

Safety data sheet

DMEM/F12

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

1. Identification

Item	Details
Product	DMEM/F12, 1X liquid, without HEPES
Identifier	MD-LIQ-DMEM-F12-1X-NAHCO3
Other description	DMEM and Ham's F12 nutrient mixture, 1:1
Intended use	Basal medium for mammalian cell-culture research
Restrictions	No clinical diagnosis or administration to people or animals
Company	Bramante Biologics Corporation
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2. Hazard Identification

The supplied aqueous medium is not classified as hazardous under the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200. No hazard pictogram, signal word or hazard statement is required for this classification.

No additional classified hazard or hazard not otherwise classified has been identified for the supplied liquid. Avoid splashes and unnecessary mist. Spilled medium can make surfaces slippery. Biological or chemical additions require a separate assessment of the resulting material.

3. Composition/information on ingredients

Aqueous mixture of amino acids, vitamins, glucose, inorganic salts and trace nutrients. No ingredient requires disclosure as a health hazard at its nominal concentration under the applicable mixture criteria. The selected ingredients below are voluntarily identified as mass per final volume; g/L is not weight percent.

Ingredient / supplied form	CAS number	Nominal concentration
Sodium chloride	7647-14-5	6.996 g/L
D-Glucose, anhydrous	50-99-7	3.151 g/L
Sodium bicarbonate	144-55-8	2.438 g/L
L-Glutamine	56-85-9	365 mg/L
Potassium chloride	7447-40-7	311.8 mg/L
Calcium chloride dihydrate	10035-04-8	154.5 mg/L
Disodium hydrogen phosphate, anhydrous	7558-79-4	71.02 mg/L
Iron(II) sulfate heptahydrate	7782-63-0	417 µg/L
Iron(III) nitrate nonahydrate	7782-61-8	50 µg/L

Ingredient / supplied form	CAS number	Nominal concentration
Copper(II) sulfate pentahydrate	7758-99-8	1.3 µg/L
Zinc sulfate heptahydrate	7446-20-0	432 µg/L

The product sheet provides the complete nominal formulation. Water supplies the remaining volume. No formulation information is withheld as a trade secret.

4. First aid measures

- Eye exposure: start rinsing immediately with clean running water. Remove contact lenses when easy to do. Obtain medical care if pain, redness or visual disturbance persists.
- Skin exposure: remove soaked clothing and wash the exposed area. Seek care for continuing irritation.
- Inhaled mist: move away from the aerosol source to fresh air. Breathing difficulty requires prompt medical attention.
- Swallowing: rinse the mouth if the person is alert. Do not induce vomiting. Contact a poison center or clinician for advice; give nothing by mouth to an unconscious person.

Mixture-specific acute and delayed symptom data are unavailable. Splash irritation and gastrointestinal discomfort are possible exposure concerns. No specific antidote has been identified; clinical care should be guided by the exposure and symptoms.

5. Fire-fighting measures

The supplied water-based liquid does not sustain combustion. Select the extinguishing agent for the surrounding materials. A strong water jet can spread contaminated liquid; use controlled spray when cooling nearby bottles.

Fire or intense heating can pressurize closed bottles. After water evaporates, heating of the residue may produce carbon oxides, nitrogen oxides and other irritating decomposition products. Use fire-scene protective clothing and self-contained breathing apparatus. Move or cool threatened containers only when this can be done safely.

6. Accidental release measures

Restrict access to the wet area. Wear splash protection and gloves, then stop the leak if this can be done safely. Use absorbent pads or another compatible absorbent to collect the liquid into a labeled waste container. Clean the surface and remove the slip hazard.

Keep collected material and wash water out of drains unless local disposal rules permit the discharge. For a spill containing cells or other added material, use the incident procedure appropriate to those hazards. Request trained assistance when the extent or contents of a spill are uncertain.

7. Handling and storage

Use transfers that limit splashing and aerosols. Do not pipette by mouth. Wash hands after work and keep laboratory reagents away from food and drink.

