

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier**

Product form : Mixture
Product name : Titanium (III) chloride-sulfuric acid Test Solution
Product code : JPHTS512

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 : Laboratory chemical
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.comWeb: 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)	http://www.npis.org	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]**

Corrosive to metals, Category 1 H290

Skin corrosion/irritation, Category 2 H315

Serious eye damage/eye irritation, Category 1 H318

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

Adverse physicochemical, human health and environmental effects

May be corrosive to metals. Causes skin irritation. Causes serious eye damage.

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2.2. Label elements

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

Hazard pictograms (CLP)



GHS05

GHS07

Signal word (CLP)

: Danger

Contains

: titanium trichloride

Hazard statements (CLP)

: H290 - May be corrosive to metals.

H315 - Causes skin irritation.

H318 - Causes serious eye damage.

Precautionary statements (CLP)

: P264 - Wash hands, forearms and face thoroughly after handling.

P280 - Wear protective gloves/protective clothing/eye protection/face protection.

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.

P390 - Absorb spillage to prevent material damage.

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	titanium trichloride (7705-07-9), sulphuric acid (7664-93-9), hydrochloric acid (7647-01-0)
Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII	titanium trichloride (7705-07-9), sulphuric acid (7664-93-9), hydrochloric acid (7647-01-0)

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 %

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
water	CAS-No.: 7732-18-5 EC-No.: 231-791-2	82	Not classified
sulphuric acid	CAS-No.: 7664-93-9 EC-No.: 231-639-5 EC Index-No.: 016-020-00-8 REACH-no: 01-2119458838-20-XXXX	13	Met. Corr. 1, H290 Skin Corr. 1A, H314 Eye Dam. 1, H318 Aquatic Chronic Not classified
titanium trichloride	CAS-No.: 7705-07-9 EC-No.: 231-728-9	3	Pyr. Sol. 1, H250 Met. Corr. 1, H290 Skin Corr. 1B, H314

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Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
hydrochloric acid	CAS-No.: 7647-01-0 EC-No.: 231-595-7 EC Index-No.: 017-002-01-X REACH-no: 01-2119484862-27-XXXX	2	Met. Corr. 1, H290 Skin Corr. 1B, H314 STOT SE 3, H335

Specific concentration limits:		
Name	Product identifier	Specific concentration limits (%)
sulphuric acid	CAS-No.: 7664-93-9 EC-No.: 231-639-5 EC Index-No.: 016-020-00-8 REACH-no: 01-2119458838-20-XXXX	(5 ≤ C < 15) Eye Irrit. 2; H319 (5 ≤ C < 15) Skin Irrit. 2; H315 (15 ≤ C < 100) Skin Corr. 1A; H314
hydrochloric acid	CAS-No.: 7647-01-0 EC-No.: 231-595-7 EC Index-No.: 017-002-01-X REACH-no: 01-2119484862-27-XXXX	(10 ≤ C < 100) STOT SE 3; H335 (10 ≤ C < 25) Eye Irrit. 2; H319 (10 ≤ C < 25) Skin Irrit. 2; H315 (25 ≤ C < 100) Skin Corr. 1B; 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	: If you feel unwell, seek medical advice.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact	: Wash skin with plenty of water. Take off contaminated clothing. If skin irritation occurs: Get medical advice/attention.
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	: Call a poison center or a doctor if you feel unwell.
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	: Irritation.
Symptoms/effects after eye contact	: Serious damage to eyes.
Symptoms/effects after ingestion	: None under normal conditions.

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	: No fire hazard.
Explosion hazard	: No direct explosion hazard.

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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.

For non-emergency personnel

Protective equipment : Wear recommended personal protective equipment.

Emergency procedures : Ventilate spillage area. Avoid contact with skin and eyes.

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.

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.

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. Avoid contact with skin and eyes. Wear personal protective equipment.

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 : Keep in a cool, well-ventilated place away from heat.

Storage conditions : Store in corrosive resistant container with a resistant inner liner. Keep only in original container.

Incompatible materials : Metals.

Packaging materials : Store always product in container of same material as original container.

Germany

Storage class (LGK, TRGS 510) : LGK 12 - Non-combustible liquids

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Joint storage table

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 6.2, LGK 7

Joint storage with restrictions permitted for

: LGK 4.1A, LGK 4.3, LGK 5.1C

Joint storage permitted for

: LGK 2A, LGK 2B, LGK 3, LGK 4.1B, LGK 4.2, LGK 5.1A, LGK 5.1B, LGK 5.2, LGK 6.1A, LGK 6.1B, LGK 6.1C, LGK 6.1D, LGK 8A, LGK 8B, LGK 10, LGK 11, LGK 12, LGK 13, LGK 10-13

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

titanium trichloride (7705-07-9)	
Bulgaria - Occupational Exposure Limits	
Local name	Титан
OEL TWA	1 mg/m ³ (неорганични съединения)
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.)
Latvia - Occupational Exposure Limits	
Local name	Titāns
OEL TWA	10 mg/m ³
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2024. gada 26. martā noteikumiem Nr. 191).
Poland - Occupational Exposure Limits	
Local name	Tytan i jego związki
NDS (OEL TWA)	10 mg/m ³ w przeliczeniu na Ti
NDSch (OEL STEL)	30 mg/m ³ w przeliczeniu na Ti
Regulatory reference	Dz. U. 2024 poz. 1017 wraz z późn. zm.
Romania - Occupational Exposure Limits	
Local name	Titan
OEL TWA	10 mg/m ³
OEL STEL	15 mg/m ³
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)
sulphuric acid (7664-93-9)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Sulphuric acid (mist)
IOEL TWA	0.05 mg/m ³

