

COMMISSION IMPLEMENTING REGULATION (EU) 2023/754**of 12 April 2023****granting a Union authorisation for the single biocidal product ‘Arche Chlorine’ in accordance with Regulation (EU) No 528/2012 of the European Parliament and of the Council****(Text with EEA relevance)**

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) No 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products ⁽¹⁾, and in particular Article 44(5), first subparagraph, thereof,

Whereas:

- (1) On 7 December 2018, Arche Consortia submitted to the European Chemicals Agency (‘the Agency’) an application in accordance with Article 43(1) of Regulation (EU) No 528/2012 for Union authorisation of a single biocidal product named ‘Arche Chlorine’ of product-types 2 and 5, as described in Annex V to that Regulation, providing written confirmation that the competent authority of Belgium had agreed to evaluate the application. The application was recorded under case number BC-UQ045679-98 in the Register for Biocidal Products.
- (2) ‘Arche Chlorine’ contains active chlorine released from chlorine as the active substance included in the Union list of approved active substances referred to in Article 9(2) of Regulation (EU) No 528/2012 for product-types 2 and 5.
- (3) On 27 November 2020, the evaluating competent authority submitted, in accordance with Article 44(1) of Regulation (EU) No 528/2012, an assessment report and the conclusions of its evaluation to the Agency.
- (4) On 5 July 2021, the Agency submitted to the Commission its opinion ⁽²⁾, the draft summary of the biocidal product characteristics (‘SPC’) of ‘Arche Chlorine’ and the final assessment report on the single biocidal product, in accordance with Article 44(3) of Regulation (EU) No 528/2012.
- (5) The opinion concludes that ‘Arche Chlorine’ is a single biocidal product within the meaning of Article 3(1), point (r), of Regulation (EU) No 528/2012, that it is eligible for Union authorisation in accordance with Article 42(1) of that Regulation and that, subject to compliance with the draft SPC, it meets the conditions laid down in Article 19(1) of that Regulation.
- (6) On 30 July 2021, the Agency transmitted to the Commission the draft SPC in all the official languages of the Union in accordance with Article 44(4) of Regulation (EU) No 528/2012.
- (7) On 7 March 2022, Germany requested the Commission to adjust the terms and conditions of the Union authorisation of the single biocidal product ‘Arche Chlorine’ for its territory in accordance with Article 44(5), second subparagraph, of Regulation (EU) No 528/2012 on the grounds of public policy referred to in Article 37(1), point (b), and the protection of health and life of humans referred to in Article 37(1), point (c), of that Regulation. In their request, the German authorities referred to the national rules of the German Drinking Water Ordinance (TrinkwV) ⁽³⁾ establishing a systematic set of rules to ensure healthy and clean drinking water by regulating the required quality of water, and the substances, methods and procedures to be used for the treatment of drinking water; imposing obligations on water treatment plants and setting rules on the enforcement of those obligations. Based on the rules established by the TrinkwV, certain norms and common practices have developed which are well established in the sector of drinking water treatment in Germany.

⁽¹⁾ OJ L 167, 27.6.2012, p. 1.

⁽²⁾ ECHA opinion of 16 June 2021 on the Union authorisation of the single biocidal product ‘Arche Chlorine’ (ECHA/BPC/281/2021), <https://echa.europa.eu/it/opinions-on-union-authorisation>.

⁽³⁾ Trinkwasserverordnung in der Fassung der Bekanntmachung vom 10. März 2016 (Bundesgesetzblatt I S. 459), zuletzt geändert durch Artikel 1 der Verordnung vom 22. September 2021 (Bundesgesetzblatt I S. 4343). TrinkwV.pdf (gesetze-im-internet.de)

