

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO3 5% Equivalent to Perkin Elmer Ref: N9300234

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
SDS Reference Number: EQ0209
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 : Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO3 5% Equivalent to Perkin Elmer Ref: N9300234
Product code : EQ0209

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
Skin corrosion/irritation, Category 1, Sub-Category 1B H314
Serious eye damage/eye irritation, Category 1 H318
Full text of H- and EUH-statements: see section 16

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Adverse physicochemical, human health and environmental effects

May be corrosive to metals. Causes severe skin burns and eye damage. Causes serious eye damage.

2.2. Label elements

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

Hazard pictograms (CLP)



GHS05

Signal word (CLP)

: Danger

Contains

: nitric acid

Hazard statements (CLP)

: H290 - May be corrosive to metals.

H314 - Causes severe skin burns and eye damage.

Precautionary statements (CLP)

: P260 - Do not breathe dusts or mists.

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

P301+P330+P331+P310 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

Immediately call a POISON CENTER or doctor.

P303+P361+P353+P310 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a POISON CENTER or doctor.

P305+P351+P338+P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.

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 | nitric acid (7697-37-2), hafnium dioxide (12055-23-1) ⁽¹⁾ , iridium trichloride (10025-83-9) ⁽¹⁾ , palladium dinitrate (10102-05-3) ⁽¹⁾ , chloroplatinic acid, hexahydrate (18497-13-7) ⁽¹⁾ , rhodium trichloride (10049-07-7) ⁽¹⁾ , hexafluoroantimonic acid (16950-06-4) ⁽¹⁾ , tetrafluorostannane (7783-62-2) ⁽¹⁾ |
| Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII | nitric acid (7697-37-2), hafnium dioxide (12055-23-1) ⁽¹⁾ , iridium trichloride (10025-83-9) ⁽¹⁾ , palladium dinitrate (10102-05-3) ⁽¹⁾ , chloroplatinic acid, hexahydrate (18497-13-7) ⁽¹⁾ , rhodium trichloride (10049-07-7) ⁽¹⁾ , hexafluoroantimonic acid (16950-06-4) ⁽¹⁾ , tetrafluorostannane (7783-62-2) ⁽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 %

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SECTION 3: Composition/information on ingredients

3.2. Mixtures

| Name | Product identifier | % | Classification according to Regulation (EC) No. 1272/2008 [CLP] |
|---|--|--------|---|
| nitric acid substance with national workplace exposure limit(s) (AT, BE, BG, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GI, GR, HR, HU, IE, IT, LT, LU, LV, MT, NL, PT, RO, SE, SI, SK, AL, IS, NO, MK, RS, CH, TR); substance with a Community workplace exposure limit | CAS-No.: 7697-37-2 EC-No.: 231-714-2 EC Index-No.: 007-004-00-1 REACH-no: 01-2119487297-23-XXXX | 5 – 10 | Ox. Liq. 2, H272 Met. Corr. 1, H290 Acute Tox. 1 (Inhalation), H330 Skin Corr. 1A, H314 Eye Dam. 1, H318 |
| 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 |
| rhodium trichloride substance with national workplace exposure limit(s) (BE, DK, ES, FI, FR, GB, GR, HR, IE, PT, IS, NO, CH) | CAS-No.: 10049-07-7 EC-No.: 233-165-4 | < 0,05 | Acute Tox. 4 (Oral), H302 Aquatic Chronic 4, H413 |
| 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 |
| 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 |
| 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 |
| chloroplatinic acid, hexahydrate substance with national workplace exposure limit(s) (AT, BE, CZ, DK, EE, FI, GB, GI, HR, HU, IE, LT, MT, PT, RO, SE, SK, NO, CH); substance with a Community workplace exposure limit | CAS-No.: 18497-13-7 EC-No.: 241-010-7 EC Index-No.: 078-009-00-4 | < 0,05 | Acute Tox. 3 (Oral), H301 Skin Corr. 1B, H314 Resp. Sens. 1, H334 Skin Sens. 1, H317 STOT RE Not classified |
| hafnium dioxide substance with national workplace exposure limit(s) (AT, BE, DK, ES, FI, FR, GR, IE, PL, PT, RO, SI, IS, NO, MK, CH) | CAS-No.: 12055-23-1 EC-No.: 235-013-2 | < 0,05 | Not classified |

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| Specific concentration limits: | | |
|--------------------------------|--|---|
| Name | Product identifier | Specific concentration limits (%) |
| nitric acid | CAS-No.: 7697-37-2 EC-No.: 231-714-2 EC Index-No.: 007-004-00-1 REACH-no: 01-2119487297-23-XXXX | (5 ≤ C < 20) Skin Corr. 1B; H314 (20 ≤ C < 100) Skin Corr. 1A; H314 (65 ≤ C < 99) Ox. Liq. 3; H272 (99 ≤ C < 100) Ox. Liq. 2; H272 |

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

SECTION 4: First aid measures

4.1. Description of first aid measures

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

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

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

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

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

5.2. Special hazards arising from the substance or mixture

| | |
|--|--------------------------------|
| Fire hazard | : 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. |

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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. Do not breathe dust/fume/gas/mist/vapours/spray.

For emergency responders

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

6.2. Environmental precautions

Avoid release to the environment.

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. Do not breathe dust/fume/gas/mist/vapours/spray. 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. Store locked up.
Incompatible materials : Metals.
Packaging materials : Store always product in container of same material as original container.