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sulphuric acid (7664-93-9)	
Regulatory reference	COMMISSION DIRECTIVE 2009/161/EU
Albania - Occupational Exposure Limits	
Local name	Acidi sulfurik
OEL TWA	0.05 mg/m ³ (mjegull)
Remark	10) Gjatë përzgjedhjes së një metode të përshtatshme për monitorimin e ekspozimit, merren parasysh kufizimet potenciale dhe interferencat që mund të shfaqen në praninë e përbërjeve të tjera të squfurit; 11) Mjegulla përcaktohet si fraksion toraksi (fraksion i grimcave të inhaluara, që janë në gjendje të kalojnë përtej laringut)
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"
Austria - Occupational Exposure Limits	
Local name	Schwefelsäure
MAK (OEL TWA)	0.1 mg/m ³ (E, entspricht 0,05 mg/m ³ thorakal)
OEL C	0.2 mg/m ³ (E)
Remark	Bei der Auswahl einer geeigneten Messmethode sind allfällige Störungen durch andere Schwefel-verbindungen zu vermeiden.
Regulatory reference	BGBI. II Nr. 156/2021
Belgium - Occupational Exposure Limits	
Local name	Acide sulfurique (brume) # Zwavelzuur (nevel)
OEL TWA	0.2 mg/m ³
OEL STEL	3 mg/m ³
Remark	C: la mention "C" signifie que l'agent en question relève du champ d'application du titre 2 relatif aux agents cancérigènes, mutagènes et reprotoïques du livre VI du code de bien-être au travail. Lors du choix d'une méthode appropriée de suivi de l'exposition, il convient de tenir compte des limitations et interférences potentielles qui peuvent survenir en présence d'autre composés du soufre. # C: de vermelding "C" betekent dat het betrokken agens valt onder het toepassingsgebied van titel 2 betreffende kankerverwekkende, mutagene en reprotoxische agentia van boek VI van de codex over het welzijn op het werk. Bij de keuze van een geschikte blootstellingsmonitoringmethode dient rekening gehouden te worden met eventuele beperkingen en interferenties door de aanwezigheid van andere zwavelverbindingen.
Regulatory reference	Koninklijk besluit/Arrêté royal 16/11/2023
Bulgaria - Occupational Exposure Limits	
Local name	Сярна киселина
OEL TWA	0.05 mg/m ³ (аерозоли)
Remark	• (Химични агенти, за които са определени гранични стойности във въздуха на работната среда за Европейската общност); (2) При избора на подходящ метод за наблюдение на експозицията следва да се вземат под внимание потенциалните ограничения и взаимодействия, които могат да възникнат в присъствието на други серни съединения; (3) Аерозолът се определя като вдишвана част
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.)
Cyprus - Occupational Exposure Limits	
Local name	Θειικό οξύ (ατμοί)

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sulphuric acid (7664-93-9)	
OEL TWA	0.05 mg/m ³
Remark	Για την επιλογή της κατάλληλης μεθόδου παρακολούθησης της έκθεσης πρέπει να λαμβάνονται υπόψη οι ενδεχόμενοι περιορισμοί και παρεμβολές από την παρουσία Cιλλων ενώσεων του θείου. Οι ατμοί ορίζονται ως το θωρακικό κλάσμα.
Regulatory reference	Κανονισμοί του 2012 (Κ.Δ.Π. 70/2012)
Czech Republic - Occupational Exposure Limits	
Local name	Kyselina sírová
PEL (OEL TWA)	1 mg/m ³ (jako SO ₃) 0.05 mg/m ³ (mlha koncentrované kyseliny)
NPK-P (OEL C)	2 mg/m ³ (jako SO ₃)
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	Svovlsyre
OEL TWA	0.05 mg/m ³ tåge, thorakal fraktion
Remark	E (betyder, at stoffet har en EF-grænseværdi)
Regulatory reference	BEK nr 291 af 19/03/2024
Estonia - Occupational Exposure Limits	
Local name	Väävelhape, udu
OEL TWA	0.05 mg/m ³
Remark	28 (Kokkupuute seiremeetodi valimisel tuleb arvestada võimalikke piiranguid ja häireid, mis võivad tekkida väävlühendite esinemise korral), 29 (Udu määratletakse ülemistesse hingamisteedesse jõudvate osakeste fraktsioonina)
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)
Finland - Occupational Exposure Limits	
Local name	Rikkihappo
HTP (OEL TWA)	0.05 mg/m ³ torakaalijae
HTP (OEL STEL)	0.1 mg/m ³ torakaalijae
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)
France - Occupational Exposure Limits	
Local name	Acide sulfurique
VME (OEL TWA)	0.05 mg/m ³ (fraction thoracique de l'aérosol)
VLE (OEL C/STEL)	3 mg/m ³
Remark	Valeurs règlementaires indicatives. La VLEP CT n'est pas réglementaire et provient d'une circulaire du ministère chargé du travail
Regulatory reference	Arrêté du 30 juin 2004 modifié et circulaire du Ministère du travail (réf.: INRS ED 6443, 2022; Outil65; Arrêté du 9 mai 2012)
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Schwefelsäure
AGW (OEL TWA)	0.1 mg/m ³ (E)
Peak exposure limitation factor	1(I)

