

07/17/2018

Kit Components

Product code	Description
N9306225	STANDARD KIT-PERKINELMER UDA

Components:

N9300232	STD-2 ICPMS MULTIELEMENT CAL
N9300233	STANDARD-3ICPMS MULTIELEM CAL
N9300234	STD-4 ICPMS MULTIELEMENT CAL
N9300235	STD-5 ICPMS MULTIELEMENT CAL

acc. to OSHA HCS

Printing date 07/17/2018

Review date 07/17/2018

1 Identification

- **Product identifier**
- **Trade name:** STD-2 ICPMS MULTIELEMENT CAL
- **Article number** N9300232
- **Application of the substance / the mixture** Laboratory chemicals
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**

PerkinElmer, Inc.
710 Bridgeport Avenue
Shelton, Connecticut 06484 USA
CustomerCareUS@perkinelmer.com
203-925-4600

- **Emergency telephone number:**
CHEMTREC (within US) 800-424-9300
CHEMTREC (from outside US) +1 703-527-3887 (call collect)
CHEMTREC (within AU) +(61)-290372994

2 Hazard(s) identification

- **Classification of the substance or mixture**



Corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.
Eye Dam. 1 H318 Causes serious eye damage.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms** GHS05
- **Signal word** Danger

- **Hazard-determining components of labeling:**

Nitric Acid

- **Hazard statements**

H314 Causes severe skin burns and eye damage.

- **Precautionary statements**

- P260 Do not breathe dusts or mists.
- P264 Wash thoroughly after handling.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.
- P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310 Immediately call a poison center/doctor.
- P321 Specific treatment (see on this label).
- P363 Wash contaminated clothing before reuse.
- P405 Store locked up.

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Trade name: STD-2 ICPMS MULTIELEMENT CAL

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P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Classification system:**
- **NFPA ratings (scale 0 - 4)**



- **HMIS-ratings (scale 0 - 4)**



- **Other hazards**

The product does not contain any organic halogen compounds (AOX), nitrates, heavy metal compounds or formaldehydes.

- **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.
- **vPvB:** Not applicable.

3 Composition/information on ingredients

- **Chemical characterization: Substances**
- **CAS No. Description**
7732-18-5 Water
- **Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

- **Hazardous components:**

7697-37-2	Nitric Acid	Ox. Liq. 2, H272 Skin Corr. 1A, H314	5.0%
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- **Additional Components**

7440-52-0	erbium		0.001%
7440-53-1	europium		0.001%
7440-54-2	gadolinium		0.001%
7440-60-0	holmium		0.001%
1312-81-8	lanthanum oxide		0.001%
7439-94-3	LUTETIUM		0.001%
7440-00-8	neodymium		0.001%
7427-91-6	Dysprosium		0.001%
7440-10-0	Praseodymium		0.001%
7440-19-9	samarium		0.001%
12060-08-1	scandium oxide		0.001%
12037-01-3	TERBIUM OXIDE		0.001%
7440-29-1	thorium	Carc. 1A, H350	0.001%

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7440-30-4	THULIUM		0.001%
7440-64-4	ytterbium		0.001%
1314-36-9	yttrium oxide		0.001%
7440-45-1	cerium	 Water-react. 2, H261	0.001%
7732-18-5	Water		94.983%

4 First-aid measures

- **Description of first aid measures**
- **General information:** Immediately remove any clothing soiled by the product.
- **After inhalation:** In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:** Drink copious amounts of water and provide fresh air. Immediately call a doctor.
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture** No further relevant information available.
- **Advice for firefighters**
- **Protective equipment:** No special measures required.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:**
Inform respective authorities in case of seepage into water course or sewage system.
Dilute with plenty of water.
- **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
- **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**

· **PAC-1:**

7697-37-2	Nitric Acid		0.16 ppm
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7440-53-1	europium	30 mg/m ³
7440-54-2	gadolinium	30 mg/m ³
7440-60-0	holmium	12 mg/m ³
1312-81-8	lanthanum oxide	4 mg/m ³
7439-94-3	LUTETIUM	30 mg/m ³
7440-00-8	neodymium	30 mg/m ³
7440-10-0	Praseodymium	1.2 mg/m ³
7440-19-9	samarium	30 mg/m ³
12060-08-1	scandium oxide	30 mg/m ³
12037-01-3	TERBIUM OXIDE	30 mg/m ³
7440-29-1	thorium	30 mg/m ³
7440-30-4	THULIUM	30 mg/m ³
1314-36-9	yttrium oxide	3.8 mg/m ³
7440-45-1	cerium	30 mg/m ³

PAC-2:

7697-37-2	Nitric Acid	24 ppm
7440-53-1	europium	330 mg/m ³
7440-54-2	gadolinium	330 mg/m ³
7440-60-0	holmium	130 mg/m ³
1312-81-8	lanthanum oxide	44 mg/m ³
7439-94-3	LUTETIUM	330 mg/m ³
7440-00-8	neodymium	330 mg/m ³
7440-10-0	Praseodymium	13 mg/m ³
7440-19-9	samarium	330 mg/m ³
12060-08-1	scandium oxide	330 mg/m ³
12037-01-3	TERBIUM OXIDE	330 mg/m ³
7440-29-1	thorium	330 mg/m ³
7440-30-4	THULIUM	330 mg/m ³
1314-36-9	yttrium oxide	43 mg/m ³
7440-45-1	cerium	330 mg/m ³

PAC-3:

7697-37-2	Nitric Acid	92 ppm
7440-53-1	europium	2,000 mg/m ³
7440-54-2	gadolinium	2,000 mg/m ³
7440-60-0	holmium	790 mg/m ³
1312-81-8	lanthanum oxide	270 mg/m ³
7439-94-3	LUTETIUM	2,000 mg/m ³
7440-00-8	neodymium	2,000 mg/m ³
7440-10-0	Praseodymium	79 mg/m ³
7440-19-9	samarium	2,000 mg/m ³

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12060-08-1	scandium oxide	(Contd. of page 4) 2,000 mg/m ³
12037-01-3	TERBIUM OXIDE	2,000 mg/m ³
7440-29-1	thorium	2,000 mg/m ³
7440-30-4	THULIUM	2,000 mg/m ³
1314-36-9	yttrium oxide	260 mg/m ³
7440-45-1	cerium	2,000 mg/m ³

7 Handling and storage

- **Handling:**
- **Precautions for safe handling** No special precautions are necessary if used correctly.
- **Information about protection against explosions and fires:** The product is not flammable.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.

· **Control parameters**

- **Components with limit values that require monitoring at the workplace:**

7697-37-2 Nitric Acid

PEL	Long-term value: 5 mg/m ³ , 2 ppm
REL	Short-term value: 10 mg/m ³ , 4 ppm Long-term value: 5 mg/m ³ , 2 ppm
TLV	Short-term value: 10 mg/m ³ , 4 ppm Long-term value: 5.2 mg/m ³ , 2 ppm

- **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

- Keep away from foodstuffs, beverages and feed.
- Immediately remove all soiled and contaminated clothing.
- Wash hands before breaks and at the end of work.
- Avoid contact with the eyes.
- Avoid contact with the eyes and skin.

- **Breathing equipment:** Not required.