Germany

Storage class (LGK, TRGS 510) : LGK 8B - Non-combustible corrosive substances

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 5.1A, LGK 5.2, LGK 6.2, LGK 7

Joint storage with restrictions permitted for : LGK 4.1A, LGK 4.2, LGK 4.3, LGK 5.1C

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Joint storage permitted for : LGK 2A, LGK 2B, LGK 3, LGK 4.1B, LGK 5.1B, 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

| nitric acid (7697-37-2) | |
|---|--|
| EU - Indicative Occupational Exposure Limit (IOEL) | |
| Local name | Nitric acid |
| IOEL STEL | 2,6 mg/m ³ |
| | 1 ppm |
| Regulatory reference | COMMISSION DIRECTIVE 2006/15/EC |
| Albania - Occupational Exposure Limits | |
| Local name | Acid nitrik |
| OEL STEL | 2,6 mg/m ³ |
| | 1 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 | Salpetersäure |
| OEL C | 2,6 mg/m ³ |
| | 1 ppm |
| Regulatory reference | BGBl. II Nr. 156/2021 |
| Belgium - Occupational Exposure Limits | |
| Local name | Acide nitrique # Salpeterzuur |
| OEL STEL | 2,6 mg/m ³ |
| | 1 ppm |
| Regulatory reference | Koninklijk besluit/Arrêté royal 16/11/2023 |
| Bulgaria - Occupational Exposure Limits | |
| Local name | Азотна киселина |
| OEL STEL | 2,6 mg/m ³ |
| | 1 ppm |
| Remark | • (Химични агенти, за които са определени гранични стойности във въздуха на работната среда за Европейската общност) |

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| nitric acid (7697-37-2) | |
|--|---|
| 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 | Dušična kiselina |
| KGVI (OEL STEL) | 2,6 mg/m ³ |
| | 1 ppm |
| Remark | Direktiva: 2006/15/EZ |
| 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 | Νιτρικό οξύ |
| OEL STEL | 2,6 mg/m ³ |
| | 1 ppm |
| Regulatory reference | Κανονισμοί του 2007 (Κ.Δ.Π. 295/2007) |
| Czech Republic - Occupational Exposure Limits | |
| Local name | Kyselina dusičná |
| PEL (OEL TWA) | 1 mg/m ³ |
| | 0,38 ppm |
| NPK-P (OEL C) | 2,5 mg/m ³ |
| | 0,95 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 | Salpetersyre |
| OEL STEL | 2,6 mg/m ³ |
| | 1 ppm |
| Remark | E (betyder, at stoffet har en EF-grænseværdi); S (betyder, at grænseværdien ikke bør overskrides. Værdien gælder for en eksponeringsperiode på 15 minutter) |
| Regulatory reference | BEK nr 291 af 19/03/2024 |
| Estonia - Occupational Exposure Limits | |
| Local name | Lämmastikhape |
| OEL STEL | 2,6 mg/m ³ |
| | 1 ppm |
| Regulatory reference | Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13) |
| Finland - Occupational Exposure Limits | |
| Local name | Typpihappo |
| HTP (OEL TWA) | 1,3 mg/m ³ |

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| nitric acid (7697-37-2) | |
|---|--|
| | 0,5 ppm |
| HTP (OEL STEL) | 2,6 mg/m ³ |
| | 1 ppm |
| Regulatory reference | HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden ministeriö) |
| France - Occupational Exposure Limits | |
| Local name | Acide nitrique |
| VLE (OEL C/STEL) | 2,6 mg/m ³ |
| | 1 ppm |
| Remark | Valeurs réglementaires indicatives |
| Regulatory reference | Arrêté du 30 juin 2004 modifié (réf.: INRS ED 6443, 2022; Outil65; Arrêté du 26 octobre 2007) |
| Germany - Occupational Exposure Limits (TRGS 900) | |
| Local name | Salpetersäure |
| AGW (OEL TWA) | 2,6 mg/m ³ |
| | 1 ppm |
| 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; 16 - Der Arbeitsplatzgrenzwert ist nur als Kurzzeitwert festgelegt. Die betriebliche Überwachung soll durch messtechnische Mittelwertbildung über 15 Minuten erfolgen, z.B. durch eine 15-minütige Probenahme |
| Regulatory reference | TRGS900 |
| Gibraltar - Occupational Exposure Limits | |
| Local name | Nitric acid |
| OEL STEL | 2,6 mg/m ³ |
| | 1 ppm |
| Regulatory reference | Factories (Control of Chemical Agents at Work) Regulations 2003 (LN. 2018/181) |
| Greece - Occupational Exposure Limits | |
| Local name | Νιτρικό οξύ |
| OEL STEL | 2,6 mg/m ³ |
| | 1 ppm |
| Regulatory reference | Π.Δ. 162/2007 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους |
| Hungary - Occupational Exposure Limits | |
| Local name | SALÉTRÓMSAV |
| CK (OEL STEL) | 2,6 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); EU2 (2006/15/EK irányelvben közölt érték) |
| Regulatory reference | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről |

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| nitric acid (7697-37-2) | |
|---|---|
| Ireland - Occupational Exposure Limits | |
| Local name | Nitric acid |
| OEL STEL | 2,6 mg/m ³ |
| | 1 ppm |
| Remark | IOELV (Indicative Occupational Exposure Limit Values) |
| Regulatory reference | Chemical Agents Code of Practice 2024 |
| Italy - Occupational Exposure Limits | |
| Local name | Acido nitrico |
| OEL STEL | 2,6 mg/m ³ |
| | 1 ppm |
| Regulatory reference | Allegato XXXVIII del Decreto Legislativo 4 settembre 2024, n. 135 |
| Latvia - Occupational Exposure Limits | |
| Local name | Slāpekļskābe |
| OEL TWA | 2 mg/m ³ |
| | 0,78 ppm |
| OEL STEL | 2,6 mg/m ³ |
| | 1 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 | Nitrato rūgštis (azoto rūgštis) |
| TPRV (OEL STEL) | 2,6 mg/m ³ |
| | 1 ppm |
| Regulatory reference | LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12) |
| Luxembourg - Occupational Exposure Limits | |
| Local name | Acide nitrique |
| OEL STEL | 2,6 mg/m ³ |
| | 1 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 | Nitric acid |
| OEL STEL | 2,6 mg/m ³ |
| | 1 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 | Salpeterzuur |