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sulphuric acid (7664-93-9)	
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	Sulphuric acid
OEL TWA	0.05 mg/m ³ The mist is defined as the thoracic fraction
Remark	When selecting an appropriate exposure monitoring method, account should be taken of potential limitations and interferences that may arise in the presence of other sulphur compounds
Regulatory reference	Factories (Control of Chemical Agents at Work) Regulations 2003 (LN. 2018/181)
Greece - Occupational Exposure Limits	
Local name	Θειικό οξύ (ομίχλη)
OEL TWA	1 mg/m ³
Remark	Η ένδειξη «δέρμα» στις οριακές τιμές επαγγελματικής έκθεσης επισημαίνει το ενδεχόμενο σημαντικής διείσδυσης μέσω του δέρματος.
Regulatory reference	Π.Δ. 12/2012 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους
Hungary - Occupational Exposure Limits	
Local name	KÉNSAV
AK (OEL TWA)	0.05 mg/m ³ torakális frakció
Remark	m (maró hatású anyag, amely felmarja a bőrt, nyálkahártyát, szemet vagy mindhámat); EU3 (2009/161/EK 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
Italy - Occupational Exposure Limits	
Local name	Acido solforico (nebulizzazione)
OEL TWA	0.05 mg/m ³
Regulatory reference	Allegato XXXVIII del Decreto Legislativo 4 settembre 2024, n. 135
Lithuania - Occupational Exposure Limits	
Local name	Sieros rūgštis (rūkas)
IPRV (OEL TWA)	0.05 mg/m ³
TPRV (OEL STEL)	3 mg/m ³
Remark	Renkantis tinkamą poveikio stebėsenos modelį turi būti atsižvelgiama į galimus apribojimus ir trukdžius, galinčius kilti, kai esama kitų sieros junginių. Rūkas (migla) apibrėžiamas kaip įkvepiama dalis.
Regulatory reference	LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)
Luxembourg - Occupational Exposure Limits	
Local name	Acide sulfurique (brume)
OEL STEL	0.05 mg/m ³ La brume est définie comme la fraction thoracique

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sulphuric acid (7664-93-9)	
Remark	Lors du choix d'une méthode appropriée de suivi de l'exposition, il convient de tenir compte des limitations et interférences potentielles qui peuvent survenir en présence d'autres composés du soufre
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	Sulphuric acid
OEL TWA	0.05 mg/m ³ (mist # ċpar)
Remark	When selecting an appropriate exposure monitoring method, account should be taken of potential limitations and interferences that may arise in the presence of other sulphur compounds. The mist is defined as the thoracic fraction. # Fl-għażla ta' metodu xieraq għall-monitoraġġ tal-esponiment, għandhom jitqiesu l-limitazzjonijiet u l-interferenzi potenzjali li jistgħu jfeġġu fil-preżenza ta' komposti oħrajn tas-sulphur (kubrit). Dan iċ-ċpar huwa mfisser bħala l-frazzjoni toraċika.
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)
Netherlands - Occupational Exposure Limits	
Local name	Zwavelzuur
TGG-8u (OEL TWA)	0.05 mg/m ³ (nevel), gedefinieerd als de thoracale fractie 0.012 ppm (Zwavelzuur (nevel), gedefinieerd als de thoracale fractie; Netherlands; Time-weighted average exposure limit 8 h; Public occupational exposure limit value)
Remark	Kankerverwekkende stof
Regulatory reference	Arbeidsomstandighedenregeling 2024
Portugal - Occupational Exposure Limits	
Local name	Ácido sulfúrico
OEL TWA	0.2 mg/m ³ T (Fração torácica)
Remark	A2 (Agente carcinogénico confirmado nos animais de laboratório con relevância desconhecida no Homem (Esta classificação refere-se a ácido sulfúrico presente en misturas ácidas inorgánicas fortes))
Regulatory reference	Norma Portuguesa NP 1796:2014
Romania - Occupational Exposure Limits	
Local name	Acid sulfuric
OEL TWA	0.05 mg/m ³
Remark	Pentru acid sulfuric: atunci când se alege o metodă adecvată de monitorizare a expunerii, trebuie să se țină cont de limitările și interferențele potențiale care pot apărea în prezența altor compuși ai sulfurului. Particule lichide pulverizate (Pentru acid sulfuric: particulele lichide pulverizate se definesc ca fracțiune toracică).
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)
Serbia - Occupational Exposure Limits	
Local name	сумпорна киселина
OEL TWA	0 mg/m ³
Remark	ЕУ*** – напомена да се ради о хемијским материјама за које су утврђене индикативне граничне вредности изложености према Директиви 2009/161/ЕУ (трећа листа)

