



2026/1352

18.6.2026

COMMISSION IMPLEMENTING REGULATION (EU) 2026/1352

of 17 June 2026

granting a Union authorisation for the biocidal product family 'Ecolab GA 24-50 BPF' 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 27 September 2016, Ecolab Deutschland GmbH submitted an application to the European Chemicals Agency ('the Agency') in accordance with Article 43(1) of Regulation (EU) No 528/2012 and Article 4 of Commission Implementing Regulation (EU) No 414/2013 ⁽²⁾ for Union authorisation of the same biocidal product family, as referred to in Article 1 of Implementing Regulation (EU) No 414/2013, named 'Ecolab GA 24-50 BPF', of product-types 6, 11 and 12, as described in Annex V to Regulation (EU) No 528/2012. The application was recorded under case number BC-QJ027133-44 in the Register for Biocidal Products. The application referred to the biocidal product family 'GA 24-50 BPF' authorised by Commission Implementing Regulation (EU) 2025/1906 ⁽³⁾, with authorisation number EU-0030162-0000.
- (2) The biocidal product family 'Ecolab GA 24-50 BPF' contains glutaraldehyde 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 6, 11 and 12.
- (3) On 2 June 2025, the Agency submitted to the Commission its opinion ⁽⁴⁾ in accordance with Article 6 of Implementing Regulation (EU) No 414/2013 and the draft summary of the product characteristics ('SPC') of 'Ecolab GA 24-50 BPF' in all the official languages of the Union in accordance with Article 44(4) of Regulation (EU) No 528/2012.
- (4) In its opinion, the Agency concludes that the proposed differences between the biocidal product family 'Ecolab GA 24-50 BPF' and the related reference biocidal product family 'GA 24-50 BPF' are limited to information which can be the subject of an administrative change in accordance with Commission Implementing Regulation (EU) No 354/2013 ⁽⁵⁾, and that based on the assessment of the related reference biocidal product family 'GA 24-50 BPF' and subject to compliance with the draft SPC, the same biocidal product family 'Ecolab GA 24-50 BPF' meets the conditions laid down in Article 19(6) of Regulation (EU) No 528/2012.

⁽¹⁾ OJ L 167, 27.6.2012, p. 1, ELI: <http://data.europa.eu/eli/reg/2012/528/oj>.

⁽²⁾ Commission Implementing Regulation (EU) No 414/2013 of 6 May 2013 specifying a procedure for the authorisation of same biocidal products in accordance with Regulation (EU) No 528/2012 of the European Parliament and of the Council (OJ L 125, 7.5.2013, p. 4, ELI: http://data.europa.eu/eli/reg_impl/2013/414/oj).

⁽³⁾ Commission Implementing Regulation (EU) 2025/1906 of 12 September 2025 granting a Union authorisation for the biocidal product family GA 24-50 BPF in accordance with Regulation (EU) No 528/2012 of the European Parliament and of the Council (OJ L, 2025/1906, 30.9.2025, ELI: http://data.europa.eu/eli/reg_impl/2025/1906/oj).

⁽⁴⁾ European Chemicals Agency opinion of 2 June 2025 on the Union authorisation of the same biocidal product family 'Ecolab GA 24-50 BPF', <https://echa.europa.eu/opinions-on-union-authorisation>.

⁽⁵⁾ Commission Implementing Regulation (EU) No 354/2013 of 18 April 2013 on changes of biocidal products authorised in accordance with Regulation (EU) No 528/2012 of the European Parliament and of the Council. (OJ L 109, 19.4.2013, p. 4, ELI: http://data.europa.eu/eli/reg_impl/2013/354/oj).

- (5) The Commission concurs with the opinion of the Agency and considers it therefore appropriate to grant a Union authorisation for the same biocidal product family 'Ecolab GA 24-50 BPF'.
- (6) The expiry date of the authorisation should be aligned with the expiry date of the authorisation of the related reference biocidal product family 'GA 24-50 BPF'.
- (7) 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-0035028-0000 is hereby granted to Ecolab Deutschland GmbH for the making available on the market and use of the same biocidal product family 'Ecolab GA 24-50 BPF' in accordance with the summary of the product characteristics set out in the Annex.

The Union authorisation is valid from 8 July 2026 until 30 September 2030.

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*.

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

Done at Brussels, 17 June 2026.

For the Commission
The President
Ursula VON DER LEYEN

ANNEX

Summary of product characteristics for a biocidal product family

Ecolab GA 24-50 BPF

Product type(s)

PT11: Preservatives for liquid-cooling and processing systems

PT12: Slimicides

PT06: Preservatives for products during storage

Authorisation number EU-0035028-0000**R4BP asset number** EU-0035028-0000

PART I

FIRST INFORMATION LEVEL1. **ADMINISTRATIVE INFORMATION**1.1. **Family name**

Name	Ecolab GA 24-50 BPF
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1.2. **Product type(s)**

Product type(s)	PT11: Preservatives for liquid-cooling and processing systems PT12: Slimicides PT06: Preservatives for products during storage
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1.3. **Authorisation holder**

Name and address of the authorisation holder	Name	Ecolab Deutschland GmbH
	Address	Ecolab Allee 1 40789 Monheim am Rhein Germany
Authorisation number	EU-0035028-0000	
<i>R4BP asset number</i>	EU-0035028-0000	
Date of the authorisation	8.7.2026	
Expiry date of the authorisation	30.9.2030	

1.4. **Manufacturer(s) of the product**

Name of manufacturer	Ecolab Europe GmbH
Address of manufacturer	Hofwiesenstrasse 349 8050 Zürich Switzerland

Location of manufacturing sites	LABORATOIRES ANIOS 3330 Rue de Lille, 59262 Sainghin en Mélantois France Ecolab Production France SAS BP509, Avenue de Général Patton, 51000 Châlons-en-Champagne France SOLUSCOPE Rue du Fauge 100, ZI Les Paluds, 13400 Aubagne France Ecolab Rozzano, Italy Via A. Grandi 9/11, 20089 Rozzano Italy NALCO ITALIANA MANUFACTURING SRL Via Vernea 99, 10042 Nichelino Italy NUOVA FARMEC SRL Via W. Flemming 7, 37026 Settimo di Pescantina (Verona) Italy Ecolab Mandra, Greece Ecolab Athinon - Thivon old National Rd. (25th KM), - Mandra - Attica Greece Ecolab Weavergate Winnington Avenue CW8 3AA Northwich, Cheshire United Kingdom of Great Britain and Northern Ireland (the) Techtex Units 7&8 Rhodes Business Park Silburn Way Middleton, M24 4NE Manchester United Kingdom of Great Britain and Northern Ireland (the) Ecolab Limited, Baglan ECOLAB CONTAMINATION CONTROL - Baglan Energy Park, Lot 7, Brunel Way, SA11 2G Neath United Kingdom of Great Britain and Northern Ireland (the) Ecolab Bioquell 52 Royce Close, SP10 3TS Portway, Andover Hampshire United Kingdom of Great Britain and Northern Ireland (the) CID LINES NV, an Ecolab company N.V.Waterpoortstraat 2, 8900 Ieper Belgium Ecolab B.V.B.A. Industriezone Ravenshout 4, 3980 Tessenderlo Belgium Nalco Deutschland Manufacturing GmbH und Co.KG Justus-von-Liebig-Str. 11, D-64584 Biebesheim Germany Ecolab Engineering GmbH Raiffeisenstrasse 7, 88313 Siegsdorf Germany Ecolab Mullingar, Ireland Central Forest Park. Zone C - Mullingar Business Park, N91 E1WD Mullingar, Co. Westmeath Ireland Ecolab d.o.o. Vajngerlova 4, 2000 Maribor Slovenia Nalco Española Manufacturing, SLU C/ Tramuntana s/n, Polígon Industrial Celrà, 17460 Girona Spain NALCO FINLAND MANUFACTURING OY Kivikummuntie 1, FIN-07955 Tesjoki Finland BRENNTAG Nordic, Vejle Strandgade 35, 7100 Vejle Denmark BRENNTAG Nordic, Haslev Høsten Teglværksvej 47, 4690 Haslev Denmark BRENNTAG Nordic, Ballerup Borupvang 5B, 2750 Ballerup Denmark BRENNTAG NORDIC, Grålum A/S Kalnesveien 1, 1712 Grålum Norway
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	BRENNTAG NORDIC, Borås A/S Vevgatan 2, 504 64 Borås Sweden BRENNTAG NORDIC, Frövi A/S Norra Bangatan 38, 718 32 Frövi Sweden BRENNTAG NORDIC, Kalmar A/S Lotsgatan 1, 392 31 Kalmar Sweden Brenntag GmbH, Duisburg Am Röhrenwerk 46, 47259 Duisburg Germany Brenntag GmbH, Essen Messeallee 11, 45131 Essen Germany Brenntag GmbH, Frankfurt Carl-Benz-Str. 8, 60314 Frankfurt am Main Germany BRENNTAG GmbH, Glauchau Boschstr. 3, 08371 Glauchau Germany BRENNTAG GmbH, Hamburg Hannoversche Str. 40, 21079 Hamburg Germany BRENNTAG GmbH, Heilbronn Dieselstr. 5, 74076 Heilbronn Germany BRENNTAG GmbH, Kaiserslautern Merkurstr. 47, 67663 Kaiserslautern Germany Brenntag GmbH, Lohfelden Am Fieseler Werk 9, 34253 Lohfelden Germany Brenntag GmbH, München Rupert-Bodner-Str. 20, 81245 München Germany Brenntag GmbH, Plochingen Am Nordseekai 22, 73207 Plochingen Germany Brenntag GmbH, Ulm Magirus-Deutz-Str. 12, 89077 Ulm Germany Brenntag Poland, Góra ul. Pijarska 1, 05-530 Góra Kalwaria Poland Brenntag Poland, Jankowice Przemysłowa 2, 62-080 Jankowice Poland Brenntag Poland, Kędzierzyn-Koźle Józefa Bema 21, 47-224 Kędzierzyn-Koźle Poland Brenntag Poland, Zgierz ul. Kwasowa 5, 95-100 Zgierz Poland Brenntag Poland, Chropyně Komenského 75, 768 11 Chropyně Czechia Brenntag Poland, Počernice Mezi úvozy 1850/1, 193 00 Praha 9-Horní Počernice Czechia Brenntag Poland, Budapest Bányaalég u. 45, 1225 Budapest Hungary Brenntag Poland, Com.Chiajna, Jud.Ilfov Str Garii Nr 2 BIS, 77040 Com.Chiajna, Jud.Ilfov Romania Brenntag SRL, Chiajna Drumul Gării 1, 077040 Chiajna Romania Brenntag Poland, Pezinok Glejovka 15, 902 03 Pezinok Slovakia Brenntag GmbH, Basel Elsässerstrasse 231, 4056 Basel Switzerland BRENNTAG CEE - Guntramsdorf Bahnstr. 13, 2353 Guntramsdorf Austria BRENNTAG Normandy 12 Sente des Jumelles - BP 11, 76710 Montville France A.F.P GmbH Otto-Brenner-Straße 16-18, 21337 Lüneburg Germany Alcochem Minerals B.V. Zeilmaker 4, 3861 SM Nijkerk Netherlands (the) FAREVA ARDEPHARM, Tournon 1041 Chemin de la digue du Rhône, 07300 Tournon-sur-Rhône France
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	FAREVA Interfill LLC, Tosno Moskovskoye Chausse 1, 187000 Tosno Russian Federation (the) CHRISTEYNS NV, Bradford Rutland St, BD4 7EA, Bradford United Kingdom of Great Britain and Northern Ireland (the) CHRISTEYNS NV, Warrington 2 Cameron Court, WA2 8RE Warrington United Kingdom of Great Britain and Northern Ireland (the) DAN-MOR Natural Products and Chemicals Ltd 29 Hailan St., Or Akiva Industrial Zone, 3060000 Israel Farmak Moravia a.s. Na Vlčinci 16/3, 779 00 Olomouc Czechia F.E.L.T. 10 Rue du Vertuquet, 59960 Neuville-en-Ferrain France Ferdinand Eimermacher GmbH & Co.KG Westring 24, 48356 Nordwalde Germany GANDAE Gaardeniersweg 2, 9000 Gent Belgium HYDRACHEM LTD Unit 16 Gillmans Industrial Estate, Natts Lane, RH14 9EZ Billingshurst United Kingdom of Great Britain and Northern Ireland (the) INNOVATE GmbH Gewerbegebietsstraße 30, 06618 Schönburg Germany Jago Pro Szczakowska 35, 43-600 Jaworzno Poland KEMVIT OY Bastintie 303, 68410 Alaveteli Finland KOMPAK NEDERLAND BV Munnikenheiweg 63, 4879 NE Etten-Leur Netherlands (the) La Antigua Lavandera SL Carretera Sevilla Alcala 75, 41500 Alcala DE Guadaira (Sevilla) Spain LICHTENHELDT GmbH Industriestr. 7 – 11, 23812 Wahlstedt bei Bad Segeberg Germany MKS GMBH & CO Am Ockenheimer Graben 43, 55411 Bingen am Rhein Germany PAL INTERNATIONAL LTD Bilton Way, LE17 4JA Lutterworth United Kingdom of Great Britain and Northern Ireland (the) PENNWHITE LTD Aston Way, Midpoint 18 Business Park, CW10 0HS Middlewich United Kingdom of Great Britain and Northern Ireland (the) RNM PRODUCTOS QUIMICOS Avenida das Searas, nº 132, 4770-329 Landim Portugal RUTPEN LTD Membury Airfield, RG17 7TJ Lambourn United Kingdom of Great Britain and Northern Ireland (the) Solimix Montseny 17-19 Pol. Ind. Sant Pere Molanta, 08799 Olerdola, Barcelona Spain Staub & Co. GmbH M Industriestraße 3, 86456 Gablingen Germany TECHNIKRAFT LTD Britannia Road, DN14 6ET Goole United Kingdom of Great Britain and Northern Ireland (the)
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	VAN DAM BODEGRAVEN BV Zeppelinstraße 12, 45470 Mülheim an der Ruhr Germany VARENNE LABORATOIRE 2 Rue du Château, 60126 Rivecourt France Evonik Peroxid GmbH Fabrikstraße 1, 9721 Weißenstein ob der Drau Austria BELINKA-Ljubljana Zasavska Cesta 95, 1231 Ljubljana Slovenia Budich International GmbH Dieselstrasse 10, 32120 Hiddenhouse Germany Plum A/S Frederik Plums Vej 2, 5610 Assens Denmark
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1.5. Manufacturer(s) of the active substance(s)

