Product code	Description
N9307103	**Contract Laboratory Program Modification Set**

Components:

N9303843	STD, Tuning Solution 1
N9303816	STD, Instrument Calibration Standard 1
N9301721	Instrument Calibration Standard 2
N9303819	STD, Contract Required Detection Limit
N9303821	STD, Instrument Check STD 1
N9300253	MERCURY A/S STANDARD
N9303822	STD, Instrument Check Std 3
N9303823	STD, Instrument Check Std 4
N9303824	STD, Instrument Check Std 5
N9303827	STD, Interferents A
N9303829	STD, Analytes B
N9303839	STD, Spike Sample Standard 1 (water)
N9303840	STD, Spike Sample Standard 2 (soil)
N9303835	STD, Memory Test 1
N9303836	STD, Memory Test 2

acc. to OSHA HCS

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*
1 Identification

· **Product identifier**

· **Trade name: STD, Tuning Solution 1**
· **Article number** N9303843
· **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**

Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2A H319 Causes serious eye irritation.

· **Label elements**
· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms** GHS07
· **Signal word** Warning
· **Hazard statements**
H315 Causes skin irritation.
H319 Causes serious eye irritation.
· **Precautionary statements**

P264	Wash thoroughly after handling.
P280	Wear protective gloves / eye protection / face protection.
P302+P352	If on skin: Wash with plenty of water.
P321	Specific treatment (see on this label).
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P337+P313	If eye irritation persists: Get medical advice/attention.

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

Health = 2
Fire = 0
Reactivity = 0

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· **HMIS-ratings (scale 0 - 4)**

Health = 2
Fire = 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.*

*
3 Composition/information on ingredients

· **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	5.0%
7697-37-2	Nitric Acid	Ox. Liq. 2, H272 Skin Corr. 1A, H314	2.0%

· **Additional Components**		
7440-48-4	cobalt Resp. Sens. 1, H334; Carc. 2, H351 Skin Sens. 1, H317	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%
7440-74-6	Indium	0.001%
7439-92-1	lead Acute Tox. 3, H301 Carc. 2, H351; Repr. 1A, H360-H362 Acute Tox. 4, H332	0.001%
7439-93-2	lithium Water-react. 1, H260 Skin Corr. 1B, H314	0.001%
7439-95-4	magnesium Pyr. Sol. 1, H250; Water-react. 1, H260	0.001%
7440-45-1	cerium Water-react. 2, H261	0.001%
7440-16-6	rhodium	0.001%
7440-28-0	thallium Acute Tox. 2, H300; Acute Tox. 2, H330 STOT RE 2, H373	0.001%

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7440-61-1	uranium Acute Tox. 2, H300; Acute Tox. 2, H330 STOT RE 2, H373	0.001%
7440-39-3	barium Water-react. 2, H261	0.001%
7440-65-5	yttrium	0.001%
7732-18-5	Water	92.988%

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4 First-aid measures

· **Description of first aid measures**
· **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. If symptoms persist, consult a doctor.
· **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.

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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.
· **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
· **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:**		
7647-01-0	Hydrochloric Acid	1.8 ppm
7697-37-2	Nitric Acid	0.16 ppm
7440-48-4	cobalt	0.18 mg/m³

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7440-41-7	beryllium	0.0023 mg/m³
7440-74-6	Indium	0.3 mg/m³
7439-92-1	lead	0.15 mg/m³
7439-93-2	lithium	3.3 mg/m³
7439-95-4	magnesium	18 mg/m³
7440-45-1	cerium	30 mg/m³
7440-16-6	rhodium	3 mg/m³
7440-28-0	thallium	0.06 mg/m³
7440-61-1	uranium	0.6 mg/m³
7440-39-3	barium	1.5 mg/m³
7440-65-5	yttrium	3 mg/m³

· **PAC-2:**

7647-01-0	Hydrochloric Acid	22 ppm
7697-37-2	Nitric Acid	24 ppm
7440-48-4	cobalt	2 mg/m³
7440-41-7	beryllium	0.025 mg/m³
7440-74-6	Indium	3.3 mg/m³
7439-92-1	lead	120 mg/m³
7439-93-2	lithium	36 mg/m³
7439-95-4	magnesium	200 mg/m³
7440-45-1	cerium	330 mg/m³
7440-16-6	rhodium	33 mg/m³
7440-28-0	thallium	3.3 mg/m³
7440-61-1	uranium	5 mg/m³
7440-39-3	barium	180 mg/m³
7440-65-5	yttrium	33 mg/m³

· **PAC-3:**

7647-01-0	Hydrochloric Acid	100 ppm
7697-37-2	Nitric Acid	92 ppm
7440-48-4	cobalt	20 mg/m³
7440-41-7	beryllium	0.1 mg/m³
7440-74-6	Indium	20 mg/m³
7439-92-1	lead	700 mg/m³
7439-93-2	lithium	220 mg/m³
7439-95-4	magnesium	1,200 mg/m³
7440-45-1	cerium	2,000 mg/m³
7440-16-6	rhodium	200 mg/m³
7440-28-0	thallium	20 mg/m³
7440-61-1	uranium	30 mg/m³
7440-39-3	barium	1,100 mg/m³

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7440-65-5	yttrium	200 mg/m³

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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:** 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.

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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/m³, 5 ppm
REL	Ceiling limit value: 7 mg/m³, 5 ppm
TLV	Ceiling limit value: 2.98 mg/m³, 2 ppm
7697-37-2 Nitric Acid	
PEL	Long-term value: 5 mg/m³, 2 ppm
REL	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5 mg/m³, 2 ppm
TLV	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5.2 mg/m³, 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 and skin.
· **Breathing equipment:** Not required.
· **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 trough 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

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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.*
· **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:	*Fully miscible.*
· **Partition coefficient (n-octanol/water):**	*Not determined.*
· **Viscosity:**	
Dynamic:	*Not determined.*
Kinematic:	*Not determined.*
· **Solvent content:**	
Water:	*93.0 %*
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.*

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11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **Primary irritant effect:**
· **on the skin:** *Irritant to skin and mucous membranes.*
· **on the eye:** *Irritating effect.*
· **Sensitization:** *No sensitizing effects known.*
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		
7647-01-0	Hydrochloric Acid	3
7440-48-4	cobalt	2B
7440-41-7	beryllium	1
7439-92-1	lead	2B

· **NTP (National Toxicology Program)**		
7440-48-4	cobalt	R
7440-41-7	beryllium	K
7439-92-1	lead	R

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

None of the ingredients is listed.

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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.
· **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.

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14 Transport information

· **UN-Number**	
· **DOT, ADR, IMDG, IATA**	UN3264
· **UN proper shipping name**	
· **DOT**	Corrosive liquid, acidic, inorganic, n.o.s. (Hydrochloric acid, Nitric Acid)
· **ADR**	3264 Corrosive liquid, acidic, inorganic, n.o.s. (Hydrochloric acid, Nitric Acid)
· **IMDG, IATA**	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (HYDROCHLORIC ACID, Nitric 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**	*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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· **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. (HYDROCHLORIC ACID, NITRIC ACID), 8, III

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15 Regulatory information

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

7732-18-5	Water		92.988%
7647-01-0	Hydrochloric Acid	Skin Corr. 1B, H314 STOT SE 3, H335	5.0%
7697-37-2	Nitric Acid	Ox. Liq. 2, H272 Skin Corr. 1A, H314	2.0%

· **Sara**

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

7647-01-0	Hydrochloric Acid
7697-37-2	Nitric Acid

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

7647-01-0	Hydrochloric Acid
7697-37-2	Nitric Acid
7440-48-4	cobalt
7440-41-7	beryllium
7439-92-1	lead
7440-28-0	thallium
7440-39-3	barium

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

7647-01-0	Hydrochloric Acid
7697-37-2	Nitric Acid
7440-48-4	cobalt
7440-41-7	beryllium
7440-74-6	Indium
7439-92-1	lead
7439-93-2	lithium
7439-95-4	magnesium
7440-45-1	cerium
7440-16-6	rhodium

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7440-28-0	thallium
7440-61-1	uranium
7440-39-3	barium
7440-65-5	yttrium
7732-18-5	Water

· **Proposition 65**

· **Chemicals known to cause cancer:**	
7440-48-4	cobalt
7440-41-7	beryllium
7439-92-1	lead

· **Chemicals known to cause reproductive toxicity for females:**	
7439-92-1	lead

· **Chemicals known to cause reproductive toxicity for males:**	
7439-92-1	lead

· **Chemicals known to cause developmental toxicity:**	
7439-92-1	lead

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**		
7440-41-7	beryllium	B1, K/L(inh), CBD(oral)
7439-92-1	lead	B2
7440-39-3	barium	D, CBD(inh), NL(oral)

· **TLV (Threshold Limit Value established by ACGIH)**		
7647-01-0	Hydrochloric Acid	A4
7440-48-4	cobalt	A3
7440-41-7	beryllium	A1
7439-92-1	lead	A3
7440-16-6	rhodium	A4
7440-61-1	uranium	A1
7440-39-3	barium	A4

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**	
7440-41-7	beryllium
7440-61-1	uranium

· **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.

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

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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
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
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
· *** Data compared to the previous version altered.**

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*
1 Identification

· **Product identifier**

· **Trade name: STD, Instrument Calibration Standard 1**
· **Article number** N9303816
· **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, Instrument Calibration Standard 1

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

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

Health = 3
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = 3
Fire = 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.*

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

· **Additional Components**		
7440-02-0	*nickel* *Carc. 2, H351; STOT RE 1, H372* *Skin Sens. 1, H317*	*0.02%*
7440-39-3	*barium* *Water-react. 2, H261*	*0.002%*
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*	*0.002%*
7440-43-9	*cadmium (non-pyrophoric)* *Acute Tox. 2, H330* *Muta. 2, H341; Carc. 1B, H350; Repr. 2, H361; STOT RE 1, H372*	*0.002%*

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7440-47-3	chromium	0.002%
7440-48-4	cobalt Resp. Sens. 1, H334; Carc. 2, H351 Skin Sens. 1, H317	0.002%
7440-50-8	copper	0.002%
7439-92-1	lead Acute Tox. 3, H301 Carc. 2, H351; Repr. 1A, H360-H362 Acute Tox. 4, H332	0.002%
7439-96-5	manganese	0.002%
1313-27-5	molybdenum trioxide Carc. 2, H351 Eye Irrit. 2A, H319; STOT SE 3, H335	0.002%
7440-38-2	Arsenic Acute Tox. 3, H301; Acute Tox. 3, H331 Carc. 1A, H350	0.002%
7440-36-0	antimony	0.002%
7782-49-2	selenium Acute Tox. 3, H301; Acute Tox. 3, H331 STOT RE 2, H373	0.002%
7440-22-4	silver	0.002%
7440-28-0	thallium Acute Tox. 2, H300; Acute Tox. 2, H330 STOT RE 2, H373	0.002%
7440-29-1	thorium Carc. 1A, H350	0.002%
7440-61-1	uranium Acute Tox. 2, H300; Acute Tox. 2, H330 STOT RE 2, H373	0.002%
7440-62-2	vanadium	0.002%
7440-66-6	zinc Water-react. 2, H261	0.002%
7429-90-5	aluminium	0.002%
147-71-7	(-)-tartaric acid Skin Irrit. 2, H315	0.001%
7732-18-5	Water	94.941%

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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.

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· **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.

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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.

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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
7440-02-0	nickel	4.5 mg/m³
7440-39-3	barium	1.5 mg/m³
7440-41-7	beryllium	0.0023 mg/m³
7440-43-9	cadmium (non-pyrophoric)	0.10 mg/m³
7440-47-3	chromium	1.5 mg/m³
7440-48-4	cobalt	0.18 mg/m³
7440-50-8	copper	3 mg/m³
7439-92-1	lead	0.15 mg/m³
7439-96-5	manganese	3 mg/m³
1313-27-5	molybdenum trioxide	2.3 mg/m³
7440-38-2	Arsenic	1.5 mg/m³
7440-36-0	antimony	1.5 mg/m³

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7782-49-2	selenium	0.6 mg/m³
7440-22-4	silver	0.3 mg/m³
7440-28-0	thallium	0.06 mg/m³
7440-29-1	thorium	30 mg/m³
7440-61-1	uranium	0.6 mg/m³
7440-62-2	vanadium	3 mg/m³
7440-66-6	zinc	6 mg/m³

· **PAC-2:**

7697-37-2	Nitric Acid	24 ppm
7440-02-0	nickel	50 mg/m³
7440-39-3	barium	180 mg/m³
7440-41-7	beryllium	0.025 mg/m³
7440-43-9	cadmium (non-pyrophoric)	0.76 mg/m³
7440-47-3	chromium	17 mg/m³
7440-48-4	cobalt	2 mg/m³
7440-50-8	copper	33 mg/m³
7439-92-1	lead	120 mg/m³
7439-96-5	manganese	5 mg/m³
1313-27-5	molybdenum trioxide	43 mg/m³
7440-38-2	Arsenic	17 mg/m³
7440-36-0	antimony	13 mg/m³
7782-49-2	selenium	6.6 mg/m³
7440-22-4	silver	170 mg/m³
7440-28-0	thallium	3.3 mg/m³
7440-29-1	thorium	330 mg/m³
7440-61-1	uranium	5 mg/m³
7440-62-2	vanadium	5.8 mg/m³
7440-66-6	zinc	21 mg/m³

· **PAC-3:**

7697-37-2	Nitric Acid	92 ppm
7440-02-0	nickel	99 mg/m³
7440-39-3	barium	1,100 mg/m³
7440-41-7	beryllium	0.1 mg/m³
7440-43-9	cadmium (non-pyrophoric)	4.7 mg/m³
7440-47-3	chromium	99 mg/m³
7440-48-4	cobalt	20 mg/m³
7440-50-8	copper	200 mg/m³
7439-92-1	lead	700 mg/m³
7439-96-5	manganese	1,800 mg/m³
1313-27-5	molybdenum trioxide	260 mg/m³

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7440-38-2	Arsenic	100 mg/m³
7440-36-0	antimony	80 mg/m³
7782-49-2	selenium	40 mg/m³
7440-22-4	silver	990 mg/m³
7440-28-0	thallium	20 mg/m³
7440-29-1	thorium	2,000 mg/m³
7440-61-1	uranium	30 mg/m³
7440-62-2	vanadium	35 mg/m³
7440-66-6	zinc	120 mg/m³

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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:** 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:**
Store in a cool place.
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/m³, 2 ppm
REL	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5 mg/m³, 2 ppm
TLV	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5.2 mg/m³, 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.