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| nitric acid (7697-37-2) | |
|---|---|
| TGG-15min (OEL STEL) | 1,3 mg/m ³ |
| | 0,5 ppm (Salpeterzuur; Netherlands; Short time value; Public occupational exposure limit value) |
| Regulatory reference | Arbeidsomstandighedenregeling 2024 |
| Portugal - Occupational Exposure Limits | |
| Local name | Ácido nítrico |
| OEL TWA | 2 ppm |
| OEL STEL | 4 ppm |
| Regulatory reference | Norma Portuguesa NP 1796:2014 |
| Romania - Occupational Exposure Limits | |
| Local name | Acid nitric/Acid azotic |
| OEL STEL | 2,6 mg/m ³ |
| | 1 ppm |
| Regulatory reference | Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024) |
| Serbia - Occupational Exposure Limits | |
| Local name | азотна киселина |
| OEL STEL | 3 mg/m ³ |
| | 1 ppm |
| Remark | ЕУ** – напомена да се ради о хемијским материјама за које су утврђене индикативне граничне вредности изложености према Директиви 2006/15/ЕЗ (друга 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 | Kyselina dusičná |
| NPHV (OEL STEL) | 2,6 mg/m ³ |
| | 1 ppm |
| Regulatory reference | Nariadenie vlády č. 355/2006 Z. z. (122/2024 Z. z.) |
| Slovenia - Occupational Exposure Limits | |
| Local name | dušikova kislina |
| OEL TWA | 2,6 mg/m ³ |
| | 1 ppm |
| OEL STEL | 2,6 mg/m ³ |
| | 1 ppm |
| Remark | 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 nítrico |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO₃ 5% Equivalent to Perkin Elmer Ref: N9300234

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

| nitric acid (7697-37-2) | |
|--|---|
| VLA-EC (OEL STEL) | 2,6 mg/m ³ |
| | 1 ppm |
| Remark | VLI (Agente químico para el que la U.E. estableció en su día un valor límite indicativo). |
| Regulatory reference | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT |
| Sweden - Occupational Exposure Limits | |
| Local name | Salpetersyra |
| NGV (OEL TWA) | 1,3 mg/m ³ |
| | 0,5 ppm |
| KGV (OEL STEL) | 2,6 mg/m ³ |
| | 1 ppm |
| Regulatory reference | Hygieniska gränsvärden (AFS 2018:1) |
| United Kingdom - Occupational Exposure Limits | |
| Local name | Nitric acid |
| WEL STEL (OEL STEL) | 2,6 mg/m ³ |
| | 1 ppm |
| Regulatory reference | EH40/2005 (Fourth edition, 2020). HSE |
| Iceland - Occupational Exposure Limits | |
| Local name | Saltpéturssýra |
| OEL STEL | 2,6 mg/m ³ |
| | 1 ppm |
| Regulatory reference | Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009) |
| Norway - Occupational Exposure Limits | |
| Local name | Salpetersyre |
| Grenseverdi (OEL TWA) | 5 mg/m ³ |
| | 2 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 | азотна киселина |
| OEL TWA | 2,6 mg/m ³ |
| | 1 ppm |
| KTV | 1 |
| Short time value [mg/m ³] | 2,6 mg/m ³ |
| Short time value [ppm] | 1 ppm |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO₃ 5% Equivalent to Perkin Elmer Ref: N9300234

Safety Data Sheet

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

| nitric acid (7697-37-2) | |
|--|---|
| 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 покусно 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; (*) дополнување на граничната вредност заради донесената Директива на Комисијата 2006/15ES од 7 февруари 2006 за создавање на втора листа на индикативни гранични вредности за професионална изложеност според директивата 98/24/EC и за измените на директивата 91/322/EEC и директивата 2000/39/ EC (Сл. весник бр. 38 од ден 9.2.2006, стр. 36) |
| 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 nitrique / Salpetersäure |
| MAK (OEL TWA) | 5 mg/m ³ 2 ppm |
| KZGW (OEL STEL) | 5 mg/m ³ 2 ppm |
| Remark | NIOSH, OSHA |
| Regulatory reference | www.suva.ch, 01.01.2024 |
| USA - ACGIH - Occupational Exposure Limits | |
| Local name | Nitric acid |
| ACGIH OEL TWA | 2 ppm |
| ACGIH OEL STEL | 4 ppm |
| Remark (ACGIH) | TLV® Basis: URT & eye irr; dental erosion |
| Regulatory reference | ACGIH 2024 |
| hafnium dioxide (12055-23-1) | |
| Austria - Occupational Exposure Limits | |
| Local name | Hafnium |
| MAK (OEL TWA) | 0,5 mg/m ³ |
| Regulatory reference | BGBI. II Nr. 156/2021 |
| Belgium - Occupational Exposure Limits | |
| Local name | Hafnium # Hafnium |
| OEL TWA | 0,5 mg/m ³ |
| Regulatory reference | Koninklijk besluit/Arrêté royal 16/11/2023 |
| Denmark - Occupational Exposure Limits | |
| Local name | Hafnium |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO3 5% Equivalent to Perkin Elmer Ref: N9300234

