

Safety data sheet

DMEM/F12 + 15 mM HEPES

BB-SDS-DMEM-F12-HEPES-1X-NAHCO3-15-MM-HEPES
Revision 2026-09-20.7 · 2026-09-20

1. Identification

Field	Information
Product	DMEM/F12 + 15 mM HEPES
Product identifier	MD-LIQ-DMEM-F12-HEPES-1X-NAHCO3-15-MM-HEPES
Other identification	1X liquid basal medium
Responsible party	Bramante Biologics Corporation
U.S. address	160 Alewife Brook Parkway, STE 1316, Cambridge, MA 02138, USA
Telephone	+1 (617) 221-6167
Emergency telephone	+1 (617) 221-6167
Email	support@bramantebio.com

Use: laboratory cell culture. Do not use for human or veterinary administration.

2. Hazard Identification

The supplied aqueous mixture is not classified as hazardous under the OSHA Hazard Communication Standard, 29 CFR 1910.1200. This determination uses the nominal composition and available ingredient information.

Label element	Requirement
Signal word	None required
Hazard pictograms	None required
Hazard statements	None required
Precautionary statements	No classified-hazard statements required; follow normal laboratory precautions

Spilled liquid can make floors slippery. Droplets may cause temporary eye or respiratory discomfort. The product contains no ingredient with unknown acute toxicity at 1% or more. Added chemicals or biological cultures can introduce hazards beyond those of the supplied medium.

3. Composition/information on ingredients

This is a mixture of water, inorganic salts, nutrients and HEPES. No constituent requires hazard disclosure at its concentration in the supplied medium. Selected nominal constituents are listed for identification; the complete product formulation includes the remaining amino acids, vitamins and nutrient components.

Constituent	CAS number	Nominal amount
Sodium chloride	7647-14-5	6.996 g/L
HEPES, free acid	7365-45-9	3.575 g/L
D-Glucose, anhydrous	50-99-7	3.151 g/L
Sodium bicarbonate	144-55-8	1.2 g/L

Constituent	CAS number	Nominal amount
L-Glutamine	56-85-9	365 mg/L
Calcium chloride dihydrate	10035-04-8	154.5 mg/L
Sodium phosphate dibasic, anhydrous	7558-79-4	71.02 mg/L
Phenol red sodium salt	34487-61-1	8.1 mg/L
Iron(II) sulfate heptahydrate	7782-63-0	417 µg/L
Iron(III) nitrate nonahydrate	7782-61-8	50 µg/L
Zinc sulfate heptahydrate	7446-20-0	432 µg/L
Copper(II) sulfate pentahydrate	7758-99-8	1.3 µg/L
Cyanocobalamin (vitamin B12)	68-19-9	680 µg/L

These quantities are masses per final solution volume, not weight percentages. Water completes the final volume; no ingredient identity is withheld as a trade secret.

4. First aid measures

Exposure	Response
Eyes	Start rinsing with clean water. Remove contact lenses if this is easy, then continue rinsing. Obtain medical care for persistent discomfort or altered vision.
Skin	Remove wet clothing and wash the affected skin. Seek advice if irritation continues.
Inhalation	Leave any mist or aerosol exposure for fresh air. Breathing difficulty needs urgent medical attention.
Ingestion	Rinse the mouth. Do not induce vomiting; seek medical advice after a substantial ingestion or if symptoms develop. Give nothing by mouth to an unconscious person.

Direct contact may cause discomfort; mixture-specific data on delayed effects are unavailable. No particular antidote is identified. Medical care should address the exposure and symptoms, including any other material mixed with the medium.

5. Fire-fighting measures

The supplied water-based medium is nonflammable. Use extinguishing equipment appropriate to the surrounding fire; no product-specific extinguishing agent is prohibited.

Heating a closed bottle can increase pressure. If fire evaporates the water, nutrient and salt residues can decompose to carbon oxides, nitrogen or sulfur oxides and metal-containing residues. Avoid fumes; firefighters should use protective clothing and self-contained breathing apparatus appropriate to the fire.

6. Accidental release measures

Restrict access to wet flooring. Wear eye protection and gloves, stop the leak if safe, and collect liquid with an absorbent that will not react with the spill. Place the absorbent in a labeled waste container, then clean the surface without spreading liquid into drains.