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· Protection of hands:



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· Material of gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· Penetration time of glove material

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· Eye protection:



Tightly sealed goggles or safety glasses

9 Physical and chemical properties

· Information on basic physical and chemical properties

· General Information

· Appearance:

Form:	Liquid
Color:	Transparent
· Odor:	Characteristic
· Odor threshold:	Not determined.

· pH-value: Not determined.

· Change in condition

Melting point/Melting range:	0 °C (32 °F)
Boiling point/Boiling range:	100 °C (212 °F)

· Flash point: Not applicable.

· Flammability (solid, gaseous): Not applicable.

· Decomposition temperature: Not determined.

· Auto igniting: Product is not selfigniting.

· Danger of explosion: Product does not present an explosion hazard.

· Explosion limits:

Lower:	Not determined.
Upper:	Not determined.

· Vapor pressure at 20 °C (68 °F): 23 hPa (17.3 mm Hg)

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- | | |
|---|--|
| · Density at 20 °C (68 °F): | 1 g/cm ³ (8.345 lbs/gal) |
| · Relative density | Not determined. |
| · Vapor density | Not determined. |
| · Evaporation rate | Not determined. |
| · Solubility in / Miscibility with Water: | Fully miscible. |
| · Partition coefficient (n-octanol/water): | Not determined. |
| · Viscosity: | |
| Dynamic: | Not determined. |
| Kinematic: | Not determined. |
| · Solvent content: | |
| Water: | 95.0 % |
| VOC content: | 0.00 % |
| · Other information | No further relevant information available. |

10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

* 11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**
- **Primary irritant effect:**
- **on the skin:** Caustic effect on skin and mucous membranes.
- **on the eye:**
- Strong caustic effect.
- Strong irritant with the danger of severe eye injury.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**
- The product shows the following dangers according to internally approved calculation methods for preparations:
- Corrosive
- Irritant
- Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

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· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**

7440-29-1 thorium

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· **NTP (National Toxicology Program)**

None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

12 Ecological information

· **Toxicity**

· **Aquatic toxicity:** No further relevant information available.

· **Persistence and degradability** No further relevant information available.

· **Behavior in environmental systems:**

· **Bioaccumulative potential** No further relevant information available.

· **Mobility in soil** No further relevant information available.

· **Additional ecological information:**

· **General notes:**

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Must not reach bodies of water or drainage ditch undiluted or unneutralized.

· **Results of PBT and vPvB assessment**

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

· **Other adverse effects** No further relevant information available.

13 Disposal considerations

· **Waste treatment methods**

· **Recommendation:**

Dispose of container and materials in accordance with local, regional and national regulations.

· **Uncleaned packagings:**

· **Recommendation:** Disposal must be made according to official regulations.

· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

· **UN-Number**

· **DOT, ADR, IMDG, IATA**

UN3264

· **UN proper shipping name**

· **DOT**

Corrosive liquid, acidic, inorganic, n.o.s. (Nitric Acid)

· **ADR**

3264 Corrosive liquid, acidic, inorganic, n.o.s. (Nitric Acid)

· **IMDG, IATA**

CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Nitric Acid)

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Trade name: STD-2 ICPMS MULTIELEMENT CAL

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· **Transport hazard class(es)**

· **DOT**



· **Class** 8 Corrosive substances
· **Label** 8

· **ADR**



· **Class** 8 (C1) Corrosive substances
· **Label** 8

· **IMDG, IATA**



· **Class** 8 Corrosive substances
· **Label** 8

· **Packing group**
· **DOT, ADR, IMDG, IATA** III

· **Environmental hazards:**
· **Marine pollutant:** No

· **Special precautions for user** Warning: Corrosive substances
· **Danger code (Kemler):** 80
· **EMS Number:** F-A,S-B
· **Segregation groups** Acids
· **Stowage Category** A
· **Stowage Code** SW2 Clear of living quarters.

· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.

· **Transport/Additional information:**

· **DOT**
· **Quantity limitations** On passenger aircraft/rail: 5 L
On cargo aircraft only: 60 L

· **ADR**

· **Excepted quantities (EQ)** Code: E1
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 1000 ml

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Trade name: STD-2 ICPMS MULTIELEMENT CAL

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- **IMDG**
- **Limited quantities (LQ)** 5L
- **Excepted quantities (EQ)** Code: E1
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 1000 ml
- **UN "Model Regulation":** UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID), 8, III

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

7732-18-5	Water		94.983%
7697-37-2	Nitric Acid	 Ox. Liq. 2, H272  Skin Corr. 1A, H314	5.0%
7440-53-1	europium		0.001%

· **Sara**

· **Section 355 (extremely hazardous substances):**

7697-37-2	Nitric Acid
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· **Section 313 (Specific toxic chemical listings):**

7697-37-2	Nitric Acid
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· **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

7697-37-2	Nitric Acid
7440-52-0	erbium
7440-53-1	europium
7440-54-2	gadolinium
7440-60-0	holmium
1312-81-8	lanthanum oxide
7439-94-3	LUTETIUM
7440-00-8	neodymium
7440-10-0	Praseodymium
7440-19-9	samarium
12060-08-1	scandium oxide
12037-01-3	TERBIUM OXIDE
7440-29-1	thorium
7440-30-4	THULIUM
7440-64-4	ytterbium
1314-36-9	yttrium oxide
7440-45-1	cerium
7732-18-5	Water

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· **Proposition 65**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

· **Carcinogenicity categories**

· **EPA (Environmental Protection Agency)**

None of the ingredients is listed.

· **TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients is listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

· **National regulations:**

· **Information about limitation of use:**

Workers are not allowed to be exposed to this hazardous material. Exceptions can be made by the authorities in certain cases.

· **Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

Disclaimer

The information provided in this Material Safety Data Sheet is based on our present knowledge, and believed to be correct at the date of publication. However, no representation is made concerning its accuracy and completeness. It is intended as guidance only, and is not to be considered a warranty or quality specification. All materials may present unknown hazards, and should be used with caution. Although certain hazards are described, we cannot guarantee that these are the only hazards which exist. PerkinElmer shall not be held liable for any damage resulting from handling or from contact with the product.

· **Department issuing SDS:** Environmental, Health and Safety

· **Contact:**

Within the USA: 1-(800)-762-4000

Outside the USA: 1-(203)-712-8488

· **Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

ICAO: International Civil Aviation Organisation

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

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IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Ox. Liq. 2: Oxidizing liquids – Category 2
Skin Corr. 1A: Skin corrosion/irritation – Category 1A
Skin Corr. 1B: Skin corrosion/irritation – Category 1B
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
*** Data compared to the previous version altered.**

USA

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1 Identification

- **Product identifier**
- **Trade name:** STANDARD-3ICPMS MULTIELEM CAL
- **Article number** N9300233
- **Application of the substance / the mixture** Laboratory chemicals
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**

PerkinElmer, Inc.
710 Bridgeport Avenue
Shelton, Connecticut 06484 USA
CustomerCareUS@perkinelmer.com
203-925-4600

- **Emergency telephone number:**
CHEMTREC (within US) 800-424-9300
CHEMTREC (from outside US) +1 703-527-3887 (call collect)
CHEMTREC (within AU) +(61)-290372994

2 Hazard(s) identification

- **Classification of the substance or mixture**



Corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.
Eye Dam. 1 H318 Causes serious eye damage.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms** GHS05
- **Signal word** Danger

- **Hazard-determining components of labeling:**

Nitric Acid

- **Hazard statements**

H314 Causes severe skin burns and eye damage.