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sulphuric acid (7664-93-9)	
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)
Slovakia - Occupational Exposure Limits	
Local name	Kyselina sírová (hmla)
NPHV (OEL TWA)	0.05 mg/m ³
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (122/2024 Z. z.)
Slovenia - Occupational Exposure Limits	
Local name	žveplova kislina - meгла
OEL TWA	0.05 mg/m ³
OEL STEL	0.05 mg/m ³
Remark	Y (Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in bat vrednosti), EU
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
Spain - Occupational Exposure Limits	
Local name	Ácido sulfúrico
VLA-ED (OEL TWA)	0.05 mg/m ³ niebla
Remark	az (Al seleccionar un método adecuado de control de la exposición, deben tomarse en consideración posibles limitaciones e interferencias que pueden surgir en presencia de otros compuestos de azufre), VLI (Agente químico para el que la U.E. estableció en su día un valor límite indicativo), s (Esta sustancia tiene prohibida total o parcialmente su comercialización y uso como fitosanitario y/o como biocida. Para una información detallada acerca de las prohibiciones consúltese: Base de datos de productos biocidas: http://www.msssi.gob.es/ciudadanos/productos.do?tipo=plaguicidas Base de datos de productos fitosanitarios http://www.magrama.gob.es/agricultura/pags/fitos/registro/fichas/pdf/Lista_sa.pdf), d (Véase UNE EN 481: Atmósferas en los puestos de trabajo. Definición de las fracciones por el tamaño de las partículas para la medición de aerosoles).
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT
Sweden - Occupational Exposure Limits	
Local name	Svavelsyra
NGV (OEL TWA)	0.1 mg/m ³ inhalerbar fraktion
KGV (OEL STEL)	0.2 mg/m ³ inhalerbar fraktion
Remark	C (Ämnet är cancerframkallande. Risk för cancer finns även vid annan exponering än via inandning. För vissa cancerframkallande ämnen som inte har gränsvärden gäller förbud eller tillståndskrav enligt föreskrifterna om kemiska arbetsmiljörisker); V (Vägledande korttidsgränsvärde ska användas som ett rekommenderat högsta värde som inte bör överskridas); 3 (Med inhalerbar fraktion menas den mängd partiklar, av totalmängden partiklar i luften, som man inandas genom näsa och mun); 46 (Aerosoler av svavelsyra har i studier visats vara cancerframkallande)
Regulatory reference	Hygieniska gränsvärden (AFS 2018:1)
United Kingdom - Occupational Exposure Limits	
Local name	Sulphuric acid
WEL TWA (OEL TWA)	0.05 mg/m ³ mist
Remark	The mist is defined as the thoracic fraction
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE

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sulphuric acid (7664-93-9)	
Iceland - Occupational Exposure Limits	
Local name	Brennisteinssýra (úði)
OEL TWA	0.05 mg/m ³
Regulatory reference	Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)
Norway - Occupational Exposure Limits	
Local name	Svovelsyreaerosol
Grænseverdi (OEL TWA)	0.1 mg/m ³ Torakal fraksjon
Remark	K: Kjemikalier som skal betraktes som kreftfremkallende; E: EU har en veiledende grænseverdi og/eller anmerkning for stoffet.
Regulatory reference	FOR-2024-04-05-581
North Macedonia - Occupational Exposure Limits	
Local name	сулфурна киселина
OEL TWA	0.1 mg/m ³ (l) инхалабилна фракција – дел на вкупно суспендирани материји, кои работникот ги вдишува
Remark	(Y)
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 sulfurique / Schwefelsäure
MAK (OEL TWA)	0.1 mg/m ³ (i) / (e)
KZGW (OEL STEL)	0.2 mg/m ³ (i) / (e)
Notation	C1 [#] _A , SS _C / C1 [#] _A , SS _C
Remark	IFA, NIOSH, OSHA. Pas de risque accru de cancer si la VME est respectée / IFA, NIOSH, OSHA. Kein erhöhtes Krebsrisiko bei Einhalten des MAK-Werts
Regulatory reference	www.suva.ch, 01.01.2024
USA - ACGIH - Occupational Exposure Limits	
Local name	Sulfuric acid
ACGIH OEL TWA	0.2 mg/m ³ (T - Thoracic particulate matter)
Remark (ACGIH)	TLV® Basis: Pulm func. Notations: A2 (Suspected Human Carcinogen. Classification refers to sulfuric acid contained in strong inorganic acid mists)
Regulatory reference	ACGIH 2024
hydrochloric acid (7647-01-0)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Hydrogen chloride
IOEL TWA	8 mg/m ³ 5 ppm
IOEL STEL	15 mg/m ³ 10 ppm
Regulatory reference	COMMISSION DIRECTIVE 2000/39/EC