- (8) Germany explained in more detail that parts of the description of use 2 (disinfection of drinking water at drinking water suppliers), use 3 (disinfection of water in reservoirs) and use 4 (disinfection of water in collective systems) of the SPC do not fully correspond to the rules of the TrinkwV. In particular, the application methods and application rates and frequency for those uses would need to be adapted to meet the requirements of the list of treatment substances and disinfection processes according to paragraph 11 of the TrinkwV.
- (9) The Commission, having regard to Article 2(7) of Regulation (EU) No 528/2012, considers that the request made by Germany to adjust the conditions of the Union authorisation of the single biocidal product 'Arche Chlorine' for its territory in accordance with Article 44(5), second subparagraph, of Regulation (EU) No 528/2012 is justified on the grounds of public policy in the supply of drinking water and the protection of health and life of humans pursuant to Article 37(1), points (b) and (c), respectively, of that Regulation. The TrinkwV implements in Germany Council Directive 98/83/EC⁽⁴⁾, which sets a legal framework to protect human health from the adverse effects of any contamination of water intended for human consumption by ensuring that it is wholesome and clean. That Directive sets essential quality standards at Union level and allows Member States to implement additional requirements and higher standards when transposing it into their national laws. The particular rules chosen by Germany to transpose the provisions of Directive 98/83/EC into national law are in place since 2001 and are implemented and relied upon by the drinking water treatment sector in Germany. Products for the disinfection of drinking water made available on the German market should therefore not interfere with that system and should comply with the rules established in the TrinkwV.
- (10) The Commission concurs with the opinion of the Agency and considers it therefore appropriate to grant a Union authorisation for 'Arche Chlorine' with the adjustments of the SPC as requested by Germany for its territory for the uses 2, 3 and 4 in accordance with Article 44(5), second subparagraph, of Regulation (EU) No 528/2012.
- (11) The measures provided for in this Regulation are in accordance with the opinion of the Standing Committee on Biocidal Products,

HAS ADOPTED THIS REGULATION:

Article 1

A Union authorisation with authorisation number EU-0026816-0000 is granted to Arche Consortia for the making available on the market and use of the single biocidal product 'Arche Chlorine' in accordance with the summary of the biocidal product characteristics set out in the Annex.

For the territory of the Federal Republic of Germany, adjustments to the terms and conditions apply for the uses 2, 3 and 4 of 'Arche Chlorine' as laid down in the summary of product characteristics in the Annex.

The Union authorisation is valid from 3 May 2023 to 30 April 2033.

Article 2

This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

⁽⁴⁾ Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption (OJ L 330, 5.12.1998, p. 32).

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 12 April 2023.

For the Commission
The President
Ursula VON DER LEYEN

ANNEX

Summary of product characteristics for a biocidal product

Arche Chlorine

Product type 2 – Disinfectants and algaecides not intended for direct application to humans or animals (Disinfectants)

Product type 5 – Drinking water (Disinfectants)

Authorisation number: EU-0026816-0000

R4BP asset number: EU-0026816-0000

1. ADMINISTRATIVE INFORMATION**1.1. Trade name(s) of the product**

Trade name(s)	Arche Chlorine
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1.2. Authorisation holder

Name and address of the authorisation holder	Name	ARCHE Consortia
	Address	Liefkensstraat 35D, 9032 Wondelgem Belgium
Authorisation number	EU-0026816-0000	
<i>R4BP asset number</i>	EU-0026816-0000	
Date of the authorisation	3 May 2023	
Expiry date of the authorisation	30 April 2033	

1.3. Manufacturer(s) of the product

Name of manufacturer	PCC Rokita SA
Address of manufacturer	Sienkiewicza 4, 56-120 Brzeg Dolny Poland
Location of manufacturing sites	Sienkiewicza 4, 56-120 Brzeg Dolny Poland

1.4. Manufacturer(s) of the active substance(s)

Active substance	Active chlorine released from chlorine
Name of manufacturer	PCC Rokita SA
Address of manufacturer	Sienkiewicza 4, 56-120 Brzeg Dolny Poland
Location of manufacturing sites	Sienkiewicza 4, 56-120 Brzeg Dolny Poland

2. PRODUCT COMPOSITION AND FORMULATION

2.1. Qualitative and quantitative information on the composition of the product

Common name	IUPAC name	Function	CAS number	EC number	Content (%)
Active chlorine released from chlorine		Active Substance			100,0
chlorine	chlorine	Non-active substance	7782-50-5	231-959-5	100,0