- **Precautionary statements**

- P260 Do not breathe dusts or mists.
- P264 Wash thoroughly after handling.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.
- P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310 Immediately call a poison center/doctor.
- P321 Specific treatment (see on this label).
- P363 Wash contaminated clothing before reuse.
- P405 Store locked up.

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P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Classification system:**
- **NFPA ratings (scale 0 - 4)**



- **HMIS-ratings (scale 0 - 4)**



- **Other hazards**
The product does not contain any organic halogen compounds (AOX), nitrates, heavy metal compounds or formaldehydes.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Hazardous components:**

7697-37-2	Nitric Acid	Ox. Liq. 2, H272 Skin Corr. 1A, H314	5.0%
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· **Additional Components**

7440-38-2	Arsenic Acute Tox. 3, H301; Acute Tox. 3, H331 Carc. 1A, H350	0.001%
513-77-9	barium carbonate Acute Tox. 4, H302	0.001%
7440-41-7	beryllium Acute Tox. 3, H301; Acute Tox. 2, H330 Carc. 1B, H350; STOT RE 1, H372 Skin Irrit. 2, H315; Eye Irrit. 2A, H319; Skin Sens. 1, H317; STOT SE 3, H335	0.001%
7440-69-9	bismuth	0.001%
7440-43-9	cadmium (non-pyrophoric) Acute Tox. 2, H330 Muta. 2, H341; Carc. 1B, H350; Repr. 2, H361; STOT RE 1, H372	0.001%


























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		(Contd. of page 2)
7440-48-4	cobalt  Resp. Sens. 1, H334; Carc. 2, H351  Skin Sens. 1, H317	0.001%
7789-02-8	Chromium Nitrate Nonahydrate  Ox. Sol. 2, H272  Acute Tox. 3, H301; Acute Tox. 3, H311  Skin Corr. 1C, H314  Acute Tox. 4, H332; Eye Irrit. 2A, H319; STOT SE 3, H335	0.001%
7789-18-6	caesium nitrate  Ox. Sol. 3, H272	0.001%
7440-50-8	copper	0.001%
7439-89-6	iron	0.001%
7440-55-3	gallium  Skin Corr. 1C, H314	0.001%
7439-97-6	mercury  Acute Tox. 2, H330  Repr. 1B, H360; STOT RE 1, H372	0.001%
7440-74-6	Indium	0.001%
7757-79-1	potassium nitrate  Ox. Sol. 2, H272	0.001%
554-13-2	lithium carbonate  Acute Tox. 3, H301  Eye Irrit. 2A, H319	0.001%
7439-95-4	magnesium  Pyr. Sol. 1, H250; Water-react. 1, H260	0.001%
7439-96-5	manganese	0.001%
497-19-8	sodium carbonate  Eye Irrit. 2A, H319	0.001%
1317-36-8	lead monoxide  Carc. 1B, H350; Repr. 1A, H360; STOT RE 2, H373  Aquatic Acute 1, H400; Aquatic Chronic 1, H410  Acute Tox. 4, H302; Acute Tox. 4, H332	0.001%
13126-12-0	rubidium nitrate  Ox. Sol. 1, H271	0.001%
7782-49-2	selenium  Acute Tox. 3, H301; Acute Tox. 3, H331  STOT RE 2, H373	0.001%
1633-05-2	strontium carbonate	0.001%
10102-45-1	thallium nitrate  Acute Tox. 2, H300; Acute Tox. 2, H330  STOT RE 2, H373	0.001%
7803-55-6	ammonium trioxovanadate  Acute Tox. 2, H300  Skin Irrit. 2, H315; Eye Irrit. 2A, H319; STOT SE 3, H335	0.001%







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		(Contd. of page 3)
7440-66-6	zinc  Water-react. 2, H261	0.001%
7429-90-5	aluminium	0.001%
7440-22-4	silver	0.001%
7440-61-1	uranium  Acute Tox. 2, H300; Acute Tox. 2, H330  STOT RE 2, H373	0.001%
7440-70-2	calcium  Water-react. 2, H261	0.001%
7440-02-0	nickel  Carc. 2, H351; STOT RE 1, H372  Skin Sens. 1, H317	0.001%
7732-18-5	Water	94.97%

4 First-aid measures

- **Description of first aid measures**
- **General information:** Immediately remove any clothing soiled by the product.
- **After inhalation:** In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:** Drink copious amounts of water and provide fresh air. Immediately call a doctor.
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture** No further relevant information available.
- **Advice for firefighters**
- **Protective equipment:** No special measures required.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:**
Inform respective authorities in case of seepage into water course or sewage system.
Dilute with plenty of water.
- **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.

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Ensure adequate ventilation.

· **Reference to other sections**

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

· **Protective Action Criteria for Chemicals**

· **PAC-1:**

7697-37-2	Nitric Acid	0.16 ppm
7440-38-2	Arsenic	1.5 mg/m ³
513-77-9	barium carbonate	2.2 mg/m ³
7440-41-7	beryllium	0.0023 mg/m ³
7440-69-9	bismuth	15 mg/m ³
7440-43-9	cadmium (non-pyrophoric)	0.10 mg/m ³
7440-48-4	cobalt	0.18 mg/m ³
7789-18-6	caesium nitrate	7.2 mg/m ³
7440-50-8	copper	3 mg/m ³
7439-89-6	iron	3.2 mg/m ³
7440-55-3	gallium	30 mg/m ³
7439-97-6	mercury	0.15 mg/m ³
7440-74-6	Indium	0.3 mg/m ³
7757-79-1	potassium nitrate	9 mg/m ³
554-13-2	lithium carbonate	3.1 mg/m ³
7439-95-4	magnesium	18 mg/m ³
7439-96-5	manganese	3 mg/m ³
497-19-8	sodium carbonate	7.6 mg/m ³
1317-36-8	lead monoxide	0.16 mg/m ³
13126-12-0	rubidium nitrate	14 mg/m ³
7782-49-2	selenium	0.6 mg/m ³
1633-05-2	strontium carbonate	71 mg/m ³
10102-45-1	thallium nitrate	0.078 mg/m ³
7803-55-6	ammonium trioxovanadate	0.01 mg/m ³
7440-66-6	zinc	6 mg/m ³
7440-22-4	silver	0.3 mg/m ³
7440-61-1	uranium	0.6 mg/m ³
7440-02-0	nickel	4.5 mg/m ³

· **PAC-2:**

7697-37-2	Nitric Acid	24 ppm
7440-38-2	Arsenic	17 mg/m ³
513-77-9	barium carbonate	270 mg/m ³
7440-41-7	beryllium	0.025 mg/m ³
7440-69-9	bismuth	170 mg/m ³

