

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

### 1.1. Product identifier

Product form : Mixture

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

No additional information available

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

Premier Farnell  
150 Armley Road  
Leeds LS12 2QQ  
Tel. : +44 (0) 8701 202530

### Emergency telephone number

+44 1865 407333

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

#### Classification according to regulation (EC) 1272/2008 [CLP]

Hazardous to the aquatic environment – H400

Acute Hazard, Category 1

Hazardous to the aquatic environment –

Chronic Hazard, Category 1 H410

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

### Adverse physicochemical, human health and environmental effects

Very toxic to aquatic life with long lasting effects.

### 2.2. Label elements

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

Hazard pictograms (CLP) :



GHS09

Signal word (CLP) : Warning

Hazard statements (CLP) : H410 - Very toxic to aquatic life with long lasting effects.

Precautionary statements (CLP) : P273 - Avoid release to the environment.

P391 - Collect spillage.

P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

### 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  | ALUMINA (1344-28-1), ZINC OXIDE (1314-13-2) |
| Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII | ALUMINA (1344-28-1), ZINC OXIDE (1314-13-2) |

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 %

| Component                                                                                                                                                                                                                                                                                                                               |                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| Substance(s) not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is 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 | ALUMINA (1344-28-1), ZINC OXIDE (1314-13-2) |

## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

| Name                                                                                                                                                           | Product identifier                                                    | %       | Classification according to Regulation (EC) No. 1272/2008 [CLP] |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|---------|-----------------------------------------------------------------|
| ALUMINA<br>substance with national workplace exposure limit(s) (BE, DK, EE, ES, FR, GB, GR, HR, HU, IE, LV, PL, RO, SK, IS, NO, CH)                            | CAS-No.: 1344-28-1<br>EC-No.: 215-691-6                               | 80 – 90 | Not classified                                                  |
| ZINC OXIDE<br>substance with national workplace exposure limit(s) (AT, BE, BG, CZ, DK, EE, ES, FI, FR, GR, HR, HU, IE, LT, LV, PL, PT, RO, SE, SK, IS, NO, CH) | CAS-No.: 1314-13-2<br>EC-No.: 215-222-5<br>EC Index-No.: 030-013-00-7 | 10 – 20 | Aquatic Acute 1, H400 (M=10)<br>Aquatic Chronic 1, H410 (M=10)  |

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

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

|                                       |                                                                                   |
|---------------------------------------|-----------------------------------------------------------------------------------|
| First-aid measures general            | : If you feel unwell, seek medical advice.                                        |
| First-aid measures after inhalation   | : Remove person to fresh air and keep comfortable for breathing.                  |
| First-aid measures after skin contact | : Wash skin with plenty of water.                                                 |
| First-aid measures after eye contact  | : Rinse eyes with water as a precaution.                                          |
| First-aid measures after ingestion    | : Call a poison center or a doctor if you feel unwell.                            |
| First-aid measures for first aider    | : First aid workers will be equipped with suitable personal protective equipment. |

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

|                                     |                                 |
|-------------------------------------|---------------------------------|
| Symptoms/effects after inhalation   | : None under normal conditions. |
| Symptoms/effects after skin contact | : None under normal conditions. |
| Symptoms/effects after eye contact  | : None under normal conditions. |
| Symptoms/effects after ingestion    | : None under normal conditions. |

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

Treat symptomatically.

## SECTION 5: Fire-fighting measures

### 5.1 Extinguishing media

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

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

Fire hazard : No fire hazard.  
Explosion hazard : No direct explosion hazard.  
Hazardous decomposition products in case of fire : Toxic fumes may be released.

### 5.3. Advice for firefighters

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

## SECTION 6: Accidental release measures

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

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

#### For non-emergency personnel

Protective equipment : Wear recommended personal protective equipment.  
Emergency procedures : Ventilate spillage area.

#### For emergency responders

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

### 6.2. Environmental precautions

Avoid release to the environment.

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

For containment : Collect spillage. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Stop leak without risks if possible.  
Methods for cleaning up : Take up liquid spill into absorbent material.  
Other information : Dispose of materials or solid residues at an authorized site.

### 6.4. Reference to other sections

For further information refer to section 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Additional hazards when processed : Not expected to present a significant hazard under anticipated conditions of normal use.  
Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment.

Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

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

Technical measures : Keep in a cool, well-ventilated place away from heat.  
Storage conditions : Keep cool. Protect from sunlight.  
Packaging materials : Store always product in container of same material as original container.

### Switzerland

Storage class (LK) : LK 10/12 - Liquids

## 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

| GCSS-010PCM-G NON-SILICONE PCM THERMAL PASTE  |                                                                                                                                                                                   |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Belgium - Occupational Exposure Limits        |                                                                                                                                                                                   |
| Local name                                    | Zinc (oxyde de) (fraction alvéolaire) # Zinkoxide (inadembare fractie)                                                                                                            |
| OEL TWA                                       | 2 mg/m <sup>3</sup>                                                                                                                                                               |
| OEL STEL                                      | 10 mg/m <sup>3</sup>                                                                                                                                                              |
| Regulatory reference                          | Koninklijk besluit/Arrêté royal 16/11/2023                                                                                                                                        |
| Bulgaria - Occupational Exposure Limits       |                                                                                                                                                                                   |
| Local name                                    | Цинков оксид                                                                                                                                                                      |
| OEL TWA                                       | 5 mg/m <sup>3</sup> (като цинк)                                                                                                                                                   |
| OEL STEL                                      | 10 mg/m <sup>3</sup> (като цинк)                                                                                                                                                  |
| 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                                    | Cinkov oksid                                                                                                                                                                      |
| GVI (OEL TWA)                                 | 2 mg/m <sup>3</sup> R (respirabilna prašina)                                                                                                                                      |
| KGVI (OEL STEL)                               | 10 mg/m <sup>3</sup>                                                                                                                                                              |
| 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                                    | Oxid zinečnatý, jako Zn                                                                                                                                                           |
| PEL (OEL TWA)                                 | 2 mg/m <sup>3</sup>                                                                                                                                                               |
| NPK-P (OEL C)                                 | 5 mg/m <sup>3</sup>                                                                                                                                                               |
| Regulatory reference                          | Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)                                                                                                                             |
| Denmark - Occupational Exposure Limits        |                                                                                                                                                                                   |
| Local name                                    | Zinkoxid og zinkoxidrøg                                                                                                                                                           |