For a large spill or a mixture containing biological material, use personnel and containment suitable for those additional hazards. Do not treat unused medium and a used cell culture as the same waste.

7. Handling and storage

Use laboratory hygiene and avoid splashing or aerosol generation. Keep food and drink outside the work area, wash hands after handling, and close bottles after withdrawing medium.

Store upright at 2–8 °C, protected from light. Freezing can alter the dissolved composition. Keep away from strong oxidants and from concentrated acids or bases; acids can release carbon dioxide from bicarbonate. Keep the container label legible.

8. Exposure controls/personal protection

No occupational exposure limit applies to the mixture as a whole. The following ingredient-based limits concern airborne material and do not describe a permissible concentration in the liquid.

Airborne constituent	Occupational exposure guidance
Copper dusts and mists, as Cu	OSHA PEL: 1 mg/m ³ , 8-hour TWA. NIOSH REL and ACGIH TLV: 1 mg/m ³ TWA.
Soluble iron salts, as Fe	NIOSH REL and ACGIH TLV: 1 mg/m ³ TWA. No current OSHA PEL for this group.

The reviewed ingredient information assigns no OSHA PEL or ACGIH TLV to HEPES, glucose, sodium bicarbonate, glutamine or phenol red sodium salt. Use general laboratory ventilation for bottle handling and local containment where a procedure creates mist.

Wear eye protection, a lab coat and gloves suitable for the complete material handled. Keep an eyewash accessible and wash hands after use. Respiratory protection is not normally needed for pouring this liquid; assess aerosol-producing tasks and use a workplace respiratory-protection program if exposure controls are insufficient.

9. Physical and chemical properties

Property	Information for supplied liquid
Physical state	Aqueous liquid
Color	Red to orange from phenol red; appearance depends on pH
Odor and odor threshold	Not determined
Melting/freezing point	Expected slightly below 0 °C because of dissolved solutes; exact freezing point not determined
Boiling point or range	Expected close to 100 °C at 101.3 kPa, with a slight elevation from dissolved solutes (estimate)
Flammability	Nonflammable aqueous medium
Lower/upper flammability or explosion limits	Not applicable to the nonflammable supplied liquid
Flash point	Not applicable to the nonflammable supplied liquid
Auto-ignition temperature	Not applicable to the nonflammable supplied liquid
Decomposition temperature	Not determined
pH	Nominal target 7.0–7.4; not a measured lot result
Kinematic viscosity	About 1 mm ² /s at 20 °C (rough estimate for a dilute aqueous medium)
Solubility	Miscible with water; salts and nutrients are supplied in aqueous solution
Partition coefficient, n-octanol/water	Not applicable as a single value for this multicomponent solution
Vapor pressure	About 2.3 kPa at 20 °C (water-vapor estimate for the dilute solution)
Evaporation rate	Not determined
Density/relative density	About 1.0 g/mL at 20 °C; relative density about 1 (rough estimates)
Relative vapor density	Water vapor: about 0.62 (air = 1, calculated reference); does not describe liquid mist
Particle characteristics	Not applicable; supplied as a liquid solution

10. Stability and reactivity

The supplied medium is chemically stable during ordinary refrigerated storage and handling. Keep it at 2–8 °C, protected from light, and avoid freezing or prolonged heating; these conditions can change the dissolved composition and its usefulness for culture.

Strong oxidants are incompatible with the organic nutrients. Concentrated acids release carbon dioxide from bicarbonate, which can pressurize a closed vessel. Concentrated bases change pH and can cause precipitation. The composition does not present a hazardous-polymerization or self-reactive hazard. Thermal decomposition after evaporation can form carbon, nitrogen and sulfur oxides and salt residues.

11. Toxicological information

Eye and skin contact are the most likely exposure routes. Ingestion or inhalation of droplets can occur during mishandling. Contact may cause transient discomfort; a large ingestion may upset the gastrointestinal tract. No whole-mixture animal toxicity test or mixture-specific numerical LD50/LC50 is available.

