

# Perchloric acid 0.1M. Volumetric solution European Pharmacopoeia (Ph Eur) Ref: 3003900

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878  
SDS Reference Number: VL033  
Issue date: 30/10/2015 Revision date: 07/01/2025 Supersedes version of: 12/02/2018 Version: 1.3

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier

Product form : Mixture  
Product name : Perchloric acid 0.1M.  
Volumetric solution  
European Pharmacopoeia (Ph Eur) Ref: 3003900  
Product code : VL033

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

##### Relevant identified uses

Main use category : Professional use  
Use of the substance/mixture : Certified reference material for laboratory use  
Function or use category : Laboratory chemicals

#### 1.3. Details of the supplier of the safety data sheet

##### Spectracer UK Ltd.

20 Seymour Mews,  
London,  
W1H 6BQ,  
United Kingdom.

Tel: +44 (0) 207 193 9114  
Fax: +44 (0) 203 432 4686  
Email: [contact@spectracer.com](mailto:contact@spectracer.com)  
Web: [www.spectracer.com](http://www.spectracer.com)

#### 1.4. Emergency telephone number

Country/Area	Organisation/Company	Address	Emergency number	Comment
Ireland	National Poisons Information Centre Beaumont Hospital	Beaumont Hospital Beaumont Road 9 Dublin	: +353 1 8379964	
Malta	Medicines & Poisons Info Office	Mater Dei Hospital Msida MSD 2090 Msida	112 +356 2545 6508	
United Kingdom	National Poisons Information Service (NHS Direct)	<a href="http://www.npis.org">http://www.npis.org</a>	111 (England & Wales only) or 112 (EU) or 08454 24 24 24 (Scotland)	

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

##### Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flammable liquids, Category 3 H226  
Oxidising Liquids, Category 2 H272  
Skin corrosion/irritation, Category 1, Sub-Category 1A H314  
Serious eye damage/eye irritation, Category 1 H318  
Full text of H- and EUH-statements: see section 16

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

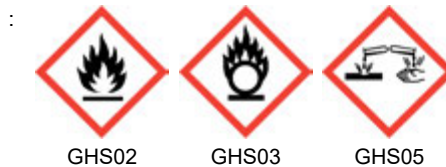
#### Adverse physicochemical, human health and environmental effects

Flammable liquid and vapour. May intensify fire; oxidiser. Causes severe skin burns and eye damage. Causes serious eye damage.

#### 2.2. Label elements

##### Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)



Signal word (CLP)

Contains

Hazard statements (CLP)

Precautionary statements (CLP)

- : Danger
- : acetic acid
- : H226 - Flammable liquid and vapour.
- : H272 - May intensify fire; oxidiser.
- : H314 - Causes severe skin burns and eye damage.
- : P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- : P220 - Keep away from clothing and other combustible materials.
- : P260 - Do not breathe dust/fume/gas/mist/vapours/spray.
- : P280 - Wear protective gloves/protective clothing/eye protection/face protection.
- : P301+P330+P331+P310 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor.
- : P303+P361+P353+P310 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a POISON CENTER or doctor.
- : P305+P351+P338+P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.

#### 2.3. Other hazards

Contains no PBT and/or vPvB substances  $\geq 0.1\%$  assessed in accordance with REACH Annex XIII

Component	
Substance(s) not meeting the PBT criteria of REACH regulation, in accordance with Annex XIII	acetic acid (64-19-7), perchloric acid (7601-90-3), acetic anhydride (108-24-7)
Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII	acetic acid (64-19-7), perchloric acid (7601-90-3), acetic anhydride (108-24-7)

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or substance(s) are not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

### SECTION 3: Composition/information on ingredients

#### 3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
acetic acid substance with national workplace exposure limit(s) (AT, BE, BG, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GI, GR, HR, HU, IE, IT, LT, LU, LV, MT, PL, PT, RO, SE, SK, AL, IS, NO, MK, RS, CH, TR); substance with a Community workplace exposure limit	CAS-No.: 64-19-7 EC-No.: 200-580-7 EC Index-No.: 607-002-00-6 REACH-no: 01-2119475328-30-XXXX	90 – 99	Flam. Liq. 3, H226 Skin Corr. 1A, H314
acetic anhydride substance with national workplace exposure limit(s) (AT, BE, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, LT, LV, PL, PT, RO, SE, SI, SK, IS, NO, MK, CH)	CAS-No.: 108-24-7 EC-No.: 203-564-8 EC Index-No.: 607-008-00-9 REACH-no: 01-2119486470-36-XXXX	1 – 5	Flam. Liq. 3, H226 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 Skin Corr. 1B, H314
perchloric acid substance with national workplace exposure limit(s) (BG, CZ)	CAS-No.: 7601-90-3 EC-No.: 231-512-4 EC Index-No.: 017-006-00-4 REACH-no: 01-2120066865-44-XXXX	1 – 5	Ox. Liq. 1, H271 Met. Corr. 1, H290 Acute Tox. 4 (Oral), H302 Skin Corr. 1A, H314 Eye Dam. 1, H318 STOT RE 2, H373

#### Specific concentration limits:

Name	Product identifier	Specific concentration limits (%)
acetic acid	CAS-No.: 64-19-7 EC-No.: 200-580-7 EC Index-No.: 607-002-00-6 REACH-no: 01-2119475328-30-XXXX	(10 ≤ C < 25) Eye Irrit. 2; H319 (10 ≤ C < 25) Skin Irrit. 2; H315 (25 ≤ C < 90) Skin Corr. 1B; H314 (90 ≤ C < 100) Skin Corr. 1A; H314
acetic anhydride	CAS-No.: 108-24-7 EC-No.: 203-564-8 EC Index-No.: 607-008-00-9 REACH-no: 01-2119486470-36-XXXX	(1 ≤ C < 5) Eye Irrit. 2; H319 (5 ≤ C < 100) STOT SE 3; H335 (5 ≤ C < 25) Eye Dam. 1; H318 (5 ≤ C < 25) Skin Irrit. 2; H315 (25 ≤ C < 100) Skin Corr. 1B; H314
perchloric acid	CAS-No.: 7601-90-3 EC-No.: 231-512-4 EC Index-No.: 017-006-00-4 REACH-no: 01-2120066865-44-XXXX	(0 ≤ C < 50) Ox. Liq. 2; H272 (1 ≤ C < 10) Eye Irrit. 2; H319 (1 ≤ C < 10) Skin Irrit. 2; H315 (10 ≤ C < 50) Skin Corr. 1B; H314 (50 ≤ C < 100) Ox. Liq. 1; H271 (50 ≤ C < 100) Skin Corr. 1A; H314

Full text of H- and EUH-statements: see section 16

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

- First-aid measures general : Call a physician immediately.
- First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

First-aid measures after skin contact	: Rinse skin with water/shower. Take off immediately all contaminated clothing. Call a physician immediately.
First-aid measures after eye contact	: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately.
First-aid measures after ingestion	: Rinse mouth. Do not induce vomiting. Call a physician immediately.
First-aid measures for first aider	: First aid workers will be equipped with suitable personal protective equipment.

#### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects after inhalation	: None under normal conditions.
Symptoms/effects after skin contact	: Burns.
Symptoms/effects after eye contact	: Serious damage to eyes.
Symptoms/effects after ingestion	: Burns.

#### 4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

Suitable extinguishing media	: Water spray. Dry powder. Foam. Carbon dioxide.
Unsuitable extinguishing media	: Do not use a heavy water stream.

#### 5.2. Special hazards arising from the substance or mixture

Fire hazard	: Flammable liquid and vapour. May intensify fire; oxidiser.
Explosion hazard	: No direct explosion hazard.
Hazardous decomposition products in case of fire	: Toxic fumes may be released.

#### 5.3. Advice for firefighters

Firefighting instructions	: Fight fire from safe distance and protected location. Do not enter fire area without proper protective equipment, including respiratory protection.
Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Stop leak if safe to do so. Notify authorities if product enters sewers or public waters. Absorb spillage to prevent material damage.
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##### For non-emergency personnel

Protective equipment	: Wear recommended personal protective equipment.
Emergency procedures	: Ventilate spillage area. No open flames, no sparks, and no smoking. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapours/spray.

##### For emergency responders

Protective equipment	: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
Emergency procedures	: Evacuate unnecessary personnel. Stop leak if safe to do so.

#### 6.2. Environmental precautions

Avoid release to the environment.

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

#### 6.3. Methods and material for containment and cleaning up

- For containment : Absorb spilled material with sand or earth. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Stop leak without risks if possible.
- Methods for cleaning up : Take up liquid spill into absorbent material. Notify authorities if product enters sewers or public waters.
- Other information : Dispose of materials or solid residues at an authorized site.

#### 6.4. Reference to other sections

For further information refer to section 13.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

- Additional hazards when processed : Not expected to present a significant hazard under anticipated conditions of normal use.
- Precautions for safe handling : Ensure good ventilation of the work station. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Flammable vapours may accumulate in the container. Use explosion-proof equipment. Wear personal protective equipment. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapours/spray.
- Hygiene measures : Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

#### 7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Ground/bond container and receiving equipment.
- Storage conditions : Store in a well-ventilated place. Keep cool. Keep container tightly closed. Store locked up.
- Incompatible materials : combustible materials.
- Packaging materials : Store always product in container of same material as original container.

#### Germany

Storage class (LGK, TRGS 510)  
Joint storage table

: LGK 3 - Flammable liquids

LGK 1	LGK 2A	LGK 2B	LGK 3	LGK 4.1A
LGK 4.1B	LGK 4.2	LGK 4.3	LGK 5.1A	LGK 5.1B
LGK 5.1C	LGK 5.2	LGK 6.1A	LGK 6.1B	LGK 6.1C
LGK 6.1D	LGK 6.2	LGK 7	LGK 8A	LGK 8B
LGK 10	LGK 11	LGK 12	LGK 13	LGK 10-13

- Joint storage not permitted for : LGK 1, LGK 2A, LGK 4.1A, LGK 4.1B, LGK 4.2, LGK 4.3, LGK 5.1A, LGK 5.1C, LGK 5.2, LGK 6.1B, LGK 6.2, LGK 7
- Joint storage with restrictions permitted for : LGK 5.1B, LGK 6.1D, LGK 11, LGK 10-13
- Joint storage permitted for : LGK 2B, LGK 3, LGK 6.1A, LGK 6.1C, LGK 8A, LGK 8B, LGK 10, LGK 12, LGK 13

#### 7.3. Specific end use(s)

No additional information available

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

##### National occupational exposure and biological limit values

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

acetic acid (64-19-7)	
<b>EU - Indicative Occupational Exposure Limit (IOEL)</b>	
Local name	Acetic acid
IOEL TWA	25 mg/m <sup>3</sup>
	10 ppm
IOEL STEL	50 mg/m <sup>3</sup>
	20 ppm
Regulatory reference	COMMISSION DIRECTIVE (EU) 2017/164
<b>Albania - Occupational Exposure Limits</b>	
Local name	Acid acetik
OEL TWA	25 mg/m <sup>3</sup>
	10 ppm
Regulatory reference	VENDIM Nr. 522, datë 6.8.2014 PËR MIRATIMIN E RREGULLORES "PËR MBROJTJEN E SIGURISË DHE SHËNDETIT TË PUNËMARRËSVE NGA RISQET E LIDHURA ME AGJENTËT KIMIKË NË PUNË"
<b>Austria - Occupational Exposure Limits</b>	
Local name	Essigsäure
MAK (OEL TWA)	25 mg/m <sup>3</sup>
	10 ppm
MAK (OEL STEL)	50 mg/m <sup>3</sup> (8x 5(Mow) min)
	20 ppm (8x 5(Mow) min)
Regulatory reference	BGBI. II Nr. 156/2021
<b>Belgium - Occupational Exposure Limits</b>	
Local name	Acide acétique # Azijnzuur
OEL TWA	25 mg/m <sup>3</sup>
	10 ppm
OEL STEL	38 mg/m <sup>3</sup>
	15 ppm
Regulatory reference	Koninklijk besluit/Arrêté royal 16/11/2023
<b>Bulgaria - Occupational Exposure Limits</b>	
Local name	Оцетна киселина
OEL TWA	25 mg/m <sup>3</sup>
	10 ppm
OEL STEL	50 mg/m <sup>3</sup>
	20 ppm
Remark	• (Химични агенти, за които са определени гранични стойности във въздуха на работната среда за Европейската общност)

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

acetic acid (64-19-7)	
Regulatory reference	Наредба № 13 от 30.12.2003 г. за защита на работещите от рисковете, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 28 от 2024 г., в сила от 05.04.2024 г.)
<b>Croatia - Occupational Exposure Limits</b>	
Local name	Octena kiselina
GVI (OEL TWA)	25 mg/m <sup>3</sup>
	10 ppm
KGVI (OEL STEL)	50 mg/m <sup>3</sup>
	20 ppm
Remark	Direktiva: 2017/164/EU
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023)
<b>Cyprus - Occupational Exposure Limits</b>	
Local name	Οξικό οξύ
OEL TWA	25 mg/m <sup>3</sup>
	10 ppm
OEL STEL	50 mg/m <sup>3</sup>
	20 ppm
Regulatory reference	Κανονισμοί του 2019 (Κ.Δ.Π. 16/2019)
<b>Czech Republic - Occupational Exposure Limits</b>	
Local name	Kyselina octová (Kyselina ethanová)
PEL (OEL TWA)	25 mg/m <sup>3</sup>
	10 ppm
NPK-P (OEL C)	50 mg/m <sup>3</sup>
	20 ppm
Remark	I - dráždí sliznice (oči, dýchací cesty) resp. kůže.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)
<b>Denmark - Occupational Exposure Limits</b>	
Local name	Eddikesyre (Ethansyre)
OEL TWA	25 mg/m <sup>3</sup>
	10 ppm
OEL STEL	50 mg/m <sup>3</sup>
	20 ppm
Remark	E (betyder, at stoffet har en EF-grænseværdi)
Regulatory reference	BEK nr 291 af 19/03/2024
<b>Estonia - Occupational Exposure Limits</b>	
Local name	Etaanhape (äädikhape)
OEL TWA	25 mg/m <sup>3</sup>