2.2. Type of formulation

GA – Gas

3. HAZARD AND PRECAUTIONARY STATEMENTS

Hazard statements	<p>May cause or intensify fire; oxidiser Causes skin irritation. Causes serious eye irritation. Toxic if inhaled. May cause respiratory irritation. Very toxic to aquatic life. Contains gas under pressure; may explode if heated</p>
Precautionary statements	<p>Keep away from clothing and other combustible materials. Do not breathe gas. Avoid release to the environment. Wear protective gloves. Wear protective clothing. Wear eye protection. Wear face protection. IF INHALED:Remove person to fresh air and keep comfortable for breathing. IF IN EYES:Rinse cautiously with water for several minutes.Remove contact lenses, if present and easy to do. Continue rinsing. Collect spillage. Store in a well-ventilated place.Keep container tightly closed. Store locked up. Protect from sunlight.Store in a well-ventilated place. In case of fire:Stop leak if safe to do so. Dispose of contents to local regulation. Keep valves and fittings free from oil and grease. Call a doctor if you feel unwell. Avoid breathing gas. Wash hands thoroughly after handling. Use only outdoors or in a well-ventilated area. IF ON SKIN:Wash with plenty of water. Call a Poison center/doctor. Specific treatment (see reference to supplemental first aid instruction on this label). If skin irritation occurs:Get medical attention. If eye irritation persists:Get medical attention. Take off contaminated clothing.And wash it before reuse.</p>

4. AUTHORISED USE(S)

4.1. Use description

Table 1

Use # 1 – Disinfection of waste water after the waste water plant

Product type	PT02 – Disinfectants and algaecides not intended for direct application to humans or animals (Disinfectants)
Where relevant, an exact description of the authorised use	/
Target organism(s) (including development stage)	Scientific name: bacteria Common name: Bacteria Development stage: Scientific name: viruses Common name: Viruses Development stage:
Field(s) of use	Indoor Outdoor Disinfection of waste water after the waste water plant, by shock dosing (in case of contamination).
Application method(s)	Method: Closed system Detailed description: Automated dosing system.
Application rate(s) and frequency	Application Rate: Shock dosing: 477 mg/l active chlorine (AC) under dirty conditions. Dilution (%): - Number and timing of application: Contact time: 30 minutes
Category(ies) of users	Industrial Professional
Pack sizes and packaging material	Cylinder: 4,8-140 l (6-175 kg Cl ₂) Drum: 400-1 000 l (500-1 250 kg Cl ₂) Railway tanks: 43 000-44 000 l (53 750-55 000 kg Cl ₂) Carbon/stainless steel

4.1.1. Use-specific instructions for use

Connect the chlorine cylinder or drum to the automated dosing system, closed dosing system. Set up the parameters of the system to obtain an active chlorine concentration in the water according to the application rate indicated above.

4.1.2. Use-specific risk mitigation measures

Reduce residual concentrations of active chlorine by active carbon filtration or addition of reducing agents (e.g. ascorbic acid or sodium ascorbate) before discharging the waste water to surface water. Alternatively, water can be retained in a buffer before discharge.

Regular water quality assessments should be performed to assure the effluent meets all required quality standards.

4.1.3. *Where specific to the use, the particulars of likely direct or indirect effects, first aid instructions and emergency measures to protect the environment*

See Section 5 General directions for use

4.1.4. *Where specific to the use, the instructions for safe disposal of the product and its packaging*

See Section 5 General directions for use

4.1.5. *Where specific to the use, the conditions of storage and shelf-life of the product under normal conditions of storage*

See Section 5 General directions for use

4.2. Use description

Table 2

Use # 2 – Disinfection of drinking water at drinking water suppliers

Product type	PT05 – Drinking water (Disinfectants)
Where relevant, an exact description of the authorised use	/
Target organism(s) (including development stage)	Scientific name: bacteria Common name: Bacteria Development stage: Scientific name: viruses Common name: Viruses Development stage:
Field(s) of use	Indoor Outdoor Disinfection at the drinking water suppliers and their water distribution systems, by continuous dosing.
Application method(s)	Method: Closed system Detailed description: Automated dosing system Adjustment applicable in the territory of the Federal Republic of Germany in accordance with Article 44(5) of Regulation (EU) No 528/2012: In accordance with the list of treatment substances and disinfection processes of paragraph 11 of the German Drinking Water Ordinance ¹ , the technical rules for dosing set out in the Deutscher Verein des Gas Wasserfaches e.V. ² -working sheets W 229, W 296, W 623 and the minimum contact time of W 229 apply ³ . (See section 6 for further references)

