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**Safety Data Sheet****1. Chemical product and company identification****Product name** : Nitric acid (1+10)**SDS code** : Z3-13**Company/undertaking identification** :

HAYASHI PURE CHEMICAL IND.,LTD.

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URL : <https://www.hpc-j.co.jp/>**Emergency number** : 06-6910-7305**Recommended use** : For research and experimental use only.**Restrictions on use** : Do not use on a human body or for animal medicines, foods, household products, cosmetics, etc.**2. Hazards identification****GHS classification**

|  |  |                                 |                             |
|--|--|---------------------------------|-----------------------------|
| Physical hazards                                 | Explosives   | classification not possible     |                             |
|  | Flammable gases  | No classification               |                             |
|  | Aerosol  | classification not possible     |                             |
|  | Oxidizing gases  | No classification               |                             |
|  | Gases under pressure   | No classification               |                             |
|  | Flammable liquids  | classification not possible     |                             |
|  | Flammable solids   | No classification               |                             |
|  | Self-reactive substances and mixtures                                    | classification not possible     |                             |
|  | Pyrophoric liquids   | classification not possible     |                             |
|  | Pyrophoric solids  | No classification               |                             |
|  | Self-heating substances and mixtures                                     | classification not possible     |                             |
|  | Substances and mixtures which in contact with water emit flammable gases | classification not possible     |                             |
|  | Oxidizing liquids  | classification not possible     |                             |
|  | Oxidizing solids   | No classification               |                             |
|  | Organic peroxides  | classification not possible     |                             |
|  | Corrosive to metals  | Category 1                      |                             |
|  | Desensitized explosives  | classification not possible     |                             |
|  | Health hazards   | Acute toxicity (oral)           | classification not possible |
|  |  | Acute toxicity (dermal)         | classification not possible |
|  |  | Acute toxicity (inhalation:gas) | No classification           |
| Acute toxicity (inhalation:vapors)               |  | Category 2                      |                             |
| Acute toxicity (inhalation:dust/mist)            |  | classification not possible     |                             |
| Skin corrosion/irritation                        |  | Category 1                      |                             |
| Serious eye damage/eye irritation                |  | Category 1                      |                             |
| Respiratory sensitization                        |  | classification not possible     |                             |
| Skin sensitization                               |  | classification not possible     |                             |
| Germ cell mutagenicity                           |  | classification not possible     |                             |
| Carcinogenicity                                  | classification not possible  |                                 |                             |
| Reproductive toxicity                            | classification not possible  |                                 |                             |
| Specific target organ toxicity (single exposure) | Category 2 (respiratory system)  |                                 |                             |

|                       |   |  |
|-----------------------|---|--|
| Environmental hazards | Specific target organ toxicity (repeated exposure)        | Category 2 (respiratory system, tooth) |
|                       | Aspiration hazard   | classification not possible            |
|                       | Hazardous to the aquatic environment, short-term (acute)  | No classification                      |
|                       | Hazardous to the aquatic environment, long-term (chronic) | No classification                      |
|                       | Hazardous to the ozone layer                              | classification not possible            |

## Hazard pictograms (GHS JP)



GHS05



GHS06



GHS08

|                                   |  |
|-----------------------------------|--|
| Signal word (GHS JP)              | : Danger   |
| Hazard statements (GHS JP)        | : May be corrosive to metals (H290)<br>Causes severe skin burns and eye damage (H314)<br>Fatal if inhaled (H330)<br>May cause damage to organs (respiratory system) (H371)<br>May cause damage to organs (respiratory system, tooth) through prolonged or repeated exposure (H373)   |
| Precautionary statements (GHS JP) |  |
| Prevention                        | : Keep only in original container. (P234)<br>Do not breathe dust/fume/gas/mist/vapors/spray. (P260)<br>Wash hands, forearms and face thoroughly after handling. (P264)<br>Do not eat, drink or smoke when using this product. (P270)<br>Use only outdoors or in a well-ventilated area. (P271)<br>Wear protective gloves/protective clothing/eye protection/face protection. (P280)<br>[In case of inadequate ventilation] wear respiratory protection. (P284)   |
| Response                          | : IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. (P301+P330+P331)<br>IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. (P303+P361+P353)<br>IF INHALED: Remove person to fresh air and keep comfortable for breathing (P304+P340)<br>IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. (P305+P351+P338)<br>IF exposed or concerned: Call a POISON CENTER or doctor. (P308+P311)<br>Immediately call a POISON CENTER or doctor. (P310)<br>Get medical advice/attention if you feel unwell. (P314)<br>Wash contaminated clothing before reuse. (P363)<br>Absorb spillage to prevent material-damage. (P390) |
| Storage                           | : Store in a well-ventilated place. Keep container tightly closed. (P403+P233)<br>Store locked up. (P405)<br>Store in corrosive resistant container with a resistant inner liner. (P406)   |
| Disposal                          | : Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation. (P501)   |