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|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OEL TWA                                       | 4 mg/m <sup>3</sup> beregnet som Zn                                                                                                                                                                                                                                             |
| Regulatory reference                          | BEK nr 1619 af 19/12/2024                                                                                                                                                                                                                                                       |
| <b>Estonia - Occupational Exposure Limits</b> |                                                                                                                                                                                                                                                                                 |
| Local name                                    | Tsinkoksiid                                                                                                                                                                                                                                                                     |
| OEL TWA                                       | 5 mg/m <sup>3</sup>                                                                                                                                                                                                                                                             |
| Remark                                        | 1 (Peentolm koosneb alla 2,5-mikromeetrise läbimõõduga osakestest, mis võivad koos sissehingatava õhuga jõuda kopsualveoolidesse)                                                                                                                                               |
| Regulatory reference                          | Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)                                                                                                                                                                                                    |
| <b>Finland - Occupational Exposure Limits</b> |                                                                                                                                                                                                                                                                                 |
| Local name                                    | Sinkkioksidi, huurut                                                                                                                                                                                                                                                            |
| HTP (OEL TWA)                                 | 2 mg/m <sup>3</sup>                                                                                                                                                                                                                                                             |
| HTP (OEL STEL)                                | 10 mg/m <sup>3</sup>                                                                                                                                                                                                                                                            |
| Regulatory reference                          | HTP-ARVOT 2020 (Sosiaali- ja terveystministeriö)                                                                                                                                                                                                                                |
| <b>France - Occupational Exposure Limits</b>  |                                                                                                                                                                                                                                                                                 |
| Local name                                    | Zinc (oxyde de) (Oxyde de zinc)                                                                                                                                                                                                                                                 |
| VME (OEL TWA)                                 | 5 mg/m <sup>3</sup> (fumées)<br>10 mg/m <sup>3</sup> (poussières)                                                                                                                                                                                                               |
| Remark                                        | Valeurs recommandées/admises                                                                                                                                                                                                                                                    |
| Regulatory reference                          | Circulaire du Ministère du travail (réf.: INRS ED 6443, 2022; Outil65)                                                                                                                                                                                                          |
| <b>Greece - Occupational Exposure Limits</b>  |                                                                                                                                                                                                                                                                                 |
| Local name                                    | Ψευδαργύρου Οξειδίο (καπνοί)                                                                                                                                                                                                                                                    |
| OEL TWA                                       | 5 mg/m <sup>3</sup>                                                                                                                                                                                                                                                             |
| OEL STEL                                      | 10 mg/m <sup>3</sup>                                                                                                                                                                                                                                                            |
| Regulatory reference                          | Π.Δ. 90/1999 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους                                                                                                                                         |
| <b>Hungary - Occupational Exposure Limits</b> |                                                                                                                                                                                                                                                                                 |
| Local name                                    | CINK-OXID                                                                                                                                                                                                                                                                       |
| AK (OEL TWA)                                  | 5 mg/m <sup>3</sup> por<br>5 mg/m <sup>3</sup> füst                                                                                                                                                                                                                             |
| Remark                                        | i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindhármat); Por: N (Irritáló anyagok, egyszerű fojtógázok, csekély egészségkárosító hatással bíró anyagok), füst: R (Azok az anyagok, amelyek egészségkárosító hatása RÖVID expozíció hatására jelentkezik) |
| Regulatory reference                          | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről                                                                                                                                                |
| <b>Ireland - Occupational Exposure Limits</b> |                                                                                                                                                                                                                                                                                 |
| Local name                                    | Zinc oxide, fume                                                                                                                                                                                                                                                                |
| OEL TWA                                       | 2 mg/m <sup>3</sup> R (Respirable Fraction)                                                                                                                                                                                                                                     |
| OEL STEL                                      | 10 mg/m <sup>3</sup>                                                                                                                                                                                                                                                            |
| Remark                                        | Advisory OELV (Advisory Occupational Exposure Limit Values)                                                                                                                                                                                                                     |
| Regulatory reference                          | Chemical Agents Code of Practice 2024                                                                                                                                                                                                                                           |

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|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Latvia - Occupational Exposure Limits</b>    |                                                                                                                                                         |
| Local name                                      | Cinka oksīds                                                                                                                                            |
| OEL TWA                                         | 0.5 mg/m <sup>3</sup>                                                                                                                                   |
| Regulatory reference                            | Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2024. gada 26. martā noteikumiem Nr. 191).                      |
| <b>Lithuania - Occupational Exposure Limits</b> |                                                                                                                                                         |
| Local name                                      | Cinko oksidas                                                                                                                                           |
| IPRV (OEL TWA)                                  | 5 mg/m <sup>3</sup>                                                                                                                                     |
| Regulatory reference                            | LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)                                                                                       |
| <b>Poland - Occupational Exposure Limits</b>    |                                                                                                                                                         |
| Local name                                      | Tlenek cynku                                                                                                                                            |
| NDS (OEL TWA)                                   | 5 mg/m <sup>3</sup> w przeliczeniu na Zn – frakcja wdychalna                                                                                            |
| NDSch (OEL STEL)                                | 10 mg/m <sup>3</sup> w przeliczeniu na Zn – frakcja wdychalna                                                                                           |
| Remark                                          | Frakcja wdychalna – frakcja aerozolu wnikaćca przez nos i usta, która stwarza zagrożenie dla zdrowia po zdeponowaniu w drogach oddechowych.             |
| Regulatory reference                            | Dz. U. 2024 poz. 1017 wraz z późn. zm.                                                                                                                  |
| <b>Portugal - Occupational Exposure Limits</b>  |                                                                                                                                                         |
| Local name                                      | Óxido de zinco                                                                                                                                          |
| OEL TWA                                         | 2 mg/m <sup>3</sup> R (Fração respirável)                                                                                                               |
| OEL STEL                                        | 10 mg/m <sup>3</sup> R (Fração respirável)                                                                                                              |
| Regulatory reference                            | Norma Portuguesa NP 1796:2014                                                                                                                           |
| <b>Romania - Occupational Exposure Limits</b>   |                                                                                                                                                         |
| Local name                                      | Oxid de zinc                                                                                                                                            |
| OEL TWA                                         | 5 mg/m <sup>3</sup> (Fumuri)                                                                                                                            |
| OEL STEL                                        | 10 mg/m <sup>3</sup> (Fumuri)                                                                                                                           |
| Regulatory reference                            | Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)                                                                                            |
| <b>Slovakia - Occupational Exposure Limits</b>  |                                                                                                                                                         |
| Local name                                      | Oxid zinočnatý, dymy                                                                                                                                    |
| NPHV (OEL TWA)                                  | 1 mg/m <sup>3</sup> respirabilná frakcia                                                                                                                |
| NPHV (OEL STEL)                                 | 1 mg/m <sup>3</sup> respirabilná frakcia                                                                                                                |
| Regulatory reference                            | Nariadenie vlády č. 355/2006 Z. z. (122/2024 Z. z.)                                                                                                     |
| <b>Spain - Occupational Exposure Limits</b>     |                                                                                                                                                         |
| Local name                                      | Óxido de cinc                                                                                                                                           |
| VLA-ED (OEL TWA)                                | 2 mg/m <sup>3</sup> Fracción respirable                                                                                                                 |
| VLA-EC (OEL STEL)                               | 10 mg/m <sup>3</sup> Fracción respirable                                                                                                                |
| Remark                                          | d (Véase UNE EN 481: Atmósferas en los puestos de trabajo. Definición de las fracciones por el tamaño de las partículas para la medición de aerosoles). |
| Regulatory reference                            | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT                                                                           |

