

**PlasmaCAL custom calibration standard for ICP-AES and ICP-MS**

Revision: 15.08.2023

Product code: AC18.08776

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**1. Identification**
**Product identifier**

PlasmaCAL custom calibration standard for ICP-AES and ICP-MS

**Relevant identified uses of the substance or mixture and uses advised against**
**Use of the substance/mixture**

 Reagents and laboratory chemicals  
 Only for laboratory and analysis purposes.

**Uses advised against**

Do not use for private purposes (household).

**Details of the supplier of the safety data sheet**
**Details of the supplier of the safety data sheet**

Company name:	AnalytiChem Services, Unipessoal, Lda
Street:	Rua de Júlio Dinis 676 7º
Place:	P-4050-320 Porto
Telephone:	+351 226002917
E-mail:	info@analytichem.com
Contact person:	SDS service department
E-mail:	SDS@analytichem.com
Internet:	www.analytichem.com
Responsible Department:	SDS service department

**Supplier or manufacturer details**

Company name:	AnalytiChem Canada Inc.	
	Québec, CANADA	
Street:	21800 Clark Graham Ave	
Place:	CDN-H9X 4B6 Baie-D'Urfé	
Telephone:	+1 (800) 361-6820	Telefax: +1 (800) 253-5549
E-mail:	info@analytichem.com	
Contact person:	SDS service department	
E-mail:	SDS@analytichem.com	
Internet:	www.analytichem.com	
Responsible Department:	AnalytiChem:	
	EU-Belgium: AnalytiChem Belgium, Industriezone "De Arend" 2, 8210 Zedelgem, Belgium, +32 50 28 83 20	
	EU-Germany: AnalytiChem Germany, Stempelstrasse 6, 47167 Duisburg, Germany, +49 203 51 94 – 200	
	EU-Netherlands: AnalytiChem Netherlands, Communicatieweg 7, 3641 SG Mijdrecht, The Netherlands, +31 297 286848	
	UK: AnalytiChem UK, Unit 7 Launton Business Center, Murdock Road, Bicester, OX26 4XB, England, +44 1869 355 500	
	USA: AnalytiChem USA, 227 China Road, Winslow, Maine, 04901, United States, +1 800-244-8378	
	Canada: AnalytiChem Canada, 21800 Clark Graham Avenue, Baie d'Urfe, H9X 4B6, Canada, +1 514-457-0701	
	Australia: ORE Research & Exploration Pty Ltd, 37A Hosie Street, Bayswater North, 3153, Australia, +61 3 9729 0333	
<b>Emergency telephone number:</b>	+1 703-741-5970 (CHEMTREC)	

**Further Information**

This product is a mixture. REACH Registration Number see section 3.

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**2. Hazard identification**

**Classification of the substance or mixture**

**Regulation (EC) No 1272/2008**

- Met. Corr. 1; H290
- Acute Tox. 3; H311
- Acute Tox. 4; H302
- Skin Corr. 1B; H314
- Eye Dam. 1; H318

Full text of hazard statements: see SECTION 16.

**Label elements**

**Regulation (EC) No 1272/2008**

**Hazard components for labelling**

- nitric acid
- Hydrofluoric acid

**Signal word:** Danger

**Pictograms:**



**Hazard statements**

- H290 May be corrosive to metals.
- H302 Harmful if swallowed.
- H311 Toxic in contact with skin.
- H314 Causes severe skin burns and eye damage.
- EUH071 Corrosive to the respiratory tract.

**Precautionary statements**

- P260 Do not breathe dust/fume/gas/mist/vapours/spray.
- P280 Wear protective gloves/protective clothing and eye protection/face protection.
- P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
- 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.