Active substance	Glutaraldehyde
Name of manufacturer	MC (US) 3 LLC
Address of manufacturer	Route 25 West Virginia 25112, Institute United States (the)
Location of manufacturing sites	MC (US) 3 LLC site 1 Route 25 West Virginia 25112 Institute, United States (the)

2. PRODUCT FAMILY COMPOSITION AND FORMULATION

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

Common name	IUPAC name	Function	CAS number	EC number	Content (%)
Glutaraldehyde	1,5-pentanedial	Active substance	111-30-8	203-856-5	12,9 - 55,3 % (w/w)

2.2. Type(s) of formulation

Formulation type(s)	AL Any other liquid
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PART II

SECOND INFORMATION LEVEL META SPC(S)

1. META SPC 1 ADMINISTRATIVE INFORMATION

1.1. Meta SPC 1 identifier

Identifier	Meta SPC: meta SPC GA 50
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1.2. Suffix to the authorisation number

Number	1-1
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1.3. **Product type(s)**

Product type(s)	PT11: Preservatives for liquid-cooling and processing systems PT12: Slimicides
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2. **META SPC 1 COMPOSITION**2.1. **Qualitative and quantitative information on the composition of the meta SPC 1**

Common name	IUPAC name	Function	CAS number	EC number	Content (%)
Glutaraldehyde	1,5-pentanedial	Active substance	111-30-8	203-856-5	48,5 - 55,3 % (w/w)

2.2. **Type(s) of formulation of the meta SPC 1**

Formulation type(s)	AL Any other liquid
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3. **HAZARD AND PRECAUTIONARY STATEMENTS OF THE META SPC 1**

Hazard statements	H301: Toxic if swallowed. H314: Causes severe skin burns and eye damage. H317: May cause an allergic skin reaction. H330: Fatal if inhaled. H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled. H410: Very toxic to aquatic life with long lasting effects. EUH071: Corrosive to the respiratory tract.
Precautionary statements	P260: Do not breathe spray. P271: Use only outdoors or in a well-ventilated area. P280: Wear protective gloves. P284: [In case of inadequate ventilation] wear respiratory protection. P273: Avoid release to the environment. P301+P310: IF SWALLOWED: Immediately call a POISON CENTER. P330: Rinse mouth. P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P310: Immediately call a POISON CENTER. P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P342+P311: If experiencing respiratory symptoms: Call a POISON CENTER. P391: Collect spillage. P403+P233: Store in a well-ventilated place. Keep container tightly closed. P501: Dispose of contents a hazardous waste disposal service in accordance with the statutory regulations. P501: Dispose of container a hazardous waste disposal service in accordance with the statutory regulations.

4. AUTHORISED USE(S) OF THE META SPC

4.1. Use description

Table 1

Preservation of liquids used in closed re-circulating cooling systems

Product type	PT11: Preservatives for liquid-cooling and processing systems
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data
Field(s) of use	indoor use outdoor use Liquid-closed re-circulating cooling/heating and processing systems.
Application method(s)	Method: closed system Detailed description: Dosing into the cooling system.
Application rate(s) and frequency	Application Rate: 25 to 200 g glutaraldehyde per m ³ of water. Number and timing of application: Bi- or tri- monthly according to the characteristics of the system and the stability of the biocidal product in the treated water.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.1.1. Use-specific instructions for use

It is recommended to mechanically cleanse dirty systems with fresh water before starting the treatment with the biocidal product.

Dose in a well-mixed point of the circuit, below the water level. When opening the system for servicing or maintenance, biocide can be added to reach the initial dosing concentrations.

System monitor

Control the level of biocide with a test kit at least every 3 months and prior to shut off period of the system. Control microbial contamination with dip slides or other appropriate techniques at least every 3 months.

Particular attention should be addressed during the shut off period of the system where stagnant fluids are more susceptible to microbial contamination.

Dose 25 to 200 g glutaraldehyde per m³ of water.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.1.2. *Use-specific risk mitigation measures*

Drain off preserved cooling fluids at least five days after the last addition of the biocidal product.

See also the general directions for use.

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 general directions for use.

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

See 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 general directions for use.

4.2. **Use description**

Table 2

Preservation of liquids used in open re-circulating cooling systems

Product type	PT11: Preservatives for liquid-cooling and processing systems
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data Scientific name: no data Common name: green algae Development stage: no data
Field(s) of use	outdoor use Liquid-open re-circulating cooling and processing systems.
Application method(s)	Method: open system Detailed description: Glutaraldehyde is automatically added in the water circuit, usually as upstream as possible, by means of injection by a dosing pump and dedicated feeding lines. A timer is used for intermittent dosage.

Application rate(s) and frequency	Application Rate: 25 to 50 g glutaraldehyde per m ³ of water Number and timing of application: Typical dose: 1-2 days.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.2.1. *Use-specific instructions for use*

For control of microbial growth in industrial cooling water systems treated with a biocidal product by slug dosing.

Not intended for use in once-through cooling systems.

It is recommended to mechanically cleanse dirty systems before starting the treatment with the biocidal product.

Dose in a well-mixed point of the circuit, below the water level.

Typical dose : 1-2 days. Each slug dose lasts 15-30 minutes, depending on the pump capacity and the volume of water in the circuit. Treatment shall not exceed 2 days.

Dose 25 to 50 g glutaraldehyde per m³ of water.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.2.2. *Use-specific risk mitigation measures*

The use is restricted to small cooling systems with a maximum blowdown of 2 m³/h. Waste water must be discharged to the municipal sewer, purified in an on-site industrial sewage treatment plant including a biological treatment step, or directly to surface water via a settling pond that allows sufficient retention.

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 general directions for use.

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

See 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 general directions for use.

4.3. **Use description**

Table 3

Preservation of injection water in the oil and gas industry

Product type	PT11: Preservatives for liquid-cooling and processing systems
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data
Field(s) of use	outdoor use Preservation of injection water in the oil and gas industry.
Application method(s)	Method: closed system Detailed description: The biocidal product is dosed using automated pumps directly into the water stream, after mixing of production water and make-up water into the petroleum reservoir.
Application rate(s) and frequency	Application Rate: Bacteria: curative use, 50 to 1000 g glutaraldehyde per m ³ of injection water with a contact time of 24 hours. Anaerobic bacteria: preventive use, 150 to 1000 g glutaraldehyde per m ³ of injection water. Number and timing of application: The biocidal product is typically dosed in a weekly batch fashion, ranging from one to five hours per dose. Batches may occur up to three times per week in severe cases.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.3.1. *Use-specific instructions for use*

Glutaraldehyde should be dosed separately from other oil field chemistries such as antifoaming agents, oxygen scavengers, flocculants, or other oxidizing biocides (e.g. chlorite) in order to prevent cross reactivity. Successive addition may therefore be required to optimize performance. If a deaerator is being treated with oxidizing biocides, glutaraldehyde should be dosed downstream of the deaeration unit.