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| Sweden - Occupational Exposure Limits         |                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Local name                                    | Zinkoxid                                                                                                                                                                                                                                                                                                                                                                   |
| NGV (OEL TWA)                                 | 5 mg/m <sup>3</sup> (totaldamm)                                                                                                                                                                                                                                                                                                                                            |
| Remark                                        | 25 (Med inhalerbar och respirabel fraktion menas de dammfractioner som definieras i svensk standard SS-EN 481, Arbetsplatsluft – Partikelstorleksfraktioner för mätning av luftburna partiklar (utgåva 1, 1993). Med totaldamm menas de partiklar (aerosoler) som fastnar på ett filter i en totaldammprovtagare)                                                          |
| Regulatory reference                          | Arbetsmiljöverkets föreskrifter och allmänna råd (AFS 2023:14) om gränsvärden för luftvägsexponering i arbetsmiljön                                                                                                                                                                                                                                                        |
| United Kingdom - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                    | Aluminium oxides                                                                                                                                                                                                                                                                                                                                                           |
| WEL TWA (OEL TWA)                             | 10 mg/m <sup>3</sup> inhalable dust<br>4 mg/m <sup>3</sup> respirable dust                                                                                                                                                                                                                                                                                                 |
| Regulatory reference                          | EH40/2005 (Fourth edition, 2020). HSE                                                                                                                                                                                                                                                                                                                                      |
| Iceland - Occupational Exposure Limits        |                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                    | Sínkoxíð og sínkoxíðreykur, sem Zn                                                                                                                                                                                                                                                                                                                                         |
| OEL TWA                                       | 4 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                        |
| Regulatory reference                          | Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)                                                                                                                                                                                                                                                                                  |
| Norway - Occupational Exposure Limits         |                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                    | Sinkoksid                                                                                                                                                                                                                                                                                                                                                                  |
| Grenseverdi (OEL TWA)                         | 5 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                        |
| Remark                                        | 1) Grenseverdien er fastsatt lik verdien for sjenerende støv.                                                                                                                                                                                                                                                                                                              |
| Regulatory reference                          | FOR-2024-04-05-581                                                                                                                                                                                                                                                                                                                                                         |
| Switzerland - Occupational Exposure Limits    |                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                    | Oxyde de zinc (fumée) / Zinkoxid (Rauch)                                                                                                                                                                                                                                                                                                                                   |
| MAK (OEL TWA)                                 | 3 mg/m <sup>3</sup> (a) / (a)                                                                                                                                                                                                                                                                                                                                              |
| KZGW (OEL STEL)                               | 3 mg/m <sup>3</sup> (a) / (a)                                                                                                                                                                                                                                                                                                                                              |
| Remark                                        | NIOSH, OSHA                                                                                                                                                                                                                                                                                                                                                                |
| Regulatory reference                          | www.suva.ch, 01.01.2025                                                                                                                                                                                                                                                                                                                                                    |
| Switzerland - BAT                             |                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                    | Aluminium oxyde / Aluminiumoxid                                                                                                                                                                                                                                                                                                                                            |
| BAT                                           | 50 µg/g creatinine (0.21 µmol/mmol cr.; Paramètre biologique: Aluminium; Substrat d'examen: Urine; Moment du prélèvement: Exposition de longue durée: après plusieurs périodes de travail.) / (0.21 µmol/mmol cr.; Biologischer Parameter: Aluminium; Untersuchungsmaterial: Urin; Probennahmezeitpunkt: Bei Langzeitexposition: nach mehreren vorangegangenen Schichten.) |
| Regulatory reference                          | Ordonnance 832.30 (OPA), article 50 al. 3, www.suva.ch/valeurs-limites / Verordnung 832.30 (VUV), Art. 50 Abs. 3, www.suva.ch/grenzwerte                                                                                                                                                                                                                                   |