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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 trough 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

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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.*
· **Explosion limits:**	
Lower:	*Not determined.*
Upper:	*Not determined.*

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· **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.
· **Solubility in / Miscibility with Water:**	Fully miscible.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
Dynamic:	Not determined.
Kinematic:	Not determined.
· **Solvent content:**	
Water:	94.9 %
VOC content:	0.00 %
Solids content:	0.1 %
· **Other information**	No further relevant information available.

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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.

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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)**		
7440-02-0	nickel	2B
7440-41-7	beryllium	1
7440-43-9	cadmium (non-pyrophoric)	1
7440-47-3	chromium	3
7440-48-4	cobalt	2B
7439-92-1	lead	2B
7440-38-2	Arsenic	1
7782-49-2	selenium	3
7440-29-1	thorium	1

· **NTP (National Toxicology Program)**		
7440-02-0	nickel	R
7440-41-7	beryllium	K
7440-43-9	cadmium (non-pyrophoric)	K
7440-48-4	cobalt	R
7439-92-1	lead	R
7440-38-2	Arsenic	K

· **OSHA-Ca (Occupational Safety & Health Administration)**	
7440-43-9	cadmium (non-pyrophoric)
7440-38-2	Arsenic

*

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.*

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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)*
· **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*

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· **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
· **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

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15 Regulatory information

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

7732-18-5	Water		94.941%
7697-37-2	Nitric Acid	Ox. Liq. 2, H272 Skin Corr. 1A, H314	5.0%
7440-02-0	nickel	Carc. 2, H351; STOT RE 1, H372 Skin Sens. 1, H317	0.02%

· **Sara**

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

7697-37-2	Nitric Acid

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

7697-37-2	Nitric Acid
7440-02-0	nickel
7440-39-3	barium

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7440-41-7	beryllium
7440-43-9	cadmium (non-pyrophoric)
7440-47-3	chromium
7440-48-4	cobalt
7440-50-8	copper
7439-92-1	lead
7439-96-5	manganese
1313-27-5	molybdenum trioxide
7440-38-2	Arsenic
7440-36-0	antimony
7782-49-2	selenium
7440-22-4	silver
7440-28-0	thallium
7440-62-2	vanadium
7440-66-6	zinc
7429-90-5	aluminium

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

7697-37-2	Nitric Acid
7440-02-0	nickel
7440-39-3	barium
7440-41-7	beryllium
7440-43-9	cadmium (non-pyrophoric)
7440-47-3	chromium
7440-48-4	cobalt
7440-50-8	copper
7439-92-1	lead
7439-96-5	manganese
1313-27-5	molybdenum trioxide
7440-38-2	Arsenic
7440-36-0	antimony
7782-49-2	selenium
7440-22-4	silver
7440-28-0	thallium
7440-29-1	thorium
7440-61-1	uranium
7440-62-2	vanadium
7440-66-6	zinc
7429-90-5	aluminium
147-71-7	(-)-tartaric acid

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7732-18-5	Water

· **Proposition 65**

· **Chemicals known to cause cancer:**	
7440-02-0	nickel
7440-41-7	beryllium
7440-43-9	cadmium (non-pyrophoric)
7440-48-4	cobalt
7439-92-1	lead
7440-38-2	Arsenic

· **Chemicals known to cause reproductive toxicity for females:**	
7439-92-1	lead

· **Chemicals known to cause reproductive toxicity for males:**	
7440-43-9	cadmium (non-pyrophoric)
7439-92-1	lead

· **Chemicals known to cause developmental toxicity:**	
7440-43-9	cadmium (non-pyrophoric)
7439-92-1	lead

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**		
7440-39-3	barium	D, CBD(inh), NL(oral)
7440-41-7	beryllium	B1, K/L(inh), CBD(oral)
7440-43-9	cadmium (non-pyrophoric)	B1
7440-47-3	chromium	D
7440-50-8	copper	D
7439-92-1	lead	B2
7439-96-5	manganese	D
7440-38-2	Arsenic	A
7782-49-2	selenium	D
7440-22-4	silver	D
7440-66-6	zinc	D, I, II

· **TLV (Threshold Limit Value established by ACGIH)**		
7440-02-0	nickel	A5
7440-39-3	barium	A4
7440-41-7	beryllium	A1
7440-43-9	cadmium (non-pyrophoric)	A2
7440-47-3	chromium	A4
7440-48-4	cobalt	A3
7439-92-1	lead	A3
7440-38-2	Arsenic	A1

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7440-61-1	uranium	A1
7429-90-5	aluminium	A4

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

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

· **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.

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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
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

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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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*
1 Identification

· **Product identifier**

· **Trade name: Instrument Calibration Standard 2**
· **Article number** N9301721
· **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.

Acute Tox. 4 H302 Harmful if swallowed.
Acute Tox. 4 H312 Harmful in contact with skin.

· **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:**
Nitric Acid
Hydrofluoric acid
· **Hazard statements**
H302+H312 Harmful if swallowed or in contact with skin.
H314 Causes severe skin burns and eye damage.
· **Precautionary statements**
P260 Do not breathe dusts or mists.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312 If swallowed: Call a poison center/doctor if you feel unwell.

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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).
P362+P364 Take off contaminated clothing and wash it before reuse.
P363 Wash contaminated clothing before reuse.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

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

Health = 3
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = 3
Fire = 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.

*
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%

· **Additional Components**

7664-39-3	Hydrofluoric acid Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330 Skin Corr. 1A, H314	0.3%
133-37-9	(+-)-tartaric acid	0.2%
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%

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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%
7440-70-2	calcium Water-react. 2, H261	0.001%
7440-47-3	chromium	0.001%
7440-48-4	cobalt Resp. Sens. 1, H334; Carc. 2, H351 Skin Sens. 1, H317	0.001%
7440-50-8	copper	0.001%
7439-89-6	iron	0.001%
7439-92-1	lead Acute Tox. 3, H301 Carc. 2, H351; Repr. 1A, H360-H362 Acute Tox. 4, H332	0.001%
7439-95-4	magnesium Pyr. Sol. 1, H250; Water-react. 1, H260	0.001%
1317-35-7	trimanganese tetraoxide	0.001%
1313-27-5	molybdenum trioxide Carc. 2, H351 Eye Irrit. 2A, H319; STOT SE 3, H335	0.001%
7440-02-0	nickel Carc. 2, H351; STOT RE 1, H372 Skin Sens. 1, H317	0.001%
7440-36-0	antimony	0.001%
7440-09-7	potassium Water-react. 1, H260 Skin Corr. 1B, H314	0.001%
7782-49-2	selenium Acute Tox. 3, H301; Acute Tox. 3, H331 STOT RE 2, H373	0.001%
7440-22-4	silver	0.001%
7440-23-5	sodium Water-react. 1, H260 Skin Corr. 1B, H314	0.001%
10042-76-9	strontium nitrate Ox. Sol. 2, H272	0.001%
7440-28-0	thallium Acute Tox. 2, H300; Acute Tox. 2, H330 STOT RE 2, H373	0.001%
7440-31-5	tin	0.001%
7440-32-6	titanium Self-heat. 1, H251; Water-react. 1, H260	0.001%
7440-62-2	vanadium	0.001%

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7429-90-5	aluminium	0.001%
7440-66-6	zinc Water-react. 2, H261	0.001%
7440-38-2	Arsenic Acute Tox. 3, H301; Acute Tox. 3, H331 Carc. 1A, H350	0.001%
7440-39-3	barium Water-react. 2, H261	0.001%
7732-18-5	Water	94.474%

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4 First-aid measures

· **Description of first aid measures**
· **General information:**
Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
· **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.
Rub in Ca-gluconate solution or Ca-gluconate gel immediately.
· **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
· **After swallowing:**
Immediately call a doctor.
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.

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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).

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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
7440-41-7	beryllium	0.0023 mg/m³
7440-43-9	cadmium (non-pyrophoric)	0.10 mg/m³
7440-47-3	chromium	1.5 mg/m³
7440-48-4	cobalt	0.18 mg/m³
7440-50-8	copper	3 mg/m³
7439-89-6	iron	3.2 mg/m³
7439-92-1	lead	0.15 mg/m³
7439-95-4	magnesium	18 mg/m³
1317-35-7	trimanganese tetraoxide	4.2 mg/m³
1313-27-5	molybdenum trioxide	2.3 mg/m³
7440-02-0	nickel	4.5 mg/m³
7440-36-0	antimony	1.5 mg/m³
7440-09-7	potassium	2.3 mg/m³
7782-49-2	selenium	0.6 mg/m³
7440-22-4	silver	0.3 mg/m³
7440-23-5	sodium	13 mg/m³
10042-76-9	strontium nitrate	5.7 mg/m³
7440-28-0	thallium	0.06 mg/m³
7440-31-5	tin	6 mg/m³
7440-32-6	titanium	30 mg/m³
7440-62-2	vanadium	3 mg/m³
7440-66-6	zinc	6 mg/m³
7440-38-2	Arsenic	1.5 mg/m³
7440-39-3	barium	1.5 mg/m³

· **PAC-2:**		
7697-37-2	Nitric Acid	24 ppm
7440-41-7	beryllium	0.025 mg/m³
7440-43-9	cadmium (non-pyrophoric)	0.76 mg/m³
7440-47-3	chromium	17 mg/m³
7440-48-4	cobalt	2 mg/m³
7440-50-8	copper	33 mg/m³

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7439-89-6	iron	35 mg/m³
7439-92-1	lead	120 mg/m³
7439-95-4	magnesium	200 mg/m³
1317-35-7	trimanganese tetraoxide	6.9 mg/m³
1313-27-5	molybdenum trioxide	43 mg/m³
7440-02-0	nickel	50 mg/m³
7440-36-0	antimony	13 mg/m³
7440-09-7	potassium	25 mg/m³
7782-49-2	selenium	6.6 mg/m³
7440-22-4	silver	170 mg/m³
7440-23-5	sodium	140 mg/m³
10042-76-9	strontium nitrate	62 mg/m³
7440-28-0	thallium	3.3 mg/m³
7440-31-5	tin	67 mg/m³
7440-32-6	titanium	330 mg/m³
7440-62-2	vanadium	5.8 mg/m³
7440-66-6	zinc	21 mg/m³
7440-38-2	Arsenic	17 mg/m³
7440-39-3	barium	180 mg/m³

· **PAC-3:**

7697-37-2	Nitric Acid	92 ppm
7440-41-7	beryllium	0.1 mg/m³
7440-43-9	cadmium (non-pyrophoric)	4.7 mg/m³
7440-47-3	chromium	99 mg/m³
7440-48-4	cobalt	20 mg/m³
7440-50-8	copper	200 mg/m³
7439-89-6	iron	150 mg/m³
7439-92-1	lead	700 mg/m³
7439-95-4	magnesium	1,200 mg/m³
1317-35-7	trimanganese tetraoxide	41 mg/m³
1313-27-5	molybdenum trioxide	260 mg/m³
7440-02-0	nickel	99 mg/m³
7440-36-0	antimony	80 mg/m³
7440-09-7	potassium	150 mg/m³
7782-49-2	selenium	40 mg/m³
7440-22-4	silver	990 mg/m³
7440-23-5	sodium	870 mg/m³
10042-76-9	strontium nitrate	370 mg/m³
7440-28-0	thallium	20 mg/m³
7440-31-5	tin	400 mg/m³

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7440-32-6	titanium	2,000 mg/m³
7440-62-2	vanadium	35 mg/m³
7440-66-6	zinc	120 mg/m³
7440-38-2	Arsenic	100 mg/m³
7440-39-3	barium	1,100 mg/m³

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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.

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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/m³, 2 ppm
REL	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5 mg/m³, 2 ppm
TLV	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5.2 mg/m³, 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 trough 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

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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 at 20 °C (68 °F):**	*<4*
· **Change in condition**	
Melting point/Melting range:	*Undetermined.*
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/cm³ (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:	94.5 %
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.

