

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
SDS Reference Number: EQ0028
Issue date: 2016/9/7 Revision date: 2025/1/5 Supersedes version of: 2023/8/21 Version: 1.3

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

1.1. Product identifier

Product form : Mixture
Product name : PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2
Product code : EQ0028

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

Relevant identified uses

Main use category : Industrial use, 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
Web: 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
Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

May be corrosive to metals.

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

2.2. Label elements

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

Hazard pictograms (CLP) :



GHS05

Signal word (CLP) :

Warning

Hazard statements (CLP) :

H290 - May be corrosive to metals.

Precautionary statements (CLP) :

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	hydrochloric acid (7647-01-0), germanium dioxide (1310-53-8) ⁽¹⁾ , palladium dinitrate (10102-05-3) ⁽¹⁾ , hexafluoroantimonic acid (16950-06-4) ⁽¹⁾ , tetrafluorostannane (7783-62-2) ⁽¹⁾ , iridium trichloride (10025-83-9) ⁽¹⁾
Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII	hydrochloric acid (7647-01-0), germanium dioxide (1310-53-8) ⁽¹⁾ , palladium dinitrate (10102-05-3) ⁽¹⁾ , hexafluoroantimonic acid (16950-06-4) ⁽¹⁾ , tetrafluorostannane (7783-62-2) ⁽¹⁾ , iridium trichloride (10025-83-9) ⁽¹⁾

⁽¹⁾ Substance(s) in concentration below 0.1 % and displayed on a voluntary basis

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]
hydrochloric acid substance with national workplace exposure limit(s) (BE, BG, CZ, DE, DK, EE, ES, FI, FR, GB, GI, GR, HR, HU, IE, IT, LT, LU, LV, MT, NL, PL, PT, RO, SE, SI, SK, IS, NO, RS, CH, TR); substance with a Community workplace exposure limit	CAS-No.: 7647-01-0 EC-No.: 231-595-7 EC Index-No.: 017-002-01-X REACH-no: 01-2119484862-27-XXXX	5 – 10	Met. Corr. 1, H290 Skin Corr. 1B, H314 Eye Dam. 1, H318 STOT SE 3, H335
germanium dioxide substance with national workplace exposure limit(s) (DE, LT, LV)	CAS-No.: 1310-53-8 EC-No.: 215-180-8 REACH-no: 01-2120759331-57-XXXX	< 0,05	Repr. 2, H361 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 3, H412
tetrafluorostannane substance with national workplace exposure limit(s) (AT, BE, BG, CY, CZ, DK, EE, ES, FI, FR, GB, GI, GR, HR, HU, IE, LU, MT, NL, PT, RO, SE, SI, SK, IS, MK); substance with a Community workplace exposure limit	CAS-No.: 7783-62-2 EC-No.: 232-016-0	< 0,05	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Acute Tox. 4 (Inhalation), H332 Skin Corr. 1B, H314

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
molybdenum pentafluoride substance with national workplace exposure limit(s) (AT, BE, BG, CZ, DE, DK, EE, ES, FI, FR, GB, GI, HR, HU, IE, IT, LT, LU, LV, MT, NL, PT, RO, SE, SI, SK, AL, NO, CH); substance with a Community workplace exposure limit	CAS-No.: 13819-84-6	< 0,05	Met. Corr. 1, H290 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Acute Tox. 3 (Inhalation), H331 Skin Corr. 1A, H314 Eye Dam. 1, H318
hexafluoroantimonyic acid substance with national workplace exposure limit(s) (AT, BE, BG, CZ, DK, EE, ES, FR, GB, GR, HR, HU, IE, LV, NL, PL, PT, RO, SE, SI, IS, NO, MK, CH); substance with a Community workplace exposure limit	CAS-No.: 16950-06-4 EC-No.: 241-023-8 EC Index-No.: 051-003-00-9	< 0,05	Met. Corr. 1, H290 Acute Tox. 2 (Oral), H300 Acute Tox. 1 (Dermal), H310 Acute Tox. 2 (Inhalation), H330 Skin Corr. 1A, H314 Eye Dam. 1, H318 Aquatic Chronic 2, H411
palladium dinitrate substance with national workplace exposure limit(s) (FI)	CAS-No.: 10102-05-3 EC-No.: 233-265-8 REACH-no: 01-2120279900-51-XXXX	< 0,05	Ox. Sol. 1, H271 Met. Corr. 1, H290 Acute Tox. 4 (Oral), H302 Skin Corr. 1B, H314 Eye Dam. 1, H318 Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410
iridium trichloride substance with national workplace exposure limit(s) (AT, BE, DE, DK, FI, GB, IE, SE, NO, CH)	CAS-No.: 10025-83-9 EC-No.: 233-044-6	< 0,05	Acute Tox. 4 (Oral), H302 Aquatic Chronic 2, H411

Specific concentration limits:

Name	Product identifier	Specific concentration limits (%)
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.
First-aid measures after eye contact	: Rinse eyes with water as a precaution.
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	: None under normal conditions.
Symptoms/effects after eye contact	: None under normal conditions.
Symptoms/effects after ingestion	: None under normal conditions.

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

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.
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.

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. Wear personal protective equipment.

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

Hygiene measures : 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

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

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
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 11/05/2021

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

hydrochloric acid (7647-01-0)	
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. 47 от 2021 г., в сила от 04.06.2021 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
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, граниčnim vrijednostima izloženosti i biološkim граниčnim vrijednostima (NN 1/2021)
Czech Republic - Occupational Exposure Limits	
Local name	Chlorovodík
PEL (OEL TWA)	8 mg/m ³
	5,3 ppm
NPK-P (OEL C)	15 mg/m ³
	9,9 ppm
Remark	I - dráždíl sliznice (oči, dýchací cesty), respektive kůže.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 195/2021 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Hydrogenchlorid (Chlorbrinte)
OEL TWA	8 mg/m ³
	5 ppm
Remark	E (betyder, at stoffet har en EF-grænseværdi)
Regulatory reference	BEK nr 2203 af 29. november 2021
Estonia - Occupational Exposure Limits	
Local name	Vesinikkloriid
OEL TWA	8 mg/m ³
	5 ppm

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

hydrochloric acid (7647-01-0)	
OEL STEL	15 mg/m ³
	10 ppm
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 15.05.2021, 1)
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
Remark	Valeurs réglementaires contraignantes
Regulatory reference	Article R4412-149 du Code du travail (réf.: INRS ED 984, 2016; 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

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

hydrochloric acid (7647-01-0)	
	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
CK (OEL STEL)	16 mg/m ³
Remark	i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindhármát), m (maró hatású anyag, amely felmarja a bőrt, nyálkahártyát, szemet vagy mindhármát); 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
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 2021
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 D.Lgs. 9 aprile 2008, n. 81 e s.m.i.
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
Lithuania - Occupational Exposure Limits	
Local name	Vandenilio chloridas
IPRV (OEL TWA)	8 mg/m ³