Application rate(s) and frequency	<p>Application Rate: 0,5 mg/l active chlorine (AC) as residual concentration in the system</p> <p>Dilution (%): -</p> <p>Number and timing of application:</p> <p>Frequency: continuous dosing</p> <p>Adjustment applicable in the territory of the Federal Republic of Germany in accordance with Article 44(5) of Regulation (EU) No 528/2012:</p> <p>In accordance with the list of treatment substances and disinfection processes of paragraph 11 of the German Drinking Water Ordinance (See section 6 for further reference)⁴</p> <p>Application rate: Maximum addition 1,2 mg/l free Cl₂;</p> <p>Concentration range after completion of treatment: maximum 0,3 mg/l free Cl₂, minimum 0,1 mg/l free Cl₂ (including the amounts before treatment and from other treatments) as residual concentration in the system</p> <p>In exceptional cases an addition of up to 6 mg/l free Cl₂ and concentration of up to 0,6 mg/l free Cl₂ after treatment is acceptable as residual concentration in the system, if disinfection cannot be ensured by other means or if disinfection is temporarily impaired by ammonium.</p>
Category(ies) of users	Professional
Pack sizes and packaging material	<p>Cylinder: 4,8-140 l (6-175 kg Cl₂)</p> <p>Drum: 400-1 000 l (500-1 250 kg Cl₂)</p> <p>Railway tanks: 43 000-44 000 l (53 750-55 000 kg Cl₂)</p> <p>Carbon/stainless steel</p>

4.2.1. Use-specific instructions for use

Connect the chlorine cylinder or drum to the automated, closed dosing system. Set up the parameters of the system to obtain an active chlorine concentration in the water according to the application rate indicated above.

Please note that some Member States after primary disinfection, request to maintain a residual level of available chlorine in drinking water in the pipes as a precautionary measure. This additional amount, claimed by the applicant as 'Secondary disinfection: 0,1 to 0,5 mg/l available chlorine (residual)' has been considered as covered by the primary disinfection.

4.2.2. Use-specific risk mitigation measures

Ensure that the concentration of chlorine in the drinking water does not exceed national chlorine limits before consumption.

Ensure that the concentration of chlorate present in the drinking water does not exceed the parametric values set in Directive (EU) 2020/2184 of the European Parliament and of the Council of 16 December 2020 on the quality of water intended for human consumption (recast) (OJ L 435, 23.12.2020, p. 1).

4.2.3. *Where specific to the use, the particulars of likely direct or indirect effects, first aid instructions and emergency measures to protect the environment*

See Section 5 General directions for use

4.2.4. *Where specific to the use, the instructions for safe disposal of the product and its packaging*

See Section 5 General directions for use

4.2.5. *Where specific to the use, the conditions of storage and shelf-life of the product under normal conditions of storage*

See Section 5 General directions for use

4.3. Use description

Table 3

Use # 3 – Disinfection of water in reservoirs

Product type	PT05 – Drinking water (Disinfectants)
Where relevant, an exact description of the authorised use	/
Target organism(s) (including development stage)	<p>Scientific name: bacteria Common name: Bacteria</p> <p>Development stage: Scientific name: viruses Common name: Viruses Development stage:</p>
Field(s) of use	<p>Indoor Outdoor Disinfection of water (with water coming from tap water network), in reservoirs/tanks, by continuous dosing.</p>
Application method(s)	<p>Method: Closed system</p> <p>Detailed description: Automated dosing system. The disinfection is carried out in the inlet of the reservoir, in order to assure proper distribution of the disinfectant in the water.</p> <p>Adjustment applicable in the territory of the Federal Republic of Germany in accordance with Article 44(5) of Regulation (EU) No 528/2012:</p> <p>In accordance with the list of treatment substances and disinfection processes of paragraph 11 of the German Drinking Water Ordinance¹, the technical rules for dosing set out in the Deutscher DeutscherVerein des Gas Wasserfaches e.V²-working sheets W 229, W 296, W 623 and the minimum contact time of W 229 apply³. (See section 6 for further references)</p>

