b>Acute toxicity (dermal)</b>	No data available. Not expected to cause significant skin absorption hazard.
<b>Acute toxicity (inhalation)</b>	Not expected to present inhalation hazard under normal laboratory conditions.
<b>Skin corrosion / irritation</b>	Not classified. May cause mild irritation with prolonged contact.
<b>Serious eye damage / irritation</b>	Not classified. Transient mild irritation possible.
<b>Respiratory / skin sensitization</b>	No sensitization data available. Not expected to be a sensitizer.
<b>Germ cell mutagenicity</b>	No data available. Not expected to be mutagenic based on composition.
<b>Carcinogenicity</b>	Not listed as carcinogen by IARC, NTP, or OSHA.
<b>Reproductive toxicity</b>	No data available. Not expected.
<b>STOT — single exposure</b>	Not classified.
<b>STOT — repeated exposure</b>	Not classified.
<b>Aspiration hazard</b>	Not classified (aqueous mixture).

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1 Toxicity

No ecotoxicological data are available for this mixture. Components are not expected to exhibit significant aquatic toxicity at concentrations present.

### 12.2 Persistence and Degradability

The aqueous buffer components are expected to be readily biodegradable. Nucleic acid components will degrade in the environment.

### 12.3 Bioaccumulative Potential

Not expected to bioaccumulate (mixture of hydrophilic components, log Kow < 3).

### 12.4 Mobility in Soil

Aqueous components are expected to be mobile in soil. Contains no persistent organic compounds of concern.

### 12.5 Results of PBT and vPvB Assessment

This product does not contain PBT or vPvB substances at  $\geq 0.1\%$ .

### 12.6 Other Adverse Effects

Avoid release to the environment. Do not allow to enter drains, sewers, or waterways.

## SECTION 13: DISPOSAL CONSIDERATIONS

### 13.1 Waste Treatment Methods

- Dispose of in accordance with all applicable federal, state, and local regulations.
- Incinerate in a licensed facility, or arrange for pickup by a licensed waste disposal contractor.
- Do not pour down the drain unless local regulations explicitly permit.
- Container disposal: Decontaminate and dispose of according to applicable regulations.



Waste code (EU): 18 01 06\* — chemicals consisting of or containing hazardous substances (laboratory waste).  
Consult your local hazardous waste disposal authority for specific requirements.

## SECTION 14: TRANSPORT INFORMATION

<b>UN Number</b>	Not regulated for transport
<b>UN Proper Shipping Name</b>	Not a dangerous good
<b>Transport Hazard Class(es)</b>	None
<b>Packing Group</b>	Not applicable
<b>Environmental Hazards</b>	Not classified as environmentally hazardous for transport purposes
<b>Special Precautions for User</b>	Transport in original, tightly sealed containers at 2–8 °C (cold pack recommended).
<b>ADR/RID (road/rail)</b>	Not regulated
<b>IMDG (sea)</b>	Not regulated
<b>IATA-DGR (air)</b>	Not regulated

### 14.7 Transport in Bulk

Not applicable for laboratory quantities.

## SECTION 15: REGULATORY INFORMATION

### 15.1 Safety, Health, and Environmental Regulations

<b>OSHA HazCom 2012 (29 CFR 1910.1200)</b>	This SDS complies with OSHA Hazard Communication Standard.
<b>EPA TSCA (US)</b>	Components are listed or exempt under TSCA inventory.
<b>CERCLA / SARA Title III</b>	No SARA 302 Extremely Hazardous Substances. No CERCLA reportable quantities apply.
<b>California Prop 65</b>	No Prop 65 listed chemicals at concentrations requiring warning.
<b>EU REACH</b>	Components comply with REACH registration requirements where applicable.
<b>GB/T 16483 / GB/T 17519 (China)</b>	This SDS conforms to Chinese national standard for safety data sheets.
<b>China NRCO Hazardous Chemicals</b>	Components are listed in the Catalogue of Hazardous Chemicals where applicable.

### 15.2 Chemical Safety Assessment

A formal Chemical Safety Assessment has not been performed for this research reagent kit. Users should perform their own risk assessment based on their specific conditions of use.



## SECTION 16: OTHER INFORMATION

### 16.1 H-Statement Full Text

<b>H227</b>	Combustible liquid.
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### 16.2 Abbreviations and Acronyms

<b>GHS</b>	Globally Harmonized System of Classification and Labelling of Chemicals
<b>SDS</b>	Safety Data Sheet
<b>PBT</b>	Persistent, Bioaccumulative, and Toxic
<b>vPvB</b>	Very Persistent and Very Bioaccumulative
<b>STOT</b>	Specific Target Organ Toxicity
<b>OSHA</b>	Occupational Safety and Health Administration (USA)
<b>REACH</b>	Registration, Evaluation, Authorisation and Restriction of Chemicals (EU)
<b>TSCA</b>	Toxic Substances Control Act (USA)
<b>PCR</b>	Polymerase Chain Reaction
<b>RT-PCR</b>	Reverse Transcription Polymerase Chain Reaction

### 16.3 Kit Component Inventory

Component	Description	Volume	Vial	Lid Color
2× One-Step RT-PCR Master Mix	Contains optimized buffer and enzyme mix	500 µL	0.5 mL Vial	Blue
Primer-Probe Powder	Lyophilized target-specific lyophilized primer and probe set	50 T	1.5 mL Vial	Brown
Positive Control (1E7 copies/µL)	Non-infectious plasmid-based control	0.5 ml	0.5 mL Vial	Yellow
Nuclease-free water / Dilution Buffer	For reaction setup	1 ml	1.5 mL Vial	Green
Manual	Instruction booklet	1 Set	N/A	N/A

\* After reconstitution with Nuclease-free Water per protocol.

### 16.4 GHS Hazard Classification per Component

<b>2× One-Step RT-PCR Master Mix</b>	H227 — Combustible liquid (Category 4). Signal word: Warning.
<b>Primer-Probe Powder</b>	No hazard classification required.
<b>Positive Control (1E7 copies/µL)</b>	No hazard classification required. Non-infectious.
<b>Nuclease-free Water</b>	No hazard classification required.



## 16.5 Preparation / Revision History

<b>Prepared by</b>	BIOFARGO Technical Documentation Team
<b>Initial issue date</b>	January 1, 2025
<b>Revision date</b>	April 1, 2026
<b>Reason for revision</b>	Format upgrade to GHS / OSHA HazCom 2012 / Sigma-Aldrich standard structure; correction of Section 2 emergency summary; completion of Sections 3–15; addition of Section 16.2–16.5.

## 16.6 Disclaimer

The information in this Safety Data Sheet is based on data believed to be reliable. It is provided in good faith and is believed to be accurate as of the revision date. BIOFARGO, Inc. makes no warranty, express or implied, regarding the accuracy or completeness of this information.

This SDS is intended only as a guideline for safe handling, use, processing, storage, transportation, and disposal of this product. It is not to be treated as a guarantee of any specific property. Users are responsible for assessing the suitability of this product for their particular purposes and for ensuring compliance with applicable laws and regulations.

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