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7440-43-9	cadmium (non-pyrophoric)	0.76 mg/m ³
7440-48-4	cobalt	2 mg/m ³
7789-18-6	caesium nitrate	79 mg/m ³
7440-50-8	copper	33 mg/m ³
7439-89-6	iron	35 mg/m ³
7440-55-3	gallium	330 mg/m ³
7439-97-6	mercury	1.7 mg/m ³
7440-74-6	Indium	3.3 mg/m ³
7757-79-1	potassium nitrate	100 mg/m ³
554-13-2	lithium carbonate	34 mg/m ³
7439-95-4	magnesium	200 mg/m ³
7439-96-5	manganese	5 mg/m ³
497-19-8	sodium carbonate	83 mg/m ³
1317-36-8	lead monoxide	130 mg/m ³
13126-12-0	rubidium nitrate	150 mg/m ³
7782-49-2	selenium	6.6 mg/m ³
1633-05-2	strontium carbonate	780 mg/m ³
10102-45-1	thallium nitrate	4.3 mg/m ³
7803-55-6	ammonium trioxovanadate	0.11 mg/m ³
7440-66-6	zinc	21 mg/m ³
7440-22-4	silver	170 mg/m ³
7440-61-1	uranium	5 mg/m ³
7440-02-0	nickel	50 mg/m ³
PAC-3:		
7697-37-2	Nitric Acid	92 ppm
7440-38-2	Arsenic	100 mg/m ³
513-77-9	barium carbonate	1,600 mg/m ³
7440-41-7	beryllium	0.1 mg/m ³
7440-69-9	bismuth	990 mg/m ³
7440-43-9	cadmium (non-pyrophoric)	4.7 mg/m ³
7440-48-4	cobalt	20 mg/m ³
7789-18-6	caesium nitrate	470 mg/m ³
7440-50-8	copper	200 mg/m ³
7439-89-6	iron	150 mg/m ³
7440-55-3	gallium	2,000 mg/m ³
7439-97-6	mercury	8.9 mg/m ³
7440-74-6	Indium	20 mg/m ³
7757-79-1	potassium nitrate	600 mg/m ³
554-13-2	lithium carbonate	210 mg/m ³
7439-95-4	magnesium	1,200 mg/m ³

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		(Contd. of page 6)
7439-96-5	manganese	1,800 mg/m ³
497-19-8	sodium carbonate	500 mg/m ³
1317-36-8	lead monoxide	750 mg/m ³
13126-12-0	rubidium nitrate	920 mg/m ³
7782-49-2	selenium	40 mg/m ³
1633-05-2	strontium carbonate	4,700 mg/m ³
10102-45-1	thallium nitrate	26 mg/m ³
7803-55-6	ammonium trioxovanadate	80 mg/m ³
7440-66-6	zinc	120 mg/m ³
7440-22-4	silver	990 mg/m ³
7440-61-1	uranium	30 mg/m ³
7440-02-0	nickel	99 mg/m ³

7 Handling and storage

- **Handling:**
- **Precautions for safe handling** No special precautions are necessary if used correctly.
- **Information about protection against explosions and fires:** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.

Control parameters

- **Components with limit values that require monitoring at the workplace:**

7697-37-2 Nitric Acid

PEL	Long-term value: 5 mg/m ³ , 2 ppm
REL	Short-term value: 10 mg/m ³ , 4 ppm
	Long-term value: 5 mg/m ³ , 2 ppm
TLV	Short-term value: 10 mg/m ³ , 4 ppm
	Long-term value: 5.2 mg/m ³ , 2 ppm

- **Additional information:** The lists that were valid during the creation were used as basis.
- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.

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Wash hands before breaks and at the end of work.

Avoid contact with the eyes.

Avoid contact with the eyes and skin.

· **Breathing equipment:** Not required.

· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**



Tightly sealed goggles or safety glasses

9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

· Form:	Liquid
· Color:	Transparent
· Odor:	Odorless
· Odor threshold:	Not determined.

· **pH-value:** Not determined.

· **Change in condition**

· Melting point/Melting range:	0 °C (32 °F)
· Boiling point/Boiling range:	100 °C (212 °F)

· **Flash point:** Not applicable.

· **Flammability (solid, gaseous):** Not applicable.

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Product is not selfigniting.

· **Danger of explosion:** Product does not present an explosion hazard.

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· Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
· Vapor pressure at 20 °C (68 °F):	23 hPa (17.3 mm Hg)
· Density at 20 °C (68 °F):	1 g/cm ³ (8.345 lbs/gal)
· Relative density	Not determined.
· Vapor density	Not determined.
· Evaporation rate	Not determined.
· Solubility in / Miscibility with Water:	Fully miscible.
· Partition coefficient (n-octanol/water):	Not determined.
· Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
· Solvent content:	
Water:	95.0 %
VOC content:	0.00 %
· Other information	No further relevant information available.

* **10 Stability and reactivity**

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

* **11 Toxicological information**

- **Information on toxicological effects**
- **Acute toxicity:**
- **Primary irritant effect:**
- **on the skin:** Caustic effect on skin and mucous membranes.
- **on the eye:**
Strong caustic effect.
Strong irritant with the danger of severe eye injury.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Corrosive
Irritant

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Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**

7440-38-2	Arsenic	I
7440-41-7	beryllium	I
7440-43-9	cadmium (non-pyrophoric)	I
7440-48-4	cobalt	2B
7439-97-6	mercury	3
1317-36-8	lead monoxide	2A
7782-49-2	selenium	3
7440-02-0	nickel	2B

· **NTP (National Toxicology Program)**

7440-38-2	Arsenic	K
7440-41-7	beryllium	K
7440-43-9	cadmium (non-pyrophoric)	K
7440-48-4	cobalt	R
1317-36-8	lead monoxide	R
7440-02-0	nickel	R

· **OSHA-Ca (Occupational Safety & Health Administration)**

7440-38-2	Arsenic	
7440-43-9	cadmium (non-pyrophoric)	

12 Ecological information

· **Toxicity**

· **Aquatic toxicity:** No further relevant information available.

· **Persistence and degradability** No further relevant information available.

· **Behavior in environmental systems:**

· **Bioaccumulative potential** No further relevant information available.

· **Mobility in soil** No further relevant information available.

· **Additional ecological information:**

· **General notes:**

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Must not reach bodies of water or drainage ditch undiluted or unneutralized.

· **Results of PBT and vPvB assessment**

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

· **Other adverse effects** No further relevant information available.

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13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**
Dispose of container and materials in accordance with local, regional and national regulations.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

· UN-Number	
· DOT, ADR, IMDG, IATA	UN3264
· UN proper shipping name	
· DOT	Corrosive liquid, acidic, inorganic, n.o.s. (Nitric Acid)
· ADR	3264 Corrosive liquid, acidic, inorganic, n.o.s. (Nitric Acid)
	3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)
· IMDG, IATA	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Nitric Acid)
· Transport hazard class(es)	
· DOT	
	
· Class	8 Corrosive substances
· Label	8
· ADR	
	
· Class	8 (C1) Corrosive substances
· Label	8
· IMDG, IATA	
	
· Class	8 Corrosive substances
· Label	8

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· Packing group · DOT, ADR, IMDG, IATA	III
· Environmental hazards: · Marine pollutant:	No
· Special precautions for user · Danger code (Kemler): · EMS Number: · Segregation groups · Stowage Category · Stowage Code	Warning: Corrosive substances 80 F-A,S-B Acids A SW2 Clear of living quarters.
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· Transport/Additional information: · DOT · Quantity limitations	On passenger aircraft/rail: 5 L On cargo aircraft only: 60 L
· ADR · Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· IMDG · Limited quantities (LQ) · Excepted quantities (EQ)	5L Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· UN "Model Regulation":	UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID), 8, III