# Perchloric acid 0.1M. Volumetric solution European Pharmacopoeia (Ph Eur) Ref: 3003900

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

acetic acid (64-19-7)	
	10 ppm
OEL STEL	25 mg/m <sup>3</sup>
	10 ppm
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)
Finland - Occupational Exposure Limits	
Local name	Etikkahappo
HTP (OEL TWA)	13 mg/m <sup>3</sup>
	5 ppm
HTP (OEL STEL)	25 mg/m <sup>3</sup>
	10 ppm
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden ministeriö)
France - Occupational Exposure Limits	
Local name	Acide acétique
VME (OEL TWA)	25 mg/m <sup>3</sup>
	10 ppm
VLE (OEL C/STEL)	50 mg/m <sup>3</sup>
	20 ppm
Remark	Valeurs réglementaires indicatives
Regulatory reference	Arrêté du 30 juin 2004 modifié (réf.: INRS ED 6443, 2022; Outil65; Arrête du 27 septembre 2019)
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Essigsäure
AGW (OEL TWA)	25 mg/m <sup>3</sup>
	10 ppm
Peak exposure limitation factor	2(l)
Remark	DFG - Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe der DFG (MAK-Kommission); EU - Europäische Union (Von der EU wurde ein Luftgrenzwert festgelegt: Abweichungen bei Wert und Spitzenbegrenzung sind möglich); Y - Ein Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes (BGW) nicht befürchtet zu werden
Regulatory reference	TRGS900
Gibraltar - Occupational Exposure Limits	
Local name	Acetic acid
OEL TWA	25 mg/m <sup>3</sup>
	10 ppm
OEL STEL	50 mg/m <sup>3</sup>
	20 ppm
Regulatory reference	Factories (Control of Chemical Agents at Work) Regulations 2003 (LN. 2018/181)

# Perchloric acid 0.1M. Volumetric solution European Pharmacopoeia (Ph Eur) Ref: 3003900

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

acetic acid (64-19-7)	
<b>Greece - Occupational Exposure Limits</b>	
Local name	Οξικό οξύ
OEL TWA	25 mg/m <sup>3</sup>
	10 ppm
OEL STEL	37 mg/m <sup>3</sup>
	15 ppm
Regulatory reference	Π.Δ. 90/1999 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους
<b>Hungary - Occupational Exposure Limits</b>	
Local name	ECETSAV
AK (OEL TWA)	25 mg/m <sup>3</sup>
	10 ppm
CK (OEL STEL)	50 mg/m <sup>3</sup>
	20 ppm
Remark	m (maró hatású anyag, amely felmarja a bőrt, nyálkahártyát, szemet vagy mindhármat); EU4 (2017/164 EU irányelvben közölt érték); N (Irritáló anyagok, egyszerű fojtógázok, csekély egészségkárosító hatással bíró anyagok)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
<b>Ireland - Occupational Exposure Limits</b>	
Local name	Acetic acid
OEL TWA	25 mg/m <sup>3</sup>
	10 ppm
OEL STEL	50 mg/m <sup>3</sup>
	20 ppm
Remark	IOELV (Indicative Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2024
<b>Italy - Occupational Exposure Limits</b>	
Local name	Acido acetico
OEL TWA	25 mg/m <sup>3</sup>
	10 ppm
OEL STEL	50 mg/m <sup>3</sup>
	20 ppm
Regulatory reference	Allegato XXXVIII del Decreto Legislativo 4 settembre 2024, n. 135
<b>Latvia - Occupational Exposure Limits</b>	
Local name	Etiķskābe (etānskābe)
OEL TWA	25 mg/m <sup>3</sup>
	10 ppm

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

acetic acid (64-19-7)	
OEL STEL	50 mg/m <sup>3</sup>
	20 ppm
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2024. gada 26. martā noteikumiem Nr. 191).
Lithuania - Occupational Exposure Limits	
Local name	Acto rūgštis
IPRV (OEL TWA)	25 mg/m <sup>3</sup>
	10 ppm
TPRV (OEL STEL)	50 mg/m <sup>3</sup>
	20 ppm
Regulatory reference	LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)
Luxembourg - Occupational Exposure Limits	
Local name	Acide acétique
OEL TWA	25 mg/m <sup>3</sup>
	10 ppm
OEL STEL	50 mg/m <sup>3</sup>
	20 ppm
Regulatory reference	Mémorial A N° 226 de 2021 concernant la protection de la sécurité et de la santé des salariés contre les risques liés à des agents chimiques sur le lieu de travail
Malta - Occupational Exposure Limits	
Local name	Acetic acid
OEL TWA	25 mg/m <sup>3</sup>
	10 ppm
OEL STEL	50 mg/m <sup>3</sup>
	20 ppm
Regulatory reference	S.L. 424.24 - Chemical Agents at Work Regulations (L.N. 356 of 2021) # L.S. 424.24 - Regolamenti dwar Aġenti Kimiċi fuq il-Post tax-Xogħol (A.L. 356 tal-2021)
Poland - Occupational Exposure Limits	
Local name	Kwas octowy
NDS (OEL TWA)	25 mg/m <sup>3</sup>
	10 ppm
NDSCh (OEL STEL)	50 mg/m <sup>3</sup>
	20 ppm
Regulatory reference	Dz. U. 2024 poz. 1017 wraz z późn. zm.
Portugal - Occupational Exposure Limits	
Local name	Ácido acético
OEL TWA	10 ppm
OEL STEL	15 ppm

**Perchloric acid 0.1M.**  
**Volumetric solution**  
**European Pharmacopoeia (Ph Eur) Ref: 3003900**

**Safety Data Sheet**

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

<b>acetic acid (64-19-7)</b>	
Regulatory reference	Norma Portuguesa NP 1796:2014
<b>Romania - Occupational Exposure Limits</b>	
Local name	Acid acetic
OEL TWA	25 mg/m <sup>3</sup>
	10 ppm
OEL STEL	50 mg/m <sup>3</sup>
	20 ppm
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)
<b>Serbia - Occupational Exposure Limits</b>	
Local name	сирћетна киселина
OEL TWA	25 mg/m <sup>3</sup>
	20 mg/m <sup>3</sup>
	50 mg/m <sup>3</sup>
	10 ppm
Remark	ЕУ**** – напомена да се ради о хемијским материјама за које су утврђене индикативне граничне вредности изложености према Директиви 2017/164/ЕУ (четврта листа)
Regulatory reference	ПРАВИЛНИК о превентивним мерама за безбедан и здрав рад при излагању хемијским материјама („Службени гласник РС”, бр. 106/09, 117/17 и 107/21)
<b>Slovakia - Occupational Exposure Limits</b>	
Local name	Kyselina octová (kyselina etánová)
NPHV (OEL TWA)	25 mg/m <sup>3</sup>
	10 ppm
NPHV (OEL STEL)	50 mg/m <sup>3</sup>
	20 ppm
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (122/2024 Z. z.)
<b>Spain - Occupational Exposure Limits</b>	
Local name	Ácido acético
VLA-ED (OEL TWA)	25 mg/m <sup>3</sup>
	10 ppm
VLA-EC (OEL STEL)	50 mg/m <sup>3</sup>
	20 ppm
Remark	VLI (Agente químico para el que la U.E. estableció en su día un valor límite indicativo).
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT
<b>Sweden - Occupational Exposure Limits</b>	
Local name	Ättiksyra
NGV (OEL TWA)	13 mg/m <sup>3</sup>
	5 ppm