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

hydrochloric acid (7647-01-0)	
	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
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)
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 2022
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. 2018 poz. 1286
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

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

hydrochloric acid (7647-01-0)	
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. 53/2021)
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	EУ* – напомена да се ради о хемијским материјама за које су утврђене индикативне граничне вредности изложености према Директиви 2000/39/ЕЗ (прва 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)
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. (236/2020 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. 72/2021 z dne 11.5.2021
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

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

hydrochloric acid (7647-01-0)	
	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
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	Vetnisklórlíð (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-2021-06-28-2248
Switzerland - Occupational Exposure Limits	
Local name	Chlorwasserstoff
MAK (OEL TWA)	3 mg/m ³
	3 mg/m ³

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

hydrochloric acid (7647-01-0)	
	2 ppm 2 ppm
KZGW (OEL STEL)	6 mg/m ³ 6 mg/m ³ 4 ppm 4 ppm
Notation	SS _C / SS _C
Remark	SSc - OAW ^{KT AN} - DFG, NIOSH, OSHA
Regulatory reference	www.suva.ch, 28.03.2022
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 2022
germanium dioxide (1310-53-8)	
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Germaniumdioxid
AGW (OEL TWA)	0,85 mg/m ³ (E)
Peak exposure limitation factor	2(II)
Remark	AGS - Ausschuss für Gefahrstoffe; 10 - Der Arbeitsplatzgrenzwert bezieht sich auf den Elementgehalt des entsprechenden Metalls
Regulatory reference	TRGS900
Latvia - Occupational Exposure Limits	
Local name	Germānija dioksīds (germānija (IV) oksīds)
OEL TWA	2 mg/m ³
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	Germanio oksidas
IPRV (OEL TWA)	2 mg/m ³
Regulatory reference	LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)
molybdenum pentafluoride (13819-84-6)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Fluorides, inorganic
IOEL TWA	2,5 mg/m ³
Regulatory reference	COMMISSION DIRECTIVE 2000/39/EC
Albania - Occupational Exposure Limits	
Local name	Fluorure, inorganike

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

molybdenum pentafluoride (13819-84-6)	
OEL TWA	2,5 mg/m ³
Regulatory reference	VENDIM Nr. 522, datë 6.8.2014 PËR MIRATIMIN E RREGULLORES "PËR MBROJTJEN E SIGURISË DHE SHËNETIT TË PUNËMARRËSVE NGA RISQET E LIDHURA ME AGJENTËT KIMIKË NË PUNË"
Austria - Occupational Exposure Limits	
Local name	Molybdän und Molybdänverbindungen, unlösliche
MAK (OEL TWA)	10 mg/m ³
MAK (OEL STEL)	20 mg/m ³
Regulatory reference	BGBI. II Nr. 156/2021
Austria - Biological limit values	
Local name	Fluor, seine anorganischen Verbindungen
BLV	7 mg/g creatinine Parameter: Fluorid - Untersuchungsmaterial: Harn - Probenahmezeitpunkt: Wenn die Harnprobe unmittelbar nach Expositions- bzw. Schichtende abgenommen wurde 4 mg/g creatinine Parameter: Fluorid - Untersuchungsmaterial: Harn - Probenahmezeitpunkt: Wenn die Harnprobe vor nachfolgender Schicht abgenommen wurde
Remark	Eignung mit vorzeitiger Folgeuntersuchung: Bei Überschreiten der zulässigen Grenzwerte für Fluorid im Harn. Der Zeitabstand zwischen den Untersuchungen beträgt bei Eignung: ein Jahr; bei Eignung mit vorzeitiger Folgeuntersuchung: sechs Monate.
Regulatory reference	Verordnung über die Gesundheitsüberwachung am Arbeitsplatz 2017 (VGÜ 2017)
Belgium - Occupational Exposure Limits	
Local name	Molybdène (composés solubles) (en Mo) # Molybdeenverbindungen (onoplosbaar) (als Mo)
OEL TWA	10 mg/m ³ 0,5 mg/m ³
Regulatory reference	Koninklijk besluit/Arrêté royal 16/11/2023
Bulgaria - Occupational Exposure Limits	
Local name	Молибден
OEL TWA	5 mg/m ³ разтворими съединения (като молибден) 10 mg/m ³ и негови съединения (като молибден)
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	Fluoridi, anorganski
GVI (OEL TWA)	2,5 mg/m ³
Remark	Direktiva: 2000/39/EZ
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023)

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

molybdenum pentafluoride (13819-84-6)	
Croatia - Biological limit values	
Local name	Fluor
BLV	24 mmol/mol Creatinine Karakteristični pokazatelj: fluoridi - Biološki uzorak: mokraća - Vrijeme uzorkovanja: prije radne smjene 4 mg/g creatinine Karakteristični pokazatelj: fluoridi - Biološki uzorak: mokraća - Vrijeme uzorkovanja: prije radne smjene 40 mmol/mol Creatinine Karakteristični pokazatelj: fluoridi - Biološki uzorak: mokraća - Vrijeme uzorkovanja: na kraju radne smjene 8 mg/g creatinine Karakteristični pokazatelj: fluoridi - Biološki uzorak: mokraća - Vrijeme uzorkovanja: na kraju radne smjene
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 91/2018)
Czech Republic - Occupational Exposure Limits	
Local name	Molybden
PEL (OEL TWA)	5 mg/m ³
NPK-P (OEL C)	25 mg/m ³
Remark	I - dráždí sliznice (oči, dýchací cesty) resp. kůži, B - u látky je zaveden biologický expoziční test (BET) v moči nebo krvi.
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)
Czech Republic - Biological limit values	
Local name	Fluoridy
BLV	10 mg/g creatinine Ukazatel: Fluorid - Biologický vzorek: moči - Doba odběru: konec směny 60 μmol/mmol Creatinine Ukazatel: Fluorid - Biologický vzorek: moči - Doba odběru: konec směny
Regulatory reference	Vyhláška č. 107/2013 Sb. (kterou se mění vyhláška č. 432/2003 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Fluorider, undtagen de andetsteds i listen nævnte
OEL TWA	2,5 mg/m ³ beregnet som F
Remark	E (betyder, at stoffet har en EF-grænseværdi)
Regulatory reference	BEK nr 291 af 19/03/2024
Estonia - Occupational Exposure Limits	
Local name	Fluoriidid, k.a vesinikfluoriid
OEL TWA	2,5 mg/m ³
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)
Finland - Occupational Exposure Limits	
Local name	Fluoridit, epäorgaaniset
HTP (OEL TWA)	2,5 mg/m ³ F
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)
France - Occupational Exposure Limits	
Local name	Fluorures inorganiques