### 3. Composition/information on ingredients

Distinction of substance or mixture : Mixture

| Name        | Concentration or Concentration range | Formula | Kanpo number |                             | CAS RN    |
|-------------|--------------------------------------|---------|--------------|-----------------------------|-----------|
|             |                                      |         | CSCL no      | ISHL no                     |           |
| Nitric acid | About 7.3%                           | HNO3    | (1)-394      | Existing Chemical Substance | 7697-37-2 |
| Water       | About 92.7%                          | H2O     | -            | -                           | 7732-18-5 |

The above concentration or concentration range are not product specification.  
All percentages listed in the above concentration or concentration range are wt%, unless otherwise specified.

### 4. First aid measures

#### First aid measures

- First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.  
Get immediate medical advice/attention.
- First-aid measures after skin contact : Remove/Take off immediately all contaminated clothing.  
Gently wash with plenty of soap and water.  
Get immediate medical advice/attention.
- First-aid measures after eye contact : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
Get immediate medical advice/attention.
- First-aid measures after ingestion : Do NOT induce vomiting.  
Drink plenty of water.  
Rinse mouth.  
Get immediate medical advice/attention.

### 5. Fire fighting measures

- Suitable extinguishing media : Water spray, Alcohol-resistant foam, Dry powder, Carbon dioxide, Sand.
- Unsuitable extinguishing media : Do not use a heavy water stream.
- Fire hazard : This product is unburnable.
- Explosion hazard : May induce explosion of containers by heating.  
May induce explosion of containers by water contamination.
- Hazardous decomposition products in case of fire : In case of fire, product may produce irritative or toxic fumes/gases.
- Firefighting instructions : If ignited, for the initial fire-fighting, cut off combustion sources, extinguish fire at a stroke using appropriate fire-extinguishers.  
In the case of peripheral fire, quickly remove movable containers to safe places.  
If unable to be moved containers, sprinkle water to containers and surrounding equipment, etc. to cool.  
Avoid (reject) fire-fighting water to enter environment.  
Even after extinguishing fire, thoroughly cool containers by using plenty of water.
- Protection during firefighting : Wear appropriate fire-resistant clothing including self contained-compressed air breathing apparatus.

### 6. Accidental release measures

#### Personal Precautions, Protective Equipment and Emergency Procedures

- General measures : Before entering, ventilate the area.  
Do not let unauthorized persons come close to the area.  
Immediately place the leakage area in isolation, with taking proper distances for all directions.  
Wear appropriate personal protective devices to prevent inhalation and contact with eye, skin, and clothing, and never attempt to work on the lee.

**Environmental precautions**

Environmental precautions : Avoid release to the environment.  
Prevent entry to sewers and public waters.

**Methods and Equipment for Containment and Cleaning up**

Methods for cleaning up : Clean up any spills as soon as possible, using an absorbent material to collect it.  
Collect leaking and spilled liquid in sealable containers as far as possible.  
Wash out the spilled area with large amounts of water.  
If possible, neutralize with slaked lime, soda ash, etc. before washing out.

**7. Handling and storage****Handling**

Technical measures : Work with appropriate personal protective equipment to prevent inhalation or contact to eyes, skin, and clothing.  
Handle with care to prevent leakage, overflowing, or scattering, minimize generation of mist or vapor, and thoroughly ventilate.

Precautions for safe handling : Do not eat, drink or smoke when using this product.  
Thoroughly wash your hands and gargle after handling.  
Ensure good ventilation of the work station.  
Do not contact, breathe or swallow.

Prevents handling of incompatible substances or mixtures : Avoid prolonged or repeated exposure.

**Storage**

Storage conditions : Store locked up.  
Store in a well-ventilated place, away from direct sunlight. Keep container tightly closed and keep away from fire and heat sources.  
Store in corrosive resistant container with a resistant inner liner.

Material used in packaging/containers : Light shielding airtight container.

