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SAFETY DATA SHEET

5X M4 PCR Buffer

Prepared under WHMIS 2015 (Hazardous Products Regulations, SOR/2015-17) / GHS Rev. 5.

DOCUMENT ID	VERSION	ISSUED	EFFECTIVE
HSS-PL05-PCRB-SDS	1.0	2026-09-03	2026-09-03

1 Identification

Product name	5X M4 PCR Buffer (5X reaction buffer supplied with M4 Taq DNA Polymerase)
Supplied in	M4 Taq DNA Polymerase kits: catalogue M0902-010 (4 × 1 mL tubes) and M0902-050 (1 × 50 mL bottle). Kit component; not sold separately.
Product type	Concentrated (5X) aqueous PCR reaction buffer: a proprietary buffered salt solution containing magnesium, a non-ionic detergent and a stabilizing protein.
Catalogue number	None of its own: a kit component, identified by the kit catalogue numbers above.
Recommended use	Laboratory reagent component of a polymerase chain reaction (PCR) kit. For laboratory research use only (RUO).
Restrictions on use	Not for food, drug, pesticide, or biological-product use. Not for human or animal diagnostic or therapeutic use.
Supplier	HoppeSyler Scientific Inc., 79 Bessemer Road, Unit 1, London, ON N6E 1P9, Canada
Origin	Developed and manufactured in Canada.
Emergency telephone	1-833-727-7522 · Email: info@hoppesyler.com

2 Hazard Identification

WHMIS 2015 / GHS classification	Not classified. This product does not meet the criteria for any physical, health, or environmental hazard class under WHMIS 2015 (Hazardous Products Regulations, SOR/2015-17) / GHS Rev. 5.
Basis for non-classification	The product is an aqueous solution of common buffer salts with a non-ionic detergent and a small amount of protein. Every component is present below its GHS classification cut-off in the finished buffer, individually and under the GHS mixture-additivity rules; the detergent's aquatic classification is likewise below the mixture threshold (Section 12). No volatile flammable solvent is present.
Signal word	None.
Pictograms	None.
Hazard statements	None.
Precautionary statements	PREVENTION P264 Wash hands thoroughly after handling. · P280 Wear protective gloves and eye protection. (Voluntary good-laboratory-practice handling for a research reagent; no precautionary statement is required by classification.)
Other hazards	No data indicating a hazard not otherwise classified (HNOC). As with any laboratory reagent, avoid unnecessary skin and eye contact and do not ingest.

3 Composition / Information on Ingredients

Substance type: mixture (aqueous salt solution). The composition below is the **shipped** formulation, computed from the manufacturing formulation of record.

Component	CAS-No	Concentration (w/w %, GHS band)
Water (nuclease-free)	7732-18-5	≥50%

The formulation of this buffer is proprietary. This product is not classified as hazardous, so ingredient disclosure beyond the table above is not required under the Hazardous Products Regulations (SOR/2015-17). Every constituent (common buffer salts, a magnesium salt, a non-ionic detergent and a stabilizing protein) is present below its GHS classification cut-off in the finished buffer, individually and by mixture additivity, so none drives a classification (Sections 2 and 11), and no carcinogen, mutagen, or reproductive toxicant (CMR) is present. The complete quantitative composition of record is on file and is available to regulatory authorities and medical personnel on request.

4 First-Aid Measures

Eye contact	Rinse cautiously with water for several minutes, holding the eyelids open. Remove contact lenses if present and easy to do, then continue rinsing. Get medical attention if irritation develops and persists.
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Skin contact	Wash with plenty of soap and water. Remove contaminated clothing. Get medical attention if irritation develops and persists.
Inhalation	Not an expected route of exposure for this aqueous liquid. Remove the person to fresh air if any discomfort occurs.
Ingestion	Rinse mouth with water. Do not induce vomiting. Get medical attention if a large amount is swallowed or if symptoms occur.
Symptoms / effects	None expected under normal handling. Transient mild eye or skin irritation may occur with direct or prolonged contact.
Note to physician	Treat symptomatically.

5 Fire-Fighting Measures

Suitable media	Water spray, water fog, dry chemical, carbon dioxide (CO ₂), or alcohol-resistant foam. Use media appropriate to the surrounding fire.
Unsuitable media	None known.
Specific hazards	Non-flammable aqueous solution: water and dissolved salts with no volatile flammable solvent; no flash point applies (Section 9). The product as supplied does not support combustion; the dried residue is not combustible to a significant degree. Hazardous combustion products of the residue may include carbon monoxide, carbon dioxide, and oxides of nitrogen and sulfur.
Firefighter PPE	Self-contained breathing apparatus (SCBA) and full protective gear for any surrounding fire.