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

acetic acid (64-19-7)	
KGV (OEL STEL)	25 mg/m <sup>3</sup>
	10 ppm
Regulatory reference	Hygieniska gränsvärden (AFS 2018:1)
United Kingdom - Occupational Exposure Limits	
Local name	Acetic acid
WEL TWA (OEL TWA)	25 mg/m <sup>3</sup>
	10 ppm
WEL STEL (OEL STEL)	50 mg/m <sup>3</sup>
	20 ppm
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Iceland - Occupational Exposure Limits	
Local name	Ediksýra
OEL TWA	25 mg/m <sup>3</sup>
	10 ppm
OEL STEL	50 mg/m <sup>3</sup>
	20 ppm
Regulatory reference	Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 1069/2018)
Norway - Occupational Exposure Limits	
Local name	Eddiksyre
Grenseverdi (OEL TWA)	25 mg/m <sup>3</sup>
	10 ppm
Korttidsverdi (OEL STEL)	50 mg/m <sup>3</sup>
	20 ppm
Remark	A: Kjemikalier som skal betraktes som at de fremkaller allergi eller annen overfølsomhet i øynene eller luftveier, eller som skal betraktes som at de fremkaller allergi ved hudkontakt; E: EU har en veiledende grenseverdi og/eller anmerkning for stoffet.
Regulatory reference	FOR-2024-04-05-581
North Macedonia - Occupational Exposure Limits	
Local name	Оцетна киселина
OEL TWA	25 mg/m <sup>3</sup>
	10 ppm
Remark	(EU) European Union – гранична вредност, определена на ниво на Европската унија
Regulatory reference	Правилник за минималните барања за безбедност и здравје при работа на вработени од ризици поврзани со изложување на хемиски супстанции („Службен весник на Република Македонија“ бр.46/10)
Switzerland - Occupational Exposure Limits	
Local name	Acide acétique / Essigsäure

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

acetic acid (64-19-7)	
MAK (OEL TWA)	25 mg/m <sup>3</sup>
	10 ppm
KZGW (OEL STEL)	50 mg/m <sup>3</sup>
	20 ppm
Notation	SS <sub>C</sub> / SS <sub>C</sub>
Remark	NIOSH, OSHA
Regulatory reference	www.suva.ch, 01.01.2024
USA - ACGIH - Occupational Exposure Limits	
Local name	Acetic acid
ACGIH OEL TWA	10 ppm
ACGIH OEL STEL	15 ppm
Remark (ACGIH)	TLV® Basis: URT & eye irr; pulm func
Regulatory reference	ACGIH 2024
perchloric acid (7601-90-3)	
Bulgaria - Occupational Exposure Limits	
Local name	Перхлорна киселина
OEL TWA	2 mg/m <sup>3</sup>
Regulatory reference	Наредба № 13 от 30.12.2003 г. за защита на работещите от рискове, свързани с експозиция на химични агенти при работа (изм. и доп. ДВ. бр. 28 от 2024 г., в сила от 05.04.2024 г.)
Czech Republic - Occupational Exposure Limits	
Local name	Kyselina chloristá
PEL (OEL TWA)	1 mg/m <sup>3</sup>
	0.24 ppm
NPK-P (OEL C)	2 mg/m <sup>3</sup>
	0.48 ppm
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)
acetic anhydride (108-24-7)	
Austria - Occupational Exposure Limits	
Local name	Essigsäureanhydrid (Acetanhydrid)
MAK (OEL TWA)	20 mg/m <sup>3</sup>
	5 ppm
MAK (OEL STEL)	40 mg/m <sup>3</sup> (8x 5(Mow) min)
	10 ppm (8x 5(Mow) min)
Regulatory reference	BGBI. II Nr. 156/2021
Belgium - Occupational Exposure Limits	
Local name	Anhydride acétique # Azijnzuuranhydride

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

acetic anhydride (108-24-7)	
OEL TWA	21 mg/m <sup>3</sup> (Anhydride acétique; Belgium; Time-weighted average exposure limit 8 h)
	5 ppm (Anhydride acétique; Belgium; Time-weighted average exposure limit 8 h)
OEL STEL	13 mg/m <sup>3</sup>
	3 ppm
Regulatory reference	Koninklijk besluit/Arrêté royal 16/11/2023
Croatia - Occupational Exposure Limits	
Local name	Acetanhidrid
GVI (OEL TWA)	2.5 mg/m <sup>3</sup>
	0.5 ppm
KGVI (OEL STEL)	10 mg/m <sup>3</sup>
	2 ppm
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023)
Czech Republic - Occupational Exposure Limits	
Local name	Acetanhydrid (Anhydrid kyseliny octové)
PEL (OEL TWA)	4 mg/m <sup>3</sup>
	0.9 ppm
NPK-P (OEL C)	20 mg/m <sup>3</sup>
	4.7 ppm
Remark	I - dráždí sliznice (oči, dýchací cesty) resp. kůži.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Eddikesyreanhydrid
OEL C	20 mg/m <sup>3</sup>
	2 ppm
Regulatory reference	BEK nr 291 af 19/03/2024
Estonia - Occupational Exposure Limits	
Local name	Etaanhappe anhidriid (äädikhappe anhidriid, etaanhidriid)
OEL STEL	20 mg/m <sup>3</sup> lühiajalise kokkupuute piinorm, arvatatud viieminutisele kokkupuuteajale
	5 ppm lühiajalise kokkupuute piinorm, arvatatud viieminutisele kokkupuuteajale
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)
Finland - Occupational Exposure Limits	
Local name	Etikkahappoanhydridi
HTP (OEL STEL)	21 mg/m <sup>3</sup>
	5 ppm
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)

# Perchloric acid 0.1M. Volumetric solution European Pharmacopoeia (Ph Eur) Ref: 3003900

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

acetic anhydride (108-24-7)	
<b>France - Occupational Exposure Limits</b>	
Local name	Anhydride acétique
VLE (OEL C/STEL)	20 mg/m <sup>3</sup> (Anhydride acétique; France; Short time value; VL: Valeur non réglementaire indicative)
	5 ppm (Anhydride acétique; France; Short time value; VL: Valeur non réglementaire indicative)
Remark	Valeurs recommandées/admises
Regulatory reference	Circulaire du Ministère du travail (réf.: INRS ED 6443, 2022; Outil65)
<b>Germany - Occupational Exposure Limits (TRGS 900)</b>	
Local name	Essigsäureanhydrid
AGW (OEL TWA)	0.42 mg/m <sup>3</sup>
	0.1 ppm
Peak exposure limitation factor	2(I)
Remark	DFG - Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe der DFG (MAK-Kommission); Y - Ein Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes (BGW) nicht befürchtet zu werden
Regulatory reference	TRGS900
<b>Greece - Occupational Exposure Limits</b>	
Local name	Οξικός ανυδρίτης
OEL TWA	20 mg/m <sup>3</sup>
	5 ppm
OEL STEL	20 mg/m <sup>3</sup>
	5 ppm
Regulatory reference	Π.Δ. 90/1999 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους
<b>Hungary - Occupational Exposure Limits</b>	
Local name	ECETSAV-ANHIDRID
AK (OEL TWA)	0.42 mg/m <sup>3</sup>
CK (OEL STEL)	0.84 mg/m <sup>3</sup>
Remark	m (maró hatású anyag, amely felmarja a bőrt, nyálkahártyát, szemet vagy mindhámat); N (Irritáló anyagok, egyszerű fojtógázok, csekély egészségkárosító hatással bíró anyagok)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
<b>Ireland - Occupational Exposure Limits</b>	
Local name	Acetic anhydride
OEL TWA	2.5 mg/m <sup>3</sup>
	1 ppm
OEL STEL	10 mg/m <sup>3</sup>
	3 ppm

