

1. Chemical and company identification

Name of chemical (Product name) 4X Fragmentation Buffer

Supplier's company name, address and phone number

Company name TOMY Digital Bio
Address 2-9-1 Ikenohata
 Taito-Ku, Tokyo 110-0008
 Japan
Telephone (831) 713-4465
Website dovetailgenomics.com
Emergency phone number +1 760 476 3960
Access code 334943

Recommended use of the chemical and restrictions on use

Intended use Molecular Biology Kit.
Restrictions on use Use in accordance with manufacturer's recommendations.

2. Hazards identification

GHS classification

Physical hazards The product is not classified according to GHS.
Health hazards Acute toxicity, inhalation Category 4
 Serious eye damage/eye irritation Category 2A
 Carcinogenicity Category 1B
 Reproductive toxicity Category 1B
Environmental hazards The product is not classified according to GHS.

GHS label elements

Pictograms



Signal words Danger

Hazard statement Causes serious eye irritation. Harmful if inhaled. May cause cancer. May damage fertility or the unborn child.

Precautionary statement

Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing vapours. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.

Response IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical advice/attention. If eye irritation persists: Get medical advice/attention.

Storage Store locked up.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards which do not result in classification None known.

Main symptoms and emergency overview

Main symptoms Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Emergency overview Harmful if inhaled. May cause cancer. Causes serious eye irritation. May cause reproductive effects. Prolonged exposure may cause chronic effects.

3. Composition/information on ingredients

Substance or mixture Mixture

| Chemical name or generic name | Gazette notification | | | |
|---|---|----------|----------|-------------------|
| | CAS Number | ENCS No. | ISHL No. | Concentration (%) |
| N,N-Dimethylformamide | 68-12-2 | (2)-680 | (2)-680 | 64 |
| Chemical formula | C3-H7-N-O (68-12-2) | | | |
| Composition comments | All concentrations are in percent by weight unless otherwise indicated. Components not listed are either non-hazardous or are below reportable limits. | | | |
| 4. First aid measures | | | | |
| If inhaled | Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Call a poison centre or doctor/physician if you feel unwell. | | | |
| If on skin | Wash off with soap and water. Get medical attention if irritation develops and persists. | | | |
| If in eyes | Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists. | | | |
| If swallowed | Rinse mouth. Get medical attention if symptoms occur. | | | |
| Most important symptoms/effects, acute and delayed | Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. | | | |
| Protection of first-aid responders | IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. | | | |
| Notes to physician | Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed. | | | |
| 5. Fire-fighting measures | | | | |
| Extinguishing media | Alcohol resistant foam. Powder. Carbon dioxide (CO2). | | | |
| Extinguishing media to avoid | Do not use water jet as an extinguisher, as this will spread the fire. | | | |
| Specific hazards | During fire, gases hazardous to health may be formed. | | | |
| Special fire fighting procedures | Move containers from fire area if you can do so without risk. | | | |
| Protection of fire-fighters | Self-contained breathing apparatus and full protective clothing must be worn in case of fire. | | | |
| General fire hazards | No unusual fire or explosion hazards noted. | | | |
| Specific methods | Use standard firefighting procedures and consider the hazards of other involved materials. | | | |
| 6. Accidental release measures | | | | |
| Personal precautions, protective equipment and emergency procedures | Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of vapours and spray mists. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS. | | | |
| Environmental precautions | Avoid discharge into drains, water courses or onto the ground. | | | |
| Methods and materials for containment and cleaning up | Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use. Put material in suitable, covered, labelled containers For waste disposal, see section 13 of the SDS. | | | |
| 7. Handling and storage | | | | |
| Handling | | | | |
| Technical measures (e.g. Local and general ventilation) | Use only outdoors or in a well-ventilated area. | | | |
| Safe handling advice | Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid inhalation of vapours and spray mists. Avoid contact with eyes. Avoid prolonged exposure. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Observe good industrial hygiene practices. Use personal protection recommended in Section 8 of the SDS. | | | |
| Contact avoidance measures | For further information, please refer to section 10 of the SDS. | | | |

Hygiene measures Observe any medical surveillance requirements. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

Storage

Safe storage conditions Store locked up. Keep container tightly closed. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

Safe packaging materials Store in original tightly closed container.

8. Exposure controls/personal protection

Control parameters Follow standard monitoring procedures.