Technical measures : Comply with applicable regulations.

Storage temperature : Cool and dark place

**8. Exposure controls / Personal protection equipment**

| Exposure limit values   |                             |
|-------------------------|-----------------------------|
| Nitric acid             |                             |
| Exposure limits (JSOH)  | 2ppm(5.2mg/m <sup>3</sup> ) |
| Exposure limits (ACGIH) | TWA 2 ppm, STEL 4 ppm       |

Appropriate engineering controls : Cover up tightly the generation source at the handling place or install local exhaust equipment or overall ventilation equipment. Install safety showers and eye-fountains near a handling place. Clearly indicate the location.

**Protective equipment**

Respiratory protection : Gas mask for acid gases

Hand protection : Impervious protective gloves

Eye protection : Protective glasses (general glasses, glasses with side-shields, goggles)

Skin and body protection : Impervious aprons, Impervious work clothing, Impervious long boots

**9. Physical and chemical properties**

Physical state : Liquid

Appearance : Liquid

Color : colorless transparent

Odor : Irritating odor

pH : ≤ 1 (25°C)

Melting point : No data available

Freezing point : No data available

Boiling point : No data available

Flash point : No data available

|   |                                 |
|---|---------------------------------|
| Auto-ignition temperature                       | : No data available             |
| Decomposition temperature                       | : No data available             |
| Flammability (solid, gas)                       | : No data available             |
| Vapor pressure                                  | : No data available             |
| Relative density                                | : No data available             |
| Density   | : 1.04 g/cm <sup>3</sup> (20°C) |
| Relative gas density                            | : No data available             |
| Solubility                                      | : No data available             |
| Partition coefficient n-octanol/water (Log Pow) | : No data available             |
| Explosive limits (vol %)                        | : No data available             |
| Viscosity, kinematic                            | : No data available             |
| Particle characteristics                        | : No data available             |

## 10. Stability and reactivity

|                                    |   |
|------------------------------------|---|
| Reactivity                         | : No data available   |
| Chemical stability                 | : Stable under normal handling conditions.  |
| Possibility of hazardous reactions | : Reacts with reducing substances, combustible substances and bases. Corrodes many kinds of metals to generate hydrogen. When in contact with powdered metal, violent or explosive reaction occurs. |
| Conditions to avoid                | : Sunlight, heat. Contact with reducing substances, combustible substances, bases and metals.   |
| Incompatible materials             | : Reducing substances, Combustible substances, Bases, Metals  |
| Hazardous decomposition products   | : Nitrogen oxides   |

## 11. Toxicological information

The information in this section is based on the "GHS Classification Results" by NITE.

| As a product                          |  |
|---------------------------------------|--|
| Acute toxicity (oral)                 | classification not possible  |
| Acute toxicity (dermal)               | classification not possible  |
| Acute toxicity (inhalation)           | vapors:Category 2<br>Gases:No classification<br>dust, mist:classification not possible |
| Skin corrosion/irritation             | Category 1   |
| Serious eye damage/irritation         | Category 1   |
| Respiratory sensitization             | classification not possible  |
| Skin sensitization                    | classification not possible  |
| Germ cell mutagenicity                | classification not possible  |
| Carcinogenicity                       | classification not possible  |
| Reproductive toxicity                 | classification not possible  |
| STOT-single exposure                  | Category 2   |
| STOT-repeated exposure                | Category 2   |
| Aspiration hazard                     | classification not possible  |
| Nitric acid                           |  |
| Acute toxicity (oral)                 | classification not possible  |
| Acute toxicity (dermal)               | classification not possible  |
| Acute toxicity (gas)                  | No classification  |
| Acute toxicity (vapour)               | Category 1   |
| Acute toxicity (inhalation:dust/mist) | classification not possible  |
| Skin corrosion/irritation             | Category 1   |
| Serious eye damage/irritation         | Category 1   |
| Respiratory sensitization             | classification not possible  |
| Skin sensitization                    | classification not possible  |
| Germ cell mutagenicity                | classification not possible  |
| Carcinogenicity                       | classification not possible  |
| Reproductive toxicity                 | classification not possible  |
| STOT-single exposure                  | Category 1   |
| STOT-repeated exposure                | Category 1   |