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

molybdenum pentafluoride (13819-84-6)	
VME (OEL TWA)	2,5 mg/m ³
Remark	Valeurs réglementaires indicatives
Regulatory reference	Arrêté du 30 juin 2004 modifié (réf.: INRS ED 6443, 2022; Outil65)
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Fluor
AGW (OEL TWA)	1,6 mg/m ³ 1 ppm
Peak exposure limitation factor	2(I)
Remark	EU - Europäische Union (Von der EU wurde ein Luftgrenzwert festgelegt: Abweichungen bei Wert und Spitzenbegrenzung sind möglich); 13 - Eine Begründung für die Ableitung eines gesundheitsbasierten AGW liegt nicht vor
Regulatory reference	TRGS900
Gibraltar - Occupational Exposure Limits	
Local name	Fluorides, inorganic
OEL TWA	2,5 mg/m ³
Regulatory reference	Factories (Control of Chemical Agents at Work) Regulations 2003 (LN. 2018/181)
Hungary - Occupational Exposure Limits	
Local name	FLUORIDOK (F-ra számítva)
AK (OEL TWA)	2,5 mg/m ³
Remark	b (Bőrön át is felszívódik), i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindháromat), BEM (biológiai expozíciós mutató); EU1 (2000/39/EK irányelvben közölt érték); T (Azok az anyagok, amelyek egészségkárosító hatása TARTÓS expozíciót követően jelentkezik)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
Hungary - Biological Exposure Indices	
Local name	Fluorid vegyületek
BEI	7 mg/g creatinine Biológiai expozíciós (hatás) mutató: fluorid - Biológiai minta: vizeletben - Mintavétel ideje: m.v. (műszak végén) 42 µmol/mmol Creatinine Biológiai expozíciós (hatás) mutató: fluorid - Biológiai minta: vizeletben - Mintavétel ideje: m.v. (műszak végén) 4 mg/g creatinine Biológiai expozíciós (hatás) mutató: fluorid - Biológiai minta: vizeletben - Mintavétel ideje: köv.m.e. (következő műszak előtt) 24 µmol/mmol Creatinine Biológiai expozíciós (hatás) mutató: fluorid - Biológiai minta: vizeletben - Mintavétel ideje: köv.m.e. (következő műszak előtt)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
Ireland - Occupational Exposure Limits	
Local name	Molybdenum compounds (as Mo)
OEL TWA	0,5 mg/m ³ R (Respirable)
Remark	IOELV (Indicative Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2024

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

molybdenum pentafluoride (13819-84-6)	
Ireland - Biological limit values	
Local name	Fluorine, Hydrogen Fluoride and Inorganic Fluorides (not uranium hexafluoride)
BMGV	2 mg/l Parameter: Fluoride - Medium: urine - Sampling time: Prior to shift - Notations: B (Background), Ns (Non-specific) 3 mg/l Parameter: Fluoride - Medium: urine - Sampling time: End of shift - Notations: B (Background), Ns (Non-specific)
Regulatory reference	Biological Monitoring Guidelines (HSA, 2011)
Italy - Occupational Exposure Limits	
Local name	Fluoruri inorganici (espressi come F)
OEL TWA	2,5 mg/m ³
Regulatory reference	Allegato XXXVIII del Decreto Legislativo 4 settembre 2024, n. 135
Latvia - Occupational Exposure Limits	
Local name	Fluorīdi, neorganiskie
OEL TWA	2,5 mg/m ³ (pēc F)
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	Fluoridai, išskyrus vandenilio fluoridą
IPRV (OEL TWA)	2,5 mg/m ³ (kaip F)
Regulatory reference	LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)
Luxembourg - Occupational Exposure Limits	
Local name	Fluorures inorganiques
OEL TWA	2,5 mg/m ³
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	Fluorides, inorganic # Fluorides,inorganiči
OEL TWA	2,5 mg/m ³
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	Fluoriden, anorganisch en oplosbaar
TGG-15min (OEL STEL)	2 mg/m ³ (als F)
Regulatory reference	Arbeidsomstandighedenregeling 2024
Portugal - Occupational Exposure Limits	
Local name	Molibdénio, expresso em Mo Compostos solúveis
OEL TWA	0,5 mg/m ³ R (Fração respirável) 10 mg/m ³ I (Fração inalável) 3 mg/m ³ R (Fração respirável)

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

molybdenum pentafluoride (13819-84-6)	
Remark	A4 (Agente não classificável como carcinogénico no Homem); IBE (Índice biológico de exposição)
Regulatory reference	Norma Portuguesa NP 1796:2014
Portugal - Biological Exposure Indices	
Local name	Fluoretos
BEI	2 mg/l Parâmetro: Fluoretos - Meio: urina - Momento da amostragem: Início do turno - Notação: Vb (Valor basal), Ne (Não específico) 3 mg/l Parâmetro: Fluoretos - Meio: urina - Momento da amostragem: Fim do turno - Notação: Vb (Valor basal), Ne (Não específico)
Romania - Occupational Exposure Limits	
Local name	Fluoruri anorganice
OEL TWA	2,5 mg/m ³
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)
Romania - Biological limit values	
Local name	Fluor și compuși
BLV	5 mg/g creatinine Indicatorul biologic: Fluor - Material biologic: urină - Momentul recoltării: sfârșit de schimb
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)
Slovakia - Occupational Exposure Limits	
Local name	Molybdén a jeho zlúčeniny rozpustné (ako Mo)
NPHV (OEL TWA)	5 mg/m ³ 10 mg/m ³ inhalovateľná frakcia 5 mg/m ³ respirabilná frakcia
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (122/2024 Z. z.)
Slovakia - Biological limit values	
Local name	Fluorovodík a anorganické zlúčeniny fluóru (fluoridy)
BLV	7 mg/g creatinine Zisťovaný faktor: Fluoridy - Vyšetovaný materiál: moč - Čas odberu vzorky: b) koniec expozície alebo pracovnej zmeny 4 mg/g creatinine Zisťovaný faktor: Fluoridy - Vyšetovaný materiál: moč - Čas odberu vzorky: d) pred nasledujúcou pracovnou zmenou
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (122/2024 Z. z.)
Slovenia - Biological limit values	
Local name	vodikov fluorid in anorganske fluorove spojine (fluoridi)
BLV	7 mg/g creatinine Parameter: fluorid - Biološki vzorec: urin - Čas vzorčenja: ob koncu delovne izmene 4 mg/g creatinine Parameter: fluorid - Biološki vzorec: urin - Čas vzorčenja: pred naslednjim delovnim dnevom
Regulatory reference	Uradni list RS, št. 29/24 z dne 4. 4. 2024 - Pravilnik o varovanju delavcev pred tveganji zaradi izpostavljenosti kemičnim snovem pri delu
Spain - Occupational Exposure Limits	
Local name	Molibdeno