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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:
Harmful
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)**		
7440-41-7	beryllium	1
7440-43-9	cadmium (non-pyrophoric)	1
7440-47-3	chromium	3
7440-48-4	cobalt	2B
7439-92-1	lead	2B
7440-02-0	nickel	2B
7782-49-2	selenium	3
7440-38-2	Arsenic	1

· **NTP (National Toxicology Program)**		
7440-41-7	beryllium	K
7440-43-9	cadmium (non-pyrophoric)	K
7440-48-4	cobalt	R
7439-92-1	lead	R
7440-02-0	nickel	R
7440-38-2	Arsenic	K

· **OSHA-Ca (Occupational Safety & Health Administration)**	
7440-43-9	cadmium (non-pyrophoric)
7440-38-2	Arsenic

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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.*

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14 Transport information

· **UN-Number**	
· **DOT, ADR, IMDG, IATA**	*UN3264*
· **UN proper shipping name**	
· **DOT**	*Corrosive liquid, acidic, inorganic, n.o.s. (Nitric Acid, hydrofluoric acid)*
· **ADR**	*3264 Corrosive liquid, acidic, inorganic, n.o.s. (Nitric Acid, hydrofluoric acid)*
· **IMDG**	*CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Nitric Acid, hydrofluoric acid), MARINE POLLUTANT*
· **IATA**	*CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Nitric Acid, hydrofluoric acid)*
· **Transport hazard class(es)**	
· **DOT**	

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

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

· **Class**	*8 Corrosive substances*

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· **Label**	8
· **IATA**	
	
· **Class**	8 Corrosive substances
· **Label**	8
· **Packing group**	
· **DOT, ADR, IMDG, IATA**	III
· **Environmental hazards:**	
· **Marine pollutant:**	No Symbol (fish and tree)
· **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
· **Remarks:**	Special marking with the symbol (fish and tree).
· **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)**	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, HYDROFLUORIC ACID), 8, III

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15 Regulatory information

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

7732-18-5	Water	94.474%
7697-37-2	Nitric Acid Ox. Liq. 2, H272 Skin Corr. 1A, H314	5.0%
7664-39-3	Hydrofluoric acid Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330 Skin Corr. 1A, H314	0.3%

· **Sara**

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

7697-37-2	Nitric Acid

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

7697-37-2	Nitric Acid
7440-41-7	beryllium
7440-43-9	cadmium (non-pyrophoric)
7440-47-3	chromium
7440-48-4	cobalt
7440-50-8	copper
7439-92-1	lead
1317-35-7	trimanganese tetraoxide
1313-27-5	molybdenum trioxide
7440-02-0	nickel
7440-36-0	antimony
7782-49-2	selenium
7440-22-4	silver
10042-76-9	strontium nitrate
7440-28-0	thallium
7440-62-2	vanadium
7429-90-5	aluminium
7440-66-6	zinc
7440-38-2	Arsenic
7440-39-3	barium

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

7697-37-2	Nitric Acid
133-37-9	(+-)-tartaric acid
7440-41-7	beryllium
7440-43-9	cadmium (non-pyrophoric)
7440-70-2	calcium

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7440-47-3	chromium
7440-48-4	cobalt
7440-50-8	copper
7439-89-6	iron
7439-92-1	lead
7439-95-4	magnesium
1317-35-7	trimanganese tetraoxide
1313-27-5	molybdenum trioxide
7440-02-0	nickel
7440-36-0	antimony
7440-09-7	potassium
7782-49-2	selenium
7440-22-4	silver
7440-23-5	sodium
10042-76-9	strontium nitrate
7440-28-0	thallium
7440-31-5	tin
7440-32-6	titanium
7440-62-2	vanadium
7429-90-5	aluminium
7440-66-6	zinc
7440-38-2	Arsenic
7440-39-3	barium
7732-18-5	Water

· **Proposition 65**

· **Chemicals known to cause cancer:**	
7440-41-7	beryllium
7440-43-9	cadmium (non-pyrophoric)
7440-48-4	cobalt
7439-92-1	lead
7440-02-0	nickel
7440-38-2	Arsenic

· **Chemicals known to cause reproductive toxicity for females:**	
7439-92-1	lead

· **Chemicals known to cause reproductive toxicity for males:**	
7440-43-9	cadmium (non-pyrophoric)
7439-92-1	lead

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

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7439-92-1	lead

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**		
7440-41-7	beryllium	B1, K/L(inh), CBD(oral)
7440-43-9	cadmium (non-pyrophoric)	B1
7440-47-3	chromium	D
7440-50-8	copper	D
7439-92-1	lead	B2
1317-35-7	trimanganese tetraoxide	D
7782-49-2	selenium	D
7440-22-4	silver	D
7440-66-6	zinc	D, I, II
7440-38-2	Arsenic	A
7440-39-3	barium	D, CBD(inh), NL(oral)

· **TLV (Threshold Limit Value established by ACGIH)**		
7440-41-7	beryllium	A1
7440-43-9	cadmium (non-pyrophoric)	A2
7440-47-3	chromium	A4
7440-48-4	cobalt	A3
7439-92-1	lead	A3
7440-02-0	nickel	A5
7429-90-5	aluminium	A4
7440-38-2	Arsenic	A1
7440-39-3	barium	A4

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**	
7440-41-7	beryllium
7440-43-9	cadmium (non-pyrophoric)
7440-02-0	nickel
7440-38-2	Arsenic

· **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

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Trade name: Instrument Calibration Standard 2

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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
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
Acute Tox. 4: Acute toxicity – Category 4
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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*
1 Identification

· **Product identifier**

· **Trade name: STD, Contract Required Detection Limit**
· **Article number** N9303819
· **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, Contract Required Detection Limit

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

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**

Health = 3
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = 3
Fire = 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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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:**			
7697-37-2	*Nitric Acid*	*Ox. Liq. 2, H272* *Skin Corr. 1A, H314*	*5.0%*

· **Additional Components**		
7440-70-2	*calcium* *Water-react. 2, H261*	*0.05%*
7439-95-4	*magnesium* *Pyr. Sol. 1, H250; Water-react. 1, H260*	*0.05%*
7440-09-7	*potassium* *Water-react. 1, H260* *Skin Corr. 1B, H314*	*0.05%*
7440-23-5	*sodium* *Water-react. 1, H260* *Skin Corr. 1B, H314*	*0.05%*
7440-62-2	*vanadium*	*0.005%*

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7440-39-3	barium Water-react. 2, H261	0.002%
7429-90-5	aluminium	0.002%
7439-89-6	iron	0.001%
147-71-7	(-)-tartaric acid Skin Irrit. 2, H315	0.001%
7440-36-0	antimony	0.0006%
7440-48-4	cobalt Resp. Sens. 1, H334; Carc. 2, H351 Skin Sens. 1, H317	0.0005%
7440-02-0	nickel Carc. 2, H351; STOT RE 1, H372 Skin Sens. 1, H317	0.0004%
7440-50-8	copper	0.0003%
1317-35-7	trimanganese tetraoxide	0.0002%
7440-66-6	zinc Water-react. 2, H261	0.0002%
7782-49-2	selenium Acute Tox. 3, H301; Acute Tox. 3, H331 STOT RE 2, H373	0.0001%
7440-22-4	silver	0.0001%
7440-43-9	cadmium (non-pyrophoric) Acute Tox. 2, H330 Muta. 2, H341; Carc. 1B, H350; Repr. 2, H361; STOT RE 1, H372	0.0001%
7439-92-1	lead Acute Tox. 3, H301 Carc. 2, H351; Repr. 1A, H360-H362 Acute Tox. 4, H332	0.0001%
7440-28-0	thallium Acute Tox. 2, H300; Acute Tox. 2, H330 STOT RE 2, H373	0.0001%
7440-38-2	Arsenic Acute Tox. 3, H301; Acute Tox. 3, H331 Carc. 1A, H350	0.0001%
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	0.0001%
7440-47-3	chromium	0.0001%
7732-18-5	Water	94.786%

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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.

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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.

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6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Ensure adequate ventilation
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
7439-95-4	magnesium	18 mg/m³
7440-09-7	potassium	2.3 mg/m³
7440-23-5	sodium	13 mg/m³
7440-62-2	vanadium	3 mg/m³
7440-39-3	barium	1.5 mg/m³

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7439-89-6	iron	3.2 mg/m³
7440-36-0	antimony	1.5 mg/m³
7440-48-4	cobalt	0.18 mg/m³
7440-02-0	nickel	4.5 mg/m³
7440-50-8	copper	3 mg/m³
1317-35-7	trimanganese tetraoxide	4.2 mg/m³
7440-66-6	zinc	6 mg/m³
7782-49-2	selenium	0.6 mg/m³
7440-22-4	silver	0.3 mg/m³
7440-43-9	cadmium (non-pyrophoric)	0.10 mg/m³
7439-92-1	lead	0.15 mg/m³
7440-28-0	thallium	0.06 mg/m³
7440-38-2	Arsenic	1.5 mg/m³
7440-41-7	beryllium	0.0023 mg/m³
7440-47-3	chromium	1.5 mg/m³

· **PAC-2:**

7697-37-2	Nitric Acid	24 ppm
7439-95-4	magnesium	200 mg/m³
7440-09-7	potassium	25 mg/m³
7440-23-5	sodium	140 mg/m³
7440-62-2	vanadium	5.8 mg/m³
7440-39-3	barium	180 mg/m³
7439-89-6	iron	35 mg/m³
7440-36-0	antimony	13 mg/m³
7440-48-4	cobalt	2 mg/m³
7440-02-0	nickel	50 mg/m³
7440-50-8	copper	33 mg/m³
1317-35-7	trimanganese tetraoxide	6.9 mg/m³
7440-66-6	zinc	21 mg/m³
7782-49-2	selenium	6.6 mg/m³
7440-22-4	silver	170 mg/m³
7440-43-9	cadmium (non-pyrophoric)	0.76 mg/m³
7439-92-1	lead	120 mg/m³
7440-28-0	thallium	3.3 mg/m³
7440-38-2	Arsenic	17 mg/m³
7440-41-7	beryllium	0.025 mg/m³
7440-47-3	chromium	17 mg/m³

· **PAC-3:**

7697-37-2	Nitric Acid	92 ppm
7439-95-4	magnesium	1,200 mg/m³

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7440-09-7	potassium	150 mg/m³
7440-23-5	sodium	870 mg/m³
7440-62-2	vanadium	35 mg/m³
7440-39-3	barium	1,100 mg/m³
7439-89-6	iron	150 mg/m³
7440-36-0	antimony	80 mg/m³
7440-48-4	cobalt	20 mg/m³
7440-02-0	nickel	99 mg/m³
7440-50-8	copper	200 mg/m³
1317-35-7	trimanganese tetraoxide	41 mg/m³
7440-66-6	zinc	120 mg/m³
7782-49-2	selenium	40 mg/m³
7440-22-4	silver	990 mg/m³
7440-43-9	cadmium (non-pyrophoric)	4.7 mg/m³
7439-92-1	lead	700 mg/m³
7440-28-0	thallium	20 mg/m³
7440-38-2	Arsenic	100 mg/m³
7440-41-7	beryllium	0.1 mg/m³
7440-47-3	chromium	99 mg/m³

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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:** 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/m³, 2 ppm

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REL	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5 mg/m³, 2 ppm
TLV	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5.2 mg/m³, 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.*
· **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 trough 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

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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.*

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· **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.
· **Solubility in / Miscibility with**	
Water:	Fully miscible.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
Dynamic:	Not determined.
Kinematic:	Not determined.
· **Solvent content:**	
Water:	94.8 %
VOC content:	0.00 %
Solids content:	0.2 %
· **Other information**	No further relevant information available.

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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.

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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.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		
7440-48-4	cobalt	2B
7440-02-0	nickel	2B
7782-49-2	selenium	3
7440-43-9	cadmium (non-pyrophoric)	1
7439-92-1	lead	2B
7440-38-2	Arsenic	1
7440-41-7	beryllium	1
7440-47-3	chromium	3

· **NTP (National Toxicology Program)**		
7440-48-4	cobalt	R
7440-02-0	nickel	R
7440-43-9	cadmium (non-pyrophoric)	K
7439-92-1	lead	R
7440-38-2	Arsenic	K
7440-41-7	beryllium	K

· **OSHA-Ca (Occupational Safety & Health Administration)**	
7440-43-9	cadmium (non-pyrophoric)
7440-38-2	Arsenic

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12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.

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· **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.

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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)
· **Transport hazard class(es)**	
· **DOT**	

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

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

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· **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
· **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

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15 Regulatory information

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

7732-18-5	Water		94.786%
7697-37-2	Nitric Acid	Ox. Liq. 2, H272 Skin Corr. 1A, H314	5.0%

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7439-95-4	magnesium	Pyr. Sol. 1, H250; Water-react. 1, H260	0.05%

· **Sara**

· **Section 355 (extremely hazardous substances):**	
7697-37-2	Nitric Acid

· **Section 313 (Specific toxic chemical listings):**	
7697-37-2	Nitric Acid
7440-62-2	vanadium
7440-39-3	barium
7429-90-5	aluminium
7440-36-0	antimony
7440-48-4	cobalt
7440-02-0	nickel
7440-50-8	copper
1317-35-7	trimanganese tetraoxide
7440-66-6	zinc
7782-49-2	selenium
7440-22-4	silver
7440-43-9	cadmium (non-pyrophoric)
7439-92-1	lead
7440-28-0	thallium
7440-38-2	Arsenic
7440-41-7	beryllium
7440-47-3	chromium

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

7697-37-2	Nitric Acid
7440-70-2	calcium
7439-95-4	magnesium
7440-09-7	potassium
7440-23-5	sodium
7440-62-2	vanadium
7440-39-3	barium
7429-90-5	aluminium
7439-89-6	iron
147-71-7	(-)-tartaric acid
7440-36-0	antimony
7440-48-4	cobalt
7440-02-0	nickel
7440-50-8	copper
1317-35-7	trimanganese tetraoxide

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7440-66-6	zinc
7782-49-2	selenium
7440-22-4	silver
7440-43-9	cadmium (non-pyrophoric)
7439-92-1	lead
7440-28-0	thallium
7440-38-2	Arsenic
7440-41-7	beryllium
7440-47-3	chromium
7732-18-5	Water

· **Proposition 65**

· **Chemicals known to cause cancer:**	
7440-48-4	cobalt
7440-02-0	nickel
7440-43-9	cadmium (non-pyrophoric)
7439-92-1	lead
7440-38-2	Arsenic
7440-41-7	beryllium

· **Chemicals known to cause reproductive toxicity for females:**	
7439-92-1	lead

· **Chemicals known to cause reproductive toxicity for males:**	
7440-43-9	cadmium (non-pyrophoric)
7439-92-1	lead

· **Chemicals known to cause developmental toxicity:**	
7440-43-9	cadmium (non-pyrophoric)
7439-92-1	lead

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**		
7440-39-3	barium	D, CBD(inh), NL(oral)
7440-50-8	copper	D
1317-35-7	trimanganese tetraoxide	D
7440-66-6	zinc	D, I, II
7782-49-2	selenium	D
7440-22-4	silver	D
7440-43-9	cadmium (non-pyrophoric)	B1
7439-92-1	lead	B2
7440-38-2	Arsenic	A
7440-41-7	beryllium	B1, K/L(inh), CBD(oral)
7440-47-3	chromium	D

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· **TLV (Threshold Limit Value established by ACGIH)**		
7440-39-3	barium	A4
7429-90-5	aluminium	A4
7440-48-4	cobalt	A3
7440-02-0	nickel	A5
7440-43-9	cadmium (non-pyrophoric)	A2
7439-92-1	lead	A3
7440-38-2	Arsenic	A1
7440-41-7	beryllium	A1
7440-47-3	chromium	A4

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**	
7440-02-0	nickel
7440-43-9	cadmium (non-pyrophoric)
7440-38-2	Arsenic
7440-41-7	beryllium

· **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.

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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
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists

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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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*
1 Identification

· **Product identifier**

· **Trade name: STD, Instrument Check STD 1**
· **Article number** N9303821
· **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

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2 Hazard(s) identification

· **Classification of the substance or mixture**

Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2A H319 Causes serious eye irritation.