15 Regulatory information

· Safety, health and environmental regulations/legislation specific for the substance or mixture			
7732-18-5	Water		94.97%
7697-37-2	Nitric Acid	Ox. Liq. 2, H272 Skin Corr. 1A, H314	5.0%
513-77-9	barium carbonate	Acute Tox. 4, H302	0.001%
· Sara			
· Section 355 (extremely hazardous substances):			
7697-37-2	Nitric Acid		
· Section 313 (Specific toxic chemical listings):			
7697-37-2	Nitric Acid		
7440-38-2	Arsenic		

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513-77-9	barium carbonate
7440-41-7	beryllium
7440-43-9	cadmium (non-pyrophoric)
7440-48-4	cobalt
7789-02-8	Chromium Nitrate Nonahydrate
7789-18-6	caesium nitrate
7440-50-8	copper
7439-97-6	mercury
7757-79-1	potassium nitrate
554-13-2	lithium carbonate
7439-96-5	manganese
1317-36-8	lead monoxide
13126-12-0	rubidium nitrate
7782-49-2	selenium
10102-45-1	thallium nitrate
7803-55-6	ammonium trioxovanadate
7440-66-6	zinc
7429-90-5	aluminium
7440-22-4	silver
7440-02-0	nickel

TSCA (Toxic Substances Control Act):
All ingredients are listed.

7697-37-2	Nitric Acid
7440-38-2	Arsenic
513-77-9	barium carbonate
7440-41-7	beryllium
7440-69-9	bismuth
7440-43-9	cadmium (non-pyrophoric)
7440-48-4	cobalt
7789-18-6	caesium nitrate
7440-50-8	copper
7439-89-6	iron
7440-55-3	gallium
7439-97-6	mercury
7440-74-6	Indium
7757-79-1	potassium nitrate
554-13-2	lithium carbonate
7439-95-4	magnesium
7439-96-5	manganese
497-19-8	sodium carbonate

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1317-36-8	lead monoxide
13126-12-0	rubidium nitrate
7782-49-2	selenium
1633-05-2	strontium carbonate
10102-45-1	thallium nitrate
7803-55-6	ammonium trioxovanadate
7440-66-6	zinc
7429-90-5	aluminium
7440-22-4	silver
7440-61-1	uranium
7440-70-2	calcium
7440-02-0	nickel

· **Proposition 65**

· **Chemicals known to cause cancer:**

7440-38-2	Arsenic
7440-41-7	beryllium
7440-43-9	cadmium (non-pyrophoric)
7440-48-4	cobalt
1317-36-8	lead monoxide
7440-02-0	nickel

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

7440-43-9	cadmium (non-pyrophoric)
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· **Chemicals known to cause developmental toxicity:**

7440-43-9	cadmium (non-pyrophoric)
7439-97-6	mercury
554-13-2	lithium carbonate

· **Carcinogenicity categories**

· **EPA (Environmental Protection Agency)**

7440-38-2	Arsenic	A
513-77-9	barium carbonate	D, CBD(inh), NL(oral)
7440-41-7	beryllium	B1, K/L(inh), CBD(oral)
7440-43-9	cadmium (non-pyrophoric)	B1
7440-50-8	copper	D
7439-97-6	mercury	D
7439-96-5	manganese	D
1317-36-8	lead monoxide	B2
7782-49-2	selenium	D

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10102-45-1	thallium nitrate	II
7440-66-6	zinc	D, I, II
7440-22-4	silver	D

· TLV (Threshold Limit Value established by ACGIH)

7440-38-2	Arsenic	A1
513-77-9	barium carbonate	A4
7440-41-7	beryllium	A1
7440-43-9	cadmium (non-pyrophoric)	A2
7440-48-4	cobalt	A3
7439-97-6	mercury	A4
1317-36-8	lead monoxide	A3
7429-90-5	aluminium	A4
7440-61-1	uranium	A1
7440-02-0	nickel	A5

· NIOSH-Ca (National Institute for Occupational Safety and Health)

7440-38-2	Arsenic	
7440-41-7	beryllium	
7440-43-9	cadmium (non-pyrophoric)	
7440-61-1	uranium	
7440-02-0	nickel	

· National regulations:

· Information about limitation of use:

Workers are not allowed to be exposed to this hazardous material. Exceptions can be made by the authorities in certain cases.

· Water hazard class: Water hazard class 1 (Self-assessment): slightly hazardous for water.

· Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

Disclaimer

The information provided in this Material Safety Data Sheet is based on our present knowledge, and believed to be correct at the date of publication. However, no representation is made concerning its accuracy and completeness. It is intended as guidance only, and is not to be considered a warranty or quality specification. All materials may present unknown hazards, and should be used with caution. Although certain hazards are described, we cannot guarantee that these are the only hazards which exist. PerkinElmer shall not be held liable for any damage resulting from handling or from contact with the product.

· Department issuing SDS: Environmental, Health and Safety

· Contact:

Within the USA: 1-(800)-762-4000

Outside the USA: 1-(203)-712-8488

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· Abbreviations and acronyms:

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

ICAO: International Civil Aviation Organisation

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

VOC: Volatile Organic Compounds (USA, EU)

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

Ox. Liq. 2: Oxidizing liquids – Category 2

Skin Corr. 1A: Skin corrosion/irritation – Category 1A

Skin Corr. 1B: Skin corrosion/irritation – Category 1B

Eye Dam. 1: Serious eye damage/eye irritation – Category 1

· * Data compared to the previous version altered.

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Review date 07/17/2018

1 Identification

- **Product identifier**
- **Trade name:** STD-4 ICPMS MULTIELEMENT CAL
- **Article number** N9300234
- **Application of the substance / the mixture** Laboratory chemicals
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**

PerkinElmer, Inc.
710 Bridgeport Avenue
Shelton, Connecticut 06484 USA
CustomerCareUS@perkinelmer.com
203-925-4600

- **Emergency telephone number:**
CHEMTREC (within US) 800-424-9300
CHEMTREC (from outside US) +1 703-527-3887 (call collect)
CHEMTREC (within AU) +(61)-290372994

2 Hazard(s) identification

- **Classification of the substance or mixture**



Corrosion

Skin Corr. 1A H314 Causes severe skin burns and eye damage.
Eye Dam. 1 H318 Causes serious eye damage.



STOT SE 3 H335 May cause respiratory irritation.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms** GHS05, GHS07
- **Signal word** Danger

- **Hazard-determining components of labeling:**

Hydrochloric Acid
Nitric Acid

- **Hazard statements**

H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.

- **Precautionary statements**

P260 Do not breathe dusts or mists.
P264 Wash thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.

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P303+P361+P353 *If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.*

P304+P340 *IF INHALED: Remove person to fresh air and keep comfortable for breathing.*

P305+P351+P338 *If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.*

P310 *Immediately call a poison center/doctor.*

P321 *Specific treatment (see on this label).*

P363 *Wash contaminated clothing before reuse.*

P403+P233 *Store in a well-ventilated place. Keep container tightly closed.*

P405 *Store locked up.*

P501 *Dispose of contents/container in accordance with local/regional/national/international regulations.*

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



· **HMIS-ratings (scale 0 - 4)**



· **Other hazards**

The product does not contain any organic halogen compounds (AOX), nitrates, heavy metal compounds or formaldehydes.