Occupational exposure limits

Japan. OELs - ISHL. (Workplace Environment Assessment Standards)

| Components | Type | Value |
|-------------------------------------|------|--------|
| N,N-Dimethylformamide (CAS 68-12-2) | TLV | 10 ppm |

Japan. OELs - JSOH (Japan Society of Occupational Health: Recommendation of Occupational Exposure Limits)

| Components | Type | Value |
|-------------------------------------|------|----------|
| N,N-Dimethylformamide (CAS 68-12-2) | TWA | 30 mg/m3 |
| | | 10 ppm |

US. ACGIH Threshold Limit Values

| Components | Type | Value |
|-------------------------------------|------|-------|
| N,N-Dimethylformamide (CAS 68-12-2) | TWA | 5 ppm |

Biological limit values

ACGIH Biological Exposure Indices

| Components | Value | Determinant | Sampling Time |
|-------------------------------------|---------|--|---------------|
| N,N-Dimethylformamide (CAS 68-12-2) | 40 mg/l | N-Acetyl-S-(N-methylcarbamoyl) cysteine | * |
| | 30 mg/l | Sum of N-Methylformamide and N-(Hydroxymethyl)-N-Methylformamide | Urine * |
| | 30 mg/l | N-Acetyl-S-(N-methylcarbamoyl) cysteine | Urine * |
| | 15 mg/l | N-Methylformamide | * |

* - For sampling details, please see the source document.

Exposure guidelines

Japan JSOH OELs: Skin designation

N,N-Dimethylformamide (CAS 68-12-2) Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

N,N-Dimethylformamide (CAS 68-12-2) Danger of cutaneous absorption

Engineering measures

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station.

Personal protective equipment

Respiratory protection Chemical respirator with organic vapour cartridge and full facepiece.

Hand protection Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Eye protection Wear approved chemical safety goggles. Wear face shield if there is risk of splashes.

Skin and body protection Wear suitable protective clothing. Use of an impervious apron is recommended.

9. Physical and chemical properties

Physical state Liquid.

| | |
|--|-----------------|
| Form | Liquid. |
| Colour | Not available. |
| Odour | Not available. |
| Melting point/freezing point | Not available. |
| Boiling point, initial boiling point, and boiling range | Not available. |
| Combustibility | Not applicable. |
| Lower and upper explosion limit / flammability limit | |
| Explosive limit - lower (%) | Not available. |
| Explosive limit – upper (%) | Not available. |
| Flash point | Not available. |
| Auto-ignition temperature | Not available. |
| Decomposition temperature | Not available. |
| pH | Not available. |
| Kinematic viscosity | Not available. |
| Solubility(ies) | |
| Solubility (water) | Not available. |
| Partition coefficient (n-octanol/water) (log value) | Not available. |
| Vapour pressure | Not available. |
| Density and/or relative density | |
| Density | Not available. |
| Relative density | Not available. |
| Vapour density | Not available. |
| Particle characteristics | Not available. |
| Other information | |
| Explosive properties | Not explosive. |
| Oxidising properties | Not oxidising. |

10. Stability and reactivity

| | |
|---|---|
| Reactivity | The product is stable and non-reactive under normal conditions of use, storage and transport. |
| Chemical stability | Material is stable under normal conditions. |
| Possibility of hazardous reactions | No dangerous reaction known under conditions of normal use. |
| Conditions to avoid | Contact with incompatible materials. |
| Incompatible materials | Strong oxidising agents. |
| Hazardous decomposition products | No hazardous decomposition products are known. |

11. Toxicological information

| | |
|-----------------------|---|
| Acute toxicity | Harmful if inhaled. May be harmful if absorbed through skin or swallowed. |
|-----------------------|---|

| | |
|-------------------------------------|------------|
| Acute toxicity, dermal | |
| N,N-Dimethylformamide (CAS 68-12-2) | Category 4 |
| Acute toxicity, inhalation | |
| N,N-Dimethylformamide (CAS 68-12-2) | Category 4 |

| Components | Species | Test Results |
|-------------------------------------|--|--------------|
| N,N-Dimethylformamide (CAS 68-12-2) | | |
| <u>Acute</u> | | |
| Oral | | |
| LD50 | Rat | 3040 mg/kg |
| Skin corrosion/irritation | Prolonged skin contact may cause temporary irritation. | |
| Serious eye damage/eye irritation | Causes serious eye irritation. | |
| N,N-Dimethylformamide (CAS 68-12-2) | | Category 2 |
| Respiratory or skin sensitisation | | |
| Respiratory sensitisation | Not a respiratory sensitiser. | |