· **Label elements**
· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms** GHS07
· **Signal word** Warning
· **Hazard statements**
H315 Causes skin irritation.
H319 Causes serious eye irritation.
· **Precautionary statements**

P264	Wash thoroughly after handling.
P280	Wear protective gloves / eye protection / face protection.
P302+P352	If on skin: Wash with plenty of water.
P321	Specific treatment (see on this label).
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P337+P313	If eye irritation persists: Get medical advice/attention.

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

Health = 2
Fire = 0
Reactivity = 0

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· **HMIS-ratings (scale 0 - 4)**

HEALTH	2
FIRE	0
REACTIVITY	0

Health = 2
Fire = 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.*

*
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:**			
7697-37-2	*Nitric Acid*	*Ox. Liq. 2, H272* *Skin Corr. 1A, H314*	*2.0%*

· **Additional Components**		
7664-39-3	*Hydrofluoric acid* *Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330* *Skin Corr. 1A, H314*	*0.1%*
7440-39-3	*barium* *Water-react. 2, H261*	*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%*
7440-43-9	*cadmium (non-pyrophoric)* *Acute Tox. 2, H330* *Muta. 2, H341; Carc. 1B, H350; Repr. 2, H361; STOT RE 1, H372*	*0.001%*
7440-47-3	*chromium*	*0.001%*
7440-48-4	*cobalt* *Resp. Sens. 1, H334; Carc. 2, H351* *Skin Sens. 1, H317*	*0.001%*
7440-50-8	*copper*	*0.001%*
7440-38-2	*Arsenic* *Acute Tox. 3, H301; Acute Tox. 3, H331* *Carc. 1A, H350*	*0.001%*

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7439-92-1	lead Acute Tox. 3, H301 Carc. 2, H351; Repr. 1A, H360-H362 Acute Tox. 4, H332	0.001%
1317-35-7	trimanganese tetraoxide	0.001%
7440-02-0	nickel Carc. 2, H351; STOT RE 1, H372 Skin Sens. 1, H317	0.001%
7440-36-0	antimony	0.001%
7782-49-2	selenium Acute Tox. 3, H301; Acute Tox. 3, H331 STOT RE 2, H373	0.001%
7440-22-4	silver	0.001%
147-71-7	(-)-tartaric acid Skin Irrit. 2, H315	0.001%
7440-28-0	thallium Acute Tox. 2, H300; Acute Tox. 2, H330 STOT RE 2, H373	0.001%
7440-62-2	vanadium	0.001%
7440-66-6	zinc Water-react. 2, H261	0.001%
7429-90-5	aluminium	0.001%
7732-18-5	Water	97.882%

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4 First-aid measures

· **Description of first aid measures**
· **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.
Rub in Ca-gluconate solution or Ca-gluconate gel immediately.
· **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
· **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.

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· **Advice for firefighters**
· **Protective equipment:** No special measures required.

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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.
· **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
· **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
7440-39-3	barium	1.5 mg/m³
7440-41-7	beryllium	0.0023 mg/m³
7440-43-9	cadmium (non-pyrophoric)	0.10 mg/m³
7440-47-3	chromium	1.5 mg/m³
7440-48-4	cobalt	0.18 mg/m³
7440-50-8	copper	3 mg/m³
7440-38-2	Arsenic	1.5 mg/m³
7439-92-1	lead	0.15 mg/m³
1317-35-7	trimanganese tetraoxide	4.2 mg/m³
7440-02-0	nickel	4.5 mg/m³
7440-36-0	antimony	1.5 mg/m³
7782-49-2	selenium	0.6 mg/m³
7440-22-4	silver	0.3 mg/m³
7440-28-0	thallium	0.06 mg/m³
7440-62-2	vanadium	3 mg/m³
7440-66-6	zinc	6 mg/m³

· **PAC-2:**		
7697-37-2	Nitric Acid	24 ppm
7440-39-3	barium	180 mg/m³
7440-41-7	beryllium	0.025 mg/m³
7440-43-9	cadmium (non-pyrophoric)	0.76 mg/m³
7440-47-3	chromium	17 mg/m³
7440-48-4	cobalt	2 mg/m³
7440-50-8	copper	33 mg/m³

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7440-38-2	Arsenic	17 mg/m³
7439-92-1	lead	120 mg/m³
1317-35-7	trimanganese tetraoxide	6.9 mg/m³
7440-02-0	nickel	50 mg/m³
7440-36-0	antimony	13 mg/m³
7782-49-2	selenium	6.6 mg/m³
7440-22-4	silver	170 mg/m³
7440-28-0	thallium	3.3 mg/m³
7440-62-2	vanadium	5.8 mg/m³
7440-66-6	zinc	21 mg/m³

· **PAC-3:**

7697-37-2	Nitric Acid	92 ppm
7440-39-3	barium	1,100 mg/m³
7440-41-7	beryllium	0.1 mg/m³
7440-43-9	cadmium (non-pyrophoric)	4.7 mg/m³
7440-47-3	chromium	99 mg/m³
7440-48-4	cobalt	20 mg/m³
7440-50-8	copper	200 mg/m³
7440-38-2	Arsenic	100 mg/m³
7439-92-1	lead	700 mg/m³
1317-35-7	trimanganese tetraoxide	41 mg/m³
7440-02-0	nickel	99 mg/m³
7440-36-0	antimony	80 mg/m³
7782-49-2	selenium	40 mg/m³
7440-22-4	silver	990 mg/m³
7440-28-0	thallium	20 mg/m³
7440-62-2	vanadium	35 mg/m³
7440-66-6	zinc	120 mg/m³

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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:** 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.

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· **Specific end use(s)** No further relevant information available.

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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/m³, 2 ppm
REL	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5 mg/m³, 2 ppm
TLV	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5.2 mg/m³, 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 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 trough 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

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*
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.
· **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.
· **Solubility in / Miscibility with**	
Water:	Fully miscible.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
Dynamic:	Not determined.
Kinematic:	Not determined.
· **Solvent content:**	
Water:	97.9 %
VOC content:	0.00 %
· **Other information**	No further relevant information available.

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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.

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· **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.

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11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **Primary irritant effect:**
· **on the skin:** Irritant to skin and mucous membranes.
· **on the eye:** Irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		
7440-41-7	beryllium	1
7440-43-9	cadmium (non-pyrophoric)	1
7440-47-3	chromium	3
7440-48-4	cobalt	2B
7440-38-2	Arsenic	1
7439-92-1	lead	2B
7440-02-0	nickel	2B
7782-49-2	selenium	3

· **NTP (National Toxicology Program)**		
7440-41-7	beryllium	K
7440-43-9	cadmium (non-pyrophoric)	K
7440-48-4	cobalt	R
7440-38-2	Arsenic	K
7439-92-1	lead	R
7440-02-0	nickel	R

· **OSHA-Ca (Occupational Safety & Health Administration)**	
7440-43-9	cadmium (non-pyrophoric)
7440-38-2	Arsenic

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12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.

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· **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.
· **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, Hydrogen fluoride)
· **ADR**	3264 Corrosive liquid, acidic, inorganic, n.o.s. (Nitric Acid, Hydrogen fluoride)
· **IMDG, IATA**	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Nitric Acid, HYDROGEN FLUORIDE)
· **Transport hazard class(es)**	
· **DOT**	

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

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· **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*
· **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*

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· **UN "Model Regulation":** UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID, HYDROGEN FLUORIDE), 8, III

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15 Regulatory information

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

7732-18-5	Water	97.882%
7697-37-2	Nitric Acid Ox. Liq. 2, H272 Skin Corr. 1A, H314	2.0%
7664-39-3	Hydrofluoric acid Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330 Skin Corr. 1A, H314	0.1%

· **Sara**

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

7697-37-2	Nitric Acid

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

7697-37-2	Nitric Acid
7440-39-3	barium
7440-41-7	beryllium
7440-43-9	cadmium (non-pyrophoric)
7440-47-3	chromium
7440-48-4	cobalt
7440-50-8	copper
7440-38-2	Arsenic
7439-92-1	lead
1317-35-7	trimanganese tetraoxide
7440-02-0	nickel
7440-36-0	antimony
7782-49-2	selenium
7440-22-4	silver
7440-28-0	thallium
7440-62-2	vanadium
7440-66-6	zinc
7429-90-5	aluminium

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

7697-37-2	Nitric Acid
7440-39-3	barium
7440-41-7	beryllium

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7440-43-9	cadmium (non-pyrophoric)
7440-47-3	chromium
7440-48-4	cobalt
7440-50-8	copper
7440-38-2	Arsenic
7439-92-1	lead
1317-35-7	trimanganese tetraoxide
7440-02-0	nickel
7440-36-0	antimony
7782-49-2	selenium
7440-22-4	silver
147-71-7	(-)-tartaric acid
7440-28-0	thallium
7440-62-2	vanadium
7440-66-6	zinc
7429-90-5	aluminium
7732-18-5	Water

· **Proposition 65**

· **Chemicals known to cause cancer:**	
7440-41-7	beryllium
7440-43-9	cadmium (non-pyrophoric)
7440-48-4	cobalt
7440-38-2	Arsenic
7439-92-1	lead
7440-02-0	nickel

· **Chemicals known to cause reproductive toxicity for females:**	
7439-92-1	lead

· **Chemicals known to cause reproductive toxicity for males:**	
7440-43-9	cadmium (non-pyrophoric)
7439-92-1	lead

· **Chemicals known to cause developmental toxicity:**	
7440-43-9	cadmium (non-pyrophoric)
7439-92-1	lead

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**		
7440-39-3	barium	D, CBD(inh), NL(oral)
7440-41-7	beryllium	B1, K/L(inh), CBD(oral)
7440-43-9	cadmium (non-pyrophoric)	B1
7440-47-3	chromium	D

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7440-50-8	copper	D
7440-38-2	Arsenic	A
7439-92-1	lead	B2
1317-35-7	trimanganese tetraoxide	D
7782-49-2	selenium	D
7440-22-4	silver	D
7440-66-6	zinc	D, I, II

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

7440-39-3	barium	A4
7440-41-7	beryllium	A1
7440-43-9	cadmium (non-pyrophoric)	A2
7440-47-3	chromium	A4
7440-48-4	cobalt	A3
7440-38-2	Arsenic	A1
7439-92-1	lead	A3
7440-02-0	nickel	A5
7429-90-5	aluminium	A4

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

7440-41-7	beryllium
7440-43-9	cadmium (non-pyrophoric)
7440-38-2	Arsenic
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

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Trade name: STD, Instrument Check STD 1

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· **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
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 Irrit. 2: Skin corrosion/irritation – Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A

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

acc. to OSHA HCS

Printing date 07/17/2018 *Review date 07/17/2018*

*
1 Identification

· **Product identifier**

· **Trade name: MERCURY A/S STANDARD**
· **Article number** N9300253
· **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: MERCURY A/S STANDARD

(Contd. of page 1)

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

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

Health = 3
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = 3
Fire = 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.*

*

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

· **Additional Components**			
7439-97-6	*mercury*	*Acute Tox. 2, H330* *Repr. 1B, H360; STOT RE 1, H372*	*0.001%*
7732-18-5	*Water*		*94.999%*

*

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.*

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acc. to OSHA HCS

Trade name: MERCURY A/S STANDARD

(Contd. of page 2)

· **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
7439-97-6	mercury	0.15 mg/m³

· **PAC-2:**		
7697-37-2	Nitric Acid	24 ppm
7439-97-6	mercury	1.7 mg/m³

· **PAC-3:**		
7697-37-2	Nitric Acid	92 ppm
7439-97-6	mercury	8.9 mg/m³

*
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.

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Trade name: MERCURY A/S STANDARD

(Contd. of page 3)

· **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/m³, 2 ppm
REL	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5 mg/m³, 2 ppm
TLV	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5.2 mg/m³, 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.*
· **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 trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

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Trade name: MERCURY A/S STANDARD

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· **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.*
· **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.*
· **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 %*

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Trade name: MERCURY A/S STANDARD

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· **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.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		
7439-97-6	*mercury*	*3*

· **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.*

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Trade name: MERCURY A/S STANDARD

(Contd. of page 6)

· **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)
· **Transport hazard class(es)**	
· **DOT**	

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

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

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Trade name: MERCURY A/S STANDARD

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· **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
· **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		94.999%

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Trade name: MERCURY A/S STANDARD

(Contd. of page 8)

7697-37-2	Nitric Acid	Ox. Liq. 2, H272 Skin Corr. 1A, H314	5.0%
7439-97-6	mercury	Acute Tox. 2, H330 Repr. 1B, H360; STOT RE 1, H372	0.001%

· **Sara**

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

7697-37-2	Nitric Acid

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

7697-37-2	Nitric Acid
7439-97-6	mercury

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

7697-37-2	Nitric Acid
7439-97-6	mercury
7732-18-5	Water

· **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:**

7439-97-6	mercury

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**

7439-97-6	mercury	D

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

7439-97-6	mercury	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,

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Trade name: MERCURY A/S STANDARD

(Contd. of page 9)

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
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.***

acc. to OSHA HCS

Printing date 07/17/2018 *Review date 07/17/2018*

*
1 Identification

· **Product identifier**

· **Trade name: STD, Instrument Check Std 3**
· **Article number** N9303822
· **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**

Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2A H319 Causes serious eye irritation.

· **Label elements**
· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms** GHS07
· **Signal word** Warning
· **Hazard statements**
H315 Causes skin irritation.
H319 Causes serious eye irritation.
· **Precautionary statements**

P264	Wash thoroughly after handling.
P280	Wear protective gloves / eye protection / face protection.
P302+P352	If on skin: Wash with plenty of water.
P321	Specific treatment (see on this label).
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P337+P313	If eye irritation persists: Get medical advice/attention.