**Other hazards**

No data available

**3. Composition/information on ingredients**

**Mixtures**

**Chemical characterization**

Mixtures in aqueous solution

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**Relevant ingredients**

CAS No	Chemical name			Quantity
	EC No	Index No	REACH No	
	Classification (Regulation (EC) No 1272/2008)			
7697-37-2	nitric acid			5 - < 10 %
	231-714-2	007-030-00-3	01-2119487297-23	
	Ox. Liq. 3, Met. Corr. 1, Acute Tox. 3, Skin Corr. 1A, Eye Dam. 1; H272 H290 H331 H314 H318 EUH071			
7664-39-3	hydrofluoric acid ... %			< 1 %
	231-634-8	009-003-00-1		
	Acute Tox. 1, Acute Tox. 2, Acute Tox. 2, Skin Corr. 1A, Eye Dam. 1; H310 H330 H300 H314 H318			

Full text of H statements: see section 16.

**Specific Conc. Limits, M-factors and ATE**

CAS No	EC No	Chemical name	Quantity
	Specific Conc. Limits, M-factors and ATE		
7697-37-2	231-714-2	nitric acid	5 - < 10 %
	inhalation: ATE 2,65 mg/l (vapours) Ox. Liq. 3; H272: >= 65 - 100 Skin Corr. 1A; H314: >= 20 - 100 Skin Corr. 1B; H314: >= 5 - < 20		
7664-39-3	231-634-8	hydrofluoric acid ... %	< 1 %
	inhalation: ATE = 0,5 mg/l (vapours); inhalation: ATE = 0,05 mg/l (dusts or mists); inhalation: LC50 = 2240 ppm (gases); dermal: ATE = 5 mg/kg; oral: ATE = 5 mg/kg Skin Corr. 1A; H314: >= 7 - 100 Skin Corr. 1B; H314: >= 1 - < 7 Eye Irrit. 2; H319: >= 0,1 - < 1		

**Further Information**

This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of = 0.1 % (w/w).

**4. First-aid measures**
**Description of first aid measures**
**General information**

First aider: Pay attention to self-protection!

**After inhalation**

Provide fresh air.  
Call a physician immediately.

**After contact with skin**

Wash immediately with: Water  
Take off immediately all contaminated clothing and wash it before reuse.  
Call a physician immediately.

**After contact with eyes**

In case of contact with eyes flush immediately with plenty of flowing water for 10 to 15 minutes holding eyelids apart and consult an ophthalmologist.  
Remove contact lenses, if present and easy to do. Continue rinsing.  
Protect uninjured eye.

**After ingestion**

Rinse mouth immediately and drink plenty of water.  
Do NOT induce vomiting. Do not allow a neutralisation agent to be drunk.  
Call a physician immediately.

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**Most important symptoms and effects, whether acute or delayed**

- Causes burns.
- Irritant
- Cough
- Dyspnoea
- Vomiting
- Methaemoglobinaemia
- Risk of serious damage to eyes.

**Indication of immediate medical attention and special treatment needed**

No data available

**5. Fire-fighting measures**

**Extinguishing media**

**Suitable extinguishing media**

Co-ordinate fire-fighting measures to the fire surroundings.

**Unsuitable extinguishing media**

no restriction

**Specific hazards arising from the hazardous product**

- Non-combustible liquids
- Hazardous combustion products
- In case of fire may be liberated:
- Nitrogen oxides (NOx)

**Special protective equipment and precautions for fire-fighters**

- In case of fire: Wear self-contained breathing apparatus.
- In case of fire and/or explosion do not breathe fumes.
- Avoid contact with skin, eyes and clothes.

**Additional information**

- Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.
- Move undamaged containers from immediate hazard area if it can be done safely.
- Use water spray jet to protect personnel and to cool endangered containers.

**6. Accidental release measures**

**Personal precautions, protective equipment and emergency procedures**

**General advice**

Corrosive to metals.

**For non-emergency personnel**

- Provide adequate ventilation.
- Use personal protection equipment.
- Avoid contact with skin, eyes and clothes.
- Remove persons to safety.
- Emergency procedures
- Consult an expert
- Do not breathe dust/fume/gas/mist/vapours/spray.

**For emergency responders**

Precautionary statements For emergency responders : Personal protection equipment: see section 8

**Environmental precautions**

Do not allow to enter into surface water or drains.

**Methods and material for containment and cleaning up**

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**For containment**

- Cover drains.
- Prevent spread over a wide area (e.g. by containment or oil barriers).
- Collect in closed and suitable containers for disposal.
- Absorb with liquid-binding material (sand, diatomaceous earth, acid- or universal binding agents).