6 Accidental Release Measures

Personal precautions	Wear protective gloves and eye protection. Avoid contact with eyes and skin. No special emergency measures are required for this small-volume, non-classified reagent.
Environmental	Avoid release to drains and waterways where practical; see Section 12. No special environmental precautions are required.
Containment / cleanup	Absorb the spill with paper towel or an inert absorbent. Wipe up, then clean the area with water. Place waste in a labelled container for disposal in accordance with Section 13.

7 Handling and Storage

Safe handling	Handle in accordance with good laboratory practice. Avoid contact with eyes. Wear the PPE in Section 8. Wash hands after handling. Keep the buffer on ice during use.
Safe storage	Store frozen at -20 °C with the rest of the kit; keep the container tightly closed. Thaw completely and mix before use.
Incompatibilities	Strong oxidising agents.

8 Exposure Controls / Personal Protection

Exposure limits	No constituent of this product is listed in the Ontario Table of Ontario Regulation 833 or in US OSHA Table Z-1, and none carries an ACGIH TLV in the sources consulted (the purchased-grade supplier sheets and the compilations named below). The product is an aqueous liquid dispensed in small volumes and does not generate a mist or vapour in normal use. <i>Occupational exposure limits checked against the ACGIH TLV list, US OSHA 29 CFR 1910.1000 Table Z-1, and Ontario Regulation 833 (Ontario Table).</i>
Engineering controls	General laboratory ventilation is sufficient. No special engineering controls are required.
Eye / face protection	Safety glasses meeting CSA Z94.3.
Skin protection	Disposable nitrile gloves and a lab coat.
Respiratory protection	Not required under normal handling of this aqueous liquid.

9 Physical and Chemical Properties

Physical state	Liquid	Flash point	Not applicable (aqueous salt solution; no volatile flammable solvent). No flash point supports a flammability class in Section 2.
Appearance	Clear, colourless liquid	Boiling point (initial)	About 100 °C (aqueous solution; not measured)
Odour	Odourless	Flammability (solid, gas)	Not applicable (liquid)
Odour threshold	No data available	Flammable / explosive limits	Not applicable
Vapour pressure	No data available	Vapour density (air = 1)	No data available
Colour	Colourless	Oxidising properties	None

pH	About 8.8 for the 5X concentrate as supplied (the buffering component enters as a stock adjusted to pH 8.8 in the manufacturing formulation of record; the finished buffer is not independently measured)	Relative density	~1.06 (computed from the formulation of record; not measured)
Melting / freezing point	About 0 °C (aqueous solution; supplied frozen at -20 °C)	Solubility	Miscible with water
Evaporation rate	No data available	Partition coeff. (log K_{ow})	No data available
Auto-ignition temperature	Not applicable	Viscosity	Water-like; no measured value
Decomposition temperature	No data available	Explosive properties	None

As an aqueous salt solution with no volatile flammable solvent, this product has no flash point and is not a flammable liquid; this is the basis for the absence of any flammability (H226 / H225) classification in Section 2. Estimated values are marked as estimated or computed; properties without a sourced value are stated as "No data available" rather than calculated.

10 Stability and Reactivity

Reactivity / stability	Stable under the recommended storage and handling conditions. No hazardous polymerisation. No hazardous reactions known.
Conditions to avoid	Repeated freeze/thaw cycles and prolonged storage above -20 °C (may reduce performance; not a safety hazard).
Incompatible materials	Strong oxidising agents.
Decomposition products	Thermal decomposition of the dried residue may yield carbon monoxide, carbon dioxide, and oxides of nitrogen and sulfur.