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

Health = 2
Fire = 0
Reactivity = 0

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Trade name: STD, Instrument Check Std 3

(Contd. of page 1)

· **HMIS-ratings (scale 0 - 4)**

HEALTH	2
FIRE	0
REACTIVITY	0

Health = 2
Fire = 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.*

*
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:**			
7697-37-2	*Nitric Acid*	*Ox. Liq. 2, H272* *Skin Corr. 1A, H314*	*2.0%*

· **Additional Components**			
7439-95-4	*magnesium*	*Pyr. Sol. 1, H250; Water-react. 1, H260*	*0.02%*
7439-89-6	*iron*		*0.02%*
7440-09-7	*potassium*	*Water-react. 1, H260* *Skin Corr. 1B, H314*	*0.02%*
7440-23-5	*sodium*	*Water-react. 1, H260* *Skin Corr. 1B, H314*	*0.02%*
7440-70-2	*calcium*	*Water-react. 2, H261*	*0.02%*
7732-18-5	*Water*		*97.9%*

*
4 First-aid measures

· **Description of first aid measures**
· **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. If symptoms persist, consult a doctor.
· **After swallowing:** *If symptoms persist consult doctor.*
· **Most important symptoms and effects, both acute and delayed** *No further relevant information available.*

(Contd. on page 3)

acc. to OSHA HCS

Trade name: STD, Instrument Check Std 3

(Contd. of page 2)

· **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** 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**
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
7439-95-4	magnesium	18 mg/m³
7439-89-6	iron	3.2 mg/m³
7440-09-7	potassium	2.3 mg/m³
7440-23-5	sodium	13 mg/m³

· **PAC-2:**		
7697-37-2	Nitric Acid	24 ppm
7439-95-4	magnesium	200 mg/m³
7439-89-6	iron	35 mg/m³
7440-09-7	potassium	25 mg/m³
7440-23-5	sodium	140 mg/m³

· **PAC-3:**		
7697-37-2	Nitric Acid	92 ppm
7439-95-4	magnesium	1,200 mg/m³
7439-89-6	iron	150 mg/m³
7440-09-7	potassium	150 mg/m³

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7440-23-5	sodium	870 mg/m³

*
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/m³, 2 ppm
REL	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5 mg/m³, 2 ppm
TLV	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5.2 mg/m³, 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 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.

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· **Penetration time of glove material**
The exact break trough 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.*
· **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.*
· **Solubility in / Miscibility with**	
Water:	*Fully miscible.*
· **Partition coefficient (n-octanol/water):**	*Not determined.*
· **Viscosity:**	
Dynamic:	*Not determined.*
Kinematic:	*Not determined.*

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· **Solvent content:**	
Water:	97.9 %
VOC content:	0.00 %
Solids content:	0.1 %
· **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:** Irritant to skin and mucous membranes.
· **on the eye:** Irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

· **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.

· **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.

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· ***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:***
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)*

· ***Transport hazard class(es)***

· ***DOT***

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

· ***ADR***

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

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· **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
· **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		97.9%
7697-37-2	Nitric Acid	Ox. Liq. 2, H272 Skin Corr. 1A, H314	2.0%
7439-89-6	iron		0.02%

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· **Sara**

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

7697-37-2	Nitric Acid

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

7697-37-2	Nitric Acid

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

7697-37-2	Nitric Acid
7439-95-4	magnesium
7439-89-6	iron
7440-09-7	potassium
7440-23-5	sodium
7440-70-2	calcium
7732-18-5	Water

· **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.

· **Cancerogenity 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:** 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

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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
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 Irrit. 2: Skin corrosion/irritation – Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
· **** Data compared to the previous version altered.***

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*
1 Identification

· **Product identifier**

· **Trade name: STD, Instrument Check Std 4**
· **Article number** N9303823
· **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**

Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2A H319 Causes serious eye irritation.

· **Label elements**
· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms** GHS07
· **Signal word** Warning
· **Hazard statements**
H315 Causes skin irritation.
H319 Causes serious eye irritation.
· **Precautionary statements**

P264	Wash thoroughly after handling.
P280	Wear protective gloves / eye protection / face protection.
P302+P352	If on skin: Wash with plenty of water.
P321	Specific treatment (see on this label).
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P337+P313	If eye irritation persists: Get medical advice/attention.

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

Health = 2
Fire = 0
Reactivity = 0

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· **HMIS-ratings (scale 0 - 4)**

HEALTH	2
FIRE	0
REACTIVITY	0

Health = 2
Fire = 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.*

*
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:**			
7697-37-2	*Nitric Acid*	*Ox. Liq. 2, H272* *Skin Corr. 1A, H314*	*2.0%*

· **Additional Components**			
7440-29-1	*thorium*	*Carc. 1A, H350*	*0.001%*
7440-61-1	*uranium*	*Acute Tox. 2, H300; Acute Tox. 2, H330* *STOT RE 2, H373*	*0.001%*
1313-27-5	*molybdenum trioxide*	*Carc. 2, H351* *Eye Irrit. 2A, H319; STOT SE 3, H335*	*0.001%*
7732-18-5	*Water*		*97.997%*

*
4 First-aid measures

· **Description of first aid measures**
· **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. If symptoms persist, consult a doctor.
· **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**
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
7440-29-1	thorium	30 mg/m³
7440-61-1	uranium	0.6 mg/m³
1313-27-5	molybdenum trioxide	2.3 mg/m³

· **PAC-2:**		
7697-37-2	Nitric Acid	24 ppm
7440-29-1	thorium	330 mg/m³
7440-61-1	uranium	5 mg/m³
1313-27-5	molybdenum trioxide	43 mg/m³

· **PAC-3:**		
7697-37-2	Nitric Acid	92 ppm
7440-29-1	thorium	2,000 mg/m³
7440-61-1	uranium	30 mg/m³
1313-27-5	molybdenum trioxide	260 mg/m³

*
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.

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· **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/m³, 2 ppm
REL	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5 mg/m³, 2 ppm
TLV	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5.2 mg/m³, 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 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 trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

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· **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.*
· **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.*
· **Solubility in / Miscibility with**	
Water:	*Fully miscible.*
· **Partition coefficient (n-octanol/water):**	*Not determined.*
· **Viscosity:**	
Dynamic:	*Not determined.*
Kinematic:	*Not determined.*
· **Solvent content:**	
Water:	*98.0 %*
VOC content:	*0.00 %*

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Trade name: STD, Instrument Check Std 4

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· **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:** Irritant to skin and mucous membranes.
· **on the eye:** Irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		
7440-29-1	thorium	1

· **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:** Generally not hazardous for water
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

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· **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)*
· **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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Trade name: STD, Instrument Check Std 4

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· **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*
· **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*		*97.997%*
7697-37-2	*Nitric Acid*	*Ox. Liq. 2, H272* *Skin Corr. 1A, H314*	*2.0%*
7440-61-1	*uranium*	*Acute Tox. 2, H300; Acute Tox. 2, H330* *STOT RE 2, H373*	*0.001%*

· **Sara**

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

7697-37-2	*Nitric Acid*

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

7697-37-2	*Nitric Acid*
1313-27-5	*molybdenum trioxide*

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

7697-37-2	Nitric Acid
7440-29-1	thorium
7440-61-1	uranium
1313-27-5	molybdenum trioxide
7732-18-5	Water

· **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.

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**
None of the ingredients is listed.

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

7440-61-1	uranium	A1

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

7440-61-1	uranium

· **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

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Trade name: STD, Instrument Check Std 4

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· **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
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 Irrit. 2: Skin corrosion/irritation – Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A

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

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Printing date 07/17/2018 *Review date 07/17/2018*

*
1 Identification

· **Product identifier**

· **Trade name: STD, Instrument Check Std 5**
· **Article number** N9303824
· **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**

Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2A H319 Causes serious eye irritation.

· **Label elements**
· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms** GHS07
· **Signal word** Warning
· **Hazard statements**
H315 Causes skin irritation.
H319 Causes serious eye irritation.
· **Precautionary statements**

P264	Wash thoroughly after handling.
P280	Wear protective gloves / eye protection / face protection.
P302+P352	If on skin: Wash with plenty of water.
P321	Specific treatment (see on this label).
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P337+P313	If eye irritation persists: Get medical advice/attention.

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

Health = 2
Fire = 0
Reactivity = 0

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Trade name: STD, Instrument Check Std 5

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· **HMIS-ratings (scale 0 - 4)**

Health = 2
Fire = 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.*

*
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:**			
7697-37-2	*Nitric Acid*	*Ox. Liq. 2, H272* *Skin Corr. 1A, H314*	*2.0%*

· **Additional Components**		
7664-39-3	*Hydrofluoric acid* *Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330* *Skin Corr. 1A, H314*	*0.2%*
10042-76-9	*strontium nitrate* *Ox. Sol. 2, H272*	*0.001%*
1313-27-5	*molybdenum trioxide* *Carc. 2, H351* *Eye Irrit. 2A, H319; STOT SE 3, H335*	*0.001%*
7440-31-5	*tin*	*0.001%*
7440-32-6	*titanium* *Self-heat. 1, H251; Water-react. 1, H260*	*0.001%*
7732-18-5	*Water*	*97.796%*

*
4 First-aid measures

· **Description of first aid measures**
· **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.
Rub in Ca-gluconate solution or Ca-gluconate gel immediately.

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· ***After eye contact:***
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
· ***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.

*
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.
· ***Methods and material for containment and cleaning up:***
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
· ***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*
10042-76-9	*strontium nitrate*	*5.7 mg/m³*
1313-27-5	*molybdenum trioxide*	*2.3 mg/m³*
7440-31-5	*tin*	*6 mg/m³*
7440-32-6	*titanium*	*30 mg/m³*

· ***PAC-2:***		
7697-37-2	*Nitric Acid*	*24 ppm*
10042-76-9	*strontium nitrate*	*62 mg/m³*
1313-27-5	*molybdenum trioxide*	*43 mg/m³*
7440-31-5	*tin*	*67 mg/m³*
7440-32-6	*titanium*	*330 mg/m³*

· ***PAC-3:***		
7697-37-2	*Nitric Acid*	*92 ppm*
10042-76-9	*strontium nitrate*	*370 mg/m³*
1313-27-5	*molybdenum trioxide*	*260 mg/m³*

(Contd. on page 4)

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7440-31-5	tin	400 mg/m³
7440-32-6	titanium	2,000 mg/m³

*
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/m³, 2 ppm
REL	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5 mg/m³, 2 ppm
TLV	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5.2 mg/m³, 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 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

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· ***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 trough 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.*
· **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.*
· **Solubility in / Miscibility with**	
Water:	*Fully miscible.*

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(Contd. of page 5)

· **Partition coefficient (n-octanol/water):** Not determined.

· **Viscosity:**
Dynamic: Not determined.
Kinematic: Not determined.

· **Solvent content:**
Water: 97.8 %
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:** Irritant to skin and mucous membranes.
· **on the eye:** Irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

· **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.

· **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.

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Trade name: STD, Instrument Check Std 5

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· **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.
· **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**	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Nitric Acid), MARINE POLLUTANT
· **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

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Trade name: STD, Instrument Check Std 5

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· **Label**	8
· **IMDG**	
	
· **Class**	8 Corrosive substances
· **Label**	8
· **IATA**	
	
· **Class**	8 Corrosive substances
· **Label**	8
· **Packing group**	
· **DOT, ADR, IMDG, IATA**	III
· **Environmental hazards:**	
· **Marine pollutant:**	No Symbol (fish and tree)
· **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
· **Remarks:**	Special marking with the symbol (fish and tree).
· **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)**	5L
· **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, Instrument Check Std 5

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· **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	97.796%
7697-37-2	Nitric Acid Ox. Liq. 2, H272 Skin Corr. 1A, H314	2.0%
7664-39-3	Hydrofluoric acid Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330 Skin Corr. 1A, H314	0.2%

· **Sara**

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

7697-37-2	Nitric Acid

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

7697-37-2	Nitric Acid
10042-76-9	strontium nitrate
1313-27-5	molybdenum trioxide

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

7697-37-2	Nitric Acid
10042-76-9	strontium nitrate
1313-27-5	molybdenum trioxide
7440-31-5	tin
7440-32-6	titanium
7732-18-5	Water

· **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.

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**
None of the ingredients is listed.

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Trade name: STD, Instrument Check Std 5

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· **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
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 Irrit. 2: Skin corrosion/irritation – Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
· *** Data compared to the previous version altered.**

acc. to OSHA HCS

Printing date 07/17/2018 *Review date 07/17/2018*

*
1 Identification

· **Product identifier**

· **Trade name: STD, Interferents A**
· **Article number** N9303827
· **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, Interferents A

(Contd. of page 1)

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

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

Health = 3
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = 3
Fire = 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.*

*

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

· **Additional Components**		
7440-70-2	*calcium* *Water-react. 2, H261*	*0.3%*
7439-89-6	*iron*	*0.25%*
7440-23-5	*sodium* *Water-react. 1, H260* *Skin Corr. 1B, H314*	*0.25%*
7440-44-0	*carbon* *Flam. Sol. 1, H228*	*0.2%*
7664-39-3	*Hydrofluoric acid* *Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330* *Skin Corr. 1A, H314*	*0.2%*

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7723-14-0	red phosphorus Flam. Liq. 2, H225; Flam. Sol. 1, H228	0.1%
7440-09-7	potassium Water-react. 1, H260 Skin Corr. 1B, H314	0.1%
7439-95-4	magnesium Pyr. Sol. 1, H250; Water-react. 1, H260	0.1%
7704-34-9	sulfur Skin Irrit. 2, H315	0.1%
7429-90-5	aluminium	0.1%
7782-50-5	chlorine Oxid. Gas 1, H270 Acute Tox. 3, H331 Skin Irrit. 2, H315; Eye Irrit. 2A, H319; STOT SE 3, H335	0.0021%
7440-32-6	titanium Self-heat. 1, H251; Water-react. 1, H260	0.002%
1313-27-5	molybdenum trioxide Carc. 2, H351 Eye Irrit. 2A, H319; STOT SE 3, H335	0.002%
7732-18-5	Water	93.2939%

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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.
Rub in Ca-gluconate solution or Ca-gluconate gel immediately.
· **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.

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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.