Dose 50 to 1000 g glutaraldehyde per m³ of injection water.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.3.2. *Use-specific risk mitigation measures*

If discharged into seawater 0,2 mg/L glutaraldehyde must not be exceeded in the produced water. This concentration can be achieved either by slow release and/or long retention times resulting in degradation of glutaraldehyde and/or by dilution and/or by addition of sodium bisulphite at pH 5 (release after at least 20 minutes) or addition of sodium hydroxide to pH 12 (release after at least 10-16 hours) as degradation aids. Produced water containing up to 750 mg/L glutaraldehyde can be used for re-injection. Run lab test to determine the soiling dependent dosage and degradation rate in use.

When applied onshore, preserved fluids must be recycled or disposed of as hazardous waste. If release to the sewer is unavoidable, the concentration shall not exceed 1 mg glutaraldehyde/L.

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 general directions for use.

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

See 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 general directions for use.

4.4. **Use description**

Table 4

Preservation of hydro-testing fluids and mothballing fluids in the oil and gas industry

Product type	PT11: Preservatives for liquid-cooling and processing systems
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data
Field(s) of use	outdoor use Preservation of hydro-testing fluids and mothballing fluids in the oil and gas industry.
Application method(s)	Method: closed system Detailed description: Continuous injection into the water stream during the pipeline filling operation using chemical injection skids equipped with injection pumps.

Application rate(s) and frequency	Application Rate: Bacteria: curative use, 50 to 1000 g glutaraldehyde per m ³ of hydro-testing fluid or mothballing fluid with a contact time of 24 hours, depending on the water quality. Anaerobic bacteria: preventive use, 150 to 1000 g glutaraldehyde per m ³ of hydro-testing fluid or mothballing fluid, depending on the water quality and required residence time within the equipment. Number and timing of application: There is no additional biocide injection into the hydro-testing fluid once the filling operation is completed.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.4.1. *Use-specific instructions for use*

Dose 50 to 1000 g glutaraldehyde per m³ of hydro-testing fluid or mothballing fluid, depending on the water quality and required residence time within the equipment.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.4.2. *Use-specific risk mitigation measures*

If discharged into seawater 0,2 mg/L glutaraldehyde must not be exceeded in the hydrotesting and mothballing fluids. This concentration can be achieved either by slow release and/or long retention times resulting in degradation of glutaraldehyde and/or by dilution and/or by addition of sodium bisulphite at pH 5 (release after at least 20 minutes) or addition of sodium hydroxide to pH 12 (release after at least 10-16 hours) as degradation aids. Hydrotest and mothballing water containing up to 750 mg/L glutaraldehyde after the pressure test can be used for re-injection. Run lab test to determine the soiling dependent dosage and degradation rate in use.

When applied onshore, preserved fluids must be recycled or disposed of as hazardous waste. If release to the sewer is unavoidable, the concentration shall not exceed 1 mg glutaraldehyde/L.

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 general directions for use.

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

See 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 general directions for use.

4.5. **Use description**

Table 5

Preservation of water-based fracturing fluids for the oil and gas industry

Product type	PT11: Preservatives for liquid-cooling and processing systems
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data
Field(s) of use	outdoor use Preservation of water-based fracturing fluids for the oil and gas industry (i.e. shale gas extraction, wet shale extraction, shale oil extraction, production from tight gas reservoirs, production of coal bed methane and fracturing in conventional reservoirs).
Application method(s)	Method: closed system Detailed description: Glutaraldehyde is typically applied in a mixing tank, as it cannot be exposed to open systems such as the hydraulic fracturing pond or other open water sources that make up the hydraulic fracturing pond water. Glutaraldehyde is applied to the mixing tank using automated pumps, together with other chemicals such as but not limited to friction reducers, gelling agents, proppants (sand in case of slick water), corrosion inhibitors.
Application rate(s) and frequency	Application Rate: Bacteria: curative use, 50 to 1000 g glutaraldehyde per m ³ of fracturing fluid with a contact time of 24 hours. Anaerobic bacteria: preventive use, 150 to 1000 g glutaraldehyde per m ³ of fracturing fluid. Number and timing of application: In the hydraulic fracturing industry the application of the biocidal product is typically a single injection, which happens during the actual fracturing. A new biocide addition is only done when the well is re-fractured. Refracturing is rare but can be performed up to 20 times during the lifetime of a well. The lifetime of a well can reach up to 20 years.
Category(ies) of users	industrial trained professional

Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.
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4.5.1. *Use-specific instructions for use*

Typically applied through a closed system to a mixing tank using a pump. Glutaraldehyde may be used in combination with other chemistries such as friction reducers, gelling agents, proppants, and corrosion inhibitors, and applied together with these chemistries in the mixing tank(s). If used for intermittent treatments during operations, a stream of glutaraldehyde will be directly dosed into the process water stream from a separate tank into a closed system, thereby significantly reducing the chance of exposure.

Dose 50 to 1000 g glutaraldehyde per m³ of fracturing fluid.

The dose strongly depends on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.5.2. *Use-specific risk mitigation measures*

Preserved fracturing fluids are reused where applicable. If discharged into seawater 0,2 mg glutaraldehyde/L fracturing fluid must not be exceeded. This concentration can be achieved either by slow release and/or long retention times resulting in degradation of glutaraldehyde and/or by dilution and/or by addition of sodium bisulphite at pH 5 (release after at least 20 minutes) or addition of sodium hydroxide to pH 12 (release after at least 10-16 hours) as degradation aids. Run lab test to determine the soiling dependent dosage and degradation rate in use.

When applied onshore, preserved fluids must be recycled or disposed of as hazardous waste. If release to the sewer is unavoidable, the concentration shall not exceed 1 mg glutaraldehyde/L.

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 general directions for use.

In addition:

Conditions preventing emissions to water:

Emissions to surface water are prevented through the design of the installation. By way of example spills, leaks and cleaning solutions may be drained to a lined storage area, preventing release to surface water. Sub-surface releases of fluid during the fracturing process are prevented from reaching aquifers through the presence of relatively impermeable formations above the target formation. This limits upward migration of fluid. This is also relevant for recovered fluids that are re-injected for use or disposal. A minimum vertical separation distance between the target formation and aquifer should be respected. National legislation may also require a minimum depth.

Recovered water may finally be discharged via one or more large-scale waste water treatment plants where a combination of physical and biological treatments will reduce emissions to the receiving water.

Conditions preventing emissions to soil:

Emissions, through downward migration are prevented through the design of the installation. By way of example spills, leaks and cleaning solutions may be prevented from downward migration to soil by the employment of a non-permeable membrane below the well pad. Sludge from treatment works should not be spread on land.

Existence of standard municipal sewage treatment plant

Waste contractors employed to dispose of recovered water, may do so via a waste water treatment plant, depending on the properties of the water and conditions of local regulations.

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

See general directions for use.

Additional:

Contaminated water arising from cleaning will be collected and removed for disposal according to EU and local regulations and conditions.

Waste product remaining in containers after use will be returned, in the containers, to the supplier for cleaning/refilling.

Waste sludge from treatment works will be handled as industrial waste and not spread on land.

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

See general directions for use.

4.6. **Use description**

Table 6

Preservation of produced water for recycling in the oil and gas industry

Product type	PT11: Preservatives for liquid-cooling and processing systems
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data
Field(s) of use	outdoor use Preservation of produced water for recycling in the oil and gas extraction industry.
Application method(s)	Method: closed system Detailed description: Dosing using pumps directly into the water stream before being mixed with fresh injection water and pumped into the petroleum reservoir.

Application rate(s) and frequency	Application Rate: Bacteria: curative use, 50 to 1000 g glutaraldehyde per m³ of produced water with a contact time of 24 hours. Anaerobic bacteria: preventive use, 150 to 1000 g glutaraldehyde per m³ of produced water. Number and timing of application: Batch treatment: The biocidal product is typically dosed in a weekly batch fashion, ranging from one to five hours per dose. Batches may occur up to three times per week in severe cases, but typically occur once per week. Continuous treatment: biocide is supplied in a continuous fashion during operations.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.6.1. Use-specific instructions for use

Dose for the preservation of produced water before re-use 50 to 1000 g glutaraldehyde per m³ of produced water. This can be done batch wise or continuously.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.6.2. Use-specific risk mitigation measures

If discharged into seawater 0,2 mg/L glutaraldehyde must not be exceeded in the produced water. This concentration can be achieved either by slow release and/or long retention times resulting in degradation of glutaraldehyde and/or by dilution and/or by addition of sodium bisulphite at pH 5 (release after at least 20 minutes) or addition of sodium hydroxide to pH 12 (release after at least 10-16 hours) as degradation aids. Produced water containing up to 750 mg/L glutaraldehyde can be used for re-injection. Run lab test to determine the soiling dependent dosage and degradation rate in use.

When applied onshore, preserved fluids must be recycled or disposed of as hazardous waste. If release to the sewer is unavoidable, the concentration shall not exceed 1 mg glutaraldehyde/L.

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

See general directions for use.

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

See general directions for use.

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

See general directions for use.

4.7. **Use description**

Table 7

Slimicide treatment in the wet-end stage of the pulp and paper manufacturing process

Product type	PT12: Slimicides
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data Scientific name: no data Common name: fungi Development stage: no data Scientific name: no data Common name: yeasts Development stage: no data
Field(s) of use	indoor use Slimicide treatment in the wet-end stage of the pulp and paper manufacturing process.
Application method(s)	Method: closed system Detailed description: Automatic dosing by a pump and fixed pipes into the primary circuit, usually in the collection sump or in the headbox.
Application rate(s) and frequency	Application Rate: Initial dose (wet-end defouling treatment): 250 g glutaraldehyde per ton paper pulp. Wet-end maintenance dose: 100 g glutaraldehyde per ton paper pulp. Number and timing of application: Initial dose (Wet end de-fouling treatment): 2-6 automatic slug (= shock) dose additions/day. Repeat 1 to 3 days until control is achieved. Wet-end maintenance dose: 2-6 automatic slug dose additions/day, as necessary to maintain control.
Category(ies) of users	industrial trained professional

Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.
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4.7.1. *Use-specific instructions for use*

Dose in a well-mixed point of the primary circuit, below the water level. Heavily fouled systems should be boiled out prior to initial treatment.