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| hafnium dioxide (12055-23-1) | |
|--|---|
| OEL TWA | 0,5 mg/m ³ pulver eller støv |
| Regulatory reference | BEK nr 291 af 19/03/2024 |
| Finland - Occupational Exposure Limits | |
| Local name | Hafnium, metalli |
| HTP (OEL TWA) | 0,5 mg/m ³ |
| Regulatory reference | HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö) |
| France - Occupational Exposure Limits | |
| Local name | Hafnium |
| VME (OEL TWA) | 0,5 mg/m ³ |
| Remark | Valeurs recommandées/admises |
| Regulatory reference | Circulaire du Ministère du travail (réf.: INRS ED 6443, 2022; Outil65) |
| Greece - Occupational Exposure Limits | |
| Local name | Άφνιο |
| OEL TWA | 0,5 mg/m ³ |
| OEL STEL | 1,5 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 |
| Ireland - Occupational Exposure Limits | |
| Local name | Hafnium |
| OEL TWA | 0,5 mg/m ³ |
| OEL STEL | 1,5 mg/m ³ |
| Remark | Advisory OELV (Advisory Occupational Exposure Limit Values) |
| Regulatory reference | Chemical Agents Code of Practice 2024 |
| Poland - Occupational Exposure Limits | |
| Local name | Hafn i jego związki w przeliczeniu na Hf |
| 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 | Háfnio e compostos, expressos em Hf |
| OEL TWA | 0,5 mg/m ³ |
| Regulatory reference | Norma Portuguesa NP 1796:2014 |
| Romania - Occupational Exposure Limits | |
| Local name | Hafniu |
| 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) |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO3 5% Equivalent to Perkin Elmer Ref: N9300234

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| hafnium dioxide (12055-23-1) | |
|---|---|
| Slovenia - Occupational Exposure Limits | |
| Local name | hafnij in njegove spojine |
| OEL TWA | 0,5 mg/m ³ |
| OEL STEL | 2 mg/m ³ |
| Spain - Occupational Exposure Limits | |
| Local name | Hafnio |
| VLA-ED (OEL TWA) | 0,5 mg/m ³ elemental 0,5 mg/m ³ Compuestos de Hafnio, como Hf |
| Regulatory reference | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT |
| Iceland - Occupational Exposure Limits | |
| Local name | Hafnium, duft eða ryk |
| 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 | Hafnium |
| Grenseverdi (OEL TWA) | 0,5 mg/m ³ |
| Regulatory reference | FOR-2024-04-05-581 |
| North Macedonia - Occupational Exposure Limits | |
| Local name | хафниум и неговите соединенија |
| OEL TWA | 0,5 mg/m ³ (l) инхалабилна фракција – дел на вкупно суспендирани материји, кои работникот ги вдишува |
| 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 | Hafnium |
| MAK (OEL TWA) | 0,5 mg/m ³ |
| Remark | e(mg/m ³) - OAW, Auge, Leber - NIOSH, OSHA |
| Regulatory reference | www.suva.ch, 01.01.2024 |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO3 5% Equivalent to Perkin Elmer Ref: N9300234

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| hafnium dioxide (12055-23-1) | |
|--|--|
| USA - ACGIH - Occupational Exposure Limits | |
| Local name | Hafnium and compounds, as Hf |
| ACGIH OEL TWA | 0,5 mg/m ³ |
| Remark (ACGIH) | URT & eye irr; liver dam |
| Regulatory reference | ACGIH 2024 |
| 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 terveysministeriö) |
| 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 |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO3 5% Equivalent to Perkin Elmer Ref: N9300234

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| iridium trichloride (10025-83-9) | |
|---|--|
| 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, Arbetarskyddsstyrelsen, 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) |
| 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 |
| 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) |
| chloroplatinic acid, hexahydrate (18497-13-7) | |
| EU - Indicative Occupational Exposure Limit (IOEL) | |
| Local name | Platinum (metallic) |
| IOEL TWA | 1 mg/m ³ |
| Regulatory reference | COMMISSION DIRECTIVE 91/322/EEC |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO₃ 5% Equivalent to Perkin Elmer Ref: N9300234

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| chloroplatinic acid, hexahydrate (18497-13-7) | |
|--|--|
| Austria - Occupational Exposure Limits | |
| Local name | Platinverbindungen |
| MAK (OEL TWA) | 0,002 mg/m ³ (als Pt berechnet, E) |
| Remark | Sah |
| Regulatory reference | BGBI. II Nr. 156/2021 |
| Belgium - Occupational Exposure Limits | |
| Local name | Platine (sels solubles) (en Pt) # Platina (oplosbare zouten) (als Pt) |
| OEL TWA | 0,002 mg/m ³ |
| Regulatory reference | Koninklijk besluit/Arrêté royal 16/11/2023 |
| Croatia - Occupational Exposure Limits | |
| Local name | Platina spojevi, topivi (osim određenih halogenih spojeva platine) (kao Pt) |
| GVI (OEL TWA) | 0,002 mg/m ³ |
| Regulatory reference | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023) |
| Czech Republic - Occupational Exposure Limits | |
| Local name | Platina (kov) a nerozpustné sloučeniny |
| PEL (OEL TWA) | 0,5 mg/m ³ |
| NPK-P (OEL C) | 1 mg/m ³ |
| Regulatory reference | Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.) |
| Denmark - Occupational Exposure Limits | |
| Local name | Platin |
| OEL TWA | 1 mg/m ³ pulver og støv |
| Regulatory reference | BEK nr 291 af 19/03/2024 |
| Estonia - Occupational Exposure Limits | |
| Local name | Platina |
| OEL TWA | 1 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 | Platina, liukoiset suolat |
| HTP (OEL TWA) | 0,002 mg/m ³ Pt |
| Regulatory reference | HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö) |
| Gibraltar - Occupational Exposure Limits | |
| Local name | Platinum (metallic) |
| OEL TWA | 1 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) |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO₃ 5% Equivalent to Perkin Elmer Ref: N9300234