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| <b>ALUMINA (1344-28-1)</b>                    |                                                                                                                                                                |
| Belgium - Occupational Exposure Limits        |                                                                                                                                                                |
| Local name                                    | Aluminium (métal et composés insolubles, fraction alvéolaire) # Aluminium (metaal en onoplosbare verbindingen, inadembare fractie)                             |
| OEL TWA                                       | 1 mg/m <sup>3</sup>                                                                                                                                            |
| Regulatory reference                          | Koninklijk besluit/Arrêté royal 16/11/2023                                                                                                                     |
| <b>Croatia - Occupational Exposure Limits</b> |                                                                                                                                                                |
| Local name                                    | Aluminijev oksid                                                                                                                                               |
| GVI (OEL TWA)                                 | 10 mg/m <sup>3</sup> U (ukupna prašina)<br>4 mg/m <sup>3</sup> R (respirabilna prašina)                                                                        |
| Regulatory reference                          | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023) |
| <b>Denmark - Occupational Exposure Limits</b> |                                                                                                                                                                |
| Local name                                    | Aluminiumoxid                                                                                                                                                  |
| OEL TWA                                       | 5 mg/m <sup>3</sup> beregnet som Al, total<br>2 mg/m <sup>3</sup> beregnet som Al, respirabel                                                                  |
| Regulatory reference                          | BEK nr 1619 af 19/12/2024                                                                                                                                      |
| <b>Estonia - Occupational Exposure Limits</b> |                                                                                                                                                                |
| Local name                                    | Alumiinium, metalliline ja oksiidid                                                                                                                            |
| OEL TWA                                       | 10 mg/m <sup>3</sup> kogu tolm (respireeritav fraktsioon)<br>4 mg/m <sup>3</sup> peentolm (respireeritav fraktsioon)                                           |
| Remark                                        | 1 (Peentolm koosneb alla 2,5-mikromeetrise läbimõõduga osakestest, mis võivad koos sissehingatava õhuga jõuda kopsualveoolidesse)                              |
| Regulatory reference                          | Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)                                                                                   |
| <b>France - Occupational Exposure Limits</b>  |                                                                                                                                                                |
| Local name                                    | Aluminium (Trioxyde de di-)                                                                                                                                    |
| VME (OEL TWA)                                 | 10 mg/m <sup>3</sup>                                                                                                                                           |
| Remark                                        | Valeurs recommandées/admises                                                                                                                                   |
| Regulatory reference                          | Circulaire du Ministère du travail (réf.: INRS ED 6443, 2022; Outil65)                                                                                         |
| <b>Greece - Occupational Exposure Limits</b>  |                                                                                                                                                                |
| Local name                                    | Αλουμίνα, α-                                                                                                                                                   |
| OEL TWA                                       | 10 mg/m <sup>3</sup> αναπν.<br>5 mg/m <sup>3</sup> εισπν.                                                                                                      |
| Regulatory reference                          | Π.Δ. 90/1999 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους                        |
| <b>Hungary - Occupational Exposure Limits</b> |                                                                                                                                                                |
| Local name                                    | ALUMÍNIUM OXID (Al-ra számítva)                                                                                                                                |
| AK (OEL TWA)                                  | 5 mg/m <sup>3</sup><br>2 mg/m <sup>3</sup> respirábilis frakció                                                                                                |
| Remark                                        | N (Irritáló anyagok, egyszerű fojtógázok, csekély egészségkárosító hatással bíró anyagok)                                                                      |



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| Regulatory reference                                 | 5/2020. (II. 6.) ITM rendelet - A kémiai kóroki tényezők hatásának kitett munkavállalók egészségének és biztonságának védelméről                                                                                                                                                                   |
| <b>Ireland - Occupational Exposure Limits</b>        |                                                                                                                                                                                                                                                                                                    |
| Local name                                           | Aluminium oxides                                                                                                                                                                                                                                                                                   |
| OEL TWA                                              | 10 mg/m <sup>3</sup> total inhalable dust<br>4 mg/m <sup>3</sup> respirable dust                                                                                                                                                                                                                   |
| Remark                                               | Advisory OELV (Advisory Occupational Exposure Limit Values)                                                                                                                                                                                                                                        |
| Regulatory reference                                 | Chemical Agents Code of Practice 2024                                                                                                                                                                                                                                                              |
| <b>Latvia - Occupational Exposure Limits</b>         |                                                                                                                                                                                                                                                                                                    |
| Local name                                           | Alumīnija oksīds                                                                                                                                                                                                                                                                                   |
| OEL TWA                                              | 6 mg/m <sup>3</sup> dezintegrācijas aerosola veidā<br>4 mg/m <sup>3</sup> maisījumā ar niķeli (līdz 15%), (elektrokorunds)                                                                                                                                                                         |
| Regulatory reference                                 | Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2024. gada 26. martā noteikumiem Nr. 191).                                                                                                                                                                 |
| <b>Poland - Occupational Exposure Limits</b>         |                                                                                                                                                                                                                                                                                                    |
| Local name                                           | Tritlenek glinu                                                                                                                                                                                                                                                                                    |
| NDS (OEL TWA)                                        | 2.5 mg/m <sup>3</sup> w przeliczeniu na Al – frakcja wdychalna<br>1.2 mg/m <sup>3</sup> w przeliczeniu na Al – frakcja wdychalna                                                                                                                                                                   |
| Remark                                               | Frakcja wdychalna – frakcja aerozolu wnikaćca przez nos i usta, która stwarza zagrożenie dla zdrowia po zdeponowaniu w drogach oddechowych. Frakcja respirabilna – frakcja aerozolu wnikaćca do dróg oddechowych, która stwarza zagrożenie dla zdrowia po zdeponowaniu w obszarze wymiany gazowej. |
| Regulatory reference                                 | Dz. U. 2024 poz. 1017 wraz z późn. zm.                                                                                                                                                                                                                                                             |
| <b>Romania - Occupational Exposure Limits</b>        |                                                                                                                                                                                                                                                                                                    |
| Local name                                           | Oxid de aluminiu                                                                                                                                                                                                                                                                                   |
| OEL TWA                                              | 2 mg/m <sup>3</sup> (Aerosoli)                                                                                                                                                                                                                                                                     |
| OEL STEL                                             | 5 mg/m <sup>3</sup> (Aerosoli)                                                                                                                                                                                                                                                                     |
| Regulatory reference                                 | Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)                                                                                                                                                                                                                                       |
| <b>Slovakia - Occupational Exposure Limits</b>       |                                                                                                                                                                                                                                                                                                    |
| Local name                                           | Oxid hlinitý                                                                                                                                                                                                                                                                                       |
| NPHV (OEL TWA)                                       | 4 mg/m <sup>3</sup> inhalovateľná frakcia – prach<br>1.5 mg/m <sup>3</sup> respirabilná frakcia – prach                                                                                                                                                                                            |
| Regulatory reference                                 | Nariadenie vlády č. 355/2006 Z. z. (122/2024 Z. z.)                                                                                                                                                                                                                                                |
| <b>Spain - Occupational Exposure Limits</b>          |                                                                                                                                                                                                                                                                                                    |
| Local name                                           | Óxido de aluminio (Corindón)                                                                                                                                                                                                                                                                       |
| VLA-ED (OEL TWA)                                     | 10 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                               |
| Regulatory reference                                 | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT                                                                                                                                                                                                                      |
| <b>United Kingdom - Occupational Exposure Limits</b> |                                                                                                                                                                                                                                                                                                    |
| Local name                                           | Aluminium oxides                                                                                                                                                                                                                                                                                   |
| WEL TWA (OEL TWA)                                    | 10 mg/m <sup>3</sup> inhalable dust<br>4 mg/m <sup>3</sup> respirable dust                                                                                                                                                                                                                         |