Each slug dose lasts 15-30 minutes.

Initial dose (wet-end defouling treatment): 250 g glutaraldehyde per ton paper pulp.

Wet-end maintenance dose: 100 g glutaraldehyde per ton of paper pulp.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.7.2. *Use-specific risk mitigation measures*

Application is only allowed in paper factories that comply with the Industrial Emission Directive 2010/75/EU where wastewater is purified in an on-site industrial sewage treatment plant including a biological treatment step in accordance to the Best Available Techniques (BAT) as prescribed in the BAT-reference document (BREF) for the production of pulp, paper and board. The effluent must be diluted at least 200 times. Paper factories that are exempted from the Industrial Emission Directive must discharge to the municipal sewer.

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

See general directions for use.

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

See general directions for use.

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

See general directions for use.

4.8. Use description

Table 8

Slimicide treatment in the de-inking process of the pulp and paper

Product type	PT12: Slimicides
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data Scientific name: no data Common name: fungi Development stage: no data Scientific name: no data Common name: yeasts Development stage: no data
Field(s) of use	indoor use Slimicide treatment in the de-inking process of the pulp and paper.
Application method(s)	Method: closed system Detailed description: Automatic dosing by pump and fixed pipes into the circuit, usually in the pulper.
Application rate(s) and frequency	Application Rate: Initial dose (de-fouling treatment): 250 g glutaraldehyde per ton paper pulp. Maintenance dose: 100 g glutaraldehyde per ton paper pulp. Number and timing of application: Initial dose (de-fouling treatment): 1-2 automatic slug (= shock) dose additions/day. Repeat for 1 to 2 days until control is achieved. Maintenance dose: 1-2 automatic slug dose additions/day, as necessary to maintain control.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.8.1. *Use-specific instructions for use*

Dose in a well-mixed point of the primary circuit, below the water level. Heavily fouled systems should be boiled out prior to initial treatment.

Each slug dose lasts 30 minutes.

Initial dose (de-fouling treatment): 250 g glutaraldehyde per ton paper pulp.

Maintenance dose: 100 g glutaraldehyde per ton paper pulp.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.8.2. *Use-specific risk mitigation measures*

See general directions for use.

Application is only allowed in paper factories that comply with the Industrial Emission Directive 2010/75/EU where wastewater is purified in an on-site industrial sewage treatment plant including a biological treatment step in accordance to the Best Available Techniques (BAT) as prescribed in the BAT-reference document (BREF) for the production of pulp, paper and board. Paper factories that are exempted from the Industrial Emission Directive must discharge to the municipal sewer.

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

See general directions for use.

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

See general directions for use.

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

See general directions for use.

4.9. **Use description**

Table 9

Slimicide treatment in injection water in the oil and gas industry

Product type	PT12: Slimicides
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data
Field(s) of use	outdoor use Slimicide treatment in injection water in the oil and gas industry.
Application method(s)	Method: closed system Detailed description: Dosing directly into the water stream using pumps, after mixing of production water and make-up water and before injection of the water into the petroleum reservoir.

Application rate(s) and frequency	Application Rate: 50 to 1000 g glutaraldehyde per m ³ injection water. Number and timing of application: Batches may occur up to three times per week in severe cases, but typically occur once per week.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.9.1. Use-specific instructions for use

Injection water is often deaerated before being pumped into the sub-surface. Separation of chemical treatments should be considered when dosing glutaraldehyde, as it may interfere with other common chemistries such as anti-foams, oxygen scavengers, flocculants, and other oxidizing biocides (e.g. chlorite). Successive addition of different chemical packages may be necessary to prevent cross reactivity and to optimize performance. When a deaerator is present and treated with chlorite or a similar oxidizing chemistry, glutaraldehyde is typically dosed after the deaerator.

Dose 50 to 1000 g glutaraldehyde per m³ injection water.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.9.2. Use-specific risk mitigation measures

If discharged into seawater 0,2 mg/L glutaraldehyde must not be exceeded in the produced water. This concentration can be achieved either by slow release and/or long retention times resulting in degradation of glutaraldehyde and/or by dilution and/or by addition of sodium bisulphite at pH 5 (release after at least 20 minutes) or addition of sodium hydroxide to pH 12 (release after at least 10-16 hours) as degradation aids. Produced water containing up to 750 mg/L glutaraldehyde can be used for re-injection. Run lab test to determine the soiling dependent dosage and degradation rate in use.

When applied onshore, preserved fluids must be recycled or disposed of as hazardous waste. If release to the sewer is unavoidable, the concentration shall not exceed 1 mg glutaraldehyde/L.

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

See general directions for use.

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

See general directions for use.

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

See general directions for use.

4.10. **Use description**

Table 10

Slimicide treatment in hydro-testing fluids and mothballing fluids in the oil and gas industry

Product type	PT12: Slimicides
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data
Field(s) of use	outdoor use Slimicide treatment in hydro-testing fluids and mothballing fluids in the oil and gas industry.
Application method(s)	Method: closed system Detailed description: Continuous injection into the water stream during the pipeline filling operation using chemical injection skids equipped with injection pumps.
Application rate(s) and frequency	Application Rate: 50 to 1000 g glutaraldehyde per m ³ hydro-testing fluid or mothballing fluid, depending on the water quality and required residence time within the equipment. Number and timing of application: There is no additional biocide injection into the hydro-testing fluid once the filling operation is completed.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.10.1. Use-specific instructions for use

Dose 50 to 1000 g glutaraldehyde per m³ of hydro-testing fluid or mothballing fluid, depending on the water quality and required residence time within the equipment.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.10.2. Use-specific risk mitigation measures

If discharged into seawater 0,2 mg/L glutaraldehyde must not be exceeded in the hydrotesting and mothballing fluids. This concentration can be achieved either by slow release and/or long retention times resulting in degradation of glutaraldehyde and/or by dilution and/or by addition of sodium bisulphite at pH 5 (release after at least 20 minutes) or addition of sodium hydroxide to pH 12 (release after at least 10-16 hours) as degradation aids. Hydrotest and mothballing water containing up to 750 mg/L glutaraldehyde after the pressure test can be used for re-injection. Run lab test to determine the soiling dependent dosage and degradation rate in use.

When applied onshore, preserved fluids must be recycled or disposed of as hazardous waste. If release to the sewer is unavoidable, the concentration shall not exceed 1 mg glutaraldehyde/L.

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

See general directions for use.

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

See general directions for use.

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

See general directions for use.

4.11. Use description

Table 11

Slimicide treatment in water-based fracturing fluids for the oil and gas industry

Product type	PT12: Slimicides
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data
Field(s) of use	outdoor use Slimicide treatment in water-based fracturing fluids for the oil and gas industry (i.e. shale gas extraction, wet shale extraction, shale oil extraction, production from tight gas reservoirs, production of coal bed methane and fracturing in conventional reservoirs).
Application method(s)	Method: closed system Detailed description: Dosing using automated pumps directly into pipelines or prepared in a mixing tank before in-line application.

Application rate(s) and frequency	Application Rate: 50 to 1000 g glutaraldehyde per m ³ fracturing fluid, in the hydraulic fracturing water matrix. Number and timing of application: In the hydraulic fracturing industry the application of the biocidal product is typically a single injection, which happens during the actual fracturing. A new biocide addition is only done when the well is re-fractured. Refracturing is rare but can be performed up to 20 times during the lifetime of a well. The lifetime of a well can reach up to 20 years.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.11.1. Use-specific instructions for use

Glutaraldehyde is typically applied through a closed system to a mixing tank using a pump. Glutaraldehyde may be used in combination with other chemistries such as friction reducers, gelling agents, proppants, and corrosion inhibitors, and applied together with these chemistries in the mixing tank(s). If used for intermittent treatments during operations, a stream of glutaraldehyde will be directly dosed into the process water stream from a separate tank into a closed system, thereby significantly reducing the chance of exposure.

Dose 50 to 1000 g glutaraldehyde per m³ fracturing fluid, in the hydraulic fracturing water matrix.

The dose strongly depends on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.11.2. Use-specific risk mitigation measures

Preserved fracturing fluids are reused where applicable. If discharged into seawater 0,2 mg glutaraldehyde/L fracturing fluid must not be exceeded. This concentration can be achieved either by slow release and/or long retention times resulting in degradation of glutaraldehyde and/or by dilution and/or by addition of sodium bisulphite at pH 5 (release after at least 20 minutes) or addition of sodium hydroxide to pH 12 (release after at least 10-16 hours) as degradation aids. Run lab test to determine the soiling dependent dosage and degradation rate in use.

When applied onshore, preserved fluids must be recycled or disposed of as hazardous waste. If release to the sewer is unavoidable, the concentration shall not exceed 1 mg glutaraldehyde/L.

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

See general directions for use.

In addition:

Conditions preventing emissions to water:

Emissions to surface water are prevented through the design of the installation. By way of example spills, leaks and cleaning solutions may be drained to a lined storage area, preventing release to surface water. Sub-surface releases of fluid during the fracturing process are prevented from reaching aquifers through the presence of relatively

impermeable formations above the target formation. This limits upward migration of fluid. This is also relevant for recovered fluids that are re-injected for use or disposal. A minimum vertical separation distance between the target formation and aquifer should be respected. National legislation may also require a minimum depth

Recovered water may finally be discharged via one or more large-scale waste water treatment plants where a combination of physical and biological treatments will reduce emissions to the receiving water.

Conditions preventing emissions to soil:

Emissions, through downward migration are prevented through the design of the installation. By way of example spills, leaks and cleaning solutions may be prevented from downward migration to soil by the employment of a non-permeable membrane below the well pad. Sludge from treatment works should not be spread on land.

Existence of standard municipal sewage treatment plant

Waste contractors employed to dispose of recovered water, may do so via a waste water treatment plant, depending on the properties of the water and conditions of local regulations.

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

See general directions for use.

Additional:

Contaminated water arising from cleaning will be collected and removed for disposal according to EU and local regulations and conditions.

Waste product remaining in containers after use will be returned, in the containers, to the supplier for cleaning/refilling.

Waste sludge from treatment works will be handled as industrial waste and not spread on land.

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

See general directions for use.

4.12. **Use description**

Table 12

Slimicide treatment in produced water for recycling in the oil and gas industry

Product type	PT12: Slimicides
Where relevant, an exact description of the authorised use	Not relevant.

Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data
Field(s) of use	outdoor use Slimicide treatment in produced water for recycling in the oil and gas industry.
Application method(s)	Method: closed system Detailed description: Dosing using pumps directly into the water stream before being mixed with fresh injection water and pumped into the petroleum reservoir.
Application rate(s) and frequency	Application Rate: 50 to 1000 g glutaraldehyde per m ³ produced water. Number and timing of application: Batch treatment: Batches may occur up to three times per week in severe cases, but typically occur once per week. Continuous treatment: biocide is supplied in a continuous fashion during operations.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.12.1. Use-specific instructions for use

Dose 50 to 1000 g glutaraldehyde per m³ produced water.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.12.2. Use-specific risk mitigation measures

If discharged into seawater 0,2 mg/L glutaraldehyde must not be exceeded in the produced water for recycling. This concentration can be achieved either by slow release and/or long retention times resulting in degradation of glutaraldehyde and/or by dilution and/or by addition of sodium bisulphite at pH 5 (release after at least 20 minutes) or addition of sodium hydroxide to pH 12 (release after at least 10-16 hours) as degradation aids. Produced water for recycling containing up to 750 mg/L glutaraldehyde can be used for re-injection. Run lab test to determine the soiling dependent dosage and degradation rate in use.

When applied onshore, preserved fluids must be recycled or disposed of as hazardous waste. If release to the sewer is unavoidable, the concentration shall not exceed 1 mg glutaraldehyde/L.

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

See general directions for use.

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

See general directions for use.

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

See general directions for use.

5. **GENERAL DIRECTIONS FOR USE OF THE META SPC 1**

5.1. **Instructions for use**

See use specific instructions for use.

5.2. **Risk mitigation measures**

Disconnecting the product container manually:

The use of eye protection (chemical goggles) consistent with EN 166 or equivalent during handling of the product is mandatory.

Wear a protective coverall [type 3 or type 4] consistent with EN 14605 or equivalent.

Wear protective chemical resistant gloves meeting the requirements of European Standard EN 374 or equivalent during product handling phase (glove material to be specified by the authorisation holder within the product information).

Use of respiratory protective equipment (RPE) providing a protection factor of 40 is mandatory. Providing at least a powered air purifying respirator with helmet/hood/mask (TH3 (EN 12941 or equivalent)/TM3 (EN 12942 or equivalent)), or a full-face mask (EN 136 or equivalent) with particle filter P3 (EN 12083 or equivalent).

During tank cleaning & maintenance:

Wear a protective coverall [type 3 or type 4] consistent with EN 14605 or equivalent.

Wear protective chemical resistant gloves meeting the requirements of European Standard EN 374 or equivalent during product handling phase (glove material to be specified by the authorisation holder within the product information).

Use of respiratory protective equipment (RPE) providing a protection factor of 10 is mandatory. Providing at least a powered air purifying respirator with helmet/hood/mask (TH1 (EN 12941 or equivalent)/TM1 (EN 12942 or equivalent)), a half/quarter mask (EN 140 or equivalent) or a full-face mask (EN 136 or equivalent) with particle filter P2 (EN 12083 or equivalent) each or a filtering half mask (FFP2, EN 149 or equivalent).

Draining, cleaning and maintenance of closed re-circulating system:

Wear a protective coverall [type 3 or type 4] consistent with EN 14605 or equivalent.

Wear protective chemical resistant gloves meeting the requirements of European Standard EN 374 or equivalent during product handling phase (glove material to be specified by the authorisation holder within the product information).

Loading/unloading slurry tanks:

Wear protective chemical resistant gloves meeting the requirements of European Standard EN 374 or equivalent during product handling phase (glove material to be specified by the authorisation holder within the product information).

The product must be poured using an automated dosing system.

Ensure that application is carried out in well-ventilated areas.

Use engineering controls to maintain airborne level below exposure limit requirements or guidelines.

Use an approved air-purifying or positive-pressure supplied-air respirator depending on the potential airborne concentration.

Regarding the personal protective equipment listed in this section, this is without prejudice to the application by employers of Council Directive 98/24/EC and other Union legislation in the area of health and safety at work.

See section 6 for the full references to this act and the European Standards.

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

IF INHALED: Move to fresh air and keep at rest in a position comfortable for breathing.

If symptoms: Immediately call 112/ambulance for medical assistance.

IF SWALLOWED: If conscious, immediately rinse mouth. Give something to drink, if exposed person is able to swallow. Do NOT induce vomiting. Call 112/ambulance for medical assistance.

IF ON SKIN: Immediately wash skin with plenty of water. Thereafter take off all contaminated clothing and wash it before reuse. Continue to wash the skin with water for 15 minutes. Call a POISON CENTRE or a doctor. If skin irritation or rash occur: Get medical advice.

IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing for at least 15 minutes. Call 112/ambulance for medical assistance.

Information to Healthcare personnel/doctor:

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

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. Spills or discharge to natural waterways is likely to kill aquatic organisms.

Personal precautions, protective equipment and emergency procedures in case of accidental release measures: Evacuate area. Keep upwind of spill. Ventilate area of leak or spill. Only trained and properly protected personnel must be involved in clean-up operations. Use appropriate safety equipment.

Methods and materials for containment and cleaning up: Avoid making contact with spilled material, since glutaraldehyde will be absorbed by most shoes. When cleaning up a spill always wear the appropriate protective equipment, including respiratory protection, gloves, protective clothing and eye protection. A self-contained breathing apparatus or respirator and absorbents may be necessary, depending on the size of the spill and the adequacy of ventilation.

Small spills: Wear the correct protective equipment including gloves and protective clothing and cover the liquid with absorbent material. Collect and seal the material and the dirt that has absorbed the spilled material in polyethylene bags and place in a drum for transit to an approved disposal site. Rinse away the remaining spilled material with water to reduce odour, and discharge the rinsate into a municipal or industrial sewer, not into a natural waterway.

Large spills: In case of nasal and respiratory irritation, vacate the room immediately. Personnel cleaning up should be trained and equipped with a self-contained breathing apparatus, or an officially approved or certified full-face respirator equipped with an organic vapor cartridge, glove, and clothing impervious to glutaraldehyde, including rubber boots or shoe protection. Deactivate with sodium bisulfite (2-3 parts (by weight) per part of glutaraldehyde), collect the neutralized liquid and place in a drum for transit to an approved disposal site.

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

The biocidal product, when being disposed of in its unused and uncontaminated state should be treated as a hazardous waste according to EC Directive 2008/98/EC.

Deactivate with sodium bisulfite (2-3 parts (by weight) per part of glutaraldehyde), collect the neutralized liquid and place in a drum for transit to an approved disposal site. If the concentration of glutaraldehyde is up to 2%, deactivate by the addition of aqueous sodium hydroxide solution in an amount sufficient to maintain a pH of 12 for 8 h, followed by neutralization (i.e. neutral pH) with the careful addition of an inorganic acid e.g. hydrochloric acid, before disposal by appropriate means. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. Do not dump into any sewers, on the ground, or into any body of water. Avoid release to the environment. High-temperature incineration is an acceptable practice glutaraldehyde burns cleanly to carbon dioxide and water.

Containers used to store glutaraldehyde solutions are non refillable. Do not reuse or refill the containers. Containers should be triple or pressure rinsed with water promptly after they are emptied. They can then be offered for recycling or reconditioning for biocidal products, or they can be punctured and disposed of in a sanitary landfill or by other procedures approved by national and local authorities. Send waste liquid from rinsing of used containers to an approved waste handling facility.

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

Do not store in and avoid contact with aluminum, carbon steel, copper, mild steel, iron. Avoid contact with amines, ammonia, strong acids, strong bases, strong oxidizers.

Store at temperatures <40 °C

Shelf life:

meta SPC GA 50: 12 months in HDPE and stainless steel

6. **OTHER INFORMATION**

The full titles of the EN standards referenced in the Risk mitigation measures are:

EN ISO 374 – Protective gloves against dangerous chemicals and micro-organisms

EN 166 – Eye protection against chemicals.

EN 14605 – Protective clothing against liquid chemicals – Performance requirements for clothing with liquid-tight (Type 3) or spray-tight (Type 4) connections, including items providing protection to parts of the body only (Types PB [3] and PB [4]).

EN 12941 - Respiratory protective devices - Powered filtering devices incorporating a loose fitting respiratory interface - Requirements, testing, marking

EN 12942 – Respiratory protective devices - Powered filtering devices incorporating full face masks, half masks or quarter masks - Requirements, testing, marking

EN 136 - Respiratory protective devices. Full face masks. Requirements, testing, marking

EN 140 - Respiratory protective devices - Half masks and quarter masks - Requirements, testing, marking

EN 149 - Respiratory protective devices - Filtering half masks to protect against particles - Requirements, testing, marking

EN 12083 - Respiratory protective devices – Filters with breathing hoses, (Non-mask mounted filters) – Particle filters, gas filters, and combined filters – Requirements, testing, marking

Council Directive 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work (fourteenth individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC) (OJ L 131, 5.5.1998, p. 11).

With respect to the “Category (ies) of users” note: “Professionals (including industrial users) means trained professionals if this is required by national legislation.

7. **THIRD INFORMATION LEVEL: INDIVIDUAL PRODUCTS IN THE META SPC 1**7.1. **Trade name(s), authorisation number and specific composition of each individual product**

Trade name(s)			Bactron B1150G	Market area: EU		
			BIO- C11150AG	Market area: EU		
			EC6202AG	Market area: EU		
Authorisation number			EU-0035028-0001 1-1			
Common name	IUPAC name	Function	CAS number	EC number	Content (%)	
Glutaraldehyde	1,5-pentanedial	Active substance	111-30-8	203-856-5	50,5 % (w/w)	

1. **META SPC 2 ADMINISTRATIVE INFORMATION**1.1. **Meta SPC 2 identifier**

Identifier	Meta SPC: meta SPC GA 24
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1.2. **Suffix to the authorisation number**

Number	1-2
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1.3. **Product type(s)**

Product type(s)	PT06: Preservatives for products during storage PT11: Preservatives for liquid-cooling and processing systems PT12: Slimicides
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2. **META SPC 2 COMPOSITION**2.1. **Qualitative and quantitative information on the composition of the meta SPC 2**

Common name	IUPAC name	Function	CAS number	EC number	Content (%)
Glutaraldehyde	1,5-pentanedial	Active substance	111-30-8	203-856-5	23,4 - 25,9 % (w/w)

2.2. **Type(s) of formulation of the meta SPC 2**

Formulation type(s)	AL Any other liquid
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3. HAZARD AND PRECAUTIONARY STATEMENTS OF THE META SPC 2

Hazard statements	H302: Harmful if swallowed. H314: Causes severe skin burns and eye damage. H317: May cause an allergic skin reaction. H331: Toxic if inhaled. H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled. H412: Harmful to aquatic life with long lasting effects. EUH071: Corrosive to the respiratory tract.
Precautionary statements	P260: Do not breathe spray. P271: Use only outdoors or in a well-ventilated area. P280: Wear protective gloves. P273: Avoid release to the environment. P284: [In case of inadequate ventilation] wear respiratory protection. P301+P310: IF SWALLOWED: Immediately call a POISON CENTER. P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing. P310: Immediately call a POISON CENTER. P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P342+P311: If experiencing respiratory symptoms: Call a POISON CENTER. P403+P233: Store in a well-ventilated place. Keep container tightly closed. P501: Dispose of contents a hazardous waste disposal service in accordance with the statutory regulations. P501: Dispose of container a hazardous waste disposal service in accordance with the statutory regulations.