11 Toxicological Information

Likely routes of exposure	Eye and skin contact during pipetting are the only realistic routes; ingestion is unlikely; inhalation is not an expected route for this non-volatile aqueous liquid.
Acute toxicity (product)	Not classified. Every component has an oral LD50 far above the classification limit or is not classified for acute toxicity by its suppliers; by the GHS calculation method the mixture is not acutely toxic by the oral, dermal, or inhalation route.
Skin corrosion / irritation	Not classified. Transient mild irritation may occur with prolonged direct contact.
Serious eye damage / irritation	Not classified. Transient mild irritation may occur with direct contact; the buffered aqueous mixture does not meet the criteria for eye irritation at the shipped concentrations, individually or under the GHS mixture-additivity rules.
Respiratory / skin sensitisation	Not classified. No sensitiser is present at or above its classification cut-off. The stabilizing protein is non-volatile, in solution and present below 0.1%, and is not expected to present a sensitisation hazard under the recommended handling conditions.
STOT (single / repeated)	Not classified.
Aspiration hazard	Not classified (aqueous solution; not a hydrocarbon or other substance of the type that classifies for aspiration).
Carcinogenicity / mutagenicity / reproductive toxicity (CMR)	Not classified. No component carries a carcinogen, germ-cell mutagen or reproductive-toxicant classification under WHMIS 2015 / GHS, and none is listed as a carcinogen by IARC, NTP, or ACGIH.
Component reference data	Reference acute-toxicity values for every constituent are on file from the purchased-grade supplier sheets and standard compilations; none is present at a classifying level in the finished mixture: - The least favourable measured value among the constituents is an oral LD50 of 2600 mg/kg (rat), for a common buffer salt present at 1–3%; every other measured constituent value is above 4000 mg/kg. - The non-ionic detergent is not classified for health effects at neat concentration; its aquatic classification is addressed in Section 12. The stabilizing protein carries no acute-toxicity data on its supplier sheet and is not classified. <i>Where a measured value is not available for a component, classification is by calculation; the finished mixture is not classified by either route.</i>

12 Ecological Information

Ecotoxicity	Not classified as hazardous to the aquatic environment. The non-ionic detergent (Aquatic Chronic 2 at neat concentration) is present at 0.1 to 1% in the finished buffer, below the mixture-classification threshold. One buffer salt is noted by its supplier as harmful to aquatic life at neat concentration (Category 3, a class with no label element); at its low percentage in the buffer it is far below any mixture threshold. No other constituent carries an aquatic classification.
Persistence	The buffer salts are common environmental ions; the detergent and protein are biodegradable.
Bioaccumulation	Low potential.
Mobility	Highly mobile in soil and water due to water miscibility.
Other adverse effects	None known.

13 Disposal Considerations

Dispose of contents and container in accordance with local, provincial, and federal regulations. This product is not classified as a hazardous waste on the basis of its composition; however, users must verify their own waste characterisation and applicable institutional requirements. Do not release large volumes to drains.

14 Transport Information

TDG (Canada)	Not Regulated. This product meets no transport hazard class under the Transportation of Dangerous Goods Regulations (SOR/2001-286). No UN number or packing group applies.
US DOT / IATA / IMDG	Not regulated for transport under United States DOT (49 CFR), IATA (air) or IMDG (sea). Confirm current requirements before any bulk or air shipment.
Environmental hazards	Not applicable; not a marine pollutant (no aquatic hazard classification, Section 12).
Transport in bulk (MARPOL Annex II / IBC Code)	Not applicable; not shipped in bulk.

15 Regulatory Information

Canada (WHMIS 2015)	Not classified under the Hazardous Products Regulations (SOR/2015-17). Every constituent of the formulation, disclosed and proprietary alike, is listed on the Canadian Domestic Substances List (DSL).
Other jurisdictions	No component is listed under California Proposition 65. Confirm inventory status (for example US TSCA) for the destination jurisdiction before export.

16 Other Information

Prepared by HoppeSyler Scientific Inc. · Approved by: HoppeSyler Scientific Inc.

Revision history

Version	Date	Change
1.0	2026-09-03	First HoppeSyler Scientific Safety Data Sheet for this kit component, prepared under WHMIS 2015 / GHS Rev. 5. Product determined not classified : an aqueous buffer-salt solution with a non-ionic detergent and a small amount of protein, every component below its GHS cut-off, individually and by mixture additivity. Composition computed from the manufacturing formulation of record and disclosed by GHS band. Composition presentation revised 2026-09-03: the proprietary formulation is withheld and presented at the disclosure level required for a not-classified product (complete composition of record on file); no classification data changed. Prepared 2026-08-16; approved for release 2026-09-03.

Legend

GHS = Globally Harmonized System; WHMIS = Workplace Hazardous Materials Information System; TDG = Transportation of Dangerous Goods; DSL = Domestic Substances List; RUO = Research Use Only; PCR = Polymerase Chain Reaction; CMR = carcinogen / mutagen / reproductive toxicant; STOT = specific target organ toxicity; PPE = personal protective equipment; TLV = threshold limit value (ACGIH); PEL = permissible exposure limit (OSHA); TWA = time-weighted average; H = hazard statement; P = precautionary statement.

Disclaimer. The information herein is provided in good faith and believed accurate as of the issue date shown above. It is the user's responsibility to determine suitability for their purpose. HoppeSyler Scientific Inc. makes no warranty and assumes no liability for use of this information.

END OF SAFETY DATA SHEET