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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
7439-89-6	iron	3.2 mg/m³
7440-23-5	sodium	13 mg/m³
7440-44-0	carbon	6 mg/m³
7723-14-0	red phosphorus	0.27 mg/m³
7440-09-7	potassium	2.3 mg/m³
7439-95-4	magnesium	18 mg/m³
7782-50-5	chlorine	0.50 ppm
7440-32-6	titanium	30 mg/m³
1313-27-5	molybdenum trioxide	2.3 mg/m³

· **PAC-2:**		
7697-37-2	Nitric Acid	24 ppm
7439-89-6	iron	35 mg/m³
7440-23-5	sodium	140 mg/m³
7440-44-0	carbon	330 mg/m³
7723-14-0	red phosphorus	3 mg/m³
7440-09-7	potassium	25 mg/m³
7439-95-4	magnesium	200 mg/m³
7782-50-5	chlorine	2.0 ppm
7440-32-6	titanium	330 mg/m³
1313-27-5	molybdenum trioxide	43 mg/m³

· **PAC-3:**		
7697-37-2	Nitric Acid	92 ppm
7439-89-6	iron	150 mg/m³
7440-23-5	sodium	870 mg/m³

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7440-44-0	carbon	2,000 mg/m³
7723-14-0	red phosphorus	18 mg/m³
7440-09-7	potassium	150 mg/m³
7439-95-4	magnesium	1,200 mg/m³
7782-50-5	chlorine	20 ppm
7440-32-6	titanium	2,000 mg/m³
1313-27-5	molybdenum trioxide	260 mg/m³

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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:** 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.

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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/m³, 2 ppm
REL	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5 mg/m³, 2 ppm
TLV	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5.2 mg/m³, 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 trough 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

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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/cm³ (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:	93.3 %
VOC content:	0.00 %
Solids content:	1.1 %
· **Other information**	No further relevant information available.

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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.

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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)**
None of the ingredients is listed.

· **NTP (National Toxicology Program)**
None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

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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.

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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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· **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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· **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

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15 Regulatory information

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

7732-18-5	Water		93.2939%
7697-37-2	Nitric Acid	Ox. Liq. 2, H272 Skin Corr. 1A, H314	5.0%
7440-70-2	calcium	Water-react. 2, H261	0.3%

· **Sara**

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

7697-37-2	Nitric Acid
7723-14-0	red phosphorus
7782-50-5	chlorine

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

7697-37-2	Nitric Acid
7723-14-0	red phosphorus
7429-90-5	aluminium
7782-50-5	chlorine
1313-27-5	molybdenum trioxide

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

7697-37-2	Nitric Acid
7440-70-2	calcium
7439-89-6	iron
7440-23-5	sodium
7440-44-0	carbon
7723-14-0	red phosphorus
7440-09-7	potassium
7439-95-4	magnesium
7704-34-9	sulfur
7429-90-5	aluminium
7782-50-5	chlorine
7440-32-6	titanium

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1313-27-5	molybdenum trioxide
7732-18-5	Water

· **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.

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**

7723-14-0	red phosphorus	D

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

7429-90-5	aluminium	A4
7782-50-5	chlorine	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.

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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)

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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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*
1 Identification

· **Product identifier**

· **Trade name: STD, Analytes B**
· **Article number** N9303829
· **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

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2 Hazard(s) identification

· **Classification of the substance or mixture**

Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2A H319 Causes serious eye irritation.

· **Label elements**
· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms** GHS07
· **Signal word** Warning
· **Hazard statements**
H315 Causes skin irritation.
H319 Causes serious eye irritation.
· **Precautionary statements**

P264	Wash thoroughly after handling.
P280	Wear protective gloves / eye protection / face protection.
P302+P352	If on skin: Wash with plenty of water.
P321	Specific treatment (see on this label).
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P337+P313	If eye irritation persists: Get medical advice/attention.

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

Health = 2
Fire = 0
Reactivity = 0

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· **HMIS-ratings (scale 0 - 4)**

HEALTH	2
FIRE	0
REACTIVITY	0

Health = 2
Fire = 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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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*	*2.0%*

· **Additional Components**		
7440-47-3	*chromium*	*0.002%*
7440-48-4	*cobalt* *Resp. Sens. 1, H334; Carc. 2, H351* *Skin Sens. 1, H317*	*0.002%*
7440-50-8	*copper*	*0.002%*
1317-35-7	*trimanganese tetraoxide*	*0.002%*
7440-02-0	*nickel* *Carc. 2, H351; STOT RE 1, H372* *Skin Sens. 1, H317*	*0.002%*
7440-62-2	*vanadium*	*0.002%*
7782-49-2	*selenium* *Acute Tox. 3, H301; Acute Tox. 3, H331* *STOT RE 2, H373*	*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%*
7440-66-6	*zinc* *Water-react. 2, H261*	*0.001%*
7440-38-2	*Arsenic* *Acute Tox. 3, H301; Acute Tox. 3, H331* *Carc. 1A, H350*	*0.001%*
7440-22-4	*silver*	*0.0005%*

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7732-18-5	Water	97.9835%

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4 First-aid measures

· **Description of first aid measures**
· **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. If symptoms persist, consult a doctor.
· **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.

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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.
· **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
· **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
7440-47-3	chromium	1.5 mg/m³
7440-48-4	cobalt	0.18 mg/m³
7440-50-8	copper	3 mg/m³
1317-35-7	trimanganese tetraoxide	4.2 mg/m³
7440-02-0	nickel	4.5 mg/m³
7440-62-2	vanadium	3 mg/m³
7782-49-2	selenium	0.6 mg/m³

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7440-43-9	cadmium (non-pyrophoric)	0.10 mg/m³
7440-66-6	zinc	6 mg/m³
7440-38-2	Arsenic	1.5 mg/m³
7440-22-4	silver	0.3 mg/m³

· **PAC-2:**

7697-37-2	Nitric Acid	24 ppm
7440-47-3	chromium	17 mg/m³
7440-48-4	cobalt	2 mg/m³
7440-50-8	copper	33 mg/m³
1317-35-7	trimanganese tetraoxide	6.9 mg/m³
7440-02-0	nickel	50 mg/m³
7440-62-2	vanadium	5.8 mg/m³
7782-49-2	selenium	6.6 mg/m³
7440-43-9	cadmium (non-pyrophoric)	0.76 mg/m³
7440-66-6	zinc	21 mg/m³
7440-38-2	Arsenic	17 mg/m³
7440-22-4	silver	170 mg/m³

· **PAC-3:**

7697-37-2	Nitric Acid	92 ppm
7440-47-3	chromium	99 mg/m³
7440-48-4	cobalt	20 mg/m³
7440-50-8	copper	200 mg/m³
1317-35-7	trimanganese tetraoxide	41 mg/m³
7440-02-0	nickel	99 mg/m³
7440-62-2	vanadium	35 mg/m³
7782-49-2	selenium	40 mg/m³
7440-43-9	cadmium (non-pyrophoric)	4.7 mg/m³
7440-66-6	zinc	120 mg/m³
7440-38-2	Arsenic	100 mg/m³
7440-22-4	silver	990 mg/m³

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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.

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· **Specific end use(s)** *No further relevant information available.*

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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/m³, 2 ppm
REL	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5 mg/m³, 2 ppm
TLV	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5.2 mg/m³, 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 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 trough 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

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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.
· **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.
· **Solubility in / Miscibility with**	
Water:	Fully miscible.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
Dynamic:	Not determined.
Kinematic:	Not determined.
· **Solvent content:**	
Water:	98.0 %
VOC content:	0.00 %
· **Other information**	No further relevant information available.

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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.

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· **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.

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11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**
· **Primary irritant effect:**
· **on the skin:** Irritant to skin and mucous membranes.
· **on the eye:** Irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		
7440-47-3	chromium	3
7440-48-4	cobalt	2B
7440-02-0	nickel	2B
7782-49-2	selenium	3
7440-43-9	cadmium (non-pyrophoric)	1
7440-38-2	Arsenic	1

· **NTP (National Toxicology Program)**		
7440-48-4	cobalt	R
7440-02-0	nickel	R
7440-43-9	cadmium (non-pyrophoric)	K
7440-38-2	Arsenic	K

· **OSHA-Ca (Occupational Safety & Health Administration)**	
7440-43-9	cadmium (non-pyrophoric)
7440-38-2	Arsenic

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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.

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· **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.

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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)
· **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

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· **Label**	*8*
· **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*

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15 Regulatory information

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

7732-18-5	*Water*		*97.9835%*
7697-37-2	*Nitric Acid*	*Ox. Liq. 2, H272* *Skin Corr. 1A, H314*	*2.0%*
7440-48-4	*cobalt*	*Resp. Sens. 1, H334; Carc. 2, H351* *Skin Sens. 1, H317*	*0.002%*

· **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
7440-47-3	chromium
7440-48-4	cobalt
7440-50-8	copper
1317-35-7	trimanganese tetraoxide
7440-02-0	nickel
7440-62-2	vanadium
7782-49-2	selenium
7440-43-9	cadmium (non-pyrophoric)
7440-66-6	zinc
7440-38-2	Arsenic
7440-22-4	silver

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

7697-37-2	Nitric Acid
7440-47-3	chromium
7440-48-4	cobalt
7440-50-8	copper
1317-35-7	trimanganese tetraoxide
7440-02-0	nickel
7440-62-2	vanadium
7782-49-2	selenium
7440-43-9	cadmium (non-pyrophoric)
7440-66-6	zinc
7440-38-2	Arsenic
7440-22-4	silver
7732-18-5	Water

· **Proposition 65**

· **Chemicals known to cause cancer:**

7440-48-4	cobalt
7440-02-0	nickel
7440-43-9	cadmium (non-pyrophoric)
7440-38-2	Arsenic

· **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)

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

7440-43-9	cadmium (non-pyrophoric)

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· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**		
7440-47-3	chromium	D
7440-50-8	copper	D
1317-35-7	trimanganese tetraoxide	D
7782-49-2	selenium	D
7440-43-9	cadmium (non-pyrophoric)	B1
7440-66-6	zinc	D, I, II
7440-38-2	Arsenic	A
7440-22-4	silver	D

· **TLV (Threshold Limit Value established by ACGIH)**		
7440-47-3	chromium	A4
7440-48-4	cobalt	A3
7440-02-0	nickel	A5
7440-43-9	cadmium (non-pyrophoric)	A2
7440-38-2	Arsenic	A1

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**	
7440-02-0	nickel
7440-43-9	cadmium (non-pyrophoric)
7440-38-2	Arsenic

· **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.

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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 Irrit. 2: Skin corrosion/irritation – Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
· **** Data compared to the previous version altered.***

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1 Identification

· **Product identifier**

· **Trade name: STD, Spike Sample Standard 1 (water)**
· **Article number** N9303839
· **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

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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)**

Health = 3
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = 3
Fire = 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.*

*

3 Composition/information on ingredients

· **Chemical characterization: Substances**
· **Identification number(s)**
· **EC number:** *231-791-2*
· **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%*

· **Additional Components**		
87-69-4	*(+)-tartaric acid* *Eye Irrit. 2A, H319*	*0.9%*
7664-39-3	*Hydrofluoric acid* *Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330* *Skin Corr. 1A, H314*	*0.1%*
7439-89-6	*iron*	*0.05%*
7440-66-6	*zinc* *Water-react. 2, H261*	*0.025%*
7440-39-3	*barium* *Water-react. 2, H261*	*0.025%*
7440-47-3	*chromium*	*0.01%*
7440-50-8	*copper*	*0.01%*

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7439-96-5	manganese	0.01%
7440-02-0	nickel Carc. 2, H351; STOT RE 1, H372 Skin Sens. 1, H317	0.01%
7440-36-0	antimony	0.01%
7440-62-2	vanadium	0.01%
7440-48-4	cobalt Resp. Sens. 1, H334; Carc. 2, H351 Skin Sens. 1, H317	0.01%
7439-92-1	lead Acute Tox. 3, H301 Carc. 2, H351; Repr. 1A, H360-H362 Acute Tox. 4, H332	0.005%
7440-38-2	Arsenic Acute Tox. 3, H301; Acute Tox. 3, H331 Carc. 1A, H350	0.005%
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	0.0025%
7440-43-9	cadmium (non-pyrophoric) Acute Tox. 2, H330 Muta. 2, H341; Carc. 1B, H350; Repr. 2, H361; STOT RE 1, H372	0.0025%
7782-49-2	selenium Acute Tox. 3, H301; Acute Tox. 3, H331 STOT RE 2, H373	0.0025%
7440-28-0	thallium Acute Tox. 2, H300; Acute Tox. 2, H330 STOT RE 2, H373	0.0025%
7440-22-4	silver	0.0025%
7732-18-5	Water	93.8075%

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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.
Rub in Ca-gluconate solution or Ca-gluconate gel immediately.
· **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.

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· **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.

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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.
See Section 13 for disposal information.
· **Protective Action Criteria for Chemicals**

· **PAC-1:**		
7697-37-2	Nitric Acid	0.16 ppm
87-69-4	(+)-tartaric acid	1.6 mg/m³
7439-89-6	iron	3.2 mg/m³
7440-66-6	zinc	6 mg/m³
7440-39-3	barium	1.5 mg/m³
7440-47-3	chromium	1.5 mg/m³
7440-50-8	copper	3 mg/m³
7439-96-5	manganese	3 mg/m³
7440-02-0	nickel	4.5 mg/m³
7440-36-0	antimony	1.5 mg/m³
7440-62-2	vanadium	3 mg/m³
7440-48-4	cobalt	0.18 mg/m³
7439-92-1	lead	0.15 mg/m³
7440-38-2	Arsenic	1.5 mg/m³
7440-41-7	beryllium	0.0023 mg/m³
7440-43-9	cadmium (non-pyrophoric)	0.10 mg/m³

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7782-49-2	selenium	0.6 mg/m³
7440-28-0	thallium	0.06 mg/m³
7440-22-4	silver	0.3 mg/m³

· **PAC-2:**

7697-37-2	Nitric Acid	24 ppm
87-69-4	(+)-tartaric acid	17 mg/m³
7439-89-6	iron	35 mg/m³
7440-66-6	zinc	21 mg/m³
7440-39-3	barium	180 mg/m³
7440-47-3	chromium	17 mg/m³
7440-50-8	copper	33 mg/m³
7439-96-5	manganese	5 mg/m³
7440-02-0	nickel	50 mg/m³
7440-36-0	antimony	13 mg/m³
7440-62-2	vanadium	5.8 mg/m³
7440-48-4	cobalt	2 mg/m³
7439-92-1	lead	120 mg/m³
7440-38-2	Arsenic	17 mg/m³
7440-41-7	beryllium	0.025 mg/m³
7440-43-9	cadmium (non-pyrophoric)	0.76 mg/m³
7782-49-2	selenium	6.6 mg/m³
7440-28-0	thallium	3.3 mg/m³
7440-22-4	silver	170 mg/m³

· **PAC-3:**

7697-37-2	Nitric Acid	92 ppm
87-69-4	(+)-tartaric acid	100 mg/m³
7439-89-6	iron	150 mg/m³
7440-66-6	zinc	120 mg/m³
7440-39-3	barium	1,100 mg/m³
7440-47-3	chromium	99 mg/m³
7440-50-8	copper	200 mg/m³
7439-96-5	manganese	1,800 mg/m³
7440-02-0	nickel	99 mg/m³
7440-36-0	antimony	80 mg/m³
7440-62-2	vanadium	35 mg/m³
7440-48-4	cobalt	20 mg/m³
7439-92-1	lead	700 mg/m³
7440-38-2	Arsenic	100 mg/m³
7440-41-7	beryllium	0.1 mg/m³
7440-43-9	cadmium (non-pyrophoric)	4.7 mg/m³

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7782-49-2	selenium	40 mg/m³
7440-28-0	thallium	20 mg/m³
7440-22-4	silver	990 mg/m³

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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:** 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.