Application rate(s) and frequency	<p>Application Rate: 0,5 mg/l Active Chlorine (AC) as residual concentration in the system.</p> <p>Dilution (%): -</p> <p>Number and timing of application:</p> <p>Frequency: continuous dosing</p> <p>Adjustment applicable in the territory of the Federal Republic of Germany in accordance with Article 44(5) of Regulation (EU) No 528/2012:</p> <p>In accordance with the list of treatment substances and disinfection processes of paragraph 11 of the German Drinking Water Ordinance¹. (See section 6 for further reference)⁴.</p> <p>Application rate: maximum addition 1,2 mg/l free Cl₂;</p> <p>Concentration range after completion of treatment: maximum 0,3 mg/l free Cl₂, min 0,1 mg/L free Cl₂ (including the amounts before treatment and from other treatments)</p> <p>In exceptional cases an addition of up to 6 mg/l free Cl₂ and concentration up to 0,6 mg/l free Cl₂ after treatment is acceptable, if disinfection cannot be ensured by other means or if disinfection is temporarily impaired by the presence of ammonium.</p>
Category(ies) of users	Professional
Pack sizes and packaging material	<p>Cylinder: 4,8-140 l (6-175 kg Cl₂)</p> <p>Drum: 400-1 000 l (500-1 250 kg Cl₂)</p> <p>Railway tanks: 43 000-44 000 l (53 750-55 000 kg Cl₂)</p> <p>Carbon/stainless steel</p>

4.3.1. Use-specific instructions for use

Connect the chlorine cylinder or drum to the automated, closed dosing system. Set up the parameters of the system to obtain a continuous active chlorine concentration in the water according to the application rate indicated above.

4.3.2. Use-specific risk mitigation measures

Ensure that the concentration of chlorine in the drinking water does not exceed national chlorine limit before consumption.

Ensure that the concentration of chlorate present in the drinking water does not exceed the parametric values set in (EU) Directive 2020/2184 of the European Parliament and of the Council of 16 December 2020 on the quality of water intended for human consumption (recast) (OJ L 435, 23.12.2020, p. 1).

4.3.3. Where specific to the use, the particulars of likely direct or indirect effects, first aid instructions and emergency measures to protect the environment

See Section 5 General directions for use

4.3.4. *Where specific to the use, the instructions for safe disposal of the product and its packaging*

See Section 5 General directions for use

4.3.5. *Where specific to the use, the conditions of storage and shelf-life of the product under normal conditions of storage*

See Section 5 General directions for use

4.4. **Use description**

Table 4

Use # 4 – Disinfection of water in collective systems

Product type	PT05 – Drinking water (Disinfectants)
Where relevant, an exact description of the authorised use	/
Target organism(s) (including development stage)	<p>Scientific name: bacteria Common name: Bacteria Development stage:</p> <p>Scientific name: viruses Common name: Viruses Development stage:</p> <p>Scientific name: legionella pneumophila Common name: Bacteria Development stage:</p>
Field(s) of use	<p>Indoor Outdoor In Public institutions, healthcare facilities Disinfection of drinking water in collective drinking water systems by continuous dosing</p>
Application method(s)	<p>Method: Closed system</p> <p>Detailed description:</p> <p>Automated dosing system</p> <p>Adjustment applicable in the territory of the Federal Republic of Germany in accordance with Article 44(5) of Regulation (EU) No 528/2012:</p> <p>In accordance with the list of treatment substances and disinfection processes of paragraph 11 of the German Drinking Water Ordinance, the requirements set out in the Deutscher Verein des Gas Wasserfaches e.V² -working sheets W 229, W 296, W 623 and the minimum contact time of W 229 apply³. (See section 6 for further references)</p>