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

molybdenum pentafluoride (13819-84-6)	
VLA-ED (OEL TWA)	10 mg/m ³ elemental. Fracción inhalable 3 mg/m ³ elemental. Fracción respirable 10 mg/m ³ Compuestos insolubles, como Mo. Fracción inhalable 3 mg/m ³ Compuestos insolubles, como Mo. Fracción respirable 0,5 mg/m ³ Compuestos solubles, como Mo. Fracción respirable
Remark	VLB® (Agente químico que tiene Valor Límite Biológico), 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
Spain - Biological limit values	
Local name	Fluoruros inorgánicos
BLV	2 mg/l Parámetro: Fluoruros - Medio: Orina - Momento de muestreo: Antes de la jornada laboral - Notas: F (Fondo. El indicador está generalmente presente en cantidades detectables en personas no expuestas laboralmente. Estos niveles de fondo están considerados en el valor VLB), I (Significa que el indicador biológico es inespecífico puesto que puede encontrarse después de la exposición a otros agentes químicos) 3 mg/l Parámetro: Fluoruros - Medio: Orina - Momento de muestreo: Final de la jornada laboral - Notas: F (Fondo. El indicador está generalmente presente en cantidades detectables en personas no expuestas laboralmente. Estos niveles de fondo están considerados en el valor VLB), I (Significa que el indicador biológico es inespecífico puesto que puede encontrarse después de la exposición a otros agentes químicos)
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT
Sweden - Occupational Exposure Limits	
Local name	Molybden, metall och svårlösliga. föreningar (som Mo)
NGV (OEL TWA)	10 mg/m ³ totaldamm 5 mg/m ³ respirabelt damm
Remark	31 (Vid exponering för blandningar av fluorider och vätefluorid ska nivågränsvärdet för fluorider tillämpas)
Regulatory reference	Hygieniska gränsvärden (AFS 2018:1)
United Kingdom - Occupational Exposure Limits	
Local name	Molybdenum
WEL TWA (OEL TWA)	10 mg/m ³ insoluble compounds (as Mo) 5 mg/m ³ soluble compounds (as Mo)
WEL STEL (OEL STEL)	10 mg/m ³ soluble compounds (as Mo)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Norway - Occupational Exposure Limits	
Local name	Uorganiske fluorider (beregnet som F)
Grenseverdi (OEL TWA)	0,5 mg/m ³
Remark	E: EU har en veiledende grenseverdi og/eller anmerkning for stoffet.
Regulatory reference	FOR-2024-04-05-581
Switzerland - Occupational Exposure Limits	
Local name	Molybdänverbindungen löslich (als Mo berechnet)
MAK (OEL TWA)	5 mg/m ³ 10 mg/m ³

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

molybdenum pentafluoride (13819-84-6)	
KZGW (OEL STEL)	4 mg/m ³ (i) / (e)
Notation	R, SS _C , B / H, SS _C , B
Remark	e(mg/m ³) - UAW ^{KT AN} - NIOSH
Regulatory reference	www.suva.ch, 01.01.2024
Switzerland - BAT	
Local name	Fluorures / Fluorwasserstoff
BAT	4 mg/l (211 µmol/l; Paramètre biologique: Fluorures; Substrat d'examen: Urine; Moment du prélèvement: Fin de l'exposition, de la période de travail.) / (211 µmol/l; Biologischer Parameter: Fluorid; Untersuchungsmaterial: Urin; Probenahmezeitpunkt: Expositionsende, bzw. Schichtende.)
Remark	Influence de l'environnement. / Umwelteinflüsse.
Regulatory reference	Ordonnance 832.30 (OPA), article 50 al. 3, www.suva.ch/valeurs-limites / Verordnung 832.30 (VUV), Art. 50 Abs. 3, www.suva.ch/grenzwerte
USA - ACGIH - Occupational Exposure Limits	
Local name	Fluorides, as F
ACGIH OEL TWA	2,5 mg/m ³
Remark (ACGIH)	TLV® Basis: Bone dam; fluorosis. Notations: A4 (Not classifiable as a Human Carcinogen); BEI
Regulatory reference	ACGIH 2024
palladium dinitrate (10102-05-3)	
Finland - Occupational Exposure Limits	
Local name	Palladium
HTP (OEL TWA)	0,5 mg/m ³
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden ministeriö)
hexafluoroantimonyic acid (16950-06-4)	
EU - Indicative Occupational Exposure Limit (IOEL)	
IOEL TWA	2,5 mg/m ³ (Fluorides, inorganic; EU; Time-weighted average exposure limit 8 h; Indicative occupational exposure limit value)
Austria - Occupational Exposure Limits	
Local name	Antimon
MAK (OEL TWA)	0,5 mg/m ³
MAK (OEL STEL)	5 mg/m ³
Regulatory reference	BGBl. II Nr. 156/2021
Belgium - Occupational Exposure Limits	
Local name	Antimoine et ses composés (en Sb) # Antimoon en verbindingen (als Sb)
OEL TWA	0,5 mg/m ³
Regulatory reference	Koninklijk besluit/Arrêté royal 16/11/2023

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

hexafluoroantimony acid (16950-06-4)	
Bulgaria - Occupational Exposure Limits	
Local name	АНТИМОН
OEL TWA	0,5 mg/m ³ и неорганични съединения (като антимон)
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	Antimon i drugi spojevi kao (Sb) osim atimonovog trihidrida
GVI (OEL TWA)	0,5 mg/m ³
Remark	Xn (Štetno); N (opasno za okoliš)
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, граничним vrijednostima izloženosti i biološkim граничним vrijednostima (NN 148/2023)
Czech Republic - Occupational Exposure Limits	
Local name	Antimon
PEL (OEL TWA)	0,5 mg/m ³
NPK-P (OEL C)	1,5 mg/m ³
Regulatory reference	Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)
Denmark - Occupational Exposure Limits	
Local name	Antimon, pulver og forbindelser
OEL TWA	0,5 mg/m ³ beregnet som Sb, se dog stibin
Regulatory reference	BEK nr 291 af 19/03/2024
Estonia - Occupational Exposure Limits	
Local name	Antimon ja oksiidid (arvutatud antimonile)
OEL TWA	0,5 mg/m ³
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)
France - Occupational Exposure Limits	
Local name	Antimoine et ses composés, en Sb
VME (OEL TWA)	0,5 mg/m ³ (Antimoine et ses composés, en Sb; France; Time-weighted average exposure limit 8 h; VL: Valeur non réglementaire indicative; Fluorures inorganiques; 2.5 mg/m ³ ; France; Time-weighted average exposure limit 8 h; VRI: Valeur réglementaire indicative)
Remark	Valeurs recommandées/admises. Certains ou tous ces composés sont classés Cancérogène de catégorie 1A, Cancérogène de catégorie 1B ou Cancérogène de catégorie 2
Regulatory reference	Circulaire du Ministère du travail (réf.: INRS ED 6443, 2022; Outil65)
Greece - Occupational Exposure Limits	
Local name	Αντιμόνιο και ενώσεις του (ως Sb)
OEL TWA	0,5 mg/m ³
Regulatory reference	Π.Δ. 90/1999 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