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| chloroplatinic acid, hexahydrate (18497-13-7) | |
|---|--|
| Hungary - Occupational Exposure Limits | |
| Local name | PLATINA OLDHATÓ VEGYÜLETEI (Pt-ra számítva) |
| AK (OEL TWA) | 0,002 mg/m ³ |
| Remark | i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindhármát), sz (Túlérzékenységet okozó (szenzibilizáló) tulajdonságú anyag. Az anyagra érzékeny egyéneken „túlérzékenységen” alapuló bőr-, légzőrendszeri, esetleg más szervet/szervrendszert károsító megbetegedést okozhat); 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 | Platinum salts, soluble (as Pt) |
| OEL TWA | 0,002 mg/m ³ |
| Remark | Advisory OELV (Advisory Occupational Exposure Limit Values) |
| Regulatory reference | Chemical Agents Code of Practice 2024 |
| Lithuania - Occupational Exposure Limits | |
| Local name | Platina |
| IPRV (OEL TWA) | 1 mg/m ³ |
| Regulatory reference | LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12) |
| Malta - Occupational Exposure Limits | |
| Local name | Platinum (metallic) # Platinum (metalliku) |
| OEL TWA | 1 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) |
| Portugal - Indicative Occupational Exposure Limit (IOEL) | |
| Local name | Platina |
| IOEL TWA | 1 mg/m ³ |
| Regulatory reference | Decreto-Lei n.º 1/2021 de 6 de janeiro |
| Portugal - Occupational Exposure Limits | |
| Local name | Platina |
| OEL TWA | 1 mg/m ³ Metal 0,002 mg/m ³ Sais solúveis, expresso em platina |
| Regulatory reference | Norma Portuguesa NP 1796:2014 |
| Romania - Occupational Exposure Limits | |
| Local name | Platină |
| OEL TWA | 1 mg/m ³ (Metalică) |
| Regulatory reference | Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024) |
| Slovakia - Occupational Exposure Limits | |
| Local name | Platina – zlúčeniny rozpustné (ako Pt) |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO₃ 5% Equivalent to Perkin Elmer Ref: N9300234

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| chloroplatinic acid, hexahydrate (18497-13-7) | |
|--|--|
| NPHV (OEL TWA) | 0,001 mg/m ³ |
| NPHV (OEL STEL) | 0,002 mg/m ³ |
| Remark | S – znamená, že faktor môže spôsobiť senzibilizáciu |
| Regulatory reference | Nariadenie vlády č. 355/2006 Z. z. (122/2024 Z. z.) |
| Sweden - Occupational Exposure Limits | |
| Local name | Platina, metall och svårlösliga föreningar (som Pt) |
| NGV (OEL TWA) | 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, Arbetskyddsstyrelsen, 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) |
| Regulatory reference | Hygieniska gränsvärden (AFS 2018:1) |
| United Kingdom - Occupational Exposure Limits | |
| Local name | Platinum |
| WEL TWA (OEL TWA) | 5 mg/m ³ metal 0,002 mg/m ³ compounds, soluble (except certain halogeno-Pt compounds) (as Pt) |
| Regulatory reference | EH40/2005 (Fourth edition, 2020). HSE |
| Norway - Occupational Exposure Limits | |
| Local name | Platinaforbindelser, løselige (beregnet som Pt) |
| Grenseverdi (OEL TWA) | 0,002 mg/m ³ |
| Regulatory reference | FOR-2024-04-05-581 |
| Switzerland - Occupational Exposure Limits | |
| Local name | Platine, composés du / Platinverbindungen |
| MAK (OEL TWA) | 0,002 mg/m ³ |
| Notation | S / S |
| Remark | NIOSH. Exprimé en Pt. Seuls certains sels complexes sont sensibilisants / NIOSH. Als Pt berechnet. S gilt nur für Komplexsalze |
| Regulatory reference | www.suva.ch, 01.01.2024 |
| USA - ACGIH - Occupational Exposure Limits | |
| Local name | Platinum, soluble salts, as Pt |
| ACGIH OEL TWA | 0,002 mg/m ³ |
| Remark (ACGIH) | TLV® Basis: Asthma; URT irr |
| Regulatory reference | ACGIH 2024 |
| rhodium trichloride (10049-07-7) | |
| Belgium - Occupational Exposure Limits | |
| Local name | Rhodium (composés solubles) (en Rh) # Rhodium (oplosbare verbindingen) (als Rh) |
| OEL TWA | 0,01 mg/m ³ |
| Regulatory reference | Koninklijk besluit/Arrêté royal 16/11/2023 |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO₃ 5% Equivalent to Perkin Elmer Ref: N9300234