· **Results of PBT and vPvB assessment**

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

3 Composition/information on ingredients

· **Chemical characterization: Substances**

· **CAS No. Description**

7732-18-5 Water

· **Identification number(s)**

· **EC number:** 231-791-2

· **Chemical characterization: Mixtures**

· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Hazardous components:**

7647-01-0	Hydrochloric Acid	Skin Corr. 1B, H314 STOT SE 3, H335	10.0%
7697-37-2	Nitric Acid	Ox. Liq. 2, H272 Skin Corr. 1A, H314	1.0%

· **Additional Components**

7440-57-5	Gold		0.001%
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			(Contd. of page 2)
7439-88-5	iridium		0.001%
7440-05-3	palladium	 Ox. Sol. 2, H272	0.001%
7440-06-4	platinum		0.001%
7440-16-6	rhodium		0.001%
7740-18-8	RUTHENIUM		0.001%
13494-80-9	tellurium	 Acute Tox. 3, H301  Eye Irrit. 2A, H319; STOT SE 3, H335	0.001%
7440-31-5	tin		0.001%
7440-36-0	antimony		0.001%
7440-58-6	hafnium	 Flam. Sol. 1, H228	0.001%
7732-18-5	Water		88.99%

4 First-aid measures

- **Description of first aid measures**
- **General information:** Immediately remove any clothing soiled by the product.
- **After inhalation:** In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:** Drink copious amounts of water and provide fresh air. Immediately call a doctor.
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture** No further relevant information available.
- **Advice for firefighters**
- **Protective equipment:** No special measures required.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:** Inform respective authorities in case of seepage into water course or sewage system.
- **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
- **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.

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See Section 13 for disposal information.

· Protective Action Criteria for Chemicals

· PAC-1:

7647-01-0	Hydrochloric Acid	1.8 ppm
7697-37-2	Nitric Acid	0.16 ppm
7440-57-5	Gold	0.46 mg/m ³
7439-88-5	iridium	4.7 mg/m ³
7440-05-3	palladium	6 mg/m ³
7440-06-4	platinum	3 mg/m ³
7440-16-6	rhodium	3 mg/m ³
13494-80-9	tellurium	1.8 mg/m ³
7440-31-5	tin	6 mg/m ³
7440-36-0	antimony	1.5 mg/m ³
7440-58-6	hafnium	1.5 mg/m ³

· PAC-2:

7647-01-0	Hydrochloric Acid	22 ppm
7697-37-2	Nitric Acid	24 ppm
7440-57-5	Gold	5.1 mg/m ³
7439-88-5	iridium	51 mg/m ³
7440-05-3	palladium	66 mg/m ³
7440-06-4	platinum	33 mg/m ³
7440-16-6	rhodium	33 mg/m ³
13494-80-9	tellurium	20 mg/m ³
7440-31-5	tin	67 mg/m ³
7440-36-0	antimony	13 mg/m ³
7440-58-6	hafnium	17 mg/m ³

· PAC-3:

7647-01-0	Hydrochloric Acid	100 ppm
7697-37-2	Nitric Acid	92 ppm
7440-57-5	Gold	30 mg/m ³
7439-88-5	iridium	310 mg/m ³
7440-05-3	palladium	400 mg/m ³
7440-06-4	platinum	200 mg/m ³
7440-16-6	rhodium	200 mg/m ³
13494-80-9	tellurium	110 mg/m ³
7440-31-5	tin	400 mg/m ³
7440-36-0	antimony	80 mg/m ³
7440-58-6	hafnium	99 mg/m ³

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7 Handling and storage

- **Handling:**
- **Precautions for safe handling** No special precautions are necessary if used correctly.
- **Information about protection against explosions and fires:** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**

· **Components with limit values that require monitoring at the workplace:**

7647-01-0 Hydrochloric Acid

PEL	Ceiling limit value: 7 mg/m ³ , 5 ppm
REL	Ceiling limit value: 7 mg/m ³ , 5 ppm
TLV	Ceiling limit value: 2.98 mg/m ³ , 2 ppm

7697-37-2 Nitric Acid

PEL	Long-term value: 5 mg/m ³ , 2 ppm
REL	Short-term value: 10 mg/m ³ , 4 ppm Long-term value: 5 mg/m ³ , 2 ppm
TLV	Short-term value: 10 mg/m ³ , 4 ppm Long-term value: 5.2 mg/m ³ , 2 ppm

- **Additional information:** The lists that were valid during the creation were used as basis.
- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes.
Avoid contact with the eyes and skin.
- **Breathing equipment:**
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
- **Protection of hands:**



Protective gloves

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The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**



Tightly sealed goggles or safety glasses

9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

· Form:	Liquid
· Color:	Transparent
· Odor:	Odorless
· Odor threshold:	Not determined.

· **pH-value at 20 °C (68 °F):** 1

· **Change in condition**

· Melting point/Melting range:	0 °C (32 °F)
· Boiling point/Boiling range:	100 °C (212 °F)

· **Flash point:** Not applicable.

· **Flammability (solid, gaseous):** Not applicable.

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Product is not selfigniting.

· **Danger of explosion:** Product does not present an explosion hazard.

· **Explosion limits:**

· Lower:	Not determined.
· Upper:	Not determined.

· **Vapor pressure at 20 °C (68 °F):** 23 hPa (17.3 mm Hg)

· **Density at 20 °C (68 °F):** 1 g/cm³ (8.345 lbs/gal)

· **Relative density** Not determined.

· **Vapor density** Not determined.

· **Evaporation rate** Not determined.

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- **Solubility in / Miscibility with Water:** *Not miscible or difficult to mix.*
- **Partition coefficient (n-octanol/water):** *Not determined.*
- **Viscosity:**
 - Dynamic:** *Not determined.*
 - Kinematic:** *Not determined.*
- **Solvent content:**
 - Water:** *89.0 %*
 - VOC content:** *0.00 %*
- **Other information** *No further relevant information available.*

10 Stability and reactivity

- **Reactivity** *No further relevant information available.*
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** *No decomposition if used according to specifications.*
- **Possibility of hazardous reactions** *No dangerous reactions known.*
- **Conditions to avoid** *No further relevant information available.*
- **Incompatible materials:** *No further relevant information available.*
- **Hazardous decomposition products:** *No dangerous decomposition products known.*

11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**
- **Primary irritant effect:**
 - **on the skin:** *Strong caustic effect on skin and mucous membranes.*
 - **on the eye:**
 - Strong caustic effect.*
 - Strong irritant with the danger of severe eye injury.*
- **Sensitization:** *No sensitizing effects known.*
- **Additional toxicological information:**
 - The product shows the following dangers according to internally approved calculation methods for preparations:*
 - Corrosive*
 - Irritant*
 - Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.*

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**

7647-01-0	Hydrochloric Acid	3
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· **NTP (National Toxicology Program)**

None of the ingredients is listed.