| <b>Nitric acid</b>                    |                             |
|---------------------------------------|-----------------------------|
| Aspiration hazard                     | classification not possible |
| <b>Water</b>                          |                             |
| Acute toxicity (oral)                 | No classification           |
| Acute toxicity (dermal)               | No classification           |
| Acute toxicity (gas)                  | No classification           |
| Acute toxicity (vapour)               | No classification           |
| Acute toxicity (inhalation:dust/mist) | No classification           |
| Skin corrosion/irritation             | No classification           |
| Serious eye damage/irritation         | No classification           |
| Respiratory sensitization             | No classification           |
| Skin sensitization                    | No classification           |
| Germ cell mutagenicity                | No classification           |
| Carcinogenicity                       | No classification           |
| Reproductive toxicity                 | No classification           |
| STOT-single exposure                  | No classification           |
| STOT-repeated exposure                | No classification           |
| Aspiration hazard                     | No classification           |

## 12. Ecological information

The information in this section is based on the "GHS Classification Results" by NITE.

| <b>As a product</b>                                       |                             |
|---|-----------------------------|
| Hazardous to the aquatic environment, short-term (acute)  | No classification           |
| Hazardous to the aquatic environment, long-term (chronic) | No classification           |
| Persistence and degradability                             | No data available           |
| Bioaccumulative potential                                 | No data available           |
| Mobility in soil  | No data available           |
| Ozone   | classification not possible |
| <b>Nitric acid</b>  |                             |
| Hazardous to Aquatic Environment - Acute Hazard           | Category 3                  |
| Hazardous to Aquatic Environment - Chronic Hazard         | No classification           |
| Persistence and degradability                             | No data available           |
| Bioaccumulative potential                                 | No data available           |
| Mobility in soil  | No data available           |
| Hazardous to the ozone layer                              | classification not possible |
| <b>Water</b>  |                             |
| Hazardous to Aquatic Environment - Acute Hazard           | No classification           |
| Hazardous to Aquatic Environment - Chronic Hazard         | No classification           |
| Persistence and degradability                             | No data available           |
| Bioaccumulative potential                                 | No data available           |
| Mobility in soil  | No data available           |
| Hazardous to the ozone layer                              | classification not possible |

## 13. Disposal considerations

- Ecology - waste materials : With the detail information of the waste, subcontract its disposal to a waste disposer authorized by a Prefectural Governor.
- Contaminated container and packaging : Empty the packaging completely prior to disposal.  
Empty containers should be taken for recycle, recovery or waste in accordance with local regulation.

## 14. Transport information

### International Regulations

#### Transport by sea(IMDG)

|                                    |  |
|------------------------------------|--|
| UN-No. (IMDG)                      | : 2031   |
| Proper Shipping Name (IMDG)        | : NITRIC ACID  |
| Packing group (IMDG)               | : II   |
| Transport hazard class(es) (IMDG)  | : 8  |
| Hazard labels (IMDG)               | : 8  |
| Class (IMDG)                       | : 8  |
| Packing instructions (IMDG)        | : P001   |
| Packing provisions (IMDG)          | : PP81   |
| IBC packing instructions (IMDG)    | : IBC02  |
| IBC special provisions (IMDG)      | : B15, B20   |
| Tank instructions (IMDG)           | : T8   |
| Tank special provisions (IMDG)     | : TP2  |
| Stowage category (IMDG)            | : D  |
| Properties and observations (IMDG) | : Colourless liquid.Oxidant; may cause fire in contact with organic materials such as wood, cotton or straw, evolving highly toxic gases (brown fumes). Highly corrosive to most metals. Causes severe burns to skin, eyes and mucous membranes. |
| MFAG-No                            | : 157  |

#### Air transport(IATA)

|  |                  |
|--|------------------|
| UN-No. (IATA)                                | : 2031           |
| Proper Shipping Name (IATA)                  | : Nitric acid    |
| Packing group (IATA)                         | : II             |
| Transport hazard class(es) (IATA)            | : 8              |
| Hazard labels (IATA)                         | : 8              |
| Class (IATA)                                 | : 8              |
| PCA Excepted quantities (IATA)               | : E0             |
| PCA Limited quantities (IATA)                | : Forbidden      |
| PCA limited quantity max net quantity (IATA) | : Forbidden      |
| PCA packing instructions (IATA)              | : Forbidden      |
| PCA max net quantity (IATA)                  | : Forbidden      |
| CAO packing instructions (IATA)              | : 855            |
| CAO max net quantity (IATA)                  | : 30L            |
| Special provision (IATA)                     | : A212           |
| ERG code (IATA)                              | : 8L             |
| Marine pollutant                             | : Not applicable |

#### Regulations in Japan

|                               |   |
|-------------------------------|---|
| Regulatory information by sea | : Conform to the provisions of the Ship Safety Law.       |
| Regulatory information by air | : Conform to the provisions of the Civil Aeronautics Law. |
| MFAG-No                       | : 157   |

**Special transport precautions** : When transporting, load containers so that they do not tip over, damage, drop or collapse. Make sure there is no leak in containers.