Store tightly closed at 2–8 °C, protected from light. Keep bottles upright and protected from damage. Freezing and prolonged heat exposure can change the medium. Separate from strong oxidizers and from concentrated acids or bases; adding acid to bicarbonate can release carbon dioxide.

8. Exposure controls/personal protection

Airborne substance	Occupational exposure limits
Copper dusts and mists, as Cu	OSHA PEL, ACGIH TLV and NIOSH REL: 1 mg/m ³ , time-weighted average.
Soluble iron salts, as Fe	NIOSH REL and ACGIH TLV: 1 mg/m ³ , time-weighted average. No current OSHA PEL identified.
Other formulation ingredients	No applicable substance-specific airborne limit identified in the reviewed information.

The metal limits apply to airborne elemental copper or iron in the relevant compounds, not to the mass of liquid medium. No occupational exposure limit is assigned to the complete mixture.

Provide normal laboratory ventilation and an accessible eyewash. Use a closed transfer or local extraction when an operation produces mist. Wear eye protection suited to splash exposure, a lab coat and gloves compatible with the medium and any added reagents. Routine bottle handling does not require respiratory protection; aerosol-generating work needs an exposure assessment before selecting respiratory controls.

9. Physical and chemical properties

Property	Information
Physical state	Liquid
Color	Expected orange-red to red; actual lot appearance is recorded separately
Odor / odor threshold	No measured mixture data
Melting / freezing point	Expected around -1 to 0 °C; coarse dilute-solution estimate
Initial boiling point / range	Approximately 100 °C at 101.3 kPa; aqueous-solution estimate
Flammability	Not combustible as supplied; water-based liquid
Lower / upper flammability limits	No measured mixture data
Flash point	Not applicable to the supplied noncombustible aqueous medium
Auto-ignition temperature	No measured mixture data
Decomposition temperature	No measured mixture data
pH	Nominal comparison range 7.0–7.4 at 20–25 °C; not a measured lot result
Kinematic viscosity	About 1 mm ² /s at 20 °C; water-based estimate
Solubility	Supplied as an aqueous solution; no quantitative solubility study
n-Octanol/water partition coefficient	No single value assigned to this multicomponent solution
Vapor pressure / evaporation rate	About 2.3 kPa at 20 °C; water-based estimate. Evaporation rate not determined.
Density / relative density	About 1 g/mL at 20 °C; dilute-solution estimate
Relative vapor density	About 0.62 relative to air = 1; estimate for the water-dominated vapor
Particle characteristics	Not applicable to the supplied solution

10. Stability and reactivity

Stable for ordinary laboratory handling under the stated storage conditions. No explosive, self-reactive, pyrophoric or water-reactive behavior is expected from the supplied aqueous formulation. Nutrient deterioration during storage can occur without a hazardous reaction.

Keep away from strong oxidizers and concentrated acids or bases. Acid addition releases carbon dioxide from bicarbonate and can pressurize a closed vessel. Avoid prolonged heat exposure, freezing and evaporation; these can

change pH or produce precipitates. Intense heating of dried residue may produce irritating gases, including carbon and nitrogen oxides.

11. Toxicological information

The medium is not classified for acute oral, dermal or inhalation toxicity, skin or eye irritation, sensitization, germ-cell mutagenicity, carcinogenicity, reproductive toxicity, specific target-organ toxicity or aspiration hazard at the supplied composition. This conclusion uses ingredient information and concentration-based assessment; it is not a report of whole-mixture testing.

Endpoint or exposure	Assessment
Acute toxicity	Known acute-toxic salts occur at trace concentrations. No whole-mixture LD50 or LC50 has been measured.
Skin and eye effects	Mixture irritation criteria are not met. Contact may still cause temporary discomfort, particularly in the eyes.
Sensitization	No sensitization classification is indicated by the formulation and available evidence.
Mutagenicity, carcinogenicity and reproduction	No ingredient identified as an NTP-, IARC- or OSHA-listed carcinogen is present at a reportable concentration. The formulation does not meet classification criteria for these endpoints.
Target-organ effects	The concentrations of ingredients associated with respiratory irritation or other organ effects do not trigger mixture classification.
Aspiration	No aspiration-toxic hydrocarbon or comparable ingredient is included. Low viscosity alone does not establish aspiration toxicity.