4. AUTHORISED USE(S) OF THE META SPC

4.1. Use description

Table 1

Preservation of pigment pastes/mineral slurries to colour a wide variety of products (e.g. textiles, inks, paints, paper)

Product type	PT06: Preservatives for products during storage
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data
Field(s) of use	indoor use Pigment pastes and mineral slurries used to colour a wide variety of products (e.g. textiles (carpet fibres, carpet backing, canvas, cordage, drapes and shower curtains), inks, paints, paper).

Application method(s)	Method: closed system Detailed description: Good mixing and uniform distribution of the biocidal product should be ensured using automated or manual metering. Pigment pastes are readily incorporated by low energy mixing equipment requiring no additional dispersion.
Application rate(s) and frequency	Application Rate: 0,25 to 0,5 g glutaraldehyde per kg of the pigment paste/mineral slurry for preventive use. 0,25 to 0,5 g glutaraldehyde per kg of the pigment paste/mineral slurry with a contact time of 2 days for curative use. Number and timing of application: Once per production run of the product to preserve. Glutaraldehyde provides immediate efficacy and prevents re-growth for a period up to 3 weeks.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.1.1. Use-specific instructions for use.

Dose the biocidal product to the pigment paste or mineral slurry at a point to ensure adequate mixing using automated or manual metering.

Dose 0,25 to 0,5 g glutaraldehyde per kg of the pigment paste/mineral slurry.

The dose strongly depends on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.1.2. Use-specific risk mitigation measures

See general directions for use.

- 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 general directions for use.

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

See 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 general directions for use.

4.2. **Use description**

Table 2

Preservation of additives for the production of paper

Product type	PT06: Preservatives for products during storage
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data Scientific name: no data Common name: fungi Development stage: no data Scientific name: no data Common name: yeasts Development stage: no data
Field(s) of use	indoor use Preservation of paper additives used in paper mills.
Application method(s)	Method: closed system Detailed description: The biocidal product is automatically added by means of a dosing pump and dedicated feeding lines in the additives tank.
Application rate(s) and frequency	Application Rate: For bacteria, 0,1 to 0,5 g glutaraldehyde per kg of the paper additive for preventive use. For yeasts and fungi, 0,25 to 0,5 g glutaraldehyde per kg of the paper additive for preventive use. For bacteria, 0,1 to 0,5 g glutaraldehyde per kg of the paper additive with a contact time of 2 days for curative use. For yeasts and fungi, 0,25 to 0,5 g glutaraldehyde per kg of the paper additive with a contact time of 2 days for curative use. Number and timing of application: Once per production run of the product to preserve. Glutaraldehyde provides immediate efficacy and prevents re-growth for a period up to 3 weeks.
Category(ies) of users	industrial trained professional

Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.
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4.2.1. *Use-specific instructions for use*

Dose the biocidal product to the paper additive at a point to ensure adequate mixing using automated or manual metering.

For bacteria, 0,1 to 0,5 g glutaraldehyde per kg of the paper additive.

For yeasts and fungi, 0,25 to 0,5 g glutaraldehyde per kg of the paper additive.

The dose strongly depends on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.2.2. *Use-specific risk mitigation measures*

See general directions for use.

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 general directions for use.

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

See 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 general directions for use.

4.3. **Use description**

Table 3

Preservation of liquids used in closed re-circulating cooling systems

Product type	PT11: Preservatives for liquid-cooling and processing systems
Where relevant, an exact description of the authorised use	Not relevant.

Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data
Field(s) of use	indoor use outdoor use Liquid-closed re-circulating cooling/heating and processing systems.
Application method(s)	Method: closed system Detailed description: Dosing into the cooling system.
Application rate(s) and frequency	Application Rate: 25 to 200 g glutaraldehyde per m ³ of water. Number and timing of application: Bi- or tri- monthly according to the characteristics of the system and the stability of the biocidal product in the treated water.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.3.1. Use-specific instructions for use

It is recommended to mechanically cleanse dirty systems with fresh water before starting the treatment with the biocidal product.

Dose in a well-mixed point of the circuit, below the water level. When opening the system for servicing or maintenance, biocide can be added to reach the initial dosing concentrations.

System monitor

Control the level of biocide with a test kit at least every 3 months and prior to shut off period of the system. Control microbial contamination with dip slides or other appropriate techniques at least every 3 months

Particular attention should be addressed during the shut off period of the system where stagnant fluids are more susceptible to microbial contamination.

Dose 25 to 200 g glutaraldehyde per m³ of water.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.3.2. *Use-specific risk mitigation measures*

Drain off preserved cooling fluids at least five days after the last addition of the biocidal product.

See also the general directions for use.

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 general directions for use.

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

See 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 general directions for use.

4.4. **Use description**

Table 4

Preservation of liquids used in open re-circulating cooling systems

Product type	PT11: Preservatives for liquid-cooling and processing systems
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data Scientific name: no data Common name: green algae Development stage: no data
Field(s) of use	outdoor use Liquid-open re-circulating cooling and processing systems.
Application method(s)	Method: open system Detailed description: Glutaraldehyde is automatically added in the water circuit, usually as upstream as possible, by means of injection by a dosing pump and dedicated feeding lines. A timer is used for intermittent dosage.
Application rate(s) and frequency	Application Rate: 25 to 50 g glutaraldehyde per m ³ of water Number and timing of application: Typical dose : 1-2 days
Category(ies) of users	industrial trained professional

Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.
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4.4.1. *Use-specific instructions for use*

For control of microbial growth in industrial cooling water systems treated with a biocidal product by slug dosing.
Not intended for use in once-through cooling systems.

It is recommended to mechanically cleanse dirty systems before starting the treatment with the biocidal product.

Dose in a well-mixed point of the circuit, below the water level.

Typical dose : 1-2 days. Each slug dose lasts 15-30 minutes, depending on the pump capacity and the volume of water in the circuit. Treatment shall not exceed 2 days.

Dose 25 to 50 g glutaraldehyde per m³ of water.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.4.2. *Use-specific risk mitigation measures*

The use is restricted to small cooling systems with a maximum blowdown of 2 m³/h. Waste water must be discharged to the municipal sewer, purified in an on-site industrial sewage treatment plant including a biological treatment step, or directly to surface water via a settling pond that allows sufficient retention.

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 general directions for use.

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

See 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 general directions for use.

4.5. Use description

Table 5

Preservation of injection water in the oil and gas industry

Product type	PT11: Preservatives for liquid-cooling and processing systems
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data
Field(s) of use	outdoor use Preservation of injection water in the oil and gas industry.
Application method(s)	Method: closed system Detailed description: The biocidal product is dosed using automated pumps directly into the water stream, after mixing of production water and make-up water into the petroleum reservoir.
Application rate(s) and frequency	Application Rate: Bacteria: curative use, 50 to 1000 g glutaraldehyde per m ³ of injection water with a contact time of 24 hours. Anaerobic bacteria: preventive, use 150 to 1000 g glutaraldehyde per m ³ of injection water. Number and timing of application: The biocidal product is typically dosed in a weekly batch fashion, ranging from one to five hours per dose. Batches may occur up to three times per week in severe cases.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.5.1. *Use-specific instructions for use*

Glutaraldehyde should be dosed separately from other oil field chemistries such as antifoaming agents, oxygen scavengers, flocculants, or other oxidizing biocides (e.g. chlorite) in order to prevent cross reactivity. Successive addition may therefore be required to optimize performance. If a deaerator is being treated with oxidizing biocides, glutaraldehyde should be dosed downstream of the deaeration unit.

Dose 50 to 1000 g glutaraldehyde per m³ of injection water.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.5.2. *Use-specific risk mitigation measures*

If discharged into seawater 0,2 mg/L glutaraldehyde must not be exceeded in the produced water. This concentration can be achieved either by slow release and/or long retention times resulting in degradation of glutaraldehyde and/or by dilution and/or by addition of sodium bisulphite at pH 5 (release after at least 20 minutes) or addition of sodium hydroxide to pH 12 (release after at least 10-16 hours) as degradation aids. Produced water containing up to 750 mg/L glutaraldehyde can be used for re-injection. Run lab test to determine the soiling dependent dosage and degradation rate in use.

When applied onshore, preserved fluids must be recycled or disposed of as hazardous waste. If release to the sewer is unavoidable, the concentration shall not exceed 1 mg glutaraldehyde/L.

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 general directions for use.

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

See 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 general directions for use.

4.6. **Use description**

Table 6

Preservation of hydro-testing fluids and mothballing fluids in the oil and gas industry

Product type	PT11: Preservatives for liquid-cooling and processing systems
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data
Field(s) of use	outdoor use Preservation of hydro-testing fluids and mothballing fluids in the oil and gas industry.

Application method(s)	Method: closed system Detailed description: Continuous injection into the water stream during the pipeline filling operation using chemical injection skids equipped with injection pumps.
Application rate(s) and frequency	Application Rate: Bacteria: curative use, 50 to 1000 g glutaraldehyde per m ³ of hydro-testing fluid or mothballing fluid with a contact time of 24 hours, depending on the water quality. Anaerobic bacteria: preventive use, 150 to 1000 g glutaraldehyde per m ³ of hydro-testing fluid or mothballing fluid, depending on the water quality and required residence time within the equipment. Number and timing of application: There is no additional biocide injection into the hydro-testing fluid once the filling operation is completed.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.6.1. Use-specific instructions for use

Dose 50 to 1000 g glutaraldehyde per m³ of hydro-testing fluid or mothballing fluid, depending on the water quality and required residence time within the equipment.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.6.2. Use-specific risk mitigation measures

If discharged into seawater 0,2 mg/L glutaraldehyde must not be exceeded in the hydrotesting and mothballing fluids. This concentration can be achieved either by slow release and/or long retention times resulting in degradation of glutaraldehyde and/or by dilution and/or by addition of sodium bisulphite at pH 5 (release after at least 20 minutes) or addition of sodium hydroxide to pH 12 (release after at least 10-16 hours) as degradation aids. Hydrotest and mothballing water containing up to 750 mg/L glutaraldehyde after the pressure test can be used for re-injection. Run lab test to determine the soiling dependent dosage and degradation rate in use.