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hydrochloric acid (7647-01-0)	
Albania - Occupational Exposure Limits	
Local name	Klorur hidrogjeni
OEL TWA	8 mg/m ³
	5 ppm
OEL STEL	15 mg/m ³
	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"
Austria - Occupational Exposure Limits	
Local name	Chlorwasserstoff (Hydrogenchlorid; Salzsäure)
MAK (OEL TWA)	8 mg/m ³
	5 ppm
MAK (OEL STEL)	15 mg/m ³ (8x 5(Mow) min)
	10 ppm (8x 5(Mow) min)
Regulatory reference	BGBl. II Nr. 156/2021
Belgium - Occupational Exposure Limits	
Local name	Hydrogène (chlorure d') # Waterstofchloride
OEL TWA	8 mg/m ³
	5 ppm
OEL STEL	15 mg/m ³
	10 ppm
Regulatory reference	Koninklijk besluit/Arrêté royal 16/11/2023
Bulgaria - Occupational Exposure Limits	
Local name	Хлороводород
OEL TWA	8 mg/m ³
	5 ppm
OEL STEL	15 mg/m ³
	10 ppm
Remark	• (Химични агенти, за които са определени гранични стойности във въздуха на работната среда за Европейската общност)
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.)
Croatia - Occupational Exposure Limits	
Local name	Vodikov klorid
GVI (OEL TWA)	8 mg/m ³
	5 ppm
KGVI (OEL STEL)	15 mg/m ³
	10 ppm
Remark	Direktiva: 2000/39/EZ

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hydrochloric acid (7647-01-0)	
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023)
Cyprus - Occupational Exposure Limits	
Local name	Υδροχλώριο
OEL TWA	8 mg/m ³
	5 ppm
OEL STEL	15 mg/m ³
	10 ppm
Regulatory reference	Κανονισμοί του 2007 (Κ.Δ.Π. 295/2007)
Czech Republic - Occupational Exposure Limits	
Local name	Chlorovodík
PEL (OEL TWA)	8 mg/m ³
	5 ppm
NPK-P (OEL C)	15 mg/m ³
	10 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	Hydrogenchlorid (Chlorbrite)
OEL TWA	8 mg/m ³
	5 ppm
Remark	E (betyder, at stoffet har en EF-grænseværdi)
Regulatory reference	BEK nr 291 af 19/03/2024
Estonia - Occupational Exposure Limits	
Local name	Vesinikkloriid
OEL TWA	8 mg/m ³
	5 ppm
OEL STEL	15 mg/m ³
	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	Kloorivety, vedetön
HTP (OEL STEL)	7.6 mg/m ³
	5 ppm
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)
France - Occupational Exposure Limits	
Local name	Chlorure d'hydrogène (Acide chlorhydrique)
VLE (OEL C/STEL)	7.6 mg/m ³
	5 ppm

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hydrochloric acid (7647-01-0)	
Remark	Valeurs réglementaires contraignantes
Regulatory reference	Article R4412-149 du Code du travail (réf.: INRS ED 6443, 2022; Outil65; Décret n° 2019-1487; Décret n° 2020-1546; Décret n° 2021-434; Décret n° 2021-1849)
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Hydrogenchlorid
AGW (OEL TWA)	3 mg/m ³ 2 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	Hydrogen chloride
OEL TWA	8 mg/m ³ 5 ppm
OEL STEL	15 mg/m ³ 10 ppm
Regulatory reference	Factories (Control of Chemical Agents at Work) Regulations 2003 (LN. 2018/181)
Greece - Occupational Exposure Limits	
Local name	Υδροχλώριο
OEL TWA	7 mg/m ³ 5 ppm
OEL STEL	7 mg/m ³ 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
Hungary - Occupational Exposure Limits	
Local name	SÓSAV
AK (OEL TWA)	8 mg/m ³ 5 ppm
CK (OEL STEL)	15 mg/m ³ 10 ppm
Remark	i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindhármat), m (maró hatású anyag, amely felmarja a bőrt, nyálkahártyát, szemet vagy mindhármat); EU1 (2000/39/EK 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

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hydrochloric acid (7647-01-0)	
Ireland - Occupational Exposure Limits	
Local name	Hydrogen chloride
OEL TWA	8 mg/m ³
	5 ppm
OEL STEL	15 mg/m ³
	10 ppm
Remark	IOELV (Indicative Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2024
Italy - Occupational Exposure Limits	
Local name	Acido cloridrico
OEL TWA	8 mg/m ³
	5 ppm
OEL STEL	15 mg/m ³
	10 ppm
Regulatory reference	Allegato XXXVIII del Decreto Legislativo 4 settembre 2024, n. 135
Latvia - Occupational Exposure Limits	
Local name	Hlorūdeņradis
OEL TWA	8 mg/m ³
	5 ppm
OEL STEL	15 mg/m ³
	10 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	Vandenilio chloridas
IPRV (OEL TWA)	8 mg/m ³
	5 ppm
TPRV (OEL STEL)	15 mg/m ³
	10 ppm
Regulatory reference	LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)
Luxembourg - Occupational Exposure Limits	
Local name	Chlorure d'hydrogène
OEL TWA	8 mg/m ³
	5 ppm
OEL STEL	15 mg/m ³
	10 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	Hydrogen chloride