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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/m³, 2 ppm
REL	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5 mg/m³, 2 ppm
TLV	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5.2 mg/m³, 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.
· **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

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· ***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 trough 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

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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.*
· ***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):***	*1.11 g/cm³ (9.26295 lbs/gal)*
· ***Relative density***	*Not determined.*
· ***Vapor density***	*Not determined.*
· ***Evaporation rate***	*Not determined.*
· ***Solubility in / Miscibility with***	
Water:	*Not miscible or difficult to mix.*

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· **Partition coefficient (n-octanol/water):** Not determined.

· **Viscosity:**
Dynamic: Not determined.
Kinematic: Not determined.

· **Solvent content:**
Water: 93.8 %
VOC content: 0.00 %

Solids content: 0.2 %
· **Other information** No further relevant information available.

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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.

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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.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		
7440-47-3	chromium	3
7440-02-0	nickel	2B
7440-48-4	cobalt	2B
7439-92-1	lead	2B
7440-38-2	Arsenic	1

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7440-41-7	beryllium	1
7440-43-9	cadmium (non-pyrophoric)	1
7782-49-2	selenium	3

· **NTP (National Toxicology Program)**		
7440-02-0	nickel	R
7440-48-4	cobalt	R
7439-92-1	lead	R
7440-38-2	Arsenic	K
7440-41-7	beryllium	K
7440-43-9	cadmium (non-pyrophoric)	K

· **OSHA-Ca (Occupational Safety & Health Administration)**	
7440-38-2	Arsenic
7440-43-9	cadmium (non-pyrophoric)

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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.

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14 Transport information

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

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· **Environmental hazards:**	
· **Marine pollutant:**	No Symbol (fish and tree)
· **Special precautions for user**	Warning: Corrosive substances
· **Danger code (Kemler):**	80
· **EMS Number:**	F-A,S-B
· **Segregation groups**	Acids
· **Stowage Category**	B
· **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
· **Remarks:**	Special marking with the symbol (fish and tree).
· **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)**	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, HYDROFLUORIC ACID), 8, III

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15 Regulatory information

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

7732-18-5	Water		93.8075%
7697-37-2	Nitric Acid	Ox. Liq. 2, H272 Skin Corr. 1A, H314	5.0%
87-69-4	(+)-tartaric acid	Eye Irrit. 2A, H319	0.9%

· **Sara**

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

7697-37-2	Nitric Acid

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

7697-37-2	Nitric Acid
7440-66-6	zinc

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7440-39-3	barium
7440-47-3	chromium
7440-50-8	copper
7439-96-5	manganese
7440-02-0	nickel
7440-36-0	antimony
7440-62-2	vanadium
7440-48-4	cobalt
7439-92-1	lead
7440-38-2	Arsenic
7440-41-7	beryllium
7440-43-9	cadmium (non-pyrophoric)
7782-49-2	selenium
7440-28-0	thallium
7440-22-4	silver

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

7697-37-2	Nitric Acid
87-69-4	(+)-tartaric acid
7439-89-6	iron
7440-66-6	zinc
7440-39-3	barium
7440-47-3	chromium
7440-50-8	copper
7439-96-5	manganese
7440-02-0	nickel
7440-36-0	antimony
7440-62-2	vanadium
7440-48-4	cobalt
7439-92-1	lead
7440-38-2	Arsenic
7440-41-7	beryllium
7440-43-9	cadmium (non-pyrophoric)
7782-49-2	selenium
7440-28-0	thallium
7440-22-4	silver
7732-18-5	Water

· **Proposition 65**

· **Chemicals known to cause cancer:**	
7440-02-0	nickel

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7440-48-4	cobalt
7439-92-1	lead
7440-38-2	Arsenic
7440-41-7	beryllium
7440-43-9	cadmium (non-pyrophoric)

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

7439-92-1	lead

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

7439-92-1	lead
7440-43-9	cadmium (non-pyrophoric)

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

7439-92-1	lead
7440-43-9	cadmium (non-pyrophoric)

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**

7440-66-6	zinc	D, I, II
7440-39-3	barium	D, CBD(inh), NL(oral)
7440-47-3	chromium	D
7440-50-8	copper	D
7439-96-5	manganese	D
7439-92-1	lead	B2
7440-38-2	Arsenic	A
7440-41-7	beryllium	B1, K/L(inh), CBD(oral)
7440-43-9	cadmium (non-pyrophoric)	B1
7782-49-2	selenium	D
7440-22-4	silver	D

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

7440-39-3	barium	A4
7440-47-3	chromium	A4
7440-02-0	nickel	A5
7440-48-4	cobalt	A3
7439-92-1	lead	A3
7440-38-2	Arsenic	A1
7440-41-7	beryllium	A1
7440-43-9	cadmium (non-pyrophoric)	A2

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

7440-02-0	nickel
7440-38-2	Arsenic
7440-41-7	beryllium

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7440-43-9	cadmium (non-pyrophoric)

· **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.

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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
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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1 Identification

· **Product identifier**

· **Trade name: STD, Spike Sample Standard 2 (soil)**
· **Article number** N9303840
· **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

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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)**

Health = 3
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = 3
Fire = 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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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:**			
7697-37-2	*Nitric Acid*	*Ox. Liq. 2, H272* *Skin Corr. 1A, H314*	*5.0%*

· **Additional Components**		
7440-39-3	*barium* *Water-react. 2, H261*	*0.025%*
7440-47-3	*chromium*	*0.025%*
7440-50-8	*copper*	*0.025%*
7440-66-6	*zinc* *Water-react. 2, H261*	*0.025%*
147-71-7	*(-)-tartaric acid* *Skin Irrit. 2, H315*	*0.02%*
7440-62-2	*vanadium*	*0.015%*
7440-02-0	*nickel* *Carc. 2, H351; STOT RE 1, H372* *Skin Sens. 1, H317*	*0.0125%*

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7439-92-1	lead Acute Tox. 3, H301 Carc. 2, H351; Repr. 1A, H360-H362 Acute Tox. 4, H332	0.01%
7664-39-3	Hydrofluoric acid Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330 Skin Corr. 1A, H314	0.01%
7440-48-4	cobalt Resp. Sens. 1, H334; Carc. 2, H351 Skin Sens. 1, H317	0.01%
7440-36-0	antimony	0.01%
7440-38-2	Arsenic Acute Tox. 3, H301; Acute Tox. 3, H331 Carc. 1A, H350	0.005%
7440-43-9	cadmium (non-pyrophoric) Acute Tox. 2, H330 Muta. 2, H341; Carc. 1B, H350; Repr. 2, H361; STOT RE 1, H372	0.005%
7440-28-0	thallium Acute Tox. 2, H300; Acute Tox. 2, H330 STOT RE 2, H373	0.0025%
7440-22-4	silver	0.0025%
7782-49-2	selenium Acute Tox. 3, H301; Acute Tox. 3, H331 STOT RE 2, H373	0.0025%
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	0.0025%
7732-18-5	Water	94.7925%

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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.

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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.

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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
7440-39-3	barium	1.5 mg/m³
7440-47-3	chromium	1.5 mg/m³
7440-50-8	copper	3 mg/m³
7440-66-6	zinc	6 mg/m³
7440-62-2	vanadium	3 mg/m³
7440-02-0	nickel	4.5 mg/m³
7439-92-1	lead	0.15 mg/m³
7440-48-4	cobalt	0.18 mg/m³
7440-36-0	antimony	1.5 mg/m³
7440-38-2	Arsenic	1.5 mg/m³
7440-43-9	cadmium (non-pyrophoric)	0.10 mg/m³
7440-28-0	thallium	0.06 mg/m³
7440-22-4	silver	0.3 mg/m³
7782-49-2	selenium	0.6 mg/m³
7440-41-7	beryllium	0.0023 mg/m³

· **PAC-2:**		
7697-37-2	Nitric Acid	24 ppm

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7440-39-3	barium	180 mg/m³
7440-47-3	chromium	17 mg/m³
7440-50-8	copper	33 mg/m³
7440-66-6	zinc	21 mg/m³
7440-62-2	vanadium	5.8 mg/m³
7440-02-0	nickel	50 mg/m³
7439-92-1	lead	120 mg/m³
7440-48-4	cobalt	2 mg/m³
7440-36-0	antimony	13 mg/m³
7440-38-2	Arsenic	17 mg/m³
7440-43-9	cadmium (non-pyrophoric)	0.76 mg/m³
7440-28-0	thallium	3.3 mg/m³
7440-22-4	silver	170 mg/m³
7782-49-2	selenium	6.6 mg/m³
7440-41-7	beryllium	0.025 mg/m³

· **PAC-3:**

7697-37-2	Nitric Acid	92 ppm
7440-39-3	barium	1,100 mg/m³
7440-47-3	chromium	99 mg/m³
7440-50-8	copper	200 mg/m³
7440-66-6	zinc	120 mg/m³
7440-62-2	vanadium	35 mg/m³
7440-02-0	nickel	99 mg/m³
7439-92-1	lead	700 mg/m³
7440-48-4	cobalt	20 mg/m³
7440-36-0	antimony	80 mg/m³
7440-38-2	Arsenic	100 mg/m³
7440-43-9	cadmium (non-pyrophoric)	4.7 mg/m³
7440-28-0	thallium	20 mg/m³
7440-22-4	silver	990 mg/m³
7782-49-2	selenium	40 mg/m³
7440-41-7	beryllium	0.1 mg/m³

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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:** The product is not flammable.

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· **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/m³, 2 ppm
REL	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5 mg/m³, 2 ppm
TLV	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5.2 mg/m³, 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.*
· **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 trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

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· **Eye protection:**

Tightly sealed goggles or safety glasses

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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.*
· **Explosion limits:**	
Lower:	*Not determined.*
Upper:	*Not determined.*
· **Vapor pressure at 20 °C (68 °F):**	*1 hPa (0.8 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.*
· **Solubility in / Miscibility with**	
Water:	*Fully miscible.*
· **Partition coefficient (n-octanol/water):**	*Not determined.*
· **Viscosity:**	
Dynamic:	*Not determined.*
Kinematic:	*Not determined.*
· **Solvent content:**	
Water:	*94.8 %*

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VOC content:	0.00 %
Solids content:	0.2 %
· **Other information**	No further relevant information available.

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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.

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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.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		
7440-47-3	chromium	3
7440-02-0	nickel	2B
7439-92-1	lead	2B
7440-48-4	cobalt	2B
7440-38-2	Arsenic	1
7440-43-9	cadmium (non-pyrophoric)	1
7782-49-2	selenium	3
7440-41-7	beryllium	1

· **NTP (National Toxicology Program)**		
7440-02-0	nickel	R
7439-92-1	lead	R

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7440-48-4	cobalt	R
7440-38-2	Arsenic	K
7440-43-9	cadmium (non-pyrophoric)	K
7440-41-7	beryllium	K

· **OSHA-Ca (Occupational Safety & Health Administration)**	
7440-38-2	Arsenic
7440-43-9	cadmium (non-pyrophoric)

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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.

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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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· **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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· **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

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15 Regulatory information

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

7732-18-5	Water		94.7925%
7697-37-2	Nitric Acid	Ox. Liq. 2, H272 Skin Corr. 1A, H314	5.0%
7440-47-3	chromium		0.025%

· **Sara**

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

7697-37-2	Nitric Acid

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

7697-37-2	Nitric Acid
7440-39-3	barium
7440-47-3	chromium
7440-50-8	copper
7440-66-6	zinc
7440-62-2	vanadium
7440-02-0	nickel
7439-92-1	lead
7440-48-4	cobalt
7440-36-0	antimony
7440-38-2	Arsenic
7440-43-9	cadmium (non-pyrophoric)
7440-28-0	thallium
7440-22-4	silver
7782-49-2	selenium
7440-41-7	beryllium

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

7697-37-2	Nitric Acid
7440-39-3	barium
7440-47-3	chromium

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7440-50-8	copper
7440-66-6	zinc
147-71-7	(-)-tartaric acid
7440-62-2	vanadium
7440-02-0	nickel
7439-92-1	lead
7440-48-4	cobalt
7440-36-0	antimony
7440-38-2	Arsenic
7440-43-9	cadmium (non-pyrophoric)
7440-28-0	thallium
7440-22-4	silver
7782-49-2	selenium
7440-41-7	beryllium
7732-18-5	Water

· **Proposition 65**

· **Chemicals known to cause cancer:**	
7440-02-0	nickel
7439-92-1	lead
7440-48-4	cobalt
7440-38-2	Arsenic
7440-43-9	cadmium (non-pyrophoric)
7440-41-7	beryllium

· **Chemicals known to cause reproductive toxicity for females:**	
7439-92-1	lead

· **Chemicals known to cause reproductive toxicity for males:**	
7439-92-1	lead
7440-43-9	cadmium (non-pyrophoric)

· **Chemicals known to cause developmental toxicity:**	
7439-92-1	lead
7440-43-9	cadmium (non-pyrophoric)

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**		
7440-39-3	barium	D, CBD(inh), NL(oral)
7440-47-3	chromium	D
7440-50-8	copper	D
7440-66-6	zinc	D, I, II
7439-92-1	lead	B2
7440-38-2	Arsenic	A

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7440-43-9	cadmium (non-pyrophoric)	B1
7440-22-4	silver	D
7782-49-2	selenium	D
7440-41-7	beryllium	B1, K/L(inh), CBD(oral)

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

7440-39-3	barium	A4
7440-47-3	chromium	A4
7440-02-0	nickel	A5
7439-92-1	lead	A3
7440-48-4	cobalt	A3
7440-38-2	Arsenic	A1
7440-43-9	cadmium (non-pyrophoric)	A2
7440-41-7	beryllium	A1

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

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

· **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.