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|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Regulatory reference                              | EH40/2005 (Fourth edition, 2020). HSE                                                                                                                                                                                                                                                                                                                                      |
| <b>Iceland - Occupational Exposure Limits</b>     |                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                        | Áloxíð, sem Al                                                                                                                                                                                                                                                                                                                                                             |
| OEL TWA                                           | 10 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                       |
| Regulatory reference                              | Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)                                                                                                                                                                                                                                                                                  |
| <b>Norway - Occupational Exposure Limits</b>      |                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                        | Aluminiumoksid                                                                                                                                                                                                                                                                                                                                                             |
| Grenseverdi (OEL TWA)                             | 10 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                       |
| Remark                                            | 1) Grenseverdien er fastsatt lik verdien for sjenerende støv.                                                                                                                                                                                                                                                                                                              |
| Regulatory reference                              | FOR-2024-04-05-581                                                                                                                                                                                                                                                                                                                                                         |
| <b>Switzerland - Occupational Exposure Limits</b> |                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                        | Aluminium oxyde / Aluminiumoxid [Korund]                                                                                                                                                                                                                                                                                                                                   |
| MAK (OEL TWA)                                     | 3 mg/m <sup>3</sup> (a) / (a)                                                                                                                                                                                                                                                                                                                                              |
| Notation                                          | B / B                                                                                                                                                                                                                                                                                                                                                                      |
| Remark                                            | NIOSH                                                                                                                                                                                                                                                                                                                                                                      |
| Regulatory reference                              | www.suva.ch, 01.01.2025                                                                                                                                                                                                                                                                                                                                                    |
| <b>Switzerland - BAT</b>                          |                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                        | Aluminium oxyde / Aluminiumoxid                                                                                                                                                                                                                                                                                                                                            |
| BAT                                               | 50 µg/g creatinine (0.21 µmol/mmol cr.; Paramètre biologique: Aluminium; Substrat d'examen: Urine; Moment du prélèvement: Exposition de longue durée: après plusieurs périodes de travail.) / (0.21 µmol/mmol cr.; Biologischer Parameter: Aluminium; Untersuchungsmaterial: Urin; Probennahmezeitpunkt: Bei Langzeitexposition: nach mehreren vorangegangenen Schichten.) |
| Regulatory reference                              | Ordonnance 832.30 (OPA), article 50 al. 3, www.suva.ch/valeurs-limites / Verordnung 832.30 (VUV), Art. 50 Abs. 3, www.suva.ch/grenzwerte                                                                                                                                                                                                                                   |
| <b>ZINC OXIDE (1314-13-2)</b>                     |                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Austria - Occupational Exposure Limits</b>     |                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                        | Zinkoxid-Rauch                                                                                                                                                                                                                                                                                                                                                             |
| MAK (OEL TWA)                                     | 5 mg/m <sup>3</sup> (A)                                                                                                                                                                                                                                                                                                                                                    |
| Regulatory reference                              | BGBl. II Nr. 238/2018                                                                                                                                                                                                                                                                                                                                                      |
| <b>Belgium - Occupational Exposure Limits</b>     |                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                        | Zinc (oxyde de) (fraction alvéolaire) # Zinkoxide (inadembare fractie)                                                                                                                                                                                                                                                                                                     |
| OEL TWA                                           | 2 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                        |
| OEL STEL                                          | 10 mg/m <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                       |
| Regulatory reference                              | Koninklijk besluit/Arrêté royal 16/11/2023                                                                                                                                                                                                                                                                                                                                 |
| <b>Bulgaria - Occupational Exposure Limits</b>    |                                                                                                                                                                                                                                                                                                                                                                            |
| Local name                                        | Цинков оксид                                                                                                                                                                                                                                                                                                                                                               |
| OEL TWA                                           | 5 mg/m <sup>3</sup> (като цинк)                                                                                                                                                                                                                                                                                                                                            |
| OEL STEL                                          | 10 mg/m <sup>3</sup> (като цинк)                                                                                                                                                                                                                                                                                                                                           |