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hydrochloric acid (7647-01-0)	
OEL TWA	8 mg/m ³
	5 ppm
OEL STEL	15 mg/m ³
	10 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)
Netherlands - Occupational Exposure Limits	
Local name	Zoutzuur
TGG-8u (OEL TWA)	8 mg/m ³
	5 ppm
TGG-15min (OEL STEL)	15 mg/m ³
	10 ppm
Regulatory reference	Arbeidsomstandighedenregeling 2024
Poland - Occupational Exposure Limits	
Local name	Chlorowodór
NDS (OEL TWA)	5 mg/m ³
NDSCh (OEL STEL)	10 mg/m ³
Regulatory reference	Dz. U. 2024 poz. 1017 wraz z późn. zm.
Portugal - Occupational Exposure Limits	
Local name	Ácido clorídrico
OEL C	2 mg/m ³
	2 ppm
Remark	A4 (Agente não classificável como carcinogénico no Homem)
Regulatory reference	Norma Portuguesa NP 1796:2014
Romania - Occupational Exposure Limits	
Local name	Acid clorhidric/Clorură de hidrogen
OEL TWA	8 mg/m ³
	5 ppm
OEL STEL	15 mg/m ³
	10 ppm
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)
Serbia - Occupational Exposure Limits	
Local name	водоник хлорид, хлороводоник
OEL TWA	8 mg/m ³
	5 ppm
OEL STEL	15 mg/m ³
	10 ppm
Remark	ЕУ* – напомена да се ради о хемијским материјама за које су утврђене индикативне граничне вредности изложености према Директиви 2000/39/ЕЗ (прва листа)

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hydrochloric acid (7647-01-0)	
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)
Slovakia - Occupational Exposure Limits	
Local name	Chlorovodík
NPHV (OEL TWA)	8 mg/m ³
	5 ppm
NPHV (OEL STEL)	15 mg/m ³
	10 ppm
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (122/2024 Z. z.)
Slovenia - Occupational Exposure Limits	
Local name	vodikov klorid, brezvodni (klorovodik, brezvodni)
OEL TWA	8 mg/m ³
	5 ppm
OEL STEL	16 mg/m ³
	10 ppm
Remark	Y (Snovi, pri katerih ni nevarnosti za zarodek ob upoštevanju mejnih vrednosti in bat vrednosti), EU
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
Spain - Occupational Exposure Limits	
Local name	Cloruro de hidrógeno
VLA-ED (OEL TWA)	7.6 mg/m ³
	5 ppm
VLA-EC (OEL STEL)	15 mg/m ³
	10 ppm
Remark	VLI (Agente químico para el que la U.E. estableció en su día un valor límite indicativo. Todos estos agentes químicos figuran al menos en una de las directivas de valores límite indicativos publicadas hasta ahora (ver Anexo C. Bibliografía). Los estados miembros disponen de un tiempo fijado en dichas directivas para su transposición a los valores límites de cada país miembro. Una vez adoptados, estos valores tienen la misma validez que el resto de los valores adoptados por el país).
Sweden - Occupational Exposure Limits	
Local name	Saltsyra (Väteklorid)
NGV (OEL TWA)	3 mg/m ³
	2 ppm
KGV (OEL STEL)	6 mg/m ³
	4 ppm
Regulatory reference	Hygieniska gränsvärden (AFS 2018:1)
United Kingdom - Occupational Exposure Limits	
Local name	Hydrogen chloride
WEL TWA (OEL TWA)	2 mg/m ³ gas and aerosol mists
	1 ppm gas and aerosol mists

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hydrochloric acid (7647-01-0)	
WEL STEL (OEL STEL)	8 mg/m ³ gas and aerosol mists
	5 ppm gas and aerosol mists
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Iceland - Occupational Exposure Limits	
Local name	Vetnisklórfið (klórvetni)
OEL STEL	8 mg/m ³
	5 ppm
Regulatory reference	Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)
Norway - Occupational Exposure Limits	
Local name	Hydrogenklorid (Saltsyre)
Grenseverdi (OEL TWA)	7 mg/m ³
	5 ppm
Takverdi (OEL C)	7 mg/m ³
	5 ppm
Remark	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	хлороводород, безводен
OEL TWA	8 mg/m ³
	5 ppm
KTV	2
Short time value [mg/m ³]	16 mg/m ³
Short time value [ppm]	10 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 ³ или во ml/m ³ (ppm) а е дадена како многукратни дозволени пречекорувања на граничната вредност; (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	Chlorwasserstoff
MAK (OEL TWA)	3 mg/m ³
	3 mg/m ³
KZGW (OEL STEL)	2 ppm
	2 ppm
KZGW (OEL STEL)	6 mg/m ³
	6 mg/m ³

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hydrochloric acid (7647-01-0)	
	4 ppm 4 ppm
Notation	SS _C / SS _C
Remark	SS _C - OAW ^{KT AN} - DFG, NIOSH, OSHA
Regulatory reference	www.suva.ch, 01.01.2024
USA - ACGIH - Occupational Exposure Limits	
Local name	Hydrogen chloride
ACGIH OEL C	2 ppm
Remark (ACGIH)	TLV® Basis: 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.

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:

In case of insufficient ventilation, wear suitable respiratory equipment

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	: Not available
Odour threshold	: Not available
Melting point	: Not applicable
Freezing point	: Not available

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Boiling point	: Not available
Flammability	: Non flammable.
Lower explosion limit	: Not available
Upper explosion limit	: Not available
Flash point	: Not available
Auto-ignition temperature	: Not available
Decomposition temperature	: Not available
pH	: < 2
Viscosity, kinematic	: Not available
Solubility	: Not available
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	: Not available
Relative vapour density at 20°C	: Not available
Particle characteristics	: Not applicable

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

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

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

metals.