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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
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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*
1 Identification

· **Product identifier**

· **Trade name: STD, Memory Test 1**
· **Article number** N9303835
· **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

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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)**

Health = 3
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = 3
Fire = 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.*

*

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

· **Additional Components**		
7439-89-6	*iron*	*0.1%*
7439-95-4	*magnesium* *Pyr. Sol. 1, H250; Water-react. 1, H260*	*0.1%*
7440-09-7	*potassium* *Water-react. 1, H260* *Skin Corr. 1B, H314*	*0.1%*
7440-23-5	*sodium* *Water-react. 1, H260* *Skin Corr. 1B, H314*	*0.1%*
7429-90-5	*aluminium*	*0.1%*

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7440-70-2	calcium Water-react. 2, H261	0.1%
7440-39-3	barium Water-react. 2, H261	0.002%
7439-92-1	lead Acute Tox. 3, H301 Carc. 2, H351; Repr. 1A, H360-H362 Acute Tox. 4, H332	0.002%
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	0.002%
7440-02-0	nickel Carc. 2, H351; STOT RE 1, H372 Skin Sens. 1, H317	0.002%
7440-38-2	Arsenic Acute Tox. 3, H301; Acute Tox. 3, H331 Carc. 1A, H350	0.002%
7440-43-9	cadmium (non-pyrophoric) Acute Tox. 2, H330 Muta. 2, H341; Carc. 1B, H350; Repr. 2, H361; STOT RE 1, H372	0.002%
7782-49-2	selenium Acute Tox. 3, H301; Acute Tox. 3, H331 STOT RE 2, H373	0.002%
7440-22-4	silver	0.002%
7440-47-3	chromium	0.002%
7440-28-0	thallium Acute Tox. 2, H300; Acute Tox. 2, H330 STOT RE 2, H373	0.002%
7440-62-2	vanadium	0.002%
7440-48-4	cobalt Resp. Sens. 1, H334; Carc. 2, H351 Skin Sens. 1, H317	0.002%
7440-66-6	zinc Water-react. 2, H261	0.002%
7440-50-8	copper	0.002%
7439-96-5	manganese	0.002%
7732-18-5	Water	94.37%

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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.

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· ***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.

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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.*

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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*
7439-89-6	*iron*	*3.2 mg/m³*
7439-95-4	*magnesium*	*18 mg/m³*
7440-09-7	*potassium*	*2.3 mg/m³*
7440-23-5	*sodium*	*13 mg/m³*
7440-39-3	*barium*	*1.5 mg/m³*
7439-92-1	*lead*	*0.15 mg/m³*
7440-41-7	*beryllium*	*0.0023 mg/m³*
7440-02-0	*nickel*	*4.5 mg/m³*
7440-38-2	*Arsenic*	*1.5 mg/m³*
7440-43-9	*cadmium (non-pyrophoric)*	*0.10 mg/m³*
7782-49-2	*selenium*	*0.6 mg/m³*

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7440-22-4	silver	0.3 mg/m³
7440-47-3	chromium	1.5 mg/m³
7440-28-0	thallium	0.06 mg/m³
7440-62-2	vanadium	3 mg/m³
7440-48-4	cobalt	0.18 mg/m³
7440-66-6	zinc	6 mg/m³
7440-50-8	copper	3 mg/m³
7439-96-5	manganese	3 mg/m³

· **PAC-2:**

7697-37-2	Nitric Acid	24 ppm
7439-89-6	iron	35 mg/m³
7439-95-4	magnesium	200 mg/m³
7440-09-7	potassium	25 mg/m³
7440-23-5	sodium	140 mg/m³
7440-39-3	barium	180 mg/m³
7439-92-1	lead	120 mg/m³
7440-41-7	beryllium	0.025 mg/m³
7440-02-0	nickel	50 mg/m³
7440-38-2	Arsenic	17 mg/m³
7440-43-9	cadmium (non-pyrophoric)	0.76 mg/m³
7782-49-2	selenium	6.6 mg/m³
7440-22-4	silver	170 mg/m³
7440-47-3	chromium	17 mg/m³
7440-28-0	thallium	3.3 mg/m³
7440-62-2	vanadium	5.8 mg/m³
7440-48-4	cobalt	2 mg/m³
7440-66-6	zinc	21 mg/m³
7440-50-8	copper	33 mg/m³
7439-96-5	manganese	5 mg/m³

· **PAC-3:**

7697-37-2	Nitric Acid	92 ppm
7439-89-6	iron	150 mg/m³
7439-95-4	magnesium	1,200 mg/m³
7440-09-7	potassium	150 mg/m³
7440-23-5	sodium	870 mg/m³
7440-39-3	barium	1,100 mg/m³
7439-92-1	lead	700 mg/m³
7440-41-7	beryllium	0.1 mg/m³
7440-02-0	nickel	99 mg/m³
7440-38-2	Arsenic	100 mg/m³

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7440-43-9	cadmium (non-pyrophoric)	4.7 mg/m³
7782-49-2	selenium	40 mg/m³
7440-22-4	silver	990 mg/m³
7440-47-3	chromium	99 mg/m³
7440-28-0	thallium	20 mg/m³
7440-62-2	vanadium	35 mg/m³
7440-48-4	cobalt	20 mg/m³
7440-66-6	zinc	120 mg/m³
7440-50-8	copper	200 mg/m³
7439-96-5	manganese	1,800 mg/m³

*
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/m³, 2 ppm
REL	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5 mg/m³, 2 ppm
TLV	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5.2 mg/m³, 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.

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· **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 trough 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

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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.*
· **Explosion limits:**	
Lower:	*Not determined.*
Upper:	*Not determined.*

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Trade name: STD, Memory Test 1

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· **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.
· **Solubility in / Miscibility with Water:**	Fully miscible.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
Dynamic:	Not determined.
Kinematic:	Not determined.
· **Solvent content:**	
Water:	94.4 %
VOC content:	0.00 %
Solids content:	0.5 %
· **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.

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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)**		
7439-92-1	lead	2B
7440-41-7	beryllium	1
7440-02-0	nickel	2B
7440-38-2	Arsenic	1
7440-43-9	cadmium (non-pyrophoric)	1
7782-49-2	selenium	3
7440-47-3	chromium	3
7440-48-4	cobalt	2B

· **NTP (National Toxicology Program)**		
7439-92-1	lead	R
7440-41-7	beryllium	K
7440-02-0	nickel	R
7440-38-2	Arsenic	K
7440-43-9	cadmium (non-pyrophoric)	K
7440-48-4	cobalt	R

· **OSHA-Ca (Occupational Safety & Health Administration)**	
7440-38-2	Arsenic
7440-43-9	cadmium (non-pyrophoric)

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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 product to reach ground water, water course or sewage system, even in small quantities.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.
Danger to drinking water if even extremely small quantities leak into the ground.
· **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.*

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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)*
· **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*

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· **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
· **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		94.37%
7697-37-2	Nitric Acid	Ox. Liq. 2, H272 Skin Corr. 1A, H314	5.0%
7439-95-4	magnesium	Pyr. Sol. 1, H250; Water-react. 1, H260	0.1%

· **Sara**

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

7697-37-2	Nitric Acid

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

7697-37-2	Nitric Acid
7429-90-5	aluminium
7440-39-3	barium
7439-92-1	lead

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7440-41-7	beryllium
7440-02-0	nickel
7440-38-2	Arsenic
7440-43-9	cadmium (non-pyrophoric)
7782-49-2	selenium
7440-22-4	silver
7440-47-3	chromium
7440-28-0	thallium
7440-62-2	vanadium
7440-48-4	cobalt
7440-66-6	zinc
7440-50-8	copper
7439-96-5	manganese

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

7697-37-2	Nitric Acid
7439-89-6	iron
7439-95-4	magnesium
7440-09-7	potassium
7440-23-5	sodium
7429-90-5	aluminium
7440-70-2	calcium
7440-39-3	barium
7439-92-1	lead
7440-41-7	beryllium
7440-02-0	nickel
7440-38-2	Arsenic
7440-43-9	cadmium (non-pyrophoric)
7782-49-2	selenium
7440-22-4	silver
7440-47-3	chromium
7440-28-0	thallium
7440-62-2	vanadium
7440-48-4	cobalt
7440-66-6	zinc
7440-50-8	copper
7439-96-5	manganese
7732-18-5	Water

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· **Proposition 65**

· **Chemicals known to cause cancer:**	
7439-92-1	lead
7440-41-7	beryllium
7440-02-0	nickel
7440-38-2	Arsenic
7440-43-9	cadmium (non-pyrophoric)
7440-48-4	cobalt

· **Chemicals known to cause reproductive toxicity for females:**	
7439-92-1	lead

· **Chemicals known to cause reproductive toxicity for males:**	
7439-92-1	lead
7440-43-9	cadmium (non-pyrophoric)

· **Chemicals known to cause developmental toxicity:**	
7439-92-1	lead
7440-43-9	cadmium (non-pyrophoric)

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**		
7440-39-3	barium	D, CBD(inh), NL(oral)
7439-92-1	lead	B2
7440-41-7	beryllium	B1, K/L(inh), CBD(oral)
7440-38-2	Arsenic	A
7440-43-9	cadmium (non-pyrophoric)	B1
7782-49-2	selenium	D
7440-22-4	silver	D
7440-47-3	chromium	D
7440-66-6	zinc	D, I, II
7440-50-8	copper	D
7439-96-5	manganese	D

· **TLV (Threshold Limit Value established by ACGIH)**		
7429-90-5	aluminium	A4
7440-39-3	barium	A4
7439-92-1	lead	A3
7440-41-7	beryllium	A1
7440-02-0	nickel	A5
7440-38-2	Arsenic	A1
7440-43-9	cadmium (non-pyrophoric)	A2
7440-47-3	chromium	A4
7440-48-4	cobalt	A3

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· NIOSH-Ca (National Institute for Occupational Safety and Health)	
7440-41-7	beryllium
7440-02-0	nickel
7440-38-2	Arsenic
7440-43-9	cadmium (non-pyrophoric)

· **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 3 (Self-assessment): extremely 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
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

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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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*
1 Identification

· **Product identifier**

· **Trade name: STD, Memory Test 2**
· **Article number** N9303836
· **Application of the substance / the mixture** Laboratory chemicals

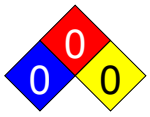
· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**

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)**



Health = 0
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**

Health = 1
Fire = 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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*
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:** Void

· **Additional Components**		
12125-02-9	ammonium chloride Acute Tox. 4, H302; Eye Irrit. 2A, H319	0.72%
7440-44-0	carbon Flam. Sol. 1, H228	0.2%
7723-14-0	red phosphorus Flam. Liq. 2, H225; Flam. Sol. 1, H228	0.1%
7704-34-9	sulfur Skin Irrit. 2, H315	0.1%
7664-39-3	Hydrofluoric acid Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330 Skin Corr. 1A, H314	0.1%
7440-32-6	titanium Self-heat. 1, H251; Water-react. 1, H260	0.002%
7440-36-0	antimony	0.002%
7439-98-7	molybdenum	0.002%
7732-18-5	Water	98.774%

*
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:** Rub in Ca-gluconate solution or Ca-gluconate gel immediately.
· **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.

*
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.

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· **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.
· **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
· **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:**		
12125-02-9	ammonium chloride	20 mg/m³
7440-44-0	carbon	6 mg/m³
7723-14-0	red phosphorus	0.27 mg/m³
7440-32-6	titanium	30 mg/m³
7440-36-0	antimony	1.5 mg/m³
7439-98-7	molybdenum	30 mg/m³

· **PAC-2:**		
12125-02-9	ammonium chloride	54 mg/m³
7440-44-0	carbon	330 mg/m³
7723-14-0	red phosphorus	3 mg/m³
7440-32-6	titanium	330 mg/m³
7440-36-0	antimony	13 mg/m³
7439-98-7	molybdenum	330 mg/m³

· **PAC-3:**		
12125-02-9	ammonium chloride	330 mg/m³
7440-44-0	carbon	2,000 mg/m³
7723-14-0	red phosphorus	18 mg/m³
7440-32-6	titanium	2,000 mg/m³
7440-36-0	antimony	80 mg/m³
7439-98-7	molybdenum	2,000 mg/m³

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7 Handling and storage

· **Handling:**
· **Precautions for safe handling** No special measures required.

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· **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.

· **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 trough 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:**	Odorless
· **Odor threshold:**	Not determined.
· **pH-value:**	Not determined.
· **Change in condition**	
Melting point/Melting range:	0 °C (32 °F)

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Trade name: STD, Memory Test 2

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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):**	0.99536 g/cm³ (8.30628 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:	98.8 %
VOC content:	0.00 %
Solids content:	0.1 %
· **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.

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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.

· **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

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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.
· **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.

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

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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.*
· **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*

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15 Regulatory information

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

7732-18-5	*Water*		*98.774%*
12125-02-9	*ammonium chloride*	*Acute Tox. 4, H302; Eye Irrit. 2A, H319*	*0.72%*
7440-44-0	*carbon*	*Flam. Sol. 1, H228*	*0.2%*

· **Sara**

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

7723-14-0	*red phosphorus*

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

7723-14-0	*red phosphorus*
7440-36-0	*antimony*

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

12125-02-9	*ammonium chloride*
7440-44-0	*carbon*
7723-14-0	*red phosphorus*
7704-34-9	*sulfur*

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7440-32-6	titanium
7440-36-0	antimony
7439-98-7	molybdenum
7732-18-5	Water

· **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.

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**

7723-14-0	red phosphorus	D

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

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:** Water hazard class 1 (Self-assessment): slightly hazardous for water.
· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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