hexafluoroantimonyic acid (16950-06-4)	
Hungary - Occupational Exposure Limits	
Local name	ANTIMON ÉS SZERVETLEN VEGYÜLETEI (Sb-ra számítva)
AK (OEL TWA)	0,5 mg/m ³
Remark	i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindhármat); T (Azok az anyagok, amelyek egészségkárosító hatása TARTÓS expozíciót követően jelentkezik)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
Ireland - Occupational Exposure Limits	
Local name	Antimony & compounds (as Sb)
OEL TWA	0,5 mg/m ³
Remark	Advisory OELV (Advisory Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2024
Latvia - Occupational Exposure Limits	
Local name	Antimonametāliskie putekļi
OEL TWA	0,2 mg/m ³
OEL STEL	0,5 mg/m ³
Regulatory reference	Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2024. gada 26. martā noteikumiem Nr. 191).
Netherlands - Occupational Exposure Limits	
Local name	Antimoon
TGG-8u (OEL TWA)	0,5 mg/m ³ en -verbindingen (als Sb)
TGG-15min (OEL STEL)	2 mg/m ³ (Fluoriden, anorganisch en oplosbaar (als F); Netherlands; Short time value; Public occupational exposure limit value; als F)
Regulatory reference	Arbeidsomstandighedenregeling 2024
Poland - Occupational Exposure Limits	
Local name	Antymon i jego związki nieorganiczne, z wyjątkiem stibanu w przeliczeniu na Sb
NDS (OEL TWA)	0,5 mg/m ³
Regulatory reference	Dz. U. 2024 poz. 1017 wraz z późn. zm.
Portugal - Occupational Exposure Limits	
Local name	Antimónio e compostos, expressos em Sb
OEL TWA	0,5 mg/m ³
Regulatory reference	Norma Portuguesa NP 1796:2014
Romania - Occupational Exposure Limits	
Local name	Antimoniu (stibiu)
OEL TWA	0,2 mg/m ³
OEL STEL	0,5 mg/m ³
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

hexafluoroantimony acid (16950-06-4)	
Romania - Biological limit values	
Local name	Antimoniu (Stibiu)
BLV	1 mg/l Indicatorul biologic: Antimoniu - Material biologic: urină - Momentul recoltării: sfârșit de schimb
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)
Slovenia - Occupational Exposure Limits	
Local name	antimon
OEL TWA	0,5 mg/m ³
OEL STEL	2 mg/m ³
Spain - Occupational Exposure Limits	
Local name	Antimonio
VLA-ED (OEL TWA)	0,5 mg/m ³ elemental 0,5 mg/m ³ Compuestos de antimonio, como Sb, excepto hidruro de antimonio
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT
Sweden - Occupational Exposure Limits	
Local name	Antimon, och föreningar (som Sb), utom Antimontrihydrid
NGV (OEL TWA)	0,25 mg/m ³ inhalerbart damm
Remark	3 (Med inhalerbart fraktion menas den mängd partiklar, av totalmängden partiklar i luften, som man inandas genom näsa och mun)
Regulatory reference	Hygieniska gränsvärden (AFS 2018:1)
United Kingdom - Occupational Exposure Limits	
Local name	Antimony
WEL TWA (OEL TWA)	0,5 mg/m ³ and compounds except stibine (as Sb)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Iceland - Occupational Exposure Limits	
Local name	Antimón, duft og sambönd (sem Sb)
OEL TWA	0,5 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	Antimon og antimonforb. (beregnet som Sb)
Grenseverdi (OEL TWA)	0,5 mg/m ³
Remark	K: Kjemikalier som skal betraktes som kreftfremkallende.
Regulatory reference	FOR-2024-04-05-581
North Macedonia - Occupational Exposure Limits	
Local name	АНТИМОН
OEL TWA	0,5 mg/m ³ (l) инхалабилна фракција – дел на вкупно суспендирани материји, кои работникот ги вдишува

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

hexafluoroantimonyic acid (16950-06-4)	
KTV	4
Short time value [mg/m ³]	2 mg/m ³
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
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	Antimon
MAK (OEL TWA)	0,5 mg/m ³
Notation	R2 / R2
Remark	e(mg/m ³) - Haut & OAW - NIOSH
Regulatory reference	www.suva.ch, 01.01.2024
USA - ACGIH - Occupational Exposure Limits	
Local name	Antimony and compounds, as Sb
ACGIH OEL TWA	0,5 mg/m ³
Remark (ACGIH)	TLV® Basis: Skin & URT irr
Regulatory reference	ACGIH 2024
tetrafluorostannane (7783-62-2)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Tin (inorganic compounds as Sn)
IOEL TWA	2 mg/m ³
Regulatory reference	COMMISSION DIRECTIVE 91/322/EEC
Austria - Occupational Exposure Limits	
Local name	Zinn
MAK (OEL TWA)	2 mg/m ³ (E)
MAK (OEL STEL)	4 mg/m ³ (E, 4x 15(Miw) min)
Regulatory reference	BGBl. II Nr. 156/2021
Belgium - Occupational Exposure Limits	
Local name	Etain # Tin
OEL TWA	2,5 mg/m ³ (Fluorures inorganiques (en F); Belgium; Time-weighted average exposure limit 8 h; Etain (oxyde et composés inorganiques de; sauf SnH ₄ , en Sn); 2 mg/m ³ ; Belgium; Time-weighted average exposure limit 8 h)
OEL STEL	0,2 mg/m ³ (composés organiques de) # (organische verbindingen)

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

tetrafluorostannane (7783-62-2)	
Remark	D: la mention "D" signifie que la résorption de l'agent, via la peau, les muqueuses ou les yeux, constitue une partie importante de l'exposition totale. Cette résorption peut se faire tant par contact direct que par présence de l'agent dans l'air. # D: de vermelding "D" betekent dat de opname van het agens via de huid, de slijmvliezen of de ogen een belangrijk deel van de totale blootstelling vormt. Deze opname kan het gevolg zijn van zowel direct contact als zijn aanwezigheid in de lucht.
Regulatory reference	Koninklijk besluit/Arrêté royal 16/11/2023
Bulgaria - Occupational Exposure Limits	
Local name	Калай
OEL TWA	2 mg/m ³ (неорг. съединения, оксиди (като калай)) 0,1 mg/m ³ (орг. съединения (като калай))
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	Kositar, anorganski spojevi kao Sn (osim SnH4)
GVI (OEL TWA)	2 mg/m ³
Remark	Direktiva: 91/322/EEZ
Regulatory reference	Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, граниčnim vrijednostima izloženosti i biološkim граниčnim vrijednostima (NN 148/2023)
Cyprus - Occupational Exposure Limits	
Local name	Κασσίτερος (ανόργανες ενώσεις ως Sn)
OEL TWA	2 mg/m ³
Remark	Τα υπάρχοντα επιστημονικά δεδομένα για τις συνέπειες στην υγεία είναι ιδιαίτερα περιορισμένα
Regulatory reference	Κανονισμοί του 2007 (Κ.Δ.Π. 295/2007)
Czech Republic - Occupational Exposure Limits	
Local name	Cínu anorganické sloučeniny, jako Sn
PEL (OEL TWA)	2 mg/m ³
NPK-P (OEL C)	4 mg/m 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	Tinforbindelser, uorganiske
OEL TWA	2 mg/m ³ beregnet som Sn
Remark	E (betyder, at stoffet har en EF-grænseværdi)
Regulatory reference	BEK nr 291 af 19/03/2024
Estonia - Occupational Exposure Limits	
Local name	Tinaorganilised ühendid arvatatud tinale (Sn)