# Perchloric acid 0.1M. Volumetric solution European Pharmacopoeia (Ph Eur) Ref: 3003900

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

acetic anhydride (108-24-7)	
Remark	Advisory OELV (Advisory Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2024
<b>Latvia - Occupational Exposure Limits</b>	
Local name	Etiķskābes anhidrīds
OEL TWA	5 mg/m <sup>3</sup>
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2024. gada 26. martā noteikumiem Nr. 191).
<b>Lithuania - Occupational Exposure Limits</b>	
Local name	Acto rūgšties anhidridas
NRV (OEL C)	20 mg/m <sup>3</sup> 5 ppm
Remark	Ū (ūmus poveikis)
Regulatory reference	LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)
<b>Poland - Occupational Exposure Limits</b>	
Local name	Bezwodnik octowy
NDS (OEL TWA)	12 mg/m <sup>3</sup>
NDSCh (OEL STEL)	24 mg/m <sup>3</sup>
Regulatory reference	Dz. U. 2024 poz. 1017 wraz z późn. zm.
<b>Portugal - Occupational Exposure Limits</b>	
Local name	Anidrido acético
OEL TWA	1 ppm
OEL STEL	3 ppm
Remark	A4 (Agente não classificável como carcinogénico no Homem)
Regulatory reference	Norma Portuguesa NP 1796:2014
<b>Romania - Occupational Exposure Limits</b>	
Local name	Anhidridă acetică
OEL TWA	15 mg/m <sup>3</sup> 3.6 ppm
OEL STEL	25 mg/m <sup>3</sup> 6 ppm
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)
<b>Slovakia - Occupational Exposure Limits</b>	
Local name	Acetanhydrid (anhydrid kyseliny octovej)
NPHV (OEL TWA)	21 mg/m <sup>3</sup> 5 ppm
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (122/2024 Z. z.)

# Perchloric acid 0.1M. Volumetric solution European Pharmacopoeia (Ph Eur) Ref: 3003900

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

acetic anhydride (108-24-7)	
<b>Slovenia - Occupational Exposure Limits</b>	
Local name	anhidrid očetne kisline acetanhidrid)
OEL TWA	21 mg/m <sup>3</sup>
	5 ppm
OEL STEL	21 mg/m <sup>3</sup>
	5 ppm
Regulatory reference	Uradni list RS, št. 29/2024 z dne 4. 4. 2024 - Pravilnik o varovanju delavcev pred tveganji zaradi izpostavljenosti kemičnim snovem pri delu
<b>Spain - Occupational Exposure Limits</b>	
Local name	Anhidrido acético
VLA-ED (OEL TWA)	21 mg/m <sup>3</sup>
	5 ppm
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT
<b>Sweden - Occupational Exposure Limits</b>	
Local name	Ättiksyraanhydrid
KGV (OEL STEL)	20 mg/m <sup>3</sup>
	5 ppm
Regulatory reference	Hygieniska gränsvärden (AFS 2018:1)
<b>United Kingdom - Occupational Exposure Limits</b>	
Local name	Acetic anhydride
WEL TWA (OEL TWA)	2.5 mg/m <sup>3</sup> Acetic anhydride; United Kingdom; Time-weighted average exposure limit 8 h; Workplace exposure limit (EH40/2005)
	0.5 ppm Acetic anhydride; United Kingdom; Time-weighted average exposure limit 8 h; Workplace exposure limit (EH40/2005)
WEL STEL (OEL STEL)	10 mg/m <sup>3</sup> Acetic anhydride; United Kingdom; Short time value; Workplace exposure limit (EH40/2005)
	2 ppm Acetic anhydride; United Kingdom; Short time value; Workplace exposure limit (EH40/2005)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
<b>Iceland - Occupational Exposure Limits</b>	
Local name	Ediksýruanhýdríð
OEL STEL	20 mg/m <sup>3</sup>
	5 ppm
Regulatory reference	Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)
<b>Norway - Occupational Exposure Limits</b>	
Local name	Eddiksyreanhydrid
Takverdi (OEL C)	20 mg/m <sup>3</sup>
	5 ppm

# Perchloric acid 0.1M. Volumetric solution European Pharmacopoeia (Ph Eur) Ref: 3003900

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

acetic anhydride (108-24-7)	
Regulatory reference	FOR-2024-04-05-581
<b>North Macedonia - Occupational Exposure Limits</b>	
Local name	анхидрид на оцетна киселина ацетанхидрид
OEL TWA	21 mg/m <sup>3</sup>
	5 ppm
KTV	1
Short time value [mg/m <sup>3</sup> ]	21 mg/m <sup>3</sup>
Short time value [ppm]	5 ppm
Remark	(KTV) краткотрајна вредност (КТВ) значи концентрација на опасни хемиски супстанции во воздухот на работното место внатре во зона на дишење, на која работникот без опасност по здравјето може да е изложен на покусо време. Изложеноста на краткотрајни вредности може да трае највеќе 15 минути и не смее да се повтори повеќе од четирипати во работната смена, при што меѓу две изложености на оваа концентрација мора да измине најмалку 60 минути. Краткотрајната вредност е изразена во mg/m <sup>3</sup> или во ml/m <sup>3</sup> (ppm) а е дадена како многукратни дозволени пречекорувања на граничната вредност
Regulatory reference	Правилник за минималните барања за безбедност и здравје при работа на вработени од ризици поврзани со изложување на хемиски супстанции („Службен весник на Република Македонија“ бр.46/10)
<b>Switzerland - Occupational Exposure Limits</b>	
Local name	Anhydride acétique / Essigsäureanhydrid [Acetanhydrid]
MAK (OEL TWA)	4 mg/m <sup>3</sup>
	1 ppm
KZGW (OEL STEL)	8 mg/m <sup>3</sup>
	2 ppm
Notation	SS <sub>c</sub> / SS <sub>c</sub>
Remark	NIOSH
Regulatory reference	www.suva.ch, 01.01.2024
<b>USA - ACGIH - Occupational Exposure Limits</b>	
Local name	Acetic anhydride
ACGIH OEL TWA	1 ppm (Acetic anhydride; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
ACGIH OEL STEL	3 ppm (Acetic anhydride; USA; Short time value; TLV - Adopted Value)
Remark (ACGIH)	TLV® Basis: Eye & URT irr. Notations: A4 (Not classifiable as a Human Carcinogen)
Regulatory reference	ACGIH 2024

## 8.2. Exposure controls

### Appropriate engineering controls

#### Appropriate engineering controls:

Ensure good ventilation of the work station.