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

| rhodium trichloride (10049-07-7) | |
|--|--|
| Croatia - Occupational Exposure Limits | |
| Local name | Rodij (kao Rh) |
| GVI (OEL TWA) | 0,1 mg/m ³ dim i prašina metala 0,001 mg/m ³ topivi spojevi |
| KGVI (OEL STEL) | 0,3 mg/m ³ dim i prašina metala 0,003 mg/m ³ topivi spojevi |
| Regulatory reference | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023) |
| Denmark - Occupational Exposure Limits | |
| Local name | Rhodiumforbindelser, opløselige |
| OEL TWA | 0,001 mg/m ³ beregnet som Rh |
| Regulatory reference | BEK nr 291 af 19/03/2024 |
| Finland - Occupational Exposure Limits | |
| Local name | Rodium, metallihuurut ja -pöly |
| HTP (OEL TWA) | 0,1 mg/m ³ Rh |
| Regulatory reference | HTP-ARVOT 2020 (Sosiaali- ja terveystieteiden ministeriö) |
| France - Occupational Exposure Limits | |
| Local name | Rhodium (métal) |
| VME (OEL TWA) | 1 mg/m ³ |
| Remark | Valeurs recommandées/admises |
| Regulatory reference | Circulaire du Ministère du travail (réf.: INRS ED 6443, 2022; Outil65) |
| Greece - Occupational Exposure Limits | |
| Local name | Ρόδιο |
| OEL TWA | 0,1 mg/m ³ |
| OEL STEL | 0,3 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 |
| Ireland - Occupational Exposure Limits | |
| Local name | Rhodium (as Rh) |
| OEL TWA | 0,1 mg/m ³ metal fume and dust 0,001 mg/m ³ soluble salts |
| OEL STEL | 0,3 mg/m ³ metal fume and dust 0,003 mg/m ³ soluble salts |
| Remark | Advisory OELV (Advisory Occupational Exposure Limit Values) |
| Regulatory reference | Chemical Agents Code of Practice 2024 |
| Portugal - Occupational Exposure Limits | |
| Local name | Ródio |
| OEL TWA | 1 mg/m ³ Metal e compostos insolúveis, expresso em Rh 0,01 mg/m ³ Compostos solúveis, expresso em Rh |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO3 5% Equivalent to Perkin Elmer Ref: N9300234

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| rhodium trichloride (10049-07-7) | |
|---|--|
| Remark | A4 (Agente não classificável como carcinogénico no Homem) |
| Regulatory reference | Norma Portuguesa NP 1796:2014 |
| Spain - Occupational Exposure Limits | |
| Local name | Rodio metal |
| VLA-ED (OEL TWA) | 1 mg/m ³ |
| Remark | c (Los términos "soluble" e "insoluble" se entienden con referencia al agua). |
| Regulatory reference | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT |
| United Kingdom - Occupational Exposure Limits | |
| Local name | Rhodium |
| WEL TWA (OEL TWA) | 0,1 mg/m ³ metal fume and dust (as Rh) 0,001 mg/m ³ soluble salts (as Rh) |
| WEL STEL (OEL STEL) | 0,3 mg/m ³ metal fume and dust (as Rh) 0,003 mg/m ³ soluble salts (as Rh) |
| Regulatory reference | EH40/2005 (Fourth edition, 2020). HSE |
| Iceland - Occupational Exposure Limits | |
| Local name | Ródíum, duft, ryk og reykur, sem Rh |
| OEL TWA | 0,1 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 | Rhodium |
| Grenseverdi (OEL TWA) | 0,1 mg/m ³ |
| Regulatory reference | FOR-2024-04-05-581 |
| Switzerland - Occupational Exposure Limits | |
| Local name | Rhodium, sels solubles / Rhodiumsalze (löslich) |
| MAK (OEL TWA) | 0,001 mg/m ³ (i) / (e) |
| Remark | OSHA. Exprimé en Rh / OSHA. Als Rh berechnet |
| Regulatory reference | www.suva.ch, 01.01.2024 |
| USA - ACGIH - Occupational Exposure Limits | |
| Local name | Rhodium, soluble compounds, as Rh |
| ACGIH OEL TWA | 0,01 mg/m ³ (Rhodium, Soluble compounds, as Rh; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value) |
| Remark (ACGIH) | TLV® Basis: Asthma. Notations: A4 (Not classifiable as a Human Carcinogen) |
| Regulatory reference | ACGIH 2024 |
| 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) |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO₃ 5% Equivalent to Perkin Elmer Ref: N9300234

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| hexafluoroantimonyic acid (16950-06-4) | |
|--|---|
| Austria - Occupational Exposure Limits | |
| Local name | Antimon |
| MAK (OEL TWA) | 0,5 mg/m ³ |
| MAK (OEL STEL) | 5 mg/m ³ |
| Regulatory reference | BGBI. 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 |
| 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, граниčnim vrijednostima izloženosti i biološkim граниčnim 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 |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO3 5% Equivalent to Perkin Elmer Ref: N9300234

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| hexafluoroantimonyic acid (16950-06-4) | |
|--|---|
| 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 |
| 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 mindhármát); 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. |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO₃ 5% Equivalent to Perkin Elmer Ref: N9300234

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| hexafluoroantimony acid (16950-06-4) | |
|--|---|
| 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) |
| 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 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 | 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) |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO3 5% Equivalent to Perkin Elmer Ref: N9300234

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| hexafluoroantimony acid (16950-06-4) | |
|---|---|
| Norway - Occupational Exposure Limits | |
| Local name | Antimon og antimonforb. (beregnet som Sb) |
| Greenseverdi (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 |
| 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 |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO3 5% Equivalent to Perkin Elmer Ref: N9300234

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| tetrafluorostannane (7783-62-2) | |
|---|--|
| 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 SnH4, 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) |
| 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, graničnim vrijednostima izloženosti i biološkim graničnim 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 |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO3 5% Equivalent to Perkin Elmer Ref: N9300234

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| tetrafluorostannane (7783-62-2) | |
|---|--|
| 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 arvutatud tinale (Sn) |
| 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) |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO₃ 5% Equivalent to Perkin Elmer Ref: N9300234