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

tetrafluorostannane (7783-62-2)	
OEL TWA	0,1 mg/m ³
OEL STEL	0,2 mg/m ³
Remark	A (Naha kaudu kergesti imenduv aine)
Regulatory reference	Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)
Finland - Occupational Exposure Limits	
Local name	Tina, metalli
HTP (OEL TWA)	2 mg/m ³ Sn
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden ministeriö)
France - Occupational Exposure Limits	
VME (OEL TWA)	2,5 mg/m ³ (Fluorures inorganiques; France; Time-weighted average exposure limit 8 h; VRI: Valeur réglementaire indicative)
Gibraltar - Occupational Exposure Limits	
Local name	Tin (inorganic compounds as Sn)
OEL TWA	2 mg/m ³
Remark	Existing scientific data on health effects appear to be particularly limited
Regulatory reference	Factories (Control of Chemical Agents at Work) Regulations 2003 (LN. 2018/181)
Greece - Occupational Exposure Limits	
Local name	Κασσίτερος
OEL TWA	2 mg/m ³
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	ÓN SZERVETLEN VEGYÜLETEI (Sn-ra számítva)
AK (OEL TWA)	2 mg/m ³
CK (OEL STEL)	8 mg/m ³
Remark	b (Bőrön át is felszívódik), i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindhármát); EU91 (91/322/EGK irányelvben közölt érték); T (Azok az anyagok, amelyek egészségkárosító hatása TARTÓS expozíciót követően jelentkezik)
Regulatory reference	5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről
Ireland - Occupational Exposure Limits	
Local name	Tin, as Sn
OEL TWA	2 mg/m ³ Metal 2 mg/m ³ Oxide & inorganic compounds, except tin hydride 0,1 mg/m ³ Organic compounds
OEL STEL	0,2 mg/m ³ Organic compounds
Remark	IOELV (Indicative Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2024

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

tetrafluorostannane (7783-62-2)	
Luxembourg - Occupational Exposure Limits	
Local name	Etain (composés inorganiques en Sn)
OEL TWA	2 mg/m ³
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	Tin (inorganic compounds as Sn)
OEL TWA	2 mg/m ³
Regulatory reference	S.L. 424.24 - Chemical Agents at Work Regulations (L.N. 356 of 2021) # L.S. 424.24 - Regolamenti dwar Agenti Kimiċi fuq il-Post tax-Xogħol (A.L. 356 tal-2021)
Netherlands - Occupational Exposure Limits	
Local name	Tin
TGG-8u (OEL TWA)	2 mg/m ³ (anorganische verbindingen als Sn)
TGG-15min (OEL STEL)	2 mg/m ³ (Fluoriden, anorganisch en oplosbaar (als F); Netherlands; Short time value; Public occupational exposure limit value; als F)
Regulatory reference	Arbeidsomstandighedenregeling 2024
Portugal - Occupational Exposure Limits	
Local name	Estanho e compostos, excluindo Hidreto de estanho
OEL TWA	2 mg/m ³ Metal 2 mg/m ³ Óxido e compostos inorgânicos, expresso em Sn 0,1 mg/m ³ Compostos orgânicos, expresso em Sn
OEL STEL	0,2 mg/m ³ Compostos orgânicos, expresso em Sn
Remark	Compostos orgânicos: P (Toxicidade percutânea); A4 (Agente não classificável como carcinogénico no Homem)
Regulatory reference	Norma Portuguesa NP 1796:2014
Romania - Occupational Exposure Limits	
Local name	Staniu (compuși anorganici exprimați în Sn)
OEL TWA	2 mg/m ³
Regulatory reference	Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)
Slovakia - Occupational Exposure Limits	
Local name	Cín zlúčeniny anorganické (ako Sn)
NPHV (OEL TWA)	2 mg/m ³
NPHV (OEL STEL)	4 mg/m ³
Regulatory reference	Nariadenie vlády č. 355/2006 Z. z. (122/2024 Z. z.)
Slovenia - Occupational Exposure Limits	
Local name	kositrove (IV) spojine (anorganske, računano kot Sn)
OEL TWA	2 mg/m ³
Remark	EU

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

tetrafluorostannane (7783-62-2)	
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	Estaño metal
VLA-ED (OEL TWA)	2 mg/m ³
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
Sweden - Occupational Exposure Limits	
Local name	Tenn metall och oorg. föreningar (som Sn)
NGV (OEL TWA)	2 mg/m ³ inhalerbar fraktion
Remark	3 (Med inhalerbar fraktion menas den mängd partiklar, av totalmängden partiklar i luften, som man inandas genom näsa och mun)
Regulatory reference	Hygieniska gränsvärden (AFS 2018:1)
United Kingdom - Occupational Exposure Limits	
Local name	Tin compounds, inorganic, except SnH4
WEL TWA (OEL TWA)	2 mg/m ³ (as Sn4)
WEL STEL (OEL STEL)	4 mg/m ³ (as Sn4)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Iceland - Occupational Exposure Limits	
Local name	Tinsambönd, ólífræn, sem Sn
OEL TWA	2 mg/m ³
Regulatory reference	Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)
North Macedonia - Occupational Exposure Limits	
Local name	Калај (неоргански соединенија, пресметано како Sn)
OEL TWA	2 mg/m ³ (I) инхалабилна фракција – дел на вкупно суспендирани материји, кои работникот ги вдишува
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)
USA - ACGIH - Occupational Exposure Limits	
Local name	Tin and inorganic compounds, excluding Tin hydride and Indium tin oxide, as Sn
ACGIH OEL TWA	2 mg/m ³ (I - Inhalable particulate matter)
Remark (ACGIH)	Non fibrous = TLV® Basis: URT irr Fibrous (including whiskers) = TLV® Basis: Mesothelioma; cancer. Notations: A2 (Suspected Human Carcinogen)
Regulatory reference	ACGIH 2024