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

#### Personal protection equipment

##### Personal protective equipment:

Avoid all unnecessary exposure. Personal protective equipment should be chosen according to the CEN standards and in discussion with the supplier of the protective equipment.

##### Personal protective equipment symbol(s):



#### Eye and face protection

##### Eye protection:

Safety glasses

#### Skin protection

##### Skin and body protection:

Wear suitable protective clothing

##### Hand protection:

Protective gloves

#### Respiratory protection

##### Respiratory protection:

Where exposure through inhalation may occur from use, respiratory protection equipment is recommended

#### Environmental exposure controls

##### Environmental exposure controls:

Avoid release to the environment.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Colour	: Not available
Odour	: Irritating. Pungent. vinegar odour.
Odour threshold	: Not available
Melting point	: Not applicable
Freezing point	: Not available
Boiling point	: ≈ 118 °C
Flammability	: Flammable liquid and vapour.
Lower explosion limit	: Not available
Upper explosion limit	: Not available
Flash point	: ≈ 40 °C
Auto-ignition temperature	: Not available
Decomposition temperature	: Not available
pH	: Not available
Viscosity, kinematic	: Not available
Solubility	: Miscible with water.
Partition coefficient n-octanol/water (Log Kow)	: Not available
Vapour pressure	: Not available
Vapour pressure at 50°C	: Not available
Density	: Not available
Relative density	: 1
Relative vapour density at 20°C	: Not available
Particle characteristics	: Not applicable

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

#### 9.2. Other information

##### Information with regard to physical hazard classes

Explosion limits : 4 – 19 vol %

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

Flammable liquid and vapour. May intensify fire; oxidiser.

#### 10.2. Chemical stability

Stable under normal conditions.

#### 10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

#### 10.4. Conditions to avoid

Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition.

#### 10.5. Incompatible materials

Combustible materials.

#### 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

### SECTION 11: Toxicological information

#### 11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity (oral) : Not classified

Acute toxicity (dermal) : Not classified

Acute toxicity (inhalation) : Not classified

##### acetic acid (64-19-7)

LD50 oral rat	3310 mg/kg bodyweight
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##### perchloric acid (7601-90-3)

LD50 oral rat	200 – 2000 mg/kg bodyweight
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##### acetic anhydride (108-24-7)

LD50 oral rat	≈ 630 mg/kg bodyweight
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LC50 Inhalation - Rat	4.2 – 8.5 mg/L air
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Skin corrosion/irritation : Causes severe skin burns.

##### acetic acid (64-19-7)

pH	2.4
----	-----

##### perchloric acid (7601-90-3)

pH	< 2
----	-----

##### acetic anhydride (108-24-7)

pH	2.3 (10 %)
----	------------

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Serious eye damage/irritation : Causes serious eye damage.

#### acetic acid (64-19-7)

pH	2.4
----	-----

#### perchloric acid (7601-90-3)

pH	< 2
----	-----

#### acetic anhydride (108-24-7)

pH	2.3 (10 %)
----	------------

Respiratory or skin sensitisation : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

STOT-single exposure : Not classified

STOT-repeated exposure : Not classified

#### acetic acid (64-19-7)

NOAEL (oral, rat, 90 days)	290 mg/kg bodyweight
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#### perchloric acid (7601-90-3)

NOAEL (oral, rat, 90 days)	1 mg/kg bodyweight
----------------------------	--------------------

STOT-repeated exposure	May cause damage to organs (thyroid gland) through prolonged or repeated exposure.
------------------------	--

#### acetic anhydride (108-24-7)

LOAEC (inhalation, rat, vapour, 90 days)	0.104 mg/L air
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NOAEC (inhalation, rat, vapour, 90 days)	0.0042 mg/L air
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Aspiration hazard : Not classified

#### acetic acid (64-19-7)

Viscosity, kinematic	1015.385 mm <sup>2</sup> /s
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#### perchloric acid (7601-90-3)

Viscosity, kinematic	0.43 mm <sup>2</sup> /s
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#### acetic anhydride (108-24-7)

Viscosity, kinematic	0.781 mm <sup>2</sup> /s
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#### 11.2. Information on other hazards

No additional information available

### SECTION 12: Ecological information

#### 12.1. Toxicity

Ecology - general : Before neutralisation, the product may represent a danger to aquatic organisms.

Hazardous to the aquatic environment, short-term (acute) : Not classified

Hazardous to the aquatic environment, long-term (chronic) : Not classified

**Perchloric acid 0.1M.**  
**Volumetric solution**  
**European Pharmacopoeia (Ph Eur) Ref: 3003900**

**Safety Data Sheet**

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

<b>acetic acid (64-19-7)</b>	
LC50 - Fish [1]	> 1000 mg/l Oncorhynchus mykiss (Rainbow trout)
EC50 - Crustacea [1]	> 1000 mg/l Daphnia magna (Water flea)
EC50 72h - Algae [1]	> 1000 mg/l Skeletonema costatum (marine diatom)

<b>perchloric acid (7601-90-3)</b>	
LC50 - Fish [1]	1470 mg/l Lepomis macrochirus (Bluegill)
EC50 - Crustacea [1]	> 100 mg/l Daphnia magna (Water flea)
EC50 72h - Algae [1]	> 435.7 mg/l Pseudokirchneriella subcapitata
NOEC chronic fish	10 mg/l Brachydanio rerio (zebra-fish)

<b>acetic anhydride (108-24-7)</b>	
LC50 - Fish [1]	410 mg/l Carp (Leuciscus idus melanotus)
LC50 - Fish [2]	> 300.82 mg/l Oncorhynchus mykiss (Rainbow trout)
EC50 - Crustacea [1]	> 1000 mg/l Daphnia magna (Water flea)
EC50 72h - Algae [1]	> 1000 mg/l Skeletonema costatum (marine diatom)

**12.2. Persistence and degradability**

<b>Perchloric acid 0.1M.</b> <b>Volumetric solution</b> <b>European Pharmacopoeia (Ph Eur) Ref: 3003900</b>	
Persistence and degradability	Rapidly degradable

<b>acetic acid (64-19-7)</b>	
Persistence and degradability	Readily biodegradable in water, Biodegradable in soil, Very mobile in soil.
Biochemical oxygen demand (BOD)	0.6 – 0.74 g O <sub>2</sub> /g substance
Chemical oxygen demand (COD)	1.03 g O <sub>2</sub> /g substance
ThOD	1.07 g O <sub>2</sub> /g substance

<b>perchloric acid (7601-90-3)</b>	
Persistence and degradability	Rapidly degradable

<b>acetic anhydride (108-24-7)</b>	
Persistence and degradability	Readily biodegradable in water, Inherently biodegradable, Hydrolysis in water, Very mobile in soil.

**12.3. Bioaccumulative potential**

<b>acetic acid (64-19-7)</b>	
Partition coefficient n-octanol/water (Log Pow)	-0.17 (25 °C)
Bioaccumulative potential	Low bioaccumulation potential (Log Kow < 4).