When applied onshore, preserved fluids must be recycled or disposed of as hazardous waste. If release to the sewer is unavoidable, the concentration shall not exceed 1 mg glutaraldehyde/L.

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

See general directions for use.

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

See general directions for use.

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

See general directions for use.

4.7. Use description

Table 7

Preservation of water-based fracturing fluids for the oil and gas industry

Product type	PT11: Preservatives for liquid-cooling and processing systems
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data
Field(s) of use	outdoor use Preservation of water-based fracturing fluids for the oil and gas industry (i.e. shale gas extraction, wet shale extraction, shale oil extraction, production from tight gas reservoirs, production of coal bed methane and fracturing in conventional reservoirs).
Application method(s)	Method: closed system Detailed description: Glutaraldehyde is typically applied in a mixing tank, as it cannot be exposed to open systems such as the hydraulic fracturing pond or other open water sources that make up the hydraulic fracturing pond water. Glutaraldehyde is applied to the mixing tank using automated pumps, together with other chemicals such as but not limited to friction reducers, gelling agents, proppants (sand in case of slick water), corrosion inhibitors.
Application rate(s) and frequency	Application Rate: Bacteria: curative use, 50 to 1000 g glutaraldehyde per m ³ of fracturing fluid with a contact time of 24 hours. Anaerobic bacteria: preventive use, 150 to 1000 g glutaraldehyde per m ³ of fracturing fluid. Number and timing of application: In the hydraulic fracturing industry the application of the biocidal product is typically a single injection, which happens during the actual fracturing. A new biocide addition is only done when the well is re-fractured. Refracturing is rare but can be performed up to 20 times during the lifetime of a well. The lifetime of a well can reach up to 20 years.

Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.7.1. *Use-specific instructions for use*

Typically applied through a closed system to a mixing tank using a pump. Glutaraldehyde may be used in combination with other chemistries such as friction reducers, gelling agents, proppants, and corrosion inhibitors, and applied together with these chemistries in the mixing tank(s). If used for intermittent treatments during operations, a stream of glutaraldehyde will be directly dosed into the process water stream from a separate tank into a closed system, thereby significantly reducing the chance of exposure.

Dose 50 to 1000 g glutaraldehyde per m³ of fracturing fluid.

The dose strongly depends on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.7.2. *Use-specific risk mitigation measures*

Preserved fracturing fluids are reused where applicable. If discharged into seawater 0,2 mg glutaraldehyde/L fracturing fluid must not be exceeded. This concentration can be achieved either by slow release and/or long retention times resulting in degradation of glutaraldehyde and/or by dilution and/or by addition of sodium bisulphite at pH 5 (release after at least 20 minutes) or addition of sodium hydroxide to pH 12 (release after at least 10-16 hours) as degradation aids. Run lab test to determine the soiling dependent dosage and degradation rate in use.

When applied onshore, preserved fluids must be recycled or disposed of as hazardous waste. If release to the sewer is unavoidable, the concentration shall not exceed 1 mg glutaraldehyde/L.

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

See general directions for use.

In addition:

Conditions preventing emissions to water:

Emissions to surface water are prevented through the design of the installation. By way of example spills, leaks and cleaning solutions may be drained to a lined storage area, preventing release to surface water. Sub-surface releases of fluid during the fracturing process are prevented from reaching aquifers through the presence of relatively impermeable formations above the target formation. This limits upward migration of fluid. This is also relevant for recovered fluids that are re-injected for use or disposal. A minimum vertical separation distance between the target formation and aquifer should be respected. National legislation may also require a minimum depth.

Recovered water may finally be discharged via one or more large-scale waste water treatment plants where a combination of physical and biological treatments will reduce emissions to the receiving water.

Conditions preventing emissions to soil:

Emissions, through downward migration are prevented through the design of the installation. By way of example spills, leaks and cleaning solutions may be prevented from downward migration to soil by the employment of a non-permeable membrane below the well pad. Sludge from treatment works should not be spread on land.

Existence of standard municipal sewage treatment plant

Waste contractors employed to dispose of recovered water, may do so via a waste water treatment plant, depending on the properties of the water and conditions of local regulations.

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

See general directions for use.

Additional:

Contaminated water arising from cleaning will be collected and removed for disposal according to EU and local regulations and conditions.

Waste product remaining in containers after use will be returned, in the containers, to the supplier for cleaning/refilling.

Waste sludge from treatment works will be handled as industrial waste and not spread on land.

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

See general directions for use.

4.8. **Use description**

Table 8

Preservation of produced water for recycling in the oil and gas industry

Product type	PT11: Preservatives for liquid-cooling and processing systems
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data
Field(s) of use	outdoor use Preservation of produced water for recycling in the oil and gas extraction industry.

Application method(s)	Method: closed system Detailed description: Dosing using pumps directly into the water stream before being mixed with fresh injection water and pumped into the petroleum reservoir.
Application rate(s) and frequency	Application Rate: Bacteria: curative use, 50 to 1000 g glutaraldehyde per m ³ of produced water with a contact time of 24 hours. Anaerobic bacteria: preventive use, 150 to 1000 g glutaraldehyde per m ³ of produced water. Number and timing of application: Batch treatment: The biocidal product is typically dosed in a weekly batch fashion, ranging from one to five hours per dose. Batches may occur up to three times per week in severe cases, but typically occur once per week. Continuous treatment: biocide is supplied in a continuous fashion during operations.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.8.1. Use-specific instructions for use

Dose for the preservation of produced water before re-use 50 to 1000 g glutaraldehyde per m³ of produced water. This can be done batch wise or continuously.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.8.2. Use-specific risk mitigation measures

If discharged into seawater 0,2 mg/L glutaraldehyde must not be exceeded in the produced water. This concentration can be achieved either by slow release and/or long retention times resulting in degradation of glutaraldehyde and/or by dilution and/or by addition of sodium bisulphite at pH 5 (release after at least 20 minutes) or addition of sodium hydroxide to pH 12 (release after at least 10-16 hours) as degradation aids. Produced water containing up to 750 mg/L glutaraldehyde can be used for re-injection. Run lab test to determine the soiling dependent dosage and degradation rate in use.

When applied onshore, preserved fluids must be recycled or disposed of as hazardous waste. If release to the sewer is unavoidable, the concentration shall not exceed 1 mg glutaraldehyde/L.

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

See general directions for use.

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

See general directions for use.

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

See general directions for use.

4.9. Use description

Table 9

Slimicide treatment in the wet-end stage of the pulp and paper manufacturing process

Product type	PT12: Slimicides
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data Scientific name: no data Common name: fungi Development stage: no data Scientific name: no data Common name: yeasts Development stage: no data
Field(s) of use	indoor use Slimicide treatment in the wet-end stage of the pulp and paper manufacturing process.
Application method(s)	Method: closed system Detailed description: Automatic dosing by a pump and fixed pipes into the primary circuit, usually in the collection sump or in the headbox.
Application rate(s) and frequency	Application Rate: Initial dose (wet-end defouling treatment): 250 g glutaraldehyde per ton paper pulp. Wet-end maintenance dose: 100 g glutaraldehyde per ton paper pulp. Number and timing of application: Initial dose (Wet end de-fouling treatment): 2-6 automatic slug (= shock) dose additions/day. Repeat 1 to 3 days until control is achieved. Wet-end maintenance dose: 2-6 automatic slug dose additions/day, as necessary to maintain control.
Category(ies) of users	industrial trained professional

Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.
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4.9.1. *Use-specific instructions for use*

Dose in a well-mixed point of the primary circuit, below the water level. Heavily fouled systems should be boiled out prior to initial treatment.

Each slug dose lasts 15-30 minutes.

Initial dose (wet-end defouling treatment): 250 g glutaraldehyde per ton paper pulp.

Wet-end maintenance dose: 100 g glutaraldehyde per ton of paper pulp.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.9.2. *Use-specific risk mitigation measures*

Application is only allowed in paper factories that comply with the Industrial Emission Directive 2010/75/EU where wastewater is purified in an on-site industrial sewage treatment plant including a biological treatment step in accordance to the Best Available Techniques (BAT) as prescribed in the BAT-reference document (BREF) for the production of pulp, paper and board. The effluent must be diluted at least 200 times. Paper factories that are exempted from the Industrial Emission Directive must discharge to the municipal sewer.

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

See general directions for use.

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

See general directions for use.

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

See general directions for use.

4.10. Use description

Table 10

Slimicide treatment in the de-inking process of the pulp and paper

Product type	PT12: Slimicides
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data Scientific name: no data Common name: fungi Development stage: no data Scientific name: no data Common name: yeasts Development stage: no data
Field(s) of use	indoor use Slimicide treatment in the de-inking process of the pulp and paper.
Application method(s)	Method: closed system Detailed description: Automatic dosing by pump and fixed pipes into the circuit, usually in the pulper.
Application rate(s) and frequency	Application Rate: Initial dose (de-fouling treatment): 250 g glutaraldehyde per ton paper pulp. Maintenance dose: 100 g glutaraldehyde per ton paper pulp. Number and timing of application: Initial dose (de-fouling treatment): 1-2 automatic slug (= shock) dose additions/day. Repeat for 1 to 2 days until control is achieved. Maintenance dose: 1-2 automatic slug dose additions/day, as necessary to maintain control.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.10.1. *Use-specific instructions for use*

Dose in a well-mixed point of the primary circuit, below the water level. Heavily fouled systems should be boiled out prior to initial treatment.

Each slug dose lasts 30 minutes.

Initial dose (de-fouling treatment): 250 g glutaraldehyde per ton paper pulp.

Maintenance dose: 100 g glutaraldehyde per ton paper pulp.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.10.2. *Use-specific risk mitigation measures*

See general directions for use.

Application is only allowed in paper factories that comply with the Industrial Emission Directive 2010/75/EU where wastewater is purified in an on-site industrial sewage treatment plant including a biological treatment step in accordance to the Best Available Techniques (BAT) as prescribed in the BAT-reference document (BREF) for the production of pulp, paper and board. Paper factories that are exempted from the Industrial Emission Directive must discharge to the municipal sewer.

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

See general directions for use.