**For cleaning up**

- Clean contaminated articles and floor according to the environmental legislation.

**Other information**

- Provide adequate ventilation.
- Do not breathe dust/fume/gas/mist/vapours/spray.
- Wear breathing apparatus if exposed to vapours/dusts/aerosols.

**Reference to other sections**

- Safe handling: see section 7
- Personal protection equipment: see section 8
- Disposal: see section 13

**7. Handling and storage**

**Precautions for safe handling**

**Advice on safe handling**

- Read label before use. Handle and open container with care.
- When using do not eat, drink, smoke, sniff. Use personal protection equipment.
- Provide adequate ventilation. Avoid contact with skin, eyes and clothes.
- Do not breathe vapour/aerosol.

**Advice on protection against fire and explosion**

- Usual measures for fire prevention.

**Advice on general occupational hygiene**

- Keep away from food, drink and animal feedingstuffs. Remove contaminated, saturated clothing immediately.
- Draw up and observe skin protection programme. Wash hands and face before breaks and after work and take a shower if necessary. When using do not eat or drink. Avoid: aerosol or mist formation Do not breathe vapour/aerosol.

**Further information on handling**

- Draw up and observe skin protection programme.
- Wash hands and face before breaks and after work and take a shower if necessary.
- Take off immediately all contaminated clothing and wash it before reuse.

**Conditions for safe storage, including any incompatibilities**

**Requirements for storage rooms and vessels**

- Corrosive to metals.
- Unsuitable container/equipment material: Metal, Glass
- The product develops hydrogen in an aqueous solution in contact with metals.

**Hints on joint storage**

- Take national regulations into account.

**Further information on storage conditions**

- Keep container tightly closed.

**Specific end use(s)**

- Laboratory chemicals

**8. Exposure controls/Personal protection**

**Control parameters**

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**Exposure limits (ACGIH)**

CAS No	Chemical name	ppm	mg/m <sup>3</sup>	Category	Origin
7664-39-3	Hydrogen fluoride, as F	0.5		TWA (8 h)	ACGIH-2025
		2		Peak	ACGIH-2025
7697-37-2	Nitric acid	2	5.2	TWA (8 h)	ACGIH-2025
		4	10	STEL (15 min)	ACGIH-2025

**Biological limit values**

CAS No	Chemical name	Parameter	Value	Test material	Sampling time
-	FLUORIDES (ACGIH 2025)	Fluoride	2 mg/L	urine	Prior to shift

**DNEL/DMEL values**

CAS No	Chemical name	Exposure route	Effect	Value
7664-39-3	hydrofluoric acid ... %			
	Worker DNEL, long-term	inhalation	systemic	1,5 mg/m <sup>3</sup>
	Worker DNEL, acute	inhalation	systemic	2,5 mg/m <sup>3</sup>
	Worker DNEL, long-term	inhalation	local	1,5 mg/m <sup>3</sup>
	Worker DNEL, acute	inhalation	local	2,5 mg/m <sup>3</sup>
	Consumer DNEL, long-term	inhalation	systemic	0,03 mg/m <sup>3</sup>
	Consumer DNEL, acute	inhalation	systemic	0,03 mg/m <sup>3</sup>
	Consumer DNEL, long-term	inhalation	local	0,2 mg/m <sup>3</sup>
	Consumer DNEL, acute	inhalation	local	1,25 mg/m <sup>3</sup>
	Consumer DNEL, long-term	oral	systemic	0,01 mg/kg bw/day
	Consumer DNEL, acute	oral	systemic	0,01 mg/kg bw/day

**PNEC values**

CAS No	Chemical name	Value
7664-39-3	hydrofluoric acid ... %	
	Freshwater	0,89 mg/l
	Marine water	0,089 mg/l
	Freshwater sediment	3,38 mg/kg
	Marine sediment	0,338 mg/kg
	Micro-organisms in sewage treatment plants (STP)	51 mg/l
	Soil	10,6 mg/kg

**Exposure controls**
**Appropriate engineering controls**

Technical measures and the application of suitable work processes have priority over personal protection equipment.