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

iridium trichloride (10025-83-9)	
Austria - Occupational Exposure Limits	
Local name	Indium und seine Verbindungen
MAK (OEL TWA)	0,1 mg/m ³ (als In berechnet, E)
MAK (OEL STEL)	0,2 mg/m ³ (als In berechnet, E, 4x 15(Miw) min)
Regulatory reference	BGBl. II Nr. 156/2021
Belgium - Occupational Exposure Limits	
Local name	Indium et composés (en In) # Indium en -verbindingen (als In)
OEL TWA	0,1 mg/m ³
Regulatory reference	Koninklijk besluit/Arrêté royal 16/11/2023
Denmark - Occupational Exposure Limits	
Local name	Indium, pulver, støv og forbindelser
OEL TWA	0,1 mg/m ³ beregnet som In
Regulatory reference	BEK nr 291 af 19/03/2024
Finland - Occupational Exposure Limits	
Local name	Indium ja sen yhdisteet
HTP (OEL TWA)	0,1 mg/m ³ In
Regulatory reference	HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden ministeriö)
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Indium
AGW (OEL TWA)	0,0001 mg/m ³ (A)
Peak exposure limitation factor	8(II)
Remark	AGS - Ausschuss für Gefahrstoffe; 10 - Der Arbeitsplatzgrenzwert bezieht sich auf den Elementgehalt des entsprechenden Metalls
Regulatory reference	TRGS900
Ireland - Occupational Exposure Limits	
Local name	Indium & Compounds (as In)
OEL TWA	0,1 mg/m ³
OEL STEL	0,3 mg/m ³
Remark	Advisory OELV (Advisory Occupational Exposure Limit Values)
Regulatory reference	Chemical Agents Code of Practice 2024
Sweden - Occupational Exposure Limits	
Local name	Indium och oorg föreningar (som In)
NGV (OEL TWA)	0,1 mg/m ³ totaldamm
Remark	3 (Med totaldamm menas de partiklar (aerosoler) som fastnar på ett filter i den provtagare som beskrivs i Metodserien, Provtagning av totaldamm och respirabelt damm, Metod nr 1010, Arbetsmiljöverket, numera Arbetsmiljöverket. Filterdiametern är normalt 37 mm, men kan även vara 25 mm. Trots sitt namn provtas inte den totala mängden luftburna partiklar med denna metod)

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

Iridium trichloride (10025-83-9)	
Regulatory reference	Hygieniska gränsvärden (AFS 2018:1)
United Kingdom - Occupational Exposure Limits	
Local name	Indium
WEL TWA (OEL TWA)	0,1 mg/m ³ and compounds (as In)
WEL STEL (OEL STEL)	0,3 mg/m ³ and compounds (as In)
Regulatory reference	EH40/2005 (Fourth edition, 2020). HSE
Norway - Occupational Exposure Limits	
Local name	Indium og Indiumforb. (beregnet som In)
Grenseverdi (OEL TWA)	0,1 mg/m ³
Regulatory reference	FOR-2024-04-05-581
Switzerland - Occupational Exposure Limits	
Local name	Indium et ses composés / Indium und seine Verbindungen
MAK (OEL TWA)	0,1 mg/m ³ (i) / (e)
Remark	NIOSH, OSHA
Regulatory reference	www.suva.ch, 01.01.2024
USA - ACGIH - Occupational Exposure Limits	
Local name	Indium and compounds, as In
ACGIH OEL TWA	0,1 mg/m ³
Remark (ACGIH)	TLV® Basis: Pulm edema; pneumonitis; dental erosion; malaise
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

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

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
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	: 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	: 1,06
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).

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

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

germanium dioxide (1310-53-8)

LD50 oral rat	> 2000 mg/kg bodyweight
LC50 Inhalation - Rat	1,42 mg/l/4h

palladium dinitrate (10102-05-3)

LD50 oral rat	200 – 2000 mg/kg
---------------	------------------

Skin corrosion/irritation : Not classified

hydrochloric acid (7647-01-0)

pH	< 1
----	-----

molybdenum pentafluoride (13819-84-6)

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

palladium dinitrate (10102-05-3)

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

hexafluoroantimonic acid (16950-06-4)

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

Serious eye damage/irritation : Not classified

hydrochloric acid (7647-01-0)

pH	< 1
----	-----

molybdenum pentafluoride (13819-84-6)

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

palladium dinitrate (10102-05-3)

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

hexafluoroantimonic acid (16950-06-4)

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

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

hydrochloric acid (7647-01-0)

IARC group	3 - Not classifiable
------------	----------------------

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

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

germanium dioxide (1310-53-8)	
LOAEL (oral, rat, 90 days)	37,5 mg/kg bodyweight
STOT-repeated exposure	May cause damage to organs (kidneys) through prolonged or repeated exposure (inhalation, oral).

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

germanium dioxide (1310-53-8)	
LC50 - Fish [1]	103,5 mg/l Brachydanio rerio (zebra-fish)
EC50 - Crustacea [1]	67,5 mg/l Daphnia magna (Water flea)
EC50 72h - Algae [1]	0,206 mg/l Navicula pelliculosa
NOEC chronic algae	0,1 mg/l Navicula pelliculosa

palladium dinitrate (10102-05-3)	
LC50 - Fish [1]	306 µg/l Oncorhynchus mykiss (Rainbow trout)
EC50 - Crustacea [1]	35,19 µg/l Daphnia magna (Water flea)

tetrafluorostannane (7783-62-2)	
EC50 - Crustacea [1]	21,56 mg/l Daphnia magna (Water flea)

12.2. Persistence and degradability

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Persistence and degradability	Rapidly degradable
-------------------------------	--------------------

hydrochloric acid (7647-01-0)	
Persistence and degradability	Rapidly degradable

germanium dioxide (1310-53-8)	
Persistence and degradability	Rapidly degradable

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

molybdenum pentafluoride (13819-84-6)	
Persistence and degradability	Rapidly degradable
palladium dinitrate (10102-05-3)	
Persistence and degradability	Rapidly degradable
hexafluoroantimonic acid (16950-06-4)	
Persistence and degradability	Rapidly degradable
tetrafluorostannane (7783-62-2)	
Persistence and degradability	Rapidly degradable
iridium trichloride (10025-83-9)	
Persistence and degradability	Rapidly degradable

12.3. Bioaccumulative potential

No additional information available

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	hydrochloric acid (7647-01-0), germanium dioxide (1310-53-8) ⁽¹⁾ , palladium dinitrate (10102-05-3) ⁽¹⁾ , hexafluoroantimonic acid (16950-06-4) ⁽¹⁾ , tetrafluorostannane (7783-62-2) ⁽¹⁾ , iridium trichloride (10025-83-9) ⁽¹⁾
Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII	hydrochloric acid (7647-01-0), germanium dioxide (1310-53-8) ⁽¹⁾ , palladium dinitrate (10102-05-3) ⁽¹⁾ , hexafluoroantimonic acid (16950-06-4) ⁽¹⁾ , tetrafluorostannane (7783-62-2) ⁽¹⁾ , iridium trichloride (10025-83-9) ⁽¹⁾

⁽¹⁾ Substance(s) in concentration below 0.1 % and displayed on a voluntary basis

12.6. Endocrine disrupting properties

No additional information available

12.7. Other adverse effects

germanium dioxide (1310-53-8)	
Other information	Avoid release to the environment.