| | | |
|---|--|--|
| Skin sensitisation | This product is not expected to cause skin sensitisation. | |
| Germ cell mutagenicity | No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic. | |
| Carcinogenicity | May cause cancer. | |
| ACGIH Carcinogens | | |
| | N,N-Dimethylformamide (CAS 68-12-2) | A3 Confirmed animal carcinogen with unknown relevance to humans. |
| IARC Monographs. Overall Evaluation of Carcinogenicity | | |
| | N,N-Dimethylformamide (CAS 68-12-2) | 2A Probably carcinogenic to humans. |
| Japan Society for Occupational Health: Carcinogen | | |
| | N,N-Dimethylformamide (CAS 68-12-2) | 2A Probably carcinogenic to humans. |
| Reproductive toxicity | May damage fertility or the unborn child. | |
| | N,N-Dimethylformamide (CAS 68-12-2) | Category 1B |
| Specific target organ toxicity - single exposure | Not classified. | |
| Specific target organ toxicity - repeated exposure | Not classified. | |
| Aspiration hazard | Not an aspiration hazard. | |

12. Ecological information

Ecotoxicological data

| Components | | Species | Test Results |
|-------------------------------------|------|-------------------------|-----------------------|
| N,N-Dimethylformamide (CAS 68-12-2) | | | |
| Aquatic | | | |
| Acute | | | |
| Algae | EC50 | Scenedesmus subspicatus | > 1000 mg/l, 96 Hours |
| Crustacea | EC50 | Daphnia magna | > 100 mg/l, 48 Hours |
| Fish | LC50 | Lepomis macrochirus | 7100 mg/l, 96 Hours |
| Chronic | | | |
| Crustacea | NOEC | Daphnia magna | 1500 mg/l, 21 days |

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and degradability No data is available on the degradability of any ingredients in the mixture.

Bioaccumulation

Bioaccumulative potential

Octanol/water partition coefficient log Kow

N,N-Dimethylformamide (CAS 68-12-2) -1.01

Mobility in soil No data available for this product.

Hazardous to the ozone layer No data available.

Other hazardous effects No data available.

13. Disposal considerations

Residual waste Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner.

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

Local disposal regulations Contract with a disposal operator licensed by the Law on Disposal and Cleaning. Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations. When your own wastewater treatment plant is not available, collect entire waste and then charge to a licensed industrial waste management professional with manifests for industrial waste.

14. Transport information

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Not established.

Annex II of MARPOL 73/78 and the IBC Code

National regulations Follow regulation in section 15 for domestic transportation.

15. Regulatory information

Industrial Safety and Health Act

Organic solvent regulation

Class 2 organic solvents

N,N-DIMETHYLFORMAMIDE

Notifiable substances

N,N-Dimethylformamide

Table 9 Ordinance No. 299 64 %

Labeling substances

N,N-Dimethylformamide

64 %

Confirmed carcinogenic chemical substances

N,N-DIMETHYLFORMAMIDE

Poisonous and Deleterious Substances Control Act

Specified poisonous substances

Not regulated.

Poisonous substances

Not regulated.

Deleterious substances

Not regulated.

Act on the Regulation of Manufacture and Evaluation of Chemical Substances

Class I specified chemical substances

Not regulated.

Class II specified chemical substances

Not regulated.

Monitoring chemical substances

Not regulated.

Priority Assessment Chemical Substances (PACs)

N,N-Dimethylformamide

Law concerning Pollutant Release and Transfer Register

Specified class 1 substances (substance name, ordinance number and content)

Not regulated.

Class 1 substances (substance name, ordinance number and content)

N,N-Dimethylformamide

Ordinance No. 232 64 %

(N,N-Dimethylformamide)

Class 2 substances (substance name, ordinance number and content)

Not regulated.

Fire Service Act

Not dangerous goods under Fire Service Law

Ship Safety Law, Dangerous Goods Marine Transport and Storage Rule

Not regulated.

Air Law, Enforcement Rule

Not regulated.

Explosives Control Act

Not regulated.

Act on Prevention of Marine Pollution and Maritime Disaster

N, N-Dimethylformamide

Category: Y

16. Other information

Bibliography

ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices

HSDB® - Hazardous Substances Data Bank

IARC Monographs. Overall Evaluation of Carcinogenicity

Japan Chemical Industry Association (JCIA) GHS Guideline, June 2019

Japan Society for Occupational Health, Recommendation of Occupational Exposure Limits

JIS Z 7252:2019 Classification of chemicals based on "Globally Harmonized System of Classification and Labelling of Chemicals (GHS)"

JIS Z 7253:2019 Hazard communication of chemicals based on GHS - Labelling and Safety Data Sheet (SDS)

National Toxicology Program (NTP) Report on Carcinogens

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