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

titanium trichloride (7705-07-9)

LC50 Inhalation - Rat	0.46 mg/L air
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sulphuric acid (7664-93-9)

LD50 oral rat	2140 mg/kg bodyweight
LC50 Inhalation - Rat	0.375 mg/L air

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Skin corrosion/irritation : Causes skin irritation.
pH: < 2

sulphuric acid (7664-93-9)	
pH	< 1
hydrochloric acid (7647-01-0)	
pH	< 1
water (7732-18-5)	
pH	7 20 °C

Serious eye damage/irritation : Causes serious eye damage.
pH: < 2

sulphuric acid (7664-93-9)	
pH	< 1
hydrochloric acid (7647-01-0)	
pH	< 1
water (7732-18-5)	
pH	7 20 °C

Respiratory or skin sensitisation : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

hydrochloric acid (7647-01-0)	
IARC group	3 - Not classifiable

Reproductive toxicity : Not classified
STOT-single exposure : Not classified

hydrochloric acid (7647-01-0)	
STOT-single exposure	May cause respiratory irritation.

STOT-repeated exposure : Not classified
Aspiration hazard : Not classified

11.2. Information on other hazards

No additional information available

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.
Hazardous to the aquatic environment, short-term (acute) : Not classified
Hazardous to the aquatic environment, long-term (chronic) : Not classified

titanium trichloride (7705-07-9)	
LC50 - Fish [1]	> 1000 mg/l <i>Fundulus heteroclitus</i>
EC50 - Crustacea [1]	> 1000 mg/l <i>Daphnia magna</i> (Water flea)
sulphuric acid (7664-93-9)	
LC50 - Fish [1]	16 – 28 mg/l <i>Lepomis macrochirus</i> (Bluegill)

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sulphuric acid (7664-93-9)	
EC50 - Crustacea [1]	> 100 mg/l Daphnia magna (Water flea)
EC50 72h - Algae [1]	> 100 mg/l Desmodesmus subspicatus
NOEC (chronic)	0.15 mg/l Tanytarsus dissimilis
NOEC chronic fish	0.31 mg/l Salvelinus fontinalis

12.2. Persistence and degradability

Titanium (III) chloride-sulfuric acid Test Solution	
Persistence and degradability	Rapidly degradable
titanium trichloride (7705-07-9)	
Persistence and degradability	Rapidly degradable
sulphuric acid (7664-93-9)	
Persistence and degradability	Rapidly degradable
hydrochloric acid (7647-01-0)	
Persistence and degradability	Rapidly degradable
water (7732-18-5)	
Persistence and degradability	Biodegradability: Not applicable.

12.3. Bioaccumulative potential

water (7732-18-5)	
Bioaccumulative potential	Bioaccumulation: Not applicable.

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

Component	
Substance(s) not meeting the PBT criteria of REACH regulation, in accordance with Annex XIII	titanium trichloride (7705-07-9), sulphuric acid (7664-93-9), hydrochloric acid (7647-01-0)
Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII	titanium trichloride (7705-07-9), sulphuric acid (7664-93-9), hydrochloric acid (7647-01-0)

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	: Disposal must be done according to official regulations.

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Additional information : Do not re-use empty containers.

SECTION 14: Transport information

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

ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number				
UN 3264	UN 3264	UN 3264	UN 3264	UN 3264
14.2. UN proper shipping name				
CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (sulphuric acid ; titanium trichloride ; hydrochloric acid)	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (sulphuric acid ; titanium trichloride ; hydrochloric acid)	Corrosive liquid, acidic, inorganic, n.o.s. (sulphuric acid ; titanium trichloride ; hydrochloric acid)	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (sulphuric acid ; titanium trichloride ; hydrochloric acid)	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (sulphuric acid ; titanium trichloride ; hydrochloric acid)
Transport document description				
UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (sulphuric acid ; titanium trichloride ; hydrochloric acid), 8, II, (E)	UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (sulphuric acid ; titanium trichloride ; hydrochloric acid), 8, II	UN 3264 Corrosive liquid, acidic, inorganic, n.o.s. (sulphuric acid ; titanium trichloride ; hydrochloric acid), 8, II	UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (sulphuric acid ; titanium trichloride ; hydrochloric acid), 8, II	UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (sulphuric acid ; titanium trichloride ; hydrochloric acid), 8, II
14.3. Transport hazard class(es)				
8	8	8	8	8
				
14.4. Packing group				
II	II	II	II	II
14.5. Environmental hazards				
Dangerous for the environment: No	Dangerous for the environment: No Marine pollutant: No EmS-No. (Fire): F-A EmS-No. (Spillage): S-B	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)	: C1
Special provisions (ADR)	: 274
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)	: T11
Portable tank and bulk container special provisions (ADR)	: TP2, TP27
Tank code (ADR)	: L4BN
Vehicle for tank carriage	: AT
Transport category (ADR)	: 2
Hazard identification number (Kemler No.)	: 80

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Orange plates : 

Tunnel restriction code (ADR) : E
EAC code : 2X
APP code : B

Transport by sea

Special provisions (IMDG) : 274
Packing instructions (IMDG) : P001
IBC packing instructions (IMDG) : IBC02
Tank instructions (IMDG) : T11
Tank special provisions (IMDG) : TP2, TP27
Stowage category (IMDG) : B
Stowage and handling (IMDG) : SW2
Properties and observations (IMDG) : Causes burns 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
Special provisions (IATA) : A3, A803
ERG code (IATA) : 8L