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|                                                      |                                                                                                                                                                                   |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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.) |
| <b>Croatia - Occupational Exposure Limits</b>        |                                                                                                                                                                                   |
| Local name                                           | Cinkov oksid                                                                                                                                                                      |
| GVI (OEL TWA)                                        | 2 mg/m <sup>3</sup> R (respirabilna prašina)                                                                                                                                      |
| KGVI (OEL STEL)                                      | 10 mg/m <sup>3</sup>                                                                                                                                                              |
| Regulatory reference                                 | Pravilnik o zaštiti radnika od izloženosti opasnim kemikalijama na radu, graničnim vrijednostima izloženosti i biološkim graničnim vrijednostima (NN 148/2023)                    |
| <b>Czech Republic - Occupational Exposure Limits</b> |                                                                                                                                                                                   |
| Local name                                           | Oxid zinečnatý, jako Zn                                                                                                                                                           |
| PEL (OEL TWA)                                        | 2 mg/m <sup>3</sup>                                                                                                                                                               |
| NPK-P (OEL C)                                        | 5 mg/m <sup>3</sup>                                                                                                                                                               |
| Regulatory reference                                 | Nařízení vlády č. 361/2007 Sb. (Předpis 330/2023 Sb.)                                                                                                                             |
| <b>Denmark - Occupational Exposure Limits</b>        |                                                                                                                                                                                   |
| Local name                                           | Zinkoxid og zinkoxidrøg                                                                                                                                                           |
| OEL TWA                                              | 4 mg/m <sup>3</sup> beregnet som Zn                                                                                                                                               |
| Regulatory reference                                 | BEK nr 1619 af 19/12/2024                                                                                                                                                         |
| <b>Estonia - Occupational Exposure Limits</b>        |                                                                                                                                                                                   |
| Local name                                           | Tsinkoksiid                                                                                                                                                                       |
| OEL TWA                                              | 5 mg/m <sup>3</sup>                                                                                                                                                               |
| Regulatory reference                                 | Vabariigi Valitsuse 20. märtsi 2001. a määruse nr 105 (RT I, 02.04.2024, 13)                                                                                                      |
| <b>Finland - Occupational Exposure Limits</b>        |                                                                                                                                                                                   |
| Local name                                           | Sinkkioksidi, huurut                                                                                                                                                              |
| HTP (OEL TWA)                                        | 2 mg/m <sup>3</sup>                                                                                                                                                               |
| HTP (OEL STEL)                                       | 10 mg/m <sup>3</sup>                                                                                                                                                              |
| Regulatory reference                                 | HTP-ARVOT 2020 (Sosiaali- ja terveysministeriö)                                                                                                                                   |
| <b>France - Occupational Exposure Limits</b>         |                                                                                                                                                                                   |
| Local name                                           | Zinc (oxyde de) (Oxyde de zinc)                                                                                                                                                   |
| VME (OEL TWA)                                        | 5 mg/m <sup>3</sup> (fumées)<br>10 mg/m <sup>3</sup> (poussières)                                                                                                                 |
| Remark                                               | Valeurs recommandées/admises                                                                                                                                                      |
| Regulatory reference                                 | Circulaire du Ministère du travail (réf.: INRS ED 6443, 2022; Outil65)                                                                                                            |
| <b>Greece - Occupational Exposure Limits</b>         |                                                                                                                                                                                   |
| Local name                                           | Ψευδαργύρου Οξείδιο (καπνοί)                                                                                                                                                      |
| OEL TWA                                              | 5 mg/m <sup>3</sup>                                                                                                                                                               |
| OEL STEL                                             | 10 mg/m <sup>3</sup>                                                                                                                                                              |
| Regulatory reference                                 | Π.Δ. 90/1999 - Προστασία της υγείας των εργαζομένων που εκτίθενται σε ορισμένους χημικούς παράγοντες κατά τη διάρκεια της εργασίας τους                                           |

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| Hungary - Occupational Exposure Limits   |                                                                                                                                                                                                                                                                                 |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Local name                               | CINK-OXID                                                                                                                                                                                                                                                                       |
| AK (OEL TWA)                             | 5 mg/m <sup>3</sup> por<br>5 mg/m <sup>3</sup> füst                                                                                                                                                                                                                             |
| Remark                                   | i (ingerlő anyag, amely izgatja a bőrt, nyálkahártyát, szemet vagy mindhármat); Por: N (Irritáló anyagok, egyszerű fojtógázok, csekély egészségkárosító hatással bíró anyagok), füst: R (Azok az anyagok, amelyek egészségkárosító hatása RÖVID expozíció hatására 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                               | Zinc oxide, fume                                                                                                                                                                                                                                                                |
| OEL TWA                                  | 2 mg/m <sup>3</sup> R (Respirable Fraction)                                                                                                                                                                                                                                     |
| OEL STEL                                 | 10 mg/m <sup>3</sup>                                                                                                                                                                                                                                                            |
| Remark                                   | Advisory OELV (Advisory Occupational Exposure Limit Values)                                                                                                                                                                                                                     |
| Regulatory reference                     | Chemical Agents Code of Practice 2024                                                                                                                                                                                                                                           |
| Latvia - Occupational Exposure Limits    |                                                                                                                                                                                                                                                                                 |
| Local name                               | Cinka oksīds                                                                                                                                                                                                                                                                    |
| OEL TWA                                  | 0.5 mg/m <sup>3</sup>                                                                                                                                                                                                                                                           |
| Regulatory reference                     | Ministru kabineta 2007. gada 15. maija noteikumiem Nr. 325 (Grozījumi Ministru kabineta 2024. gada 26. martā noteikumiem Nr. 191).                                                                                                                                              |
| Lithuania - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                 |
| Local name                               | Cinko oksidas                                                                                                                                                                                                                                                                   |
| IPRV (OEL TWA)                           | 5 mg/m <sup>3</sup>                                                                                                                                                                                                                                                             |
| Regulatory reference                     | LIETUVOS HIGIENOS NORMA HN 23:2011 (Nr. V-695/A1-272, 2018-06-12)                                                                                                                                                                                                               |
| Poland - Occupational Exposure Limits    |                                                                                                                                                                                                                                                                                 |
| Local name                               | Tlenek cynku                                                                                                                                                                                                                                                                    |
| NDS (OEL TWA)                            | 5 mg/m <sup>3</sup> w przeliczeniu na Zn – frakcja wdychalna                                                                                                                                                                                                                    |
| NDSch (OEL STEL)                         | 10 mg/m <sup>3</sup> w przeliczeniu na Zn – frakcja wdychalna                                                                                                                                                                                                                   |
| Remark                                   | Frakcja wdychalna – frakcja aerozolu wnikaćca przez nos i usta, która stwarza zagrożenie dla zdrowia po zdeponowaniu w drogach oddechowych.                                                                                                                                     |
| Regulatory reference                     | Dz. U. 2024 poz. 1017 wraz z późn. zm.                                                                                                                                                                                                                                          |
| Portugal - Occupational Exposure Limits  |                                                                                                                                                                                                                                                                                 |
| Local name                               | Óxido de zinco                                                                                                                                                                                                                                                                  |
| OEL TWA                                  | 2 mg/m <sup>3</sup> R (Fração respirável)                                                                                                                                                                                                                                       |
| OEL STEL                                 | 10 mg/m <sup>3</sup> R (Fração respirável)                                                                                                                                                                                                                                      |
| Regulatory reference                     | Norma Portuguesa NP 1796:2014                                                                                                                                                                                                                                                   |
| Romania - Occupational Exposure Limits   |                                                                                                                                                                                                                                                                                 |
| Local name                               | Oxid de zinc                                                                                                                                                                                                                                                                    |
| OEL TWA                                  | 5 mg/m <sup>3</sup> (Fumuri)                                                                                                                                                                                                                                                    |
| OEL STEL                                 | 10 mg/m <sup>3</sup> (Fumuri)                                                                                                                                                                                                                                                   |
| Regulatory reference                     | Hotărârea Guvernului nr. 1.218/2006 (Hotărârea nr. 179/2024)                                                                                                                                                                                                                    |