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	: Dispose in a safe manner in accordance with local/national regulations. Disposal must be done according to official regulations.
Additional information	: Do not re-use empty containers.






PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

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
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. (hydrochloric acid)	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (hydrochloric acid)	Corrosive liquid, acidic, inorganic, n.o.s. (hydrochloric acid)	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (hydrochloric acid)	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (hydrochloric acid)
Transport document description				
UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (hydrochloric acid), 8, III, (E)	UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (hydrochloric acid), 8, III	UN 3264 Corrosive liquid, acidic, inorganic, n.o.s. (hydrochloric acid), 8, III	UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (hydrochloric acid), 8, III	UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (hydrochloric acid), 8, III
14.3. Transport hazard class(es)				
8	8	8	8	8
				
14.4. Packing group				
III	III	III	III	III
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

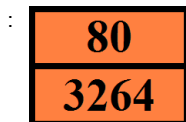
Classification code (ADR)	: C1
Special provisions (ADR)	: 274
Limited quantities (ADR)	: 5I
Excepted quantities (ADR)	: E1
Packing instructions (ADR)	: P001, IBC03, LP01, R001
Mixed packing provisions (ADR)	: MP19
Portable tank and bulk container instructions (ADR)	: T7
Portable tank and bulk container special provisions (ADR)	: TP1, TP28
Tank code (ADR)	: L4BN
Vehicle for tank carriage	: AT
Transport category (ADR)	: 3
Special provisions for carriage - Packages (ADR)	: V12
Hazard identification number (Kemler No.)	: 80

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

Orange plates



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

Transport by sea

Special provisions (IMDG) : 223, 274
Limited quantities (IMDG) : 5 L
Excepted quantities (IMDG) : E1
Packing instructions (IMDG) : P001, LP01
IBC packing instructions (IMDG) : IBC03
Tank instructions (IMDG) : T7
Tank special provisions (IMDG) : TP1, TP28
Stowage category (IMDG) : A
Stowage and handling (IMDG) : SW2
Properties and observations (IMDG) : Causes burns to skin, eyes and mucous membranes.

Air transport

PCA Excepted quantities (IATA) : E1
PCA Limited quantities (IATA) : Y841
PCA limited quantity max net quantity (IATA) : 1L
PCA packing instructions (IATA) : 852
PCA max net quantity (IATA) : 5L
CAO packing instructions (IATA) : 856
CAO max net quantity (IATA) : 60L
Special provisions (IATA) : A3
ERG code (IATA) : 8L

Inland waterway transport

Classification code (ADN) : C1
Special provisions (ADN) : 274
Limited quantities (ADN) : 5 L
Excepted quantities (ADN) : E1
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) : 5L
Excepted quantities (RID) : E1
Packing instructions (RID) : P001, IBC03, LP01, R001
Mixed packing provisions (RID) : MP19
Portable tank and bulk container instructions (RID) : T7
Portable tank and bulk container special provisions (RID) : TP1, TP28
Tank codes for RID tanks (RID) : L4BN
Transport category (RID) : 3
Special provisions for carriage – Packages (RID) : W12
Colis express (express parcels) (RID) : CE8
Hazard identification number (RID) : 80

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

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(b)	hydrochloric acid ; hexafluoroantimonic 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
3(c)	hexafluoroantimonic 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 class 4.1

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
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) : WGK 1, Slightly hazardous to water (Classification according to AwSV, Annex 1).

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

Hazardous Incident Ordinance (12. BImSchV) : Is not subject to the Hazardous Incident Ordinance (12. BImSchV)

Netherlands

ABM category : B(4) - low hazard for aquatic organisms
SZW-lijst van kankerverwekkende stoffen : tetrafluorostannane is listed
SZW-lijst van mutagene stoffen : tetrafluorostannane is 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

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

SECTION 16: Other information

Indication of changes		
Section	Changed item	Comments
4.1	First-aid measures for first aider	Added
4.1	First-aid measures general	Added
4.2	Symptoms/effects after skin contact	Added
4.2	Symptoms/effects after inhalation	Added

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

Indication of changes		
Section	Changed item	Comments
4.2	Symptoms/effects after ingestion	Added
4.2	Symptoms/effects after eye contact	Added
5.1	Unsuitable extinguishing media	Added
5.2	Explosion hazard	Added
5.2	Fire 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	Technical measures	Added
7.2	Packaging materials	Added
7.2	Storage conditions	Modified
13.1	Sewage disposal recommendations	Added
13.1	Additional information	Added
13.1	Regional waste regulation	Added
13.1	Product/Packaging disposal recommendations	Modified
16	Abbreviations and acronyms	Modified

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

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

Abbreviations and acronyms:	
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
UFI	Unique Formula Identifier

Full text of H- and EUH-statements:	
Acute Tox. 1 (Dermal)	Acute toxicity (dermal), Category 1
Acute Tox. 2 (Inhalation)	Acute toxicity (inhal.), Category 2

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

Full text of H- and EUH-statements:	
Acute Tox. 2 (Oral)	Acute toxicity (oral), Category 2
Acute Tox. 3 (Inhalation)	Acute toxicity (inhal.), Category 3
Acute Tox. 4 (Dermal)	Acute toxicity (dermal), Category 4
Acute Tox. 4 (Inhalation)	Acute toxicity (inhal.), Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment – Acute Hazard, Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment – Chronic Hazard, Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment – Chronic Hazard, Category 2
Aquatic Chronic 3	Hazardous to the aquatic environment – Chronic Hazard, Category 3
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
Ox. Sol. 1	Oxidising Solids, Category 1
Repr. 2	Reproductive toxicity, 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
H271	May cause fire or explosion; strong oxidiser.
H290	May be corrosive to metals.
H300	Fatal if swallowed.
H302	Harmful if swallowed.
H310	Fatal in contact with skin.
H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H331	Toxic if inhaled.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H361	Suspected of damaging fertility or the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

PA Tuning Solution 2 - 8 components; Ge 10mg/l ; Mo 10mg/l ; Pd 10mg/l ; Ru 10mg/l ; Sb 10mg/l ; Sn 10mg/l ; Ir 5mg/l ; Ti 5mg/l in HCl 5% Equivalent to Agilent Ref: 5188-6524-2

Safety Data Sheet

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

Full text of H- and EUH-statements:

H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

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
--------------	------	-----------------------

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.