Likely accidental exposure routes are splashes to eyes or skin, ingestion and inhalation of mist. Swallowing a substantial amount may cause gastrointestinal discomfort. Quantitative delayed-effect and interaction data for the complete medium are unavailable. These conclusions describe the supplied medium, not used cell cultures or mixtures with additional reagents.

12. Ecological information

The supplied mixture does not meet aquatic-hazard classification thresholds on the available ingredient and concentration evidence. Copper and zinc salts can be highly toxic to aquatic organisms as concentrated substances; their trace amounts here do not make the complete medium an aquatic-hazard-classified mixture.

No whole-mixture aquatic or terrestrial toxicity, biodegradation, bioaccumulation or soil-mobility study is available. Dissolved salts can move with water, and nutrient release can affect receiving systems. Avoid uncontrolled discharge and evaluate used medium according to its added substances.

13. Disposal considerations

Collect unused medium and contaminated absorbent according to the laboratory’s waste procedures and applicable local rules. Include any added chemicals or biological material in the waste determination. Do not assume the disposal route for unused medium also applies to a used culture. Empty bottles may retain residue; handle and discard them according to their contents and the receiving waste service.

14. Transport information

Transport item	Supplied product
U.S. DOT / IATA / IMDG	Not regulated as dangerous goods for the supplied bottle packs
UN number / proper shipping name	Not assigned
Transport hazard class / packing group	Not applicable
Marine pollutant / transport environmental hazard	No
Bulk transport under IMO instruments	Not applicable to the supplied bottle packs

Keep bottles closed, upright and secured against breakage and leakage. Maintain the labeled product-storage conditions during transport. These conclusions apply to this formulation in the offered packages; additional hazardous reagents or a changed formulation require a separate shipping assessment.

15. Regulatory information

No OSHA physical or health hazard category is assigned to the supplied medium for SARA 311/312 hazard categorization. Ingredient listings and environmental release obligations remain distinct from this workplace classification.

Listed constituent	U.S. regulatory relevance
Disodium hydrogen phosphate	CERCLA reportable quantity: 5,000 lb of the listed substance.
Copper sulfate	CERCLA reportable quantity: 10 lb on the listed anhydrous-salt basis; copper compounds are an EPCRA 313 category.
Zinc sulfate	CERCLA reportable quantity: 1,000 lb on the listed anhydrous-salt basis; zinc compounds are an EPCRA 313 category.
Ferrous sulfate / ferric nitrate	CERCLA reportable quantity: 1,000 lb for each listed substance; account for the relevant hydrate or salt basis.
Nitrate in aqueous solution	The dissolved nitrate falls within EPCRA 313 category N511.
Cyanocobalamin (vitamin B12)	A cobalt-containing compound within EPCRA 313 category N096; this is not a classification as cobalt metal or a free cobalt salt.

These reportable quantities are substance masses, not masses of this dilute medium. Copper compounds, zinc compounds and aqueous nitrate are below the 1% EPCRA 313 de minimis concentration. Cyanocobalamin is also below the more conservative 0.1% screening level for cobalt compounds. Facility activities, applicable exemptions and releases determine actual reporting obligations.

Phosphate and certain iron, copper and zinc salts also appear on Clean Water Act or state right-to-know lists. A nonhazardous workplace classification does not authorize discharge. This product is supplied for laboratory research; no blanket chemical-inventory or pharmaceutical-use certification is made by this SDS.

16. Other information

Revised 20 September 2026. This SDS evaluates the supplied 1X formulation using its nominal ingredient concentrations and available substance information.

PEL means permissible exposure limit; TLV means threshold limit value; REL means recommended exposure limit. The document and formulation revisions appear in the header. Reassess the SDS when the composition or material information changes.

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