Application rate(s) and frequency	<p>Application Rate: 1 mg/l active chlorine (AC) as residual concentration in the system</p> <p>Dilution (%): -</p> <p>Number and timing of application:</p> <p>Frequency: continuous dosing</p> <p>Adjustment applicable in the territory of the Federal Republic of Germany in accordance with Article 44(5) of Regulation (EU) No 528/2012:</p> <p>In accordance with the list of treatment substances and disinfection processes of paragraph 11 of the German Drinking Water Ordinance¹. (See section 6 for further reference)⁴</p> <p>Application rate: maximum addition 1,2 mg/l free Cl₂;</p> <p>Concentration range after completion of treatment: maximum 0,3 mg/l free Cl₂, min 0,1 mg/L free Cl₂ (including the amounts before treatment and from other treatments)</p> <p>In exceptional cases an addition of up to 6 mg/l free Cl₂ and concentration up to 0,6 mg/l free Cl₂ after treatment is acceptable, if disinfection cannot be ensured by other means or if disinfection is temporarily impaired by the presence of ammonium.</p>
Category(ies) of users	Professional
Pack sizes and packaging material	<p>Cylinder: 4,8-140 l (6-175 kg Cl₂)</p> <p>Drum: 400-1 000 l (500-1 250 kg Cl₂)</p> <p>Railway tanks: 43 000-44 000 l (53 750-55 000 kg Cl₂)</p> <p>Carbon/stainless steel</p>

4.4.1. Use-specific instructions for use

Connect the chlorine cylinder or drum to the automated, closed dosing system. Set up the parameters of the system to obtain a continuous active chlorine concentration in the water according to the application rate indicated above.

4.4.2. Use-specific risk mitigation measures

Ensure that the concentration of chlorine in the drinking water does not exceed national chlorine limit before consumption.

Ensure that the concentration of chlorate present in the drinking water does not exceed the parametric values set in (EU) Directive 2020/2184 of 16 December 2020 on the quality of water intended for human consumption (recast) (OJ L 435, 23.12.2020, p. 1).

4.4.3. Where specific to the use, the particulars of likely direct or indirect effects, first aid instructions and emergency measures to protect the environment

See Section 5 General directions for use

4.4.4. Where specific to the use, the instructions for safe disposal of the product and its packaging

See Section 5 General directions for use

4.4.5. Where specific to the use, the conditions of storage and shelf-life of the product under normal conditions of storage

See Section 5 General directions for use

4.5. Use description

Table 5

Use # 5 – Disinfection of drinking water for animals

Product type	PT05 – Drinking water (Disinfectants)
Where relevant, an exact description of the authorised use	/
Target organism(s) (including development stage)	Scientific name: bacteria Common name: Bacteria Development stage: Scientific name: viruses Common name: Viruses Development stage:
Field(s) of use	Indoor Outdoor Disinfection of drinking water for animals (with water coming from tap water network) in agricultural areas, by continuous dosing.
Application method(s)	Method: Closed system Detailed description: Automated dosing system
Application rate(s) and frequency	Application Rate: 0,5 mg/l active chlorine (AC) as residual concentration in the system. Dilution (%): - Number and timing of application: Frequency: continuous dosing
Category(ies) of users	Professional
Pack sizes and packaging material	Cylinder: 4,8-140 l (6-175 kg Cl ₂) Drum: 400-1 000 l (500-1 250 kg Cl ₂) Railway tanks: 43 000-44 000 l (53 750-55 000 kg Cl ₂) Carbon/stainless steel

4.5.1. *Use-specific instructions for use*

Connect the chlorine cylinder or drum to the automated, closed dosing system. Set up the parameters of the system to obtain a continuous active chlorine concentration in the water according to the application rate indicated above.

4.5.2. *Use-specific risk mitigation measures*

For food commodities, ensure that the concentration of chlorate present in food does not exceed the MRL values set in Commission Regulation (EU) 2020/749 of 4 June 2020 amending Annex III to Regulation (EC) No 396/2005 of the European Parliament and of the Council as regards maximum residue levels for chlorate in or on certain products (OJ L 178, 8.6.2020, p. 7).

4.5.3. *Where specific to the use, the particulars of likely direct or indirect effects, first aid instructions and emergency measures to protect the environment*

See Section 5 General directions for use

4.5.4. *Where specific to the use, the instructions for safe disposal of the product and its packaging*

See Section 5 General directions for use

4.5.5. *Where specific to the use, the conditions of storage and shelf-life of the product under normal conditions of storage*

See Section 5 General directions for use

5. **GENERAL DIRECTIONS FOR USE** ⁽¹⁾

5.1. **Instructions for use**

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5.2. **Risk mitigation measures**

For connecting or disconnecting the product containers as well as for maintenance or repair of the gas pipe system, the following risk mitigation measures (RMMs) are mandatory:

- an alarm system (trigger value corresponding to the acute exposure concentration (AEC): 0,5 mg active chlorine/m³ (or lower according to national legislation) which initiates safety procedures like wearing respiratory protective equipment (RPE) according to CEN standard EN14387: Respiratory protective devices – Gas filter(s) and combined filter(s) – Requirements, testing, marking (or equivalent);
- application of local exhaust ventilation (LEV) (according to the national legislation) and low-pressure/vacuum are in place to avoid chlorine emission;
- the electrochemical sensors used for measurements to detect various chlorinated species in addition to chlorine itself;
- sensors to measure exposure also when the operators are using RPE according to CEN standard EN141 or equivalent.

5.3. **Particulars of likely direct or indirect effects, first aid instructions and emergency measures to protect the environment**

Avoid breathing this toxic gas as much as possible. IF INHALED: Move to fresh air and keep at rest in a position comfortable for breathing. Immediately call 112/ambulance for medical assistance.

Information for healthcare personnel/doctor:

Immediately initiate life support measures, thereafter call a POISON CENTRE.

IF SWALLOWED: Not applicable.

⁽¹⁾ Instructions for use, risk mitigation measures and other directions for use under this section are valid for any authorised uses.

IF ON SKIN: Take off all contaminated clothing and wash it before reuse. Wash skin with water. If skin irritation occurs: Get medical advice.

IF IN EYES: Rinse with water. Remove contact lenses, if present and easy to do. Continue rinsing for 5 minutes. Call a POISON CENTRE or a doctor.

5.4. **Instructions for safe disposal of the product and its packaging**

At the end of the treatment, dispose of unused product and the packaging in accordance with local requirements.

Do not discharge unused product on the ground, into water courses, into pipes (sink, toilets...) or down the drains.

5.5. **Conditions of storage and shelf-life of the product under normal conditions of storage**

Storage conditions:

Airtight pressure tanks: Due to its chemical and physical properties, chlorine gas is always stored in dedicated carbon/steel recipients with special, dedicated valves. Chlorine packages for use within the EU should be constructed and labelled according to Directive 2010/35/EU of the European Parliament and of the Council⁵ and the Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) done at Geneva on 30 September 1957. See section 6 for further reference. Maximum filling 1,25 kg/l (80 % of volume approx.).

Keep containers with chlorine tightly closed and store in a cool, dry and well-ventilated place. Tightly screw on the valve outlet protection seal and the valve protection cap when storing. Prevent cylinders from falling over. Protect from heat and direct sunlight, the temperature of the container should never be below 15 °C or above 50 °C.

Chlorine should be kept away from reactive products (materials to avoid: reducing agents, combustible materials, metals in powder, acetylene, hydrogen, ammonia, hydrocarbons and organic materials).

6. **OTHER INFORMATION**

With respect to the 'Category(ies) of users' note:

Professionals (including industrial users) means trained professionals if this is required by national legislation.

¹ German Drinking Water Ordinance: Trinkwasserverordnung in der Fassung der Bekanntmachung vom 10. März 2016 (BGBl. I S. 459), die zuletzt durch Artikel 1 der Verordnung vom 22. September 2021 (BGBl. I S. 4343) geändert worden ist; list of treatment substances and disinfection processes of paragraph 11 of the German Drinking Water Ordinance: Bekanntmachung des Umweltbundesamtes der Liste der Aufbereitungsstoffe und Desinfektionsverfahren gemäß § 11 der Trinkwasserverordnung – 21. Änderung – (Stand: Dezember 2019).

² Deutscher Verein des Gas- und Wasserfaches e.V. (German Technical and Scientific Association for Gas and Water).

³ Part II, Lfd. Nr.4 of the list of treatment substances and disinfection processes of paragraph 11 of the German Drinking Water Ordinance.

⁴ Part I c, Lfd. Nr.2 of the list of treatment substances and disinfection processes of paragraph 11 of the German Drinking Water Ordinance.

⁵ Directive 2010/35/EU of the European Parliament and of the Council of 16 June 2010 on transportable pressure equipment and repealing Council Directives 76/767/EEC, 84/525/EEC, 84/526/EEC, 84/527/EEC and 1999/36/EC (OJ L 165, 30.6.2010, p. 1).