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| tetrafluorostannane (7783-62-2) | |
|---|---|
| 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 |
| 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 Aġenti 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) |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO₃ 5% Equivalent to Perkin Elmer Ref: N9300234

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| tetrafluorostannane (7783-62-2) | |
|---|--|
| 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 |
| 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 SnH ₄ |
| WEL TWA (OEL TWA) | 2 mg/m ³ (as Sn ₄) |
| WEL STEL (OEL STEL) | 4 mg/m ³ (as Sn ₄) |
| 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 |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO3 5% Equivalent to Perkin Elmer Ref: N9300234

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

| tetrafluorostannane (7783-62-2) | |
|--|--|
| 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 |

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 |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO₃ 5% Equivalent to Perkin Elmer Ref: N9300234

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| | |
|---|------------------------|
| 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 | : 1,07 |
| 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 |

nitric acid (7697-37-2)

| | |
|-----------------------|-----------------|
| LC50 Inhalation - Rat | > 2,65 mg/L air |
|-----------------------|-----------------|

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO₃ 5% Equivalent to Perkin Elmer Ref: N9300234

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| | |
|--|----------------------------------|
| hafnium dioxide (12055-23-1) | |
| LD50 oral rat | > 5000 mg/kg |
| LC50 Inhalation - Rat | > 4,3 mg/l |
| palladium dinitrate (10102-05-3) | |
| LD50 oral rat | 200 – 2000 mg/kg |
| chloroplatinic acid, hexahydrate (18497-13-7) | |
| LD50 oral rat | 25 – 200 mg/kg bodyweight |
| LD50 oral | 82 mg/kg (mouse) intraperitoneal |
| rhodium trichloride (10049-07-7) | |
| LD50 oral rat | 1302 mg/kg |
| Skin corrosion/irritation | : Causes severe skin burns. |
| nitric acid (7697-37-2) | |
| pH | < 1 |
| palladium dinitrate (10102-05-3) | |
| pH | < 2 |
| hexafluoroantimonic acid (16950-06-4) | |
| pH | < 2 |
| Serious eye damage/irritation | : Causes serious eye damage. |
| nitric acid (7697-37-2) | |
| pH | < 1 |
| 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 |
| Reproductive toxicity | : Not classified |
| STOT-single exposure | : Not classified |
| STOT-repeated exposure | : Not classified |
| nitric acid (7697-37-2) | |
| NOAEL (oral, rat, 90 days) | 1500 mg/kg bodyweight |
| NOAEC (inhalation, rat, gas, 90 days) | 2,15 ppm |
| hafnium dioxide (12055-23-1) | |
| NOAEL (oral, rat, 90 days) | 3156 – 7085 mg/kg bodyweight |
| chloroplatinic acid, hexahydrate (18497-13-7) | |
| LOAEL (oral, rat, 90 days) | 30 mg/kg bodyweight |
| NOAEL (oral, rat, 90 days) | 10 mg/kg bodyweight |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO3 5% Equivalent to Perkin Elmer Ref: N9300234

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Aspiration hazard : Not classified

| nitric acid (7697-37-2) | |
|-------------------------|--------------------------|
| Viscosity, kinematic | 0,595 mm ² /s |

11.2. Information on other hazards

No additional information available

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Before neutralisation, the product may represent a danger to aquatic organisms.
Hazardous to the aquatic environment, short-term (acute) : Not classified
Hazardous to the aquatic environment, long-term (chronic) : Not classified

| nitric acid (7697-37-2) | |
|-----------------------------|-------------------------------------|
| EC50 - Crustacea [1] | 180 mg/l Daphnia magna (Water flea) |
| Threshold limit - Algae [1] | > 19 mg/l |

| hafnium dioxide (12055-23-1) | |
|------------------------------|---|
| LC50 - Fish [1] | > 100 mg/l Brachydanio rerio (zebra-fish) |
| EC50 - Crustacea [1] | > 100 mg/l Daphnia magna (Water flea) |

| 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) |

| chloroplatinic acid, hexahydrate (18497-13-7) | |
|---|--|
| LC50 - Fish [1] | 76,55 mg/l Oncorhynchus mykiss (Rainbow trout) |

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

12.2. Persistence and degradability

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO3 5% Equivalent to Perkin Elmer Ref: N9300234

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

| nitric acid (7697-37-2) | |
|-------------------------------|--------------------|
| Persistence and degradability | Rapidly degradable |

| hafnium dioxide (12055-23-1) | |
|-------------------------------|--------------------|
| Persistence and degradability | Rapidly degradable |

| iridium trichloride (10025-83-9) | |
|----------------------------------|--------------------|
| Persistence and degradability | Rapidly degradable |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO3 5% Equivalent to Perkin Elmer Ref: N9300234

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| palladium dinitrate (10102-05-3) | |
|--|--------------------|
| Persistence and degradability | Rapidly degradable |
| chloroplatinic acid, hexahydrate (18497-13-7) | |
| Persistence and degradability | Rapidly degradable |
| rhodium trichloride (10049-07-7) | |
| Persistence and degradability | Rapidly degradable |
| hexafluoroantimonic acid (16950-06-4) | |
| Persistence and degradability | Rapidly degradable |
| tetrafluorostannane (7783-62-2) | |
| Persistence and degradability | Rapidly degradable |

12.3. Bioaccumulative potential

| nitric acid (7697-37-2) | |
|---|------|
| Partition coefficient n-octanol/water (Log Pow) | -2,3 |