<b>perchloric acid (7601-90-3)</b>	
BCF - Fish [1]	≤ 1
Partition coefficient n-octanol/water (Log Pow)	-4.63 (estimated value)

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

perchloric acid (7601-90-3)	
Bioaccumulative potential	Not bioaccumulative.
acetic anhydride (108-24-7)	
BCF - Fish [1]	3.16
Partition coefficient n-octanol/water (Log Pow)	-0.2
Bioaccumulative potential	Not bioaccumulative.

#### 12.4. Mobility in soil

acetic acid (64-19-7)	
Surface tension	0.028 N/m (20 °C)
Ecology - soil	May be harmful to plant growth, blooming and fruit formation.
perchloric acid (7601-90-3)	
Surface tension	0.031 N/m 25 °C
acetic anhydride (108-24-7)	
Surface tension	0.033 N/m (20°C)

#### 12.5. Results of PBT and vPvB assessment

Component	
Substance(s) not meeting the PBT criteria of REACH regulation, in accordance with Annex XIII	acetic acid (64-19-7), perchloric acid (7601-90-3), acetic anhydride (108-24-7)
Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII	acetic acid (64-19-7), perchloric acid (7601-90-3), acetic anhydride (108-24-7)

#### 12.6. Endocrine disrupting properties

No additional information available

#### 12.7. Other adverse effects

No additional information available

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

Regional waste regulation	: Disposal must be done according to official regulations.
Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Sewage disposal recommendations	: Disposal must be done according to official regulations.
Product/Packaging disposal recommendations	: Waste material must be disposed of in accordance with the Directive on waste 2008/98/EC as well as other national and local regulations. Disposal must be done according to official regulations.
Additional information	: Flammable vapours may accumulate in the container. Do not re-use empty containers.
Ecological waste information	: Avoid release to the environment.
European List of Waste (LoW, EC 2000/532)	: 16 05 06* - laboratory chemicals consisting of or containing dangerous substances including mixtures of laboratory chemicals

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

### SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

ADR	IMDG	IATA	ADN	RID
<b>14.1. UN number or ID number</b>				
UN 2789	UN 2789	UN 2789	UN 2789	UN 2789
<b>14.2. UN proper shipping name</b>				
ACETIC ACID SOLUTION	ACETIC ACID SOLUTION	Acetic acid solution	ACETIC ACID SOLUTION	ACETIC ACID SOLUTION
<b>Transport document description</b>				
UN 2789 ACETIC ACID SOLUTION, 8 (3), II, (D/E)	UN 2789 ACETIC ACID SOLUTION, 8 (3), II	UN 2789 Acetic acid solution, 8 (3), II	UN 2789 ACETIC ACID SOLUTION, 8 (3), II	UN 2789 ACETIC ACID SOLUTION, 8 (3), II
<b>14.3. Transport hazard class(es)</b>				
8 (3)	8 (3)	8 (3)	8 (3)	8 (3)
<b>14.4. Packing group</b>				
II	II	II	II	II
<b>14.5. Environmental hazards</b>				
Dangerous for the environment: No	Dangerous for the environment: No Marine pollutant: No EmS-No. (Fire): F-E EmS-No. (Spillage): S-C	Dangerous for the environment: No	Dangerous for the environment: No	Dangerous for the environment: No
No supplementary information available				

### 14.6. Special precautions for user

#### Overland transport

Classification code (ADR)	: CF1
Limited quantities (ADR)	: 1I
Excepted quantities (ADR)	: E2
Packing instructions (ADR)	: P001, IBC02
Mixed packing provisions (ADR)	: MP15
Portable tank and bulk container instructions (ADR)	: T7
Portable tank and bulk container special provisions (ADR)	: TP2
Tank code (ADR)	: L4BN
Vehicle for tank carriage	: FL
Transport category (ADR)	: 2
Special provisions for carriage - Operation (ADR)	: S2
Hazard identification number (Kemler No.)	: 83
Orange plates	:



Tunnel restriction code (ADR)	: D/E
EAC code	: •2P
APP code	: A(fl)

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

#### Transport by sea

Packing instructions (IMDG)	: P001
IBC packing instructions (IMDG)	: IBC02
Tank instructions (IMDG)	: T7
Tank special provisions (IMDG)	: TP2
Stowage category (IMDG)	: A
Properties and observations (IMDG)	: Colourless flammable liquid with a pungent odour. When pure, crystallizes below 16°C. Flashpoint: 40°C c.c. (pure product) 60°C c.c. (80% solution). Explosive limits: 4% to 17%. Miscible with water. Corrosive to lead and most other metals. Corrosive to skin, eyes and mucous membranes.

#### Air transport

PCA Excepted quantities (IATA)	: E2
PCA Limited quantities (IATA)	: Y840
PCA limited quantity max net quantity (IATA)	: 0.5L
PCA packing instructions (IATA)	: 851
PCA max net quantity (IATA)	: 1L
CAO packing instructions (IATA)	: 855
CAO max net quantity (IATA)	: 30L
ERG code (IATA)	: 8F

#### Inland waterway transport

Classification code (ADN)	: CF1
Limited quantities (ADN)	: 1 L
Excepted quantities (ADN)	: E2
Carriage permitted (ADN)	: T
Equipment required (ADN)	: PP, EP, EX, A
Ventilation (ADN)	: VE01
Number of blue cones/lights (ADN)	: 1

#### Rail transport

Classification code (RID)	: CF1
Limited quantities (RID)	: 1L
Excepted quantities (RID)	: E2
Packing instructions (RID)	: P001, IBC02
Mixed packing provisions (RID)	: MP15
Portable tank and bulk container instructions (RID)	: T7
Portable tank and bulk container special provisions (RID)	: TP2
Tank codes for RID tanks (RID)	: L4BN
Transport category (RID)	: 2
Colis express (express parcels) (RID)	: CE6
Hazard identification number (RID)	: 83

#### 14.7. Maritime transport in bulk according to IMO instruments

Not applicable

# Perchloric acid 0.1M. Volumetric solution European Pharmacopoeia (Ph Eur) Ref: 3003900

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

### SECTION 15: Regulatory information

#### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

##### EU-Regulations

##### REACH Annex XVII (Restriction List)

EU restriction list (REACH Annex XVII)		
Reference code	Applicable on	Entry title or description
3(a)	Perchloric acid 0.1M. Volumetric solution European Pharmacopoeia (Ph Eur) Ref: 3003900 ; acetic acid ; perchloric acid ; acetic anhydride	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F
3(b)	Perchloric acid 0.1M. Volumetric solution European Pharmacopoeia (Ph Eur) Ref: 3003900 ; acetic acid ; perchloric acid ; acetic anhydride	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10
40.	acetic acid	Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 or not.