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| Slovakia - Occupational Exposure Limits    |                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Local name                                 | Oxid zinočnatý, dymy                                                                                                                                                                                                                                                                                              |
| NPHV (OEL TWA)                             | 1 mg/m³ respirabilná frakcia                                                                                                                                                                                                                                                                                      |
| NPHV (OEL STEL)                            | 1 mg/m³ respirabilná frakcia                                                                                                                                                                                                                                                                                      |
| Regulatory reference                       | Nariadenie vlády č. 355/2006 Z. z. (122/2024 Z. z.)                                                                                                                                                                                                                                                               |
| Spain - Occupational Exposure Limits       |                                                                                                                                                                                                                                                                                                                   |
| Local name                                 | Óxido de cinc                                                                                                                                                                                                                                                                                                     |
| VLA-ED (OEL TWA)                           | 2 mg/m³ Fracción respirable                                                                                                                                                                                                                                                                                       |
| VLA-EC (OEL STEL)                          | 10 mg/m³ Fracción respirable                                                                                                                                                                                                                                                                                      |
| Remark                                     | d (Véase UNE EN 481: Atmósferas en los puestos de trabajo. Definición de las fracciones por el tamaño de las partículas para la medición de aerosoles).                                                                                                                                                           |
| Regulatory reference                       | Límites de Exposición Profesional para Agentes Químicos en España 2024. INSHT                                                                                                                                                                                                                                     |
| Sweden - Occupational Exposure Limits      |                                                                                                                                                                                                                                                                                                                   |
| Local name                                 | Zinkoxid                                                                                                                                                                                                                                                                                                          |
| NGV (OEL TWA)                              | 5 mg/m³ (totaldamm)                                                                                                                                                                                                                                                                                               |
| Remark                                     | 25 (Med inhalerbar och respirabel fraktion menas de dammfractioner som definieras i svensk standard SS-EN 481, Arbetsplatsluft – Partikelstorleksfraktioner för mätning av luftburna partiklar (utgåva 1, 1993). Med totaldamm menas de partiklar (aerosoler) som fastnar på ett filter i en totaldammprovtagare) |
| Regulatory reference                       | Arbetsmiljöverkets föreskrifter och allmänna råd (AFS 2023:14) om gränsvärden för luftvägsexponering i arbetsmiljön                                                                                                                                                                                               |
| Iceland - Occupational Exposure Limits     |                                                                                                                                                                                                                                                                                                                   |
| Local name                                 | Sínkoxíð og sínkoxíðreykur, sem Zn                                                                                                                                                                                                                                                                                |
| OEL TWA                                    | 4 mg/m³                                                                                                                                                                                                                                                                                                           |
| Regulatory reference                       | Reglugerð um mengunarmörk og aðgerðir til að draga úr mengun á vinnustöðum (Nr. 390/2009)                                                                                                                                                                                                                         |
| Norway - Occupational Exposure Limits      |                                                                                                                                                                                                                                                                                                                   |
| Local name                                 | Sinkoksid                                                                                                                                                                                                                                                                                                         |
| Grenseverdi (OEL TWA)                      | 5 mg/m³                                                                                                                                                                                                                                                                                                           |
| Regulatory reference                       | FOR-2024-04-05-581                                                                                                                                                                                                                                                                                                |
| Switzerland - Occupational Exposure Limits |                                                                                                                                                                                                                                                                                                                   |
| Local name                                 | Oxyde de zinc (fumée) / Zinkoxid (Rauch)                                                                                                                                                                                                                                                                          |
| MAK (OEL TWA)                              | 3 mg/m³ (a) / (a)                                                                                                                                                                                                                                                                                                 |
| KZGW (OEL STEL)                            | 3 mg/m³ (a) / (a)                                                                                                                                                                                                                                                                                                 |
| Remark                                     | NIOSH, OSHA                                                                                                                                                                                                                                                                                                       |
| Regulatory reference                       | www.suva.ch, 01.01.2025                                                                                                                                                                                                                                                                                           |

## 8.2. Exposure controls

Appropriate engineering controls

Newark.com/multicomp-pro  
Farnell.com/multicomp-pro  
sg.element14.com/b/multicomp-pro

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**Appropriate engineering controls:**

Ensure good ventilation of the work station.

**Personal protection equipment**

Personal protective equipment:

Wear recommended personal 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                    | : White                        |
| Appearance                | : Liquid.                      |
| Odour                     | : Not available                |
| Odour threshold           | : Not available                |
| Melting point             | : Not available                |
| 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      | : 64705.882 mm <sup>2</sup> /s |
| Viscosity, dynamic        | : 110 Pa·s                     |

|                                                 |                        |
|-------------------------------------------------|------------------------|
| Solubility                                      | : Not available        |
| Partition coefficient n-octanol/water (Log Kow) | : Not available        |
| Vapour pressure                                 | : Not available        |
| Vapour pressure at 50°C                         | : Not available        |
| Density                                         | : 1.7g/cm <sup>3</sup> |
| Relative density                                | : Not available        |
| Relative vapour density at 20°C                 | : Not available        |
| Particle characteristics                        | : Not applicable       |

## 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

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

### 10.2 Chemical stability

Stable under normal conditions.