## 15. Regulatory information

### National law

|   |  |
|---|--|
| Industrial Safety and Health Law                          | : Group 3 Specified Chemical Substance, (Ordinance on Prevention of Hazards Due to Specified Chemical Substances Art.2 Para.1, Item 6) Harmful Substances Whose Names Are to be Indicated on the Label (Law Art.57, Para.1, Enforcement Order Art.18 Item 1, Item 2, Attached Table No.9) Notifiable Substances (Law Art.57-2, Enforcement Order Art.18-2 Item 1, Item 2, Attached Table No.9) Nitric acid (Ordinance number : 307) Corrosive Liquids (Ordinance on Industrial Safety and Health Law Art. 326) Substances on dental health checkup (Act, Art.66, Para.3, Enforcement Order, Art.22 Item 3) |
| Japanese Poisonous and Deleterious Substances Control Law | : Not applicable   |
| Water Pollution Prevention Law                            | : Hazardous Substances (Act, Art.2, Enforcement Order Art.2, Ministerial Ordinance to Provide for Effluent Standards, Art.1)   |
| Fire Service Law  | : Not applicable   |

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|   |   |  |
|---|---|--|
| Law Relating to Prevention of Marine Pollution and Maritime Disasters | : | Noxious Liquid Substances - Category Z (Law Art.3(3), Enforcement Order, Art.1-2, Attached Table No.1 Item 3)                                    |
| Foreign Exchange and Foreign Trade Control Act                        | : | Export Trade Control Ordinance appendix 1-16   |
| Ship Safety Act   | : | Corrosive substances (Dangerous Goods Notification Schedule first second and third Article Dangerous Goods Regulations)                          |
| Civil Aeronautics Law   | : | Corrosive substances (Hazardous materials notice Appended Table 1 Article 194 of the Enforcement Regulations)                                    |
| Port Regulation Law   | : | Corrosive substances (Article 21, Paragraph 2 of Law, Article 12 rule, notice attached table that defines the type of dangerous goods)           |
| Waste Management on Public Cleansing Law                              | : | Specially Controlled Industrial Wastes (Act Art.2, para 5, Enforcement Order Art.2-4)  |
| Waterworks Law  | : | Hazardous Substances (Act Article 4 paragraph 2), Standard for Water Quality (Ministry Order No.101 of 2003)                                     |
| Japanese Pollutant Release and Transfer Register Law (PRTR Law)       | : | Not applicable   |
| Labor Standards Act   | : | Chemical Substances Causing Occupational Illnesses (Act Art.75, Para.2, Ordinance Attached Table 1-2, Item 4-1, MHLW Notification No.36 of 1978) |

## 16. Other information

|                   |   |  |
|-------------------|---|--|
| Data sources      | : | Handbook of 17423 Chemical Products, The Chemical Daily Co, Ltd. International Chemical Safety Cards.<br>National Institute of Technology and Evaluation (NITE).<br>2020 Emergency Response Guidebook (ERG 2020).  |
| Other information | : | The SDS is copyrighted material of Hayashi Pure Chemical Ind, Ltd. This Safety Data Sheet is intended to be provided for business operators who handle chemical substance products of the relevant product and is not intended to assure safety in any way. The Safety Data Sheet does not verify all the information on the applicable chemical substance in the present time. With the recognition in that unknown danger constantly exists in the relevant chemical substance, the product shall be used in the principle of self-responsibility of the user with the highest priority to safety from transport and unpacking to disposal. When the relevant chemical substance is used, the user him/herself shall collect safety information and shall investigate laws and regulations at the place, organizations, countries, etc. where the substance is actually used and give the highest priority to them. The Company shall take no responsibility for investigating state and local regulations and the user shall handle this problem on his/her own responsibility. In the event that SDS in Japanese and SDS translated into other languages exist, the document described in Japanese is prior to all other documents whether or not there is any difference in contents, and documents in other languages shall be references. |