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MATERIAL SAFETY DATA SHEET

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Date Updated: 11/24/2021

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< 1 > Product and Company Information

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Product Name	DynaMarker RNA High for Easy Electrophoresis	(Code# DM170)
Component	DynaMarker RNA High AGN	(Code# DM171)
	RNA Loading Buffer AG+	(Code# DM172)
Company	BioDynamics Laboratory Inc.	
Address	9-7 Hongo 2-Chome, Bunkyo-Ku, Tokyo 113-0033 JAPAN	
Phone	+81-3-5803-9983	
Fax	+81-3-5684-6270	

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Evaluated as a single compound below (Formamide)

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< 2 > Hazards Identification

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Classification

Serious eye damage / eye irritation (Category 2B), H320  
Reproductive toxicity (Category 1B), H360

Symbol:



Signal word: Danger

Hazard statement(s)

H320: Causes eye irritation  
H360: May damage fertility or the unborn child

Precautionary statement(s)

P201: Obtain special instructions before use.  
P202: Do not handle until all safety precautions have been read and understood.  
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do - continue rinsing.  
P337 + P313: If eye irritation persists: Get medical advice/attention.  
P308 + P313: IF exposed or concerned: Get medical advice/attention.  
P405: Store locked up.  
P501: Dispose of contents/container in accordance with local/regional/national/international regulations.

Supplemental Hazard Statements: none

### <3 > Composition/Information on Ingredients

Component:

Component	Code No.
RNA Loading Buffer AG+	DM171

Description of the product: Mixture of substances listed below with nonhazardous additions

Hazardous Ingredient(s)

Formamide

CAS #: 75-12-7

Synonym: Methanamide

Percentage:

Component	Code No.	Concentration
RNA Loading Buffer AG+	DM171	80%

### < 4 > First Aid Measures

Description of first aid measures

General advice: Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact: Wash off with soap and plenty of water. Consult a physician.

In case of eye contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed: Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Most important symptoms and effects, both acute and delayed

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Indication of any immediate medical attention and special treatment needed

No data available

### < 5 > Fire Fighting Measures

Extinguishing media

Suitable extinguishing media:

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special hazards arising from the substance or mixture:

No data available

Advice for firefighters: Wear self-contained breathing apparatus for firefighting if necessary.

Further information: No data available

### < 6 > Accidental Release Measures

Personal precautions, protective equipment and emergency procedures:

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up:

Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

Reference to other sections: For disposal see section 13.

### < 7 > Handling and Storage

Precautions for safe handling: Avoid contact with skin and eyes. Avoid inhalation of vapor or mist.

Conditions for safe storage, including any incompatibilities:

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Recommended storage temperature:

- 80 °C

Specific end use(s): No data available

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#### < 8 > Exposure Controls / PPE

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##### Engineering controls

Use only in a chemical fume hood. Safety shower and eye bath.

##### Personal Protective Equipment

**Respiratory:** Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

**Hand:** Compatible chemical-resistant gloves.

**Eye:** Chemical safety goggles.

##### General Hygiene Measures

Wash contaminated clothing before reuse. Wash thoroughly after handling.

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#### < 9 > Physical/Chemical Properties (Formamide)

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Appearance Form:	liquid, clear
	Color: colorless
Odor:	Ammonia odor
Odor Threshold:	N/A
pH:	7.1 (0.5 M)
Melting point/freezing point:	2.55°C (Melting point)
Initial boiling point and boiling range:	210°C
Flash point:	154°C
Evaporation rate:	N/A
Flammability (solid, gas):	N/A
Upper/lower flammability or explosive limits:	Upper explosion limit: 19 % (V), Lower explosion limit: 2.7 % (V)
Vapour pressure:	0.13 kPa at 70.5°C
Vapour density:	1.56 - (Air = 1.0)
Relative density:	1.134 g/cm <sup>3</sup> at 25°C
Water solubility:	1000 g/L
Partition coefficient (n-octanol/water):	log Pow = -1.51
Auto-ignition temperature:	>500°C
Decomposition temperature:	154°C
Viscosity:	2.926 mPa.s( 30°C )
Explosive properties:	N/A

N/A = not available

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#### < 10 > Stability and Reactivity

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##### Stability

Stable: Hygroscopic

Materials to Avoid: Bases, Oxidizing agents, Hydrogen peroxide, Iodine, Pyridine, Sulphur oxides

Hazardous Decomposition Products: Carbon oxides, Nitrogen oxides (NO<sub>x</sub>), Ammonia, Hydrogen cyanide

Hazardous Polymerization: No data available

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#### < 11 > Toxicological Information

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##### Information on toxicological effects

**Acute toxicity (oral):** Based on reports that the LD50 value of rats is 3,200 mg / kg, 5,325 mg / kg (SIDS (2013)), and about 6,000 mg / kg (ACGIH (7th, 2001)), it was classified as "Not classified".