If handled uncovered, arrangements with local exhaust ventilation have to be used.

**Individual protection measures, such as personal protective equipment**

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**Eye/face protection**

goggles

Wear eye/face protection.

**Hand protection**

When handling with chemical substances, protective gloves must be worn with the CE-label including the four control digits. The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

**Skin protection**

Wear suitable protective clothing. Take off immediately all contaminated clothing.

Wash hands before breaks and after work.

The choice of body protection depends on the concentration and quantity of hazardous substances. The chemical resistance of protective agents must be clarified with their suppliers.

**Respiratory protection**

Respiratory protection necessary at: aerosol or mist formation

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

**Thermal hazards**

No data available

**Environmental exposure controls**

Do not allow to enter into surface water or drains.

**9. Physical and chemical properties**
**Information on basic physical and chemical properties**

Physical state:	Liquid	
Colour:	colourless	
Odour:	like: Nitric acid	
Odour threshold:	No data available	
Melting point/freezing point:		No data available
Boiling point or initial boiling point and boiling range:		No data available
Flammability:		No data available
Lower explosive limits:		No data available
Upper explosive limits:		No data available
Flash point:		No data available
Auto-ignition temperature:		No data available
Decomposition temperature:		No data available
pH-Value (at 20 °C):		<2
Viscosity / kinematic:		No data available
Water solubility:		completely miscible
Solubility in other solvents		
No data available		
Dissolution rate:		No data available
Partition coefficient n-octanol/water:		No data available
Dispersion stability:		No data available
Vapour pressure:		No data available
Vapour pressure:		No data available
Density (at 23 °C):		1,025 g/cm <sup>3</sup>
Relative density:		No data available

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Bulk density:	No data available
Relative vapour density:	No data available
Particle characteristics:	No data available

**Other information**

**Information with regard to physical hazard classes**

Explosive properties	
No data available	
Sustained combustibility:	No data available
Self-ignition temperature	
Solid:	No data available
Gas:	No data available
Oxidizing properties	
Oxidizing	

**Other safety characteristics**

Evaporation rate:	No data available
Solvent separation test:	No data available
Solvent content:	0
Solid content:	0
Sublimation point:	No data available
Softening point:	No data available
Pour point:	No data available
No data available:	
Viscosity / dynamic:	No data available
Flow time:	No data available

**Further Information**

Corrosive to metals.

**10. Stability and reactivity**

**Reactivity**

Corrosive to metals.  
Oxidising agent

**Chemical stability**

The product is stable under storage at normal ambient temperatures.

**Possibility of hazardous reactions**

Alkali (lye)

**Conditions to avoid**

No data available

**Incompatible materials**

Cellulose  
Metal  
Glass

The product develops hydrogen in an aqueous solution in contact with metals.

**Hazardous decomposition products**

In case of fire may be liberated:  
SECTION 5: Firefighting measures

**Further information**

No data available

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**11. Toxicological information**

**Information on toxicological effects**

**Toxicokinetics, metabolism and distribution**

There are no data available on the mixture itself.

**Acute toxicity**

Toxic in contact with skin.

Harmful if swallowed.

**ATEmix calculated**

ATE (oral) 1000 mg/kg; ATE (dermal) 1000 mg/kg; ATE (inhalation vapour) > 20 mg/l; ATE (inhalation dust/mist) > 5 mg/l

CAS No	Chemical name				
	Route of exposure	Dose	Species	Source	Method
7697-37-2	nitric acid				
	inhalation vapour	ATE 2,65 mg/l			
7664-39-3	hydrofluoric acid ... %				
	oral	ATE 5 mg/kg			
	dermal	ATE 5 mg/kg			
	inhalation vapour	ATE 0,5 mg/l			
	inhalation dust/mist	ATE 0,05 mg/l			
	inhalation (1 h) gas	LC50 2240 ppm	Rat	Study report (1990)	OECD Guideline 403

**Irritation and corrosivity**

Skin corrosion/irritation: Causes severe skin burns and eye damage.