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· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:**
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.
Rinse off of bigger amounts into drains or the aquatic environment may lead to decreased pH-values. A low pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably increased, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**
Dispose of container and materials in accordance with local, regional and national regulations.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

- | | |
|----------------------------------|------------------------|
| · UN-Number | |
| · DOT, ADR, IMDG, IATA | UN1789 |
| · UN proper shipping name | |
| · DOT | Hydrochloric acid |
| · ADR | 1789 Hydrochloric acid |
| · IMDG, IATA | HYDROCHLORIC ACID |

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· **Transport hazard class(es)**

· **DOT**



· **Class** 8 Corrosive substances
· **Label** 8

· **ADR**



· **Class** 8 (C1) Corrosive substances
· **Label** 8

· **IMDG, IATA**



· **Class** 8 Corrosive substances
· **Label** 8

· **Packing group**

· **DOT, ADR, IMDG, IATA** II

· **Environmental hazards:**

· **Marine pollutant:** No

· **Special precautions for user**

Warning: Corrosive substances

· **Danger code (Kemler):** 80

· **EMS Number:** F-A,S-B

· **Segregation groups** Acids

· **Stowage Category** E

· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**

Not applicable.

· **Transport/Additional information:**

· **DOT**

· **Quantity limitations** On passenger aircraft/rail: 1 L
On cargo aircraft only: 30 L

· **ADR**

· **Excepted quantities (EQ)** Code: E2
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 500 ml

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- **IMDG**
- **Limited quantities (LQ)** 1L
- **Excepted quantities (EQ)** Code: E2
- Maximum net quantity per inner packaging: 30 ml*
- Maximum net quantity per outer packaging: 500 ml*
- **UN "Model Regulation":** UN 1789 HYDROCHLORIC ACID, 8, II

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

7732-18-5	Water		88.99%
7647-01-0	Hydrochloric Acid	 Skin Corr. 1B, H314  STOT SE 3, H335	10.0%
7697-37-2	Nitric Acid	 Ox. Liq. 2, H272  Skin Corr. 1A, H314	1.0%

· **Sara**

· **Section 355 (extremely hazardous substances):**

7647-01-0	Hydrochloric Acid
7697-37-2	Nitric Acid
13494-80-9	tellurium

· **Section 313 (Specific toxic chemical listings):**

7647-01-0	Hydrochloric Acid
7697-37-2	Nitric Acid
7440-36-0	antimony

· **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

7647-01-0	Hydrochloric Acid
7697-37-2	Nitric Acid
7440-57-5	Gold
7439-88-5	iridium
7440-05-3	palladium
7440-06-4	platinum
7440-16-6	rhodium
13494-80-9	tellurium
7440-31-5	tin
7440-36-0	antimony
7440-58-6	hafnium
7732-18-5	Water

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· **Proposition 65**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

· **Carcinogenicity categories**

· **EPA (Environmental Protection Agency)**

None of the ingredients is listed.

· **TLV (Threshold Limit Value established by ACGIH)**

7647-01-0 Hydrochloric Acid

A4

7440-16-6 rhodium

A4

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

· **National regulations:**

· **Information about limitation of use:**

Workers are not allowed to be exposed to this hazardous material. Exceptions can be made by the authorities in certain cases.

· **Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

Disclaimer

The information provided in this Material Safety Data Sheet is based on our present knowledge, and believed to be correct at the date of publication. However, no representation is made concerning its accuracy and completeness. It is intended as guidance only, and is not to be considered a warranty or quality specification. All materials may present unknown hazards, and should be used with caution. Although certain hazards are described, we cannot guarantee that these are the only hazards which exist. PerkinElmer shall not be held liable for any damage resulting from handling or from contact with the product.

· **Department issuing SDS:** Environmental, Health and Safety

· **Contact:**

Within the USA: 1-(800)-762-4000

Outside the USA: 1-(203)-712-8488

· **Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

ICAO: International Civil Aviation Organisation

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

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IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Ox. Liq. 2: Oxidizing liquids – Category 2
Skin Corr. 1A: Skin corrosion/irritation – Category 1A
Skin Corr. 1B: Skin corrosion/irritation – Category 1B
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
*** Data compared to the previous version altered.**

USA

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1 Identification

- **Product identifier**
- **Trade name:** STD-5 ICPMS MULTIELEMENT CAL
- **Article number** N9300235
- **Application of the substance / the mixture** Laboratory chemicals
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**

PerkinElmer, Inc.
710 Bridgeport Avenue
Shelton, Connecticut 06484 USA
CustomerCareUS@perkinelmer.com
203-925-4600

- **Emergency telephone number:**
CHEMTREC (within US) 800-424-9300
CHEMTREC (from outside US) +1 703-527-3887 (call collect)
CHEMTREC (within AU) +(61)-290372994

2 Hazard(s) identification

- **Classification of the substance or mixture**
The product is not classified, according to the Globally Harmonized System (GHS).

- **Label elements**
- **GHS label elements** Void
- **Hazard pictograms** Void
- **Signal word** Void
- **Hazard statements** Void
- **Classification system:**
- **NFPA ratings (scale 0 - 4)**



- **HMIS-ratings (scale 0 - 4)**

HEALTH	0	Health = 0
FIRE	0	Fire = 0
REACTIVITY	0	Reactivity = 0

- **Other hazards**
The product does not contain any organic halogen compounds (AOX), nitrates, heavy metal compounds or formaldehydes.
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

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Trade name: STD-5 ICPMS MULTIELEMENT CAL

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3 Composition/information on ingredients

- **Chemical characterization:** Mixtures
- **Description:** Mixture of the substances listed below with nonhazardous additions.
- **Hazardous components:** Void

· Additional Components

7697-37-2	Nitric Acid  Ox. Liq. 2, H272  Skin Corr. 1A, H314	0.9%
7664-39-3	hydrofluoric acid  Flam. Liq. 1, H224	0.2%
7440-03-1	niobium	0.001%
7440-15-5	rhenium  Ox. Sol. 2, H272	0.001%
7440-21-3	alkali fluorosilicates (NH4)	0.001%
7440-25-7	tantalum	0.001%
7440-32-6	titanium  Self-heat. 1, H251; Water-react. 1, H260	0.001%
7440-33-7	tungsten	0.001%
7440-42-8	boron  Acute Tox. 3, H301	0.001%
7440-56-4	Germanium from Ammonium hexafluorogermanate(IV)	0.001%
7440-67-7	zirconium  Pyr. Sol. 1, H250; Water-react. 1, H260	0.001%
7723-14-0	red phosphorus  Flam. Sol. 1, H228  Flam. Liq. 2, H225; Flam. Sol. 1, H228	0.001%
7783-20-2	ammonium sulphate  Skin Irrit. 2, H315; Eye Irrit. 2A, H319; STOT SE 3, H335	0.001%
7439-98-7	molybdenum	0.001%
7732-18-5	Water	98.888%

4 First-aid measures

- **Description of first aid measures**
- **General information:** No special measures required.
- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:** Generally the product does not irritate the skin.
- **After eye contact:** Rinse opened eye for several minutes under running water.
- **After swallowing:** If symptoms persist consult doctor.
- **Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

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5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture** No further relevant information available.
- **Advice for firefighters**
- **Protective equipment:** No special measures required.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Not required.
- **Environmental precautions:**
Inform respective authorities in case of seepage into water course or sewage system.
Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
- **Reference to other sections**
No dangerous substances are released.
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**