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 | nitric acid (7697-37-2), hafnium dioxide (12055-23-1) ⁽¹⁾ , iridium trichloride (10025-83-9) ⁽¹⁾ , palladium dinitrate (10102-05-3) ⁽¹⁾ , chloroplatinic acid, hexahydrate (18497-13-7) ⁽¹⁾ , rhodium trichloride (10049-07-7) ⁽¹⁾ , hexafluoroantimonic acid (16950-06-4) ⁽¹⁾ , tetrafluorostannane (7783-62-2) ⁽¹⁾ |
| Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII | nitric acid (7697-37-2), hafnium dioxide (12055-23-1) ⁽¹⁾ , iridium trichloride (10025-83-9) ⁽¹⁾ , palladium dinitrate (10102-05-3) ⁽¹⁾ , chloroplatinic acid, hexahydrate (18497-13-7) ⁽¹⁾ , rhodium trichloride (10049-07-7) ⁽¹⁾ , hexafluoroantimonic acid (16950-06-4) ⁽¹⁾ , tetrafluorostannane (7783-62-2) ⁽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

| hafnium dioxide (12055-23-1) | |
|-------------------------------------|-----------------------------------|
| 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. |

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO3 5% Equivalent to Perkin Elmer Ref: N9300234






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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.

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. (nitric acid) | CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid) | Corrosive liquid, acidic, inorganic, n.o.s. (nitric acid) | CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid) | CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid) |
| Transport document description | | | | |
| UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid), 8, II, (E) | UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid), 8, II | UN 3264 Corrosive liquid, acidic, inorganic, n.o.s. (nitric acid), 8, II | UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric acid), 8, II | UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (nitric 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

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO3 5% Equivalent to Perkin Elmer Ref: N9300234

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Transport category (ADR) : 2
Hazard identification number (Kemler No.) : 80
Orange plates :



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

Transport by sea

Special provisions (IMDG) : 274
Limited quantities (IMDG) : 1 L
Excepted quantities (IMDG) : E2
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

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
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

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO₃ 5% Equivalent to Perkin Elmer Ref: N9300234

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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(a) | nitric 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 2.1 to 2.4, 2.6 and 2.7, 2.8 types A and B, 2.9, 2.10, 2.12, 2.13 categories 1 and 2, 2.14 categories 1 and 2, 2.15 types A to F |
| 3(b) | Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO ₃ 5% Equivalent to Perkin Elmer Ref: N9300234 ; nitric acid ; hexafluoroantimonyic 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) | hexafluoroantimonyic 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 substance subject to the COUNCIL REGULATION (EC) for the control of dual-use items: Hafnium dioxide (12055-23-1).

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.

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO3 5% Equivalent to Perkin Elmer Ref: N9300234

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| 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 |
|-------------|-----------|-------------|--|---|--|
| Nitric acid | 7697-37-2 | 3 % w/w | 10% w/w | ex 2808 00 00 | ex 3824 99 96 |

Drug Precursors Regulation (273/2004)

Contains no 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)

National regulations

France

| Occupational diseases | |
|-----------------------|--|
| Code | Description |
| RG 65 | Eczematiform lesions of allergic mechanism |

Germany

VOC ordinance (ChemVOCFarbV) :

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

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

Multi-Element Solution 4 - 10 components; 10mg/l each of Au ; Hf ; Ir ; Pd ; Pt ; Rh ; Ru ; Sb ; Sn ; Te in HNO3 5% Equivalent to Perkin Elmer Ref: N9300234

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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 |
| 4.2 | Symptoms/effects after inhalation | Added |
| 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 |
| 6.3 | For containment | Added |
| 7.1 | Additional hazards when processed | Added |
| 7.2 | Technical measures | Added |
| 7.2 | Packaging materials | Added |

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| Indication of changes | | |
|-----------------------|--|-----------------|
| Section | Changed item | Comments |
| 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 |
| 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 |

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| Abbreviations and acronyms: | |
|-----------------------------|--|
| 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. 1 (Inhalation) | Acute toxicity (inhal.), Category 1 |
| Acute Tox. 2 (Inhalation) | Acute toxicity (inhal.), Category 2 |
| Acute Tox. 2 (Oral) | Acute toxicity (oral), Category 2 |
| Acute Tox. 3 (Oral) | Acute toxicity (oral), 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 4 | Hazardous to the aquatic environment – Chronic Hazard, Category 4 |
| Eye Dam. 1 | Serious eye damage/eye irritation, Category 1 |
| Met. Corr. 1 | Corrosive to metals, Category 1 |
| Ox. Liq. 2 | Oxidising Liquids, Category 2 |

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| Full text of H- and EUH-statements: | |
|-------------------------------------|--|
| Ox. Liq. 3 | Oxidising Liquids, Category 3 |
| Ox. Sol. 1 | Oxidising Solids, Category 1 |
| Resp. Sens. 1 | Respiratory sensitisation, 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 Sens. 1 | Skin sensitisation, Category 1 |
| STOT RE Not classified | Specific target organ toxicity (repeated exposure) Not classified |
| H271 | May cause fire or explosion; strong oxidiser. |
| H272 | May intensify fire; oxidiser. |
| H290 | May be corrosive to metals. |
| H300 | Fatal if swallowed. |
| H301 | Toxic 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. |
| H317 | May cause an allergic skin reaction. |
| H318 | Causes serious eye damage. |
| H330 | Fatal if inhaled. |
| H332 | Harmful if inhaled. |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H400 | Very toxic to aquatic life. |
| H410 | Very toxic to aquatic life with long lasting effects. |
| H411 | Toxic to aquatic life with long lasting effects. |
| H413 | May cause long lasting harmful effects to aquatic life. |

| 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 Corr. 1B | H314 | Calculation method |
| Eye Dam. 1 | H318 | Calculation method |

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