Serious eye damage/eye irritation: Causes serious eye damage.

Corrosive to the respiratory tract.

Following ingestion Gastric perforation

Irritating to respiratory system.

Pulmonary oedema

Mucous membrane irritation in the mouth, throat, esophagus and gastrointestinal tract.

see also Section 4

**Sensitizing effects**

Based on available data, the classification criteria are not met.

**Carcinogenic/mutagenic/toxic effects for reproduction**

Germ cell mutagenicity: Based on available data, the classification criteria are not met.

Carcinogenicity: Based on available data, the classification criteria are not met.

Reproductive toxicity: Based on available data, the classification criteria are not met.

**STOT-single exposure**

Based on available data, the classification criteria are not met.

**STOT-repeated exposure**

Based on available data, the classification criteria are not met.

**Aspiration hazard**

Based on available data, the classification criteria are not met.

**Information on likely routes of exposure**

There are no data available on the mixture itself.

**Specific effects in experiment on an animal**

There are no data available on the mixture itself.

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**Additional information on tests**

There are no data available on the mixture itself.

**Practical experience**

There are no data available on the mixture itself.

**Information on other hazards**
**Endocrine disrupting properties**

There are no data available on the mixture itself.

**Other information**

There are no data available on the mixture itself.

**Further information**

There are no data available on the mixture itself.

**12. Ecological information**
**Ecotoxicity**

Based on available data, the classification criteria are not met.

CAS No	Chemical name					
	Aquatic toxicity	Dose	[h]   [d]	Species	Source	Method
7697-37-2	nitric acid					
	Acute fish toxicity	LC50 mg/l	1559	96 h	Topeka shiner	Environmental Toxicology and Chemistry, other: ASTM E729-26
	Fish toxicity	NOEC	268 mg/l	30 d	juvenile Topeka shiner and with juvenile Fathead m	Study report (2009) Growth tests estimated the test chemical
	Algae toxicity	NOEC mg/l	> 419	10 d	several benthic diatoms; see results	Marine Biology 43:307-315 (1977) Ten cultures of benthic diatoms were iso
	Acute bacteria toxicity	EC50 mg/l ( )	> 1000	3 h	Activated sludge	Study report (2008) OECD Guideline 209
7664-39-3	hydrofluoric acid ... %					
	Acute fish toxicity	LC50	299 mg/l	96 h	Salmo trutta	REACH Registration Dossier other: U.S Environmental Protection Agen
	Acute algae toxicity	ErC50	43 mg/l	96 h	various algae species	REACH Registration Dossier Methods not detailed in the review.
	Crustacea toxicity	NOEC	3,7 mg/l	21 d	Daphnia magna	REACH Registration Dossier The publication is a review article of v
	Acute bacteria toxicity	EC50 mg/l ( )	2930	3 h	Activated sludge	REACH Registration Dossier ISO 8192

**Persistence and degradability**

The methods for determining the biological degradability are not applicable to inorganic substances.

**Bioaccumulative potential**

There are no data available on the mixture itself.

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**BCF**

CAS No	Chemical name	BCF	Species	Source
7664-39-3	hydrofluoric acid ... %	53 - 58	not specified	REACH Registration D

**Mobility in soil**

There are no data available on the mixture itself.

**Results of PBT and vPvB assessment**

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

**Endocrine disrupting properties**

This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

**Other adverse effects**

Discharge into the environment must be avoided.  
 Harmful effect due to pH shift.  
 Forms corrosive mixtures with water even if diluted.

**Further information**

Do not allow to enter into surface water or drains.

**13. Disposal considerations**
**Waste treatment methods**
**Disposal recommendations**

Waste disposal according to directive 2008/98/EC, covering waste and dangerous waste.  
 Send to a physico-chemical treatment facility under observation of official regulations.  
 Do not empty into drains.