Endpoint	Assessment of supplied mixture
Acute toxicity, oral/dermal/inhalation	Not classified from ingredient information and concentrations. No acutely toxic ingredient reaches an applicable classification concentration.
Skin corrosion/irritation and serious eye damage/irritation	Not classified. The dilute, near-neutral medium is below applicable ingredient and combined-irritant thresholds.
Respiratory or skin sensitization	Not classified; no sensitizer is identified at a concentration that classifies the mixture.
Germ-cell mutagenicity, carcinogenicity and reproductive toxicity	Not classified at the supplied concentrations. The trace nitrate content is below the carcinogen disclosure threshold; no other ingredient is identified as an OSHA, NTP or IARC carcinogen at a reportable concentration.
Specific target organ toxicity, single/repeated exposure	Not classified. Respiratory-irritant ingredients are present well below mixture classification levels.
Aspiration hazard	Not classified; the supplied liquid is aqueous and contains no aspiration-hazard constituent at a classification concentration.

Published ingredient data include oral rat LD50 values of 25.8 g/kg for glucose, 4,220 mg/kg for sodium bicarbonate and 7,500 mg/kg for glutamine; HEPES has reported oral and dermal rat LD50 values greater than 2,000 mg/kg. These describe the separate ingredients, not measured toxicity of this medium. Chronic mixture effects and specific interactions have not been measured; the classification uses available composition and toxicological evidence.

IARC lists ingested nitrate or nitrite under conditions that cause endogenous nitrosation as Group 2A. This conditional finding does not classify this dilute culture medium as a carcinogen. Vitamin B12 is excluded from the NTP listing for cobalt compounds that release cobalt ions in vivo.

12. Ecological information

The trace copper and zinc salts have aquatic toxicity as concentrated substances, but their concentrations do not classify this medium as an environmentally hazardous transport mixture. Whole-mixture ecotoxicity values, degradation rates and bioaccumulation measurements are unavailable.

Dissolved salts can move with water, and nutrient-rich discharges can affect receiving waters. Avoid uncontrolled release; a lack of transport classification does not authorize disposal to a drain.

13. Disposal considerations

Collect surplus medium and cleanup material according to the laboratory waste assessment and local disposal requirements. Decide how to handle used medium from its biological contents and all added reagents. Residue can remain in empty bottles; manage packaging with the same contamination assessment before recycling or disposal.

14. Transport information

Transport field	Supplied product
U.S. DOT, IATA and IMDG	Not regulated as dangerous goods
UN number and proper shipping name	Not applicable
Transport hazard class and packing group	Not applicable
Marine pollutant/environmental designation	No at the supplied concentrations
Bulk transport under IMO instruments	Not applicable to the bottle and pack formats supplied

Secure bottles upright against leakage and breakage and maintain the stated storage conditions. These determinations apply to the supplied medium; added hazardous material or concentration of the product changes the assessment.

15. Regulatory information

OSHA Hazard Communication: the supplied formulation is not classified as hazardous. Cobalt compounds, copper compounds, zinc compounds and water-dissociable nitrate compounds are listed under EPCRA/SARA Section 313. The corresponding nominal ingredients are below their applicable de minimis concentrations in this medium. Facility reporting also depends on activities and applicable thresholds.

CERCLA-listed substance	Reportable quantity of listed substance
Cupric sulfate	10 lb (4.54 kg)
Ferric nitrate	1,000 lb (454 kg)
Ferrous sulfate	1,000 lb (454 kg)
Zinc sulfate	1,000 lb (454 kg)
Sodium phosphate, dibasic	5,000 lb (2,268 kg)

These reportable quantities apply to the listed chemicals, not to an equal mass of medium. The nominal quantity of each listed substance in the supplied bottle and pack sizes is below its reportable quantity. Copper and zinc compounds are also Clean Water Act toxic pollutants; applicable discharge controls still apply.

No intentionally added ingredient in the nominal formula has been identified on the reviewed California Proposition 65 list. This statement concerns the formulation, not a test for trace impurities. Research use does not by itself determine every facility obligation under chemical-control laws.

16. Other information

Prepared 20 September 2026; document revision 2026-09-20.7. This SDS covers 1X DMEM/F12 with 15 mM HEPES, in 500 mL and 1 L bottles and packs of 1, 6, 12 or 24 bottles. Formulation revision: 2026-09-20.4.

Classification is based on the nominal aqueous composition, ingredient hazard information and concentration rules. This SDS describes the material as supplied and does not cover added chemicals, cultured cells or concentrated residues.

Applicability: 500 mL and 1 L bottles; packs of 1, 6, 12 or 24 bottles.