### 10.3 Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

### 10.4 Conditions to avoid

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

### 10.5 Incompatible materials

No additional information available

### 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 |

| ZINC OXIDE (1314-13-2) |            |
|------------------------|------------|
| LD50 oral rat          | 7950 mg/kg |
| LC50 Inhalation - Rat  | 2500 mg/kg |

|                                   |                  |
|-----------------------------------|------------------|
| Skin corrosion/irritation         | : Not classified |
| Serious eye damage/irritation     | : Not classified |
| 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 |
| Aspiration hazard                 | : Not classified |

## GCSS-010PCM-G NON-SILICONE PCM THERMAL PASTE

|                      |                 |
|----------------------|-----------------|
| Viscosity, kinematic | 64705.882 mm²/s |
|----------------------|-----------------|

### 11.2. Information on other hazards

No additional information available

## SECTION 12: Ecological information

### 12.1 Toxicity

|                                                           |                                                         |
|-----------------------------------------------------------|---------------------------------------------------------|
| Ecology - general                                         | : Very toxic to aquatic life with long lasting effects. |
| Hazardous to the aquatic environment, short-term (acute)  | : Very toxic to aquatic life.                           |
| Hazardous to the aquatic environment, long-term (chronic) | : Very toxic to aquatic life with long lasting effects. |

## ZINC OXIDE (1314-13-2)

|                      |            |
|----------------------|------------|
| LC50 - Fish [1]      | 1.1 mg/l   |
| EC50 - Crustacea [1] | 0.098 mg/l |

### 12.2. Persistence and degradability

## GCSS-010PCM-G NON-SILICONE PCM THERMAL PASTE

|                               |                        |
|-------------------------------|------------------------|
| Persistence and degradability | Not rapidly degradable |
|-------------------------------|------------------------|

## ALUMINA (1344-28-1)

|                               |                  |
|-------------------------------|------------------|
| Persistence and degradability | Not established. |
|-------------------------------|------------------|

## ZINC OXIDE (1314-13-2)

|                               |                        |
|-------------------------------|------------------------|
| Persistence and degradability | Not rapidly degradable |
|-------------------------------|------------------------|

### 12.3. Bioaccumulative potential

## ALUMINA (1344-28-1)

|                           |                                    |
|---------------------------|------------------------------------|
| Bioaccumulative potential | No bioaccumulation data available. |
|---------------------------|------------------------------------|

### 12.4. Mobility in soil

No additional information available

### 12.5. Results of PBT and vPvB assessment

## Component

|                                                                                               |                                             |
|-----------------------------------------------------------------------------------------------|---------------------------------------------|
| Substance(s) not meeting the PBT criteria of REACH regulation, in accordance with Annex XIII  | ALUMINA (1344-28-1), ZINC OXIDE (1314-13-2) |
| Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII | ALUMINA (1344-28-1), ZINC OXIDE (1314-13-2) |

### 12.6. Endocrine disrupting properties

No additional information available

### 12.7 Other adverse effects:

No additional information available



## SECTION 13: Disposal consideration

### 13.1 Waste treatment methods

|                                            |                                                                                               |
|--------------------------------------------|-----------------------------------------------------------------------------------------------|
| Regional waste regulation                  | : Disposal must be done according to official regulations.                                    |
| Waste treatment methods                    | : Dispose of contents/container in accordance with licensed collector's sorting instructions. |
| Sewage disposal recommendations            | : Disposal must be done according to official regulations.                                    |
| Product/Packaging disposal recommendations | : Disposal must be done according to official regulations.                                    |
| 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            |
|-----------------------------------------|----------------|----------------|----------------|----------------|
| <b>14.1. UN number or ID number</b>     |                |                |                |                |
| Not applicable                          | Not applicable | Not applicable | Not applicable | Not applicable |
| <b>14.2. UN proper shipping name</b>    |                |                |                |                |
| Not applicable                          | Not applicable | Not applicable | Not applicable | Not applicable |
| <b>14.3. Transport hazard class(es)</b> |                |                |                |                |
| Not applicable                          | Not applicable | Not applicable | Not applicable | Not applicable |
| <b>14.4. Packing group</b>              |                |                |                |                |
| Not applicable                          | Not applicable | Not applicable | Not applicable | Not applicable |
| <b>14.5. Environmental hazards</b>      |                |                |                |                |
| Not applicable                          | Not applicable | Not applicable | Not applicable | Not applicable |
| No supplementary information available  |                |                |                |                |

### 14.6. Special precautions for user

#### Overland transport

Not applicable

#### Transport by sea

Not applicable

#### Air transport

Not applicable

#### Inland waterway transport

Not applicable

#### Rail transport

Not applicable

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

Not applicable

## 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                                |
| 3(c)                                   | GCSS-010PCM-G NON-SILICONE PCM THERMAL PASTE |

### 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: Aluminium oxide (1344-28-1).

### Explosives Precursors Regulation (2019/1148)

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

### Drug Precursors Regulation (273/2004)

Contains 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

### Germany

VOC ordinance (ChemVOCFarbV)

:

Employment restrictions

: Observe restrictions according Act on the Protection of Working Mothers (MuSchG). Observe restrictions according Act on the Protection of Young People in Employment (JArbSchG).

Water hazard class (WGK)

: WGK 2, Significantly hazardous to water (Classification according to AwSV, Annex 1).

Major Accidents Ordinance (12. BImSchV)

: Is not subject to the Major Accidents Ordinance (12. BImSchV)

### Netherlands

SZW-lijst van kankerverwekkende stoffen

: None of the components are listed

SZW-lijst van mutagene stoffen

: None of the components are listed

SZW-lijst van reprotoxische stoffen – Borstvoeding

: None of the components are listed

SZW-lijst van reprotoxische stoffen –

: None of the components are listed

Vruchtbaarheid

SZW-lijst van reprotoxische stoffen – Ontwikkeling

: None of the components are listed

## 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

| 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                     |

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

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| Full text of H- and EUH-statements: |                                                                   |
|-------------------------------------|-------------------------------------------------------------------|
| Aquatic Acute 1                     | Hazardous to the aquatic environment – Acute Hazard, Category 1   |
| Aquatic Chronic 1                   | Hazardous to the aquatic environment – Chronic Hazard, Category 1 |
| H400                                | Very toxic to aquatic life.                                       |
| H410                                | Very toxic to aquatic life with long lasting effects.             |

| Part Number |
|-------------|
|-------------|

|                     |
|---------------------|
| MPGCSS-010PCM-G-30g |
|---------------------|

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