**Acute toxicity (Dermal):** Based on a report that the LD50 value of rats is 3,000 mg / kg (SIDS (2013)) and the

<p>LD0 value of rabbits is 6,000 mg / kg, &gt; 17,000 mg / kg (ACGIH (7th, 2001)), it was classified as "Not classified".</p>	<p>It is a liquid in the definition of GHS.</p>
<p>Acute toxicity (Inhalation, gas):</p>	<p>Classification not possible due to lack of data.</p>
<p>Acute toxicity (Inhalation, vapor):</p>	<p>The rat LC50 value (4 hours) is &gt; 21 mg / L (SIDS (2013)), and the rat LC50 value (6 hours) is 3,900 ppm (4 hours converted value: 10.8 mg / L) (ACGIH (7th), 2001)). Based on the above results, it was classified as "Not classified". In addition, since all LC50 values are higher than saturated vapor pressure concentration (2.36 mg / L), the standard value of mist was applied.</p>
<p>Acute toxicity (Inhalation, dust-mist):</p>	<p>As a result of irritation test using guinea pig, it has been reported that it was mildly irritable and recoverable (ACGIH (7th, 2001)). In a skin irritation test in which a stock solution of this substance was applied to rabbits for 20 hours, mild to moderate erythema was observed, and skin abrasion was observed 8 days after application. From the results, it is judged to be mild irritant (SIDS (2013)). Based on the above results, it was classified as "Not classified" (Category 3 of UN Classification Standard).</p>
<p>Skin corrosion/irritation:</p>	<p>In the eye irritation test using rabbits, all showed mild irritation (SIDS (2013), ACGIH (7th, 2001)). It was classified into Category 2B.</p>
<p>Serious eye damage/eye irritation:</p>	<p>Respiratory sensitization: Classification not possible due to lack of data.</p>
<p>Respiratory/ Skin sensitization:</p>	<p>Skin sensitization: Classification not possible due to lack of data.</p>
<p>Germ cell mutagenicity:</p>	<p>In vivo, negative in the mouse dominant lethal test. Positive in micronucleus test of mouse bone marrow cells by intraperitoneal administration. Negative in peripheral blood red cell micronucleus test by gavage for 90 days. Negative in chromosomal aberration test of rat bone marrow cells by subcutaneous administration. (SIDS (2013), NTP DB (Access on October 2014)). In vitro, negative in reverse mutation test of bacteria, chromosomal aberration test of cultured mammalian cells. (SIDS (2013), NTP DB (Access on October 2014), ACGIH (7th, 2001)). The positive results of the mouse bone marrow cell micronucleus test were due to high dose intraperitoneal administration (SIDS (2013)), but the in vitro chromosomal aberration test and the oral peripheral blood micronucleus test were negative. "Classification not possible" because the data is uncertain.</p>
<p>Carcinogenicity:</p>	<p>Classification not possible due to lack of data.</p>
<p>Reproductive toxicity:</p>	<p>Oral administration (water intake) of a dose (750 ppm (144-226 mg / kg / day)) at which toxicity (weight gain suppression) was observed in the parent mice also had an effect on fertility. In addition, in the teratogenicity test after oral administration, skeletal malformation was observed in the fetus when a dose (198 mg / kg / day) was not observed in the parent mice (SIDS (2013)). Based on the above, it was classified as Category 1B.</p>
<p>Specific target organ toxicity - Single exposure:</p>	<p>Classification not possible due to lack of data.</p>
<p>Specific target organ toxicity - Repeated exposure:</p>	<p>No data available for humans.</p>
<p>Aspiration hazard:</p>	<p>Classification not possible due to lack of data.</p>

< 12 > Ecological Information

Hazardous to the aquatic environment

<p>(Acute):</p>	<p>72 hours ErC50 &gt; 1000 mg / L of algae (<i>Pseudokirchneriella subcapitata</i>) (Ecological impact test in Environment Agency, 1998). 48 hours EC50 &gt; 500 mg / L for crustacea (<i>Daphnia magna</i>) (SIDS, 2013). 96 hours LC50 &gt; 100 mg / L of fish (Medaka fish) (Ecological impact test in Environment Agency, 1998). It was classified as "Not classified" by the above..</p>
<p>(Long-term):</p>	<p>When chronic toxicity data are used, it is rapidly degradable (Degradation degree by DOC after 28 days of degradability test conducted based on OECD TG 301A: 99% (SIDS, 2013). 72 hours NOEC &gt; 10 mg / L of the algae (<i>Pseudokirchneriella subcapitata</i>) (Ecological Impact Test in Environment Agency, 1998). The above results are classified as out of category.</p>
<p>Hazardous to the ozone layer:</p>	<p>The substance is classified as "Classification not possible" because it is not listed in the annex to the Montreal Protocol.</p>

< 13 > Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

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< 14 > Transport Information

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UN number

ADR/RID: - IMDG: - IATA-DGR: -

UN proper shipping name

ADR/RID: Not dangerous goods

IMDG: Not dangerous goods

IATA-DGR: Not dangerous goods

Transport hazard class(es)

ADR/RID: - IMDG: - IATA-DGR: -

Packaging group

ADR/RID: - IMDG: - IATA-DGR: -

Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA-DGR: no

Special precautions for user

No data available

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< 15 > Regulatory Information

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Safety, health and environmental regulations/legislation specific for the substance or mixture  
National regulatory information

Law concerning Pollutant Release  
and Transfer Register / PRTR Law:

Not applicable

Industrial Safety and Health Law,

Substances Subject to be Indicated Names: Article 57 (Enforcement Order Article 18, Table 9)

Substances Subject to be Notified Names: Article 57-2 (Enforcement Order Article 18-2, Table 9)

Substances Subject to be Conduct risk assessment: Article 57-3

Chemical Substances Control Law:

Not applicable for Specified Chemical Substance, Monitoring Chemical Substance and Priority Assessment Chemical Substance.

Fire Service Law:

Group 4: Flammable liquids, Type 3 petroleum Hazardous rank III Water soluble liquid

Poisonous and Deleterious Substances Control Law:

Not applicable

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< 16 > Reference

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- 1) Japan CHEMicals Collaborative Knowledge database
- 2) NITE Chemical Risk Information Platform)
- 3) THE MERCK INDEX 13<sup>TH</sup> EDITION
- 4) UNECE web page (GHS pictograms)

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< 17 > Other Information

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**DISCLAIMER**

For R&D use only. Not for drug, household or other uses.

**WARRANTY**

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Biodynamics Laboratory Inc., shall not be held liable for any damage resulting from handling or from contact with the above product.