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

See general directions for use.

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

See general directions for use.

4.11. **Use description**

Table 11

Slimicide treatment in injection water in the oil and gas industry

Product type	PT12: Slimicides
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data
Field(s) of use	outdoor use Slimicide treatment in injection water in the oil and gas industry.
Application method(s)	Method: closed system Detailed description: Dosing directly into the water stream using pumps, after mixing of production water and make-up water and before injection of the water into the petroleum reservoir.

Application rate(s) and frequency	Application Rate: 50 to 1000 g glutaraldehyde per m ³ injection water. Number and timing of application: Batches may occur up to three times per week in severe cases, but typically occur once per week.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.11.1. Use-specific instructions for use

Injection water is often deaerated before being pumped into the sub-surface. Separation of chemical treatments should be considered when dosing glutaraldehyde, as it may interfere with other common chemistries such as anti-foams, oxygen scavengers, flocculants, and other oxidizing biocides (e.g. chlorite). Successive addition of different chemical packages may be necessary to prevent cross reactivity and to optimize performance. When a deaerator is present and treated with chlorite or a similar oxidizing chemistry, glutaraldehyde is typically dosed after the deaerator.

Dose 50 to 1000 g glutaraldehyde per m³ injection water.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.11.2. Use-specific risk mitigation measures

If discharged into seawater 0,2 mg/L glutaraldehyde must not be exceeded in the produced water. This concentration can be achieved either by slow release and/or long retention times resulting in degradation of glutaraldehyde and/or by dilution and/or by addition of sodium bisulphite at pH 5 (release after at least 20 minutes) or addition of sodium hydroxide to pH 12 (release after at least 10-16 hours) as degradation aids. Produced water containing up to 750 mg/L glutaraldehyde can be used for re-injection. Run lab test to determine the soiling dependent dosage and degradation rate in use.

When applied onshore, preserved fluids must be recycled or disposed of as hazardous waste. If release to the sewer is unavoidable, the concentration shall not exceed 1 mg glutaraldehyde/L.

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

See general directions for use.

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

See general directions for use.

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

See general directions for use.

4.12. **Use description**

Table 12

Slimicide treatment in hydro-testing fluids and mothballing fluids in the oil and gas industry

Product type	PT12: Slimicides
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data
Field(s) of use	outdoor use Slimicide treatment in hydro-testing fluids and mothballing fluids in the oil and gas industry.
Application method(s)	Method: closed system Detailed description: Continuous injection into the water stream during the pipeline filling operation using chemical injection skids equipped with injection pumps.
Application rate(s) and frequency	Application Rate: 50 to 1000 g glutaraldehyde per m ³ hydro-testing fluid or mothballing fluid, depending on the water quality and required residence time within the equipment. Number and timing of application: There is no additional biocide injection into the hydro-testing fluid once the filling operation is completed.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.12.1. *Use-specific instructions for use*

Dose 50 to 1000 g glutaraldehyde per m³ of hydro-testing fluid or mothballing fluid, depending on the water quality and required residence time within the equipment.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.12.2. *Use-specific risk mitigation measures*

If discharged into seawater 0,2 mg/L glutaraldehyde must not be exceeded in the hydrotesting and mothballing fluids. This concentration can be achieved either by slow release and/or long retention times resulting in degradation of glutaraldehyde and/or by dilution and/or by addition of sodium bisulphite at pH 5 (release after at least 20 minutes) or addition of sodium hydroxide to pH 12 (release after at least 10-16 hours) as degradation aids. Hydrotest and mothballing water containing up to 750 mg/L glutaraldehyde after the pressure test can be used for re-injection. Run lab test to determine the soiling dependent dosage and degradation rate in use.

When applied onshore, preserved fluids must be recycled or disposed of as hazardous waste. If release to the sewer is unavoidable, the concentration shall not exceed 1 mg glutaraldehyde/L.

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

See general directions for use.

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

See general directions for use.

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

See general directions for use.

4.13. **Use description**

Table 13

Slimicide treatment in water-based fracturing fluids for the oil and gas industry

Product type	PT12: Slimicides
Where relevant, an exact description of the authorised use	Not relevant.
Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data
Field(s) of use	outdoor use Slimicide treatment in water-based fracturing fluids for the oil and gas industry (i.e. shale gas extraction, wet shale extraction, shale oil extraction, production from tight gas reservoirs, production of coal bed methane and fracturing in conventional reservoirs).
Application method(s)	Method: closed system Detailed description: Dosing using automated pumps directly into pipelines or prepared in a mixing tank before in-line application.

Application rate(s) and frequency	Application Rate: 50 to 1000 g glutaraldehyde per m³ fracturing fluid, in the hydraulic fracturing water matrix. Number and timing of application: In the hydraulic fracturing industry the application of the biocidal product is typically a single injection, which happens during the actual fracturing. A new biocide addition is only done when the well is re-fractured. Refracturing is rare but can be performed up to 20 times during the lifetime of a well. The lifetime of a well can reach up to 20 years.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.13.1. Use-specific instructions for use

Glutaraldehyde is typically applied through a closed system to a mixing tank using a pump. Glutaraldehyde may be used in combination with other chemistries such as friction reducers, gelling agents, proppants, and corrosion inhibitors, and applied together with these chemistries in the mixing tank(s). If used for intermittent treatments during operations, a stream of glutaraldehyde will be directly dosed into the process water stream from a separate tank into a closed system, thereby significantly reducing the chance of exposure.

Dose 50 to 1000 g glutaraldehyde per m³ fracturing fluid, in the hydraulic fracturing water matrix.

The dose strongly depends on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.13.2. Use-specific risk mitigation measures

Preserved fracturing fluids are reused where applicable. If discharged into seawater 0,2 mg glutaraldehyde/L fracturing fluid must not be exceeded. This concentration can be achieved either by slow release and/or long retention times resulting in degradation of glutaraldehyde and/or by dilution and/or by addition of sodium bisulphite at pH 5 (release after at least 20 minutes) or addition of sodium hydroxide to pH 12 (release after at least 10-16 hours) as degradation aids. Run lab test to determine the soiling dependent dosage and degradation rate in use.

When applied onshore, preserved fluids must be recycled or disposed of as hazardous waste. If release to the sewer is unavoidable, the concentration shall not exceed 1 mg glutaraldehyde/L.

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

See general directions for use.

In addition:

Conditions preventing emissions to water:

Emissions to surface water are prevented through the design of the installation. By way of example spills, leaks and cleaning solutions may be drained to a lined storage area, preventing release to surface water. Sub-surface releases of fluid during the fracturing process are prevented from reaching aquifers through the presence of relatively

impermeable formations above the target formation. This limits upward migration of fluid. This is also relevant for recovered fluids that are re-injected for use or disposal. A minimum vertical separation distance between the target formation and aquifer should be respected. National legislation may also require a minimum depth.

Recovered water may finally be discharged via one or more large-scale waste water treatment plants where a combination of physical and biological treatments will reduce emissions to the receiving water.

Conditions preventing emissions to soil:

Emissions, through downward migration are prevented through the design of the installation. By way of example spills, leaks and cleaning solutions may be prevented from downward migration to soil by the employment of a non-permeable membrane below the well pad. Sludge from treatment works should not be spread on land.

Existence of standard municipal sewage treatment plant

Waste contractors employed to dispose of recovered water, may do so via a waste water treatment plant, depending on the properties of the water and conditions of local regulations.

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

See general directions for use.

Additional:

Contaminated water arising from cleaning will be collected and removed for disposal according to EU and local regulations and conditions.

Waste product remaining in containers after use will be returned, in the containers, to the supplier for cleaning/refilling.

Waste sludge from treatment works will be handled as industrial waste and not spread on land.

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

See general directions for use.

4.14. **Use description**

Table 14

Slimicide treatment in produced water for recycling in the oil and gas industry.

Product type	PT12: Slimicides
Where relevant, an exact description of the authorised use	Not relevant.

Target organism(s) (including development stage)	Scientific name: no data Common name: bacteria Development stage: no data
Field(s) of use	outdoor use Slimicide treatment in produced water for recycling in the oil and gas industry.
Application method(s)	Method: closed system Detailed description: Dosing using pumps directly into the water stream before being mixed with fresh injection water and pumped into the petroleum reservoir.
Application rate(s) and frequency	Application Rate: 50 to 1000 g glutaraldehyde per m ³ produced water. Number and timing of application: Batch treatment: Batches may occur up to three times per week in severe cases, but typically occur once per week. Continuous treatment: biocide is supplied in a continuous fashion during operations.
Category(ies) of users	industrial trained professional
Pack sizes and packaging material	— Pails: 25L nominal, material of construction is high density polyethylene. — Drums: 220L nominal, material of construction is high density polyethylene. — IBC (intermediate bulk container): 1000L nominal, material of construction is high density polyethylene. — Bulk tank truck: 28 MT max. gross weight, material of construction is stainless steel. — Bulk ISO tank: 20 MT max. gross weight, material of construction is stainless steel. — Offshore-suitable drums: 200L, material of construction is high density polyethylene. — Offshore-suitable semi-bulk containers: 1000L, material of construction is stainless steel. — Offshore-suitable containers: 500 IG (2273L), material of construction is stainless steel. — Offshore-suitable containers: 1000 IG (4546L), material of construction is stainless steel.

4.14.1. Use-specific instructions for use

Dose 50 to 1000 g glutaraldehyde per m³ produced water.

The dose and frequency strongly depend on the formulation and intended use of the matrix to which the preservative is added. Therefore, the user shall determine dosage requirements for their specific matrix/system to be preserved. The lowest effective dose shall be used. If needed, consult the authorisation holder of the preservative product.

4.14.2. Use-specific risk mitigation measures

If discharged into seawater 0,2 mg/L glutaraldehyde must not be exceeded in the produced water for recycling. This concentration can be achieved either by slow release and/or long retention times resulting in degradation of glutaraldehyde and/or by dilution and/or by addition of sodium bisulphite at pH 5 (release after at least 20 minutes) or addition of sodium hydroxide to pH 12 (release after at least 10-16 hours) as degradation aids. Produced water for recycling containing up to 750 mg/L glutaraldehyde can be used for re-injection. Run lab test to determine the soiling dependent dosage and degradation rate in use.

When applied onshore, preserved fluids must be recycled or disposed of as hazardous waste. If release to the sewer is unavoidable, the concentration shall not exceed 1 mg glutaraldehyde/L.

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

See general directions for use.

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

See general directions for use.

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

See general directions for use.

5. **GENERAL DIRECTIONS FOR USE OF THE META SPC 2**