##### REACH Annex XIV (Authorisation List)

Contains no substance(s) listed on REACH Annex XIV (Authorisation List)

##### REACH Candidate List (SVHC)

Contains no substance(s) listed on the REACH Candidate List

##### PIC Regulation (Prior Informed Consent)

Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals)

##### POP Regulation (Persistent Organic Pollutants)

Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants)

##### Ozone Regulation (2024/590)

Contains no substance(s) listed on the Ozone Depletion list (Regulation EU 2024/590 on substances that deplete the ozone layer)

##### Council Regulation (EC) for the control of dual-use items

Contains no substance subject to the COUNCIL REGULATION (EC) for the control of dual-use items

##### Explosives Precursors Regulation (2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

##### Drug Precursors Regulation (273/2004)

Contains substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

Name	CN designation	CAS-No.	CN code	Category, Subcategory	Threshold	Annex
Acetic anhydride		108-24-7	2915 24 00	Category 2	100 l	Annex I, Annex II

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

#### National regulations

##### Germany

- VOC ordinance (ChemVOCFarbV) :
- Water hazard class (WGK) : WGK 1, Slightly hazardous to water (Classification according to AwSV, Annex 1).
- Chemicals Prohibition Ordinance (ChemVerbotsV) : This product is subject to ChemVerbotsV Annex 2 Entry 2. The following requirement must be observed: Basic requirements for the implementation of the submission (according to § 8 paragraph 1, 3 and 4).
- Hazardous Incident Ordinance (12. BImSchV) : Is not subject to the Hazardous Incident Ordinance (12. BImSchV)

##### Netherlands

- ABM category : A(4) - low hazard for aquatic organisms, may have longterm hazardous effects in aquatic environment
- SZW-lijst van kankerverwekkende stoffen : None of the components are listed
- SZW-lijst van mutagene stoffen : None of the components are listed
- SZW-lijst van reprotoxische stoffen – Borstvoeding : None of the components are listed
- SZW-lijst van reprotoxische stoffen – Vruchtbaarheid : None of the components are listed
- SZW-lijst van reprotoxische stoffen – Ontwikkeling : None of the components are listed

##### Denmark

- Classification remarks : Emergency management guidelines for the storage of flammable liquids must be followed
- Danish National Regulations : Young people below the age of 18 years are not allowed to use the product  
Pregnant/breastfeeding women working with the product must not be in direct contact with the product

##### Poland

- Polish National Regulations : Act of 25 February 2011 on chemical substances and their mixtures (J. o L. No. 63, item 322 as amended; consolidated text J. o L. 2019, item 1225).  
Act of 14 December 2012 on waste (J. o L. 2013, item 322 as amended; consolidated text J. o L. 2020, item 797).  
The announcement of Marshal of the Sejm of the Republic of Poland dated 19 October 2016 concerning the consolidated text announcement of the decree on the management of packaging and packaging waste (J. o L. 2016, item 1863 as amended).  
Decree of the Minister of Environment of 14 December 2014 on the catalogue of waste (J. o L. 2014, item 1923).  
Act of 19 August 2011 on the Carriage of Dangerous Goods (J. o L. 2011 No. 227, item 1367 as amended; consolidated text J. o L. 2020, item 154).  
Regulation of the Minister of Family, Labour and Social Policy of 12 June 2018 on the highest permissible concentration and intensity of noxious agents for health at work environment (J. o L. item 1286 as amended).  
The announcement of Minister of Health dated 9 September 2016 concerning the consolidated text announcement of the decree of the Minister of Health of 30 December 2004 on health and safety at work related to exposure to chemical agents at work (J. o L. of 16 September 2016, item 1488)  
Regulation of the Minister of Health of 2 February 2011 on tests and measurements of the noxious agents for health at work environment (J. o L. No. 33, item 166 as amended).  
Regulation of the Minister of Environment of 9 December 2003 on particularly hazardous substances to the environment (J. o L. No. 217, item 2141).  
ADR Agreement: Government Statement of 13 March 2023 on the entry into force of amendments to Annexes A and B to the Agreement concerning the International Carriage of Dangerous Goods by Road (ADR), signed in Geneva on 30 September 1957 (J. o. L. 2023, item 891)

#### 15.2. Chemical safety assessment

No chemical safety assessment has been carried out

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

#### SECTION 16: Other information

Indication of changes		
Section	Changed item	Comments
1.2	Main use category	Modified
2.2	Precautionary statements (CLP)	Modified
4.1	First-aid measures for first aider	Added
4.2	Symptoms/effects after inhalation	Added
5.1	Unsuitable extinguishing media	Added
5.2	Explosion hazard	Added
5.3	Firefighting instructions	Added
6.1	Emergency procedures	Added
6.1	Protective equipment	Added
6.1	General measures	Added
6.3	For containment	Added
7.1	Additional hazards when processed	Added
7.2	Packaging materials	Added
8.2	Appropriate engineering controls	Modified
8.2	Personal protective equipment	Modified
9	Flammability	Modified
9	Odour	Modified
13.1	Sewage disposal recommendations	Added
13.1	Regional waste regulation	Added
13.1	Additional information	Modified
13.1	Product/Packaging disposal recommendations	Modified
15.1	REACH Annex XVII	Modified
16	Abbreviations and acronyms	Added

#### Abbreviations and acronyms:

ACGIH	American Conference of Government Industrial Hygienists
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)
CAS-No.	Chemical Abstract Service number
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Abbreviations and acronyms:	
COD	Chemical oxygen demand (COD)
CSA	Chemical safety assessment
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC-No.	European Community number
EC50	Median effective concentration
ED	Endocrine disruptor
EN	European Standard
EWC	European waste catalogue
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
Log Kow	Partition coefficient n-octanol/water (Log Kow)
Log Pow	Partition coefficient n-octanol/water (Log Pow)
MAK	maximum workplace concentration
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
N.O.S.	Not Otherwise Specified
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
OSHA	Occupational Safety Health Administration
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
PPE	Personal protection equipment
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
STP	Sewage treatment plant
TF	Technical function
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
TWA	Time Weighted Average
VOC	Volatile Organic Compounds
vPvB	Very Persistent and Very Bioaccumulative

# Perchloric acid 0.1M.

## Volumetric solution

### European Pharmacopoeia (Ph Eur) Ref: 3003900

#### Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

#### Abbreviations and acronyms:

UFI	Unique Formula Identifier
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#### Full text of H- and EUH-statements:

Acute Tox. 4 (Inhalation)	Acute toxicity (inhal.), Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Flam. Liq. 3	Flammable liquids, Category 3
Met. Corr. 1	Corrosive to metals, Category 1
Ox. Liq. 1	Oxidising Liquids, Category 1
Ox. Liq. 2	Oxidising Liquids, Category 2
Skin Corr. 1A	Skin corrosion/irritation, Category 1, Sub-Category 1A
Skin Corr. 1B	Skin corrosion/irritation, Category 1, Sub-Category 1B
Skin Irrit. 2	Skin corrosion/irritation, Category 2
STOT RE 2	Specific target organ toxicity – Repeated exposure, Category 2
STOT SE 3	Specific target organ toxicity – Single exposure, Category 3, Respiratory tract irritation
H226	Flammable liquid and vapour.
H271	May cause fire or explosion; strong oxidiser.
H272	May intensify fire; oxidiser.
H290	May be corrosive to metals.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H373	May cause damage to organs through prolonged or repeated exposure.

#### Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Flam. Liq. 3	H226	On basis of test data
Ox. Liq. 2	H272	Calculation method
Skin Corr. 1A	H314	Calculation method
Eye Dam. 1	H318	Calculation method

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.