**Contaminated packaging**

Handle contaminated packages in the same way as the substance itself.  
 Waste codes/waste designations according to EWC/AVV

**14. Transport information**
**Land transport (ADR/RID)**

**UN number or ID number:** UN 3264  
**United Nations proper shipping name:** CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid, Hydrofluoric acid)  
**Transport hazard class(es):** 8  
**Packing group:** III  
 Hazard label: 8  
 Classification Code: C1  
 Special Provisions: 274  
 Limited quantity: 5 L  
 Excepted quantity: E1  
 Transport category: 3  
 Hazard No: 80  
 Tunnel restriction code: E

**Inland waterways transport (ADN)**

**UN number or ID number:** UN 3264  
**United Nations proper shipping name:** CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid, Hydrofluoric acid)  
**Transport hazard class(es):** 8  
**Packing group:** III  
 Hazard label: 8

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Classification Code:	C1
Special Provisions:	274
Limited quantity:	5 L
Excepted quantity:	E1

**Marine transport (IMDG)**

<b>UN number or ID number:</b>	UN 3264
<b>United Nations proper shipping name:</b>	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid, Hydrofluoric acid)
<b>Transport hazard class(es):</b>	8
<b>Packing group:</b>	III
Hazard label:	8
Special Provisions:	223 274
Limited quantity:	5 L
Excepted quantity:	E1
EmS:	F-A, S-B
Segregation group:	1 - acids

**Air transport (ICAO-TI/IATA-DGR)**

<b>UN number or ID number:</b>	UN 3264
<b>United Nations proper shipping name:</b>	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid, Hydrofluoric acid)
<b>Transport hazard class(es):</b>	8
<b>Packing group:</b>	III
Hazard label:	8
Special Provisions:	A3 A803
Limited quantity Passenger:	1 L
Passenger LQ:	Y841
Excepted quantity:	E1
IATA-packing instructions - Passenger:	852
IATA-max. quantity - Passenger:	5 L
IATA-packing instructions - Cargo:	856
IATA-max. quantity - Cargo:	60 L

**Environmental hazards**

ENVIRONMENTALLY HAZARDOUS: No

**15. Regulatory information**
**Safety, health and environmental regulations/legislation specific for the substance or mixture**
**EU Regulatory information**

Restrictions on use (REACH, annex XVII):

Entry 3, Entry 75

Marketing and use of explosives precursors:

Acquisition, introduction, possession or use of this product by the general public is restricted by Regulation (EU) 2019/1148. All suspicious transactions, and significant disappearances and thefts should be reported to the relevant national contact point.

**National regulatory information**

Employment restrictions: Observe employment restrictions for young people.

Water hazard class (D): 1 - slightly hazardous to water

**16. Other information**

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**Abbreviations and acronyms**

Ox. Liq. 3: Oxidizing liquids  
 Met. Corr. 1: Corrosive to metals  
 Acute Tox. 1: Acute toxicity  
 Acute Tox. 2: Acute toxicity  
 Acute Tox. 3: Acute toxicity  
 Acute Tox. 4: Acute toxicity  
 Skin Corr. 1A: Skin corrosion  
 Skin Corr. 1B: Skin corrosion  
 Eye Dam. 1: Serious eye damage

**Classification for mixtures and used evaluation method according to regulation (EC) No 1272/2008**

Classification	Classification procedure
Met. Corr. 1; H290	On basis of test data
Acute Tox. 3; H311	Calculation method
Acute Tox. 4; H302	Calculation method
Skin Corr. 1B; H314	Calculation method
Eye Dam. 1; H318	Calculation method

**Relevant H statements (number and full text)**

H272 May intensify fire; oxidizer.  
 H290 May be corrosive to metals.  
 H300 Fatal if swallowed.  
 H302 Harmful if swallowed.  
 H310 Fatal in contact with skin.  
 H311 Toxic in contact with skin.  
 H314 Causes severe skin burns and eye damage.  
 H318 Causes serious eye damage.  
 H330 Fatal if inhaled.  
 H331 Toxic if inhaled.  
 EUH071 Corrosive to the respiratory tract.

**Further Information**

Provide appropriate information, instructions and training to users

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

The information is based on the present level of our knowledge. It does not, however, give assurance of product properties and establishes no contract legal rights.

The receiver of our product is singularly responsible for adhering to existing laws and regulations.

*(The data for the relevant ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)*