· **PAC-1:**

7697-37-2	Nitric Acid	0.16 ppm
7664-39-3	hydrofluoric acid	1.0 ppm
7440-03-1	niobium	30 mg/m ³
7440-25-7	tantalum	10 mg/m ³
7440-32-6	titanium	30 mg/m ³
7440-33-7	tungsten	10 mg/m ³
7440-42-8	boron	1.9 mg/m ³
7440-56-4	Germanium from Ammonium hexafluorogermanate(IV)	3.2 mg/m ³
7440-67-7	zirconium	10 mg/m ³
7723-14-0	red phosphorus	0.27 mg/m ³
7783-20-2	ammonium sulphate	13 mg/m ³
7439-98-7	molybdenum	30 mg/m ³

· **PAC-2:**

7697-37-2	Nitric Acid	24 ppm
7664-39-3	hydrofluoric acid	24 ppm
7440-03-1	niobium	330 mg/m ³
7440-25-7	tantalum	11 mg/m ³
7440-32-6	titanium	330 mg/m ³
7440-33-7	tungsten	330 mg/m ³

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7440-42-8	boron	21 mg/m ³
7440-56-4	Germanium from Ammonium hexafluorogermanate(IV)	35 mg/m ³
7440-67-7	zirconium	83 mg/m ³
7723-14-0	red phosphorus	3 mg/m ³
7783-20-2	ammonium sulphate	140 mg/m ³
7439-98-7	molybdenum	330 mg/m ³

PAC-3:

7697-37-2	Nitric Acid	92 ppm
7664-39-3	hydrofluoric acid	44 ppm
7440-03-1	niobium	2,000 mg/m ³
7440-25-7	tantalum	64 mg/m ³
7440-32-6	titanium	2,000 mg/m ³
7440-33-7	tungsten	2,000 mg/m ³
7440-42-8	boron	130 mg/m ³
7440-56-4	Germanium from Ammonium hexafluorogermanate(IV)	170 mg/m ³
7440-67-7	zirconium	500 mg/m ³
7723-14-0	red phosphorus	18 mg/m ³
7783-20-2	ammonium sulphate	840 mg/m ³
7439-98-7	molybdenum	2,000 mg/m ³

7 Handling and storage

- **Handling:**
- **Precautions for safe handling** No special measures required.
- **Information about protection against explosions and fires:** No special measures required.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** None.
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace:**
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- **Additional information:** The lists that were valid during the creation were used as basis.

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- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
The usual precautionary measures for handling chemicals should be followed.
- **Breathing equipment:** Not required.
- **Protection of hands:**
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
- **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
- **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- **Eye protection:** Goggles recommended during refilling.

9 Physical and chemical properties

- **Information on basic physical and chemical properties**
- **General Information**
- **Appearance:**

Form:	Liquid
Color:	Transparent
Odor:	Characteristic
Odor threshold:	Not determined.
- **pH-value:** Not determined.
- **Change in condition**

Melting point/Melting range:	0 °C (32 °F)
Boiling point/Boiling range:	100 °C (212 °F)
- **Flash point:** Not applicable.
- **Flammability (solid, gaseous):** Not applicable.
- **Decomposition temperature:** Not determined.
- **Auto igniting:** Product is not selfigniting.
- **Danger of explosion:** Product does not present an explosion hazard.
- **Explosion limits:**

Lower:	Not determined.
Upper:	Not determined.
- **Vapor pressure at 20 °C (68 °F):** 23 hPa (17.3 mm Hg)
- **Density at 20 °C (68 °F):** 1 g/cm³ (8.345 lbs/gal)
- **Relative density** Not determined.
- **Vapor density** Not determined.

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· Evaporation rate	Not determined.
· Solubility in / Miscibility with Water:	Fully miscible.
· Partition coefficient (n-octanol/water):	Not determined.
· Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
· Solvent content:	
Water:	98.9 %
VOC content:	0.00 %
· Other information	No further relevant information available.

10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**
- **Primary irritant effect:**
- on the skin:** No irritant effect.
- on the eye:** No irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**
The product is not subject to classification according to internally approved calculation methods for preparations:
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**

None of the ingredients is listed.

· **NTP (National Toxicology Program)**

None of the ingredients is listed.

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· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Additional ecological information:**
- **General notes:** Generally not hazardous for water
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:** Smaller quantities can be disposed of with household waste.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

- | | |
|---------------------------------------|-----------------|
| · UN-Number | |
| · DOT, ADR, ADN, IMDG, IATA | Void |
| · UN proper shipping name | |
| · DOT, ADR, ADN, IMDG, IATA | Void |
| · Transport hazard class(es) | |
| · DOT, ADR, ADN, IMDG, IATA | |
| · Class | Void |
| · Packing group | |
| · DOT, ADR, IMDG, IATA | Void |
| · Environmental hazards: | |
| · Marine pollutant: | No |
| · Special precautions for user | Not applicable. |

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- **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.
- **UN "Model Regulation":** Non regulated according to above specifications.
Void

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

7732-18-5	Water		98.888%
7697-37-2	Nitric Acid	 Ox. Liq. 2, H272  Skin Corr. 1A, H314	0.9%
7664-39-3	hydrofluoric acid	 Flam. Liq. 1, H224	0.2%

· **Sara**

· **Section 355 (extremely hazardous substances):**

7697-37-2	Nitric Acid
7664-39-3	hydrofluoric acid
7723-14-0	red phosphorus

· **Section 313 (Specific toxic chemical listings):**

7697-37-2	Nitric Acid
7664-39-3	hydrofluoric acid
7723-14-0	red phosphorus
7783-20-2	ammonium sulphate

· **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

7697-37-2	Nitric Acid
7664-39-3	hydrofluoric acid
7440-03-1	niobium
7440-15-5	rhenium
7440-25-7	tantalum
7440-32-6	titanium
7440-33-7	tungsten
7440-42-8	boron
7440-56-4	Germanium from Ammonium hexafluorogermanate(IV)
7440-67-7	zirconium
7723-14-0	red phosphorus
7783-20-2	ammonium sulphate
7439-98-7	molybdenum
7732-18-5	Water

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· **Proposition 65**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

· **Carcinogenicity categories**

· **EPA (Environmental Protection Agency)**

7440-42-8	boron	I (oral)
7723-14-0	red phosphorus	D

· **TLV (Threshold Limit Value established by ACGIH)**

7440-67-7	zirconium	A4
7439-98-7	molybdenum	A3

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

· **National regulations:**

· **Information about limitation of use:**

Workers are not allowed to be exposed to this hazardous material. Exceptions can be made by the authorities in certain cases.

· **Water hazard class:** Generally not hazardous for water.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

Disclaimer

The information provided in this Material Safety Data Sheet is based on our present knowledge, and believed to be correct at the date of publication. However, no representation is made concerning its accuracy and completeness. It is intended as guidance only, and is not to be considered a warranty or quality specification. All materials may present unknown hazards, and should be used with caution. Although certain hazards are described, we cannot guarantee that these are the only hazards which exist. PerkinElmer shall not be held liable for any damage resulting from handling or from contact with the product.

· **Department issuing SDS:** Environmental, Health and Safety

· **Contact:**

Within the USA: 1-(800)-762-4000

Outside the USA: 1-(203)-712-8488

· **Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

ICAO: International Civil Aviation Organisation

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ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

VOC: Volatile Organic Compounds (USA, EU)

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

*** Data compared to the previous version altered.**

USA