Inland waterway transport

Classification code (ADN) : C1
Special provisions (ADN) : 274
Limited quantities (ADN) : 1 L
Excepted quantities (ADN) : E2
Carriage permitted (ADN) : T
Equipment required (ADN) : PP, EP
Number of blue cones/lights (ADN) : 0

Rail transport

Classification code (RID) : C1
Special provisions (RID) : 274
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) : T11
Portable tank and bulk container special provisions (RID) : TP2, TP27
Tank codes for RID tanks (RID) : L4BN
Transport category (RID) : 2
Colis express (express parcels) (RID) : CE6
Hazard identification number (RID) : 80

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

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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(b)	Titanium (III) chloride-sulfuric acid Test Solution ; sulphuric acid ; hydrochloric acid	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.	titanium trichloride	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 substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

ANNEX I RESTRICTED EXPLOSIVES PRECURSORS

List of substances which are not to be made available to, or introduced, possessed or used by, members of the general public, whether on their own or in mixtures or substances that include those substances, unless the concentration is equal to or lower than the limit values set out in column 2, and for which suspicious transactions and significant disappearances and thefts are to be reported within 24 hours.

Name	CAS-No.	Limit value	Upper limit value for licensing under Article 5(3)	Combined Nomenclature (CN) code for a separate chemically defined compound meeting the requirements of Note 1 to Chapter 28 or 29 of the CN, respectively	Combined Nomenclature code for mixture without constituents which would determine classification under another CN code
Sulphuric acid	7664-93-9	15 % w/w	40 % w/w	ex 2807 00 00	ex 3824 99 96

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)

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Name	CN designation	CAS-No.	CN code	Category, Subcategory	Threshold	Annex
Sulphuric acid		7664-93-9	2807 00 00	Category 3		Annex I
Hydrochloric acid	Hydrogen chloride	7647-01-0	2806 10 00	Category 3		Annex I

National regulations

France

Occupational diseases	
Code	Description
RG 66	Occupational rhinitis and asthma

Germany

VOC ordinance (ChemVOCFarbV) :

Water hazard class (WGK) :

Hazardous Incident Ordinance (12. BImSchV) :

: WGK 1, Slightly hazardous to water (Classification according to AwSV, Annex 1).
: Is not subject to the Hazardous Incident Ordinance (12. BImSchV)

Netherlands

ABM category :

SZW-lijst van kankerverwekkende stoffen :

SZW-lijst van mutagene stoffen :

SZW-lijst van reprotoxische stoffen – Borstvoeding :

SZW-lijst van reprotoxische stoffen –

Vruchtbaarheid

SZW-lijst van reprotoxische stoffen – Ontwikkeling :

: A(4) - low hazard for aquatic organisms, may have longterm hazardous effects in aquatic environment
: sulphuric acid is listed
: None of the components are listed
: None of the components are listed
: None of the components are listed
: None of the components are listed

Denmark

Danish National Regulations :

: Young people below the age of 18 years are not allowed to use 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)

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15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes		
Section	Changed item	Comments
1.2	Main use category	Modified
2.1	Adverse physicochemical, human health and environmental effects	Modified
2.1	Classification according to Regulation (EC) No. 1272/2008 [CLP]	Modified
2.2	Precautionary statements (CLP)	Modified
2.2	Hazard statements (CLP)	Modified
2.2	Hazard pictograms (CLP)	Modified
4.1	First-aid measures for first aider	Added
4.1	First-aid measures general	Modified
4.1	First-aid measures after skin contact	Modified
4.1	First-aid measures after ingestion	Modified
4.2	Symptoms/effects after inhalation	Added
4.2	Symptoms/effects after skin contact	Modified
4.2	Symptoms/effects after ingestion	Modified
5.1	Unsuitable extinguishing media	Added
5.2	Fire hazard	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
6.1	Emergency procedures	Modified
6.3	For containment	Added
7.1	Additional hazards when processed	Added
7.1	Precautions for safe handling	Modified
7.2	Packaging materials	Added
7.2	Technical measures	Added
7.2	Storage conditions	Modified
8.2	Personal protective equipment	Added
9	Flammability	Modified
12.1	Ecology - general	Modified
13.1	Product/Packaging disposal recommendations	Added
13.1	Sewage disposal recommendations	Added

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Indication of changes		
Section	Changed item	Comments
13.1	Additional information	Added
13.1	Regional waste regulation	Added
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
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

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Abbreviations and acronyms:

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
UFI	Unique Formula Identifier

Full text of H- and EUH-statements:

Aquatic Chronic Not classified	Hazardous to the aquatic environment – Chronic Hazard Not classified
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Met. Corr. 1	Corrosive to metals, Category 1
Pyr. Sol. 1	Pyrophoric Solids, Category 1
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 SE 3	Specific target organ toxicity – Single exposure, Category 3, Respiratory tract irritation
H250	Catches fire spontaneously if exposed to air.
H290	May be corrosive to metals.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

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

Met. Corr. 1	H290	On basis of test data
Skin Irrit. 2	H315	Calculation method
Eye Dam. 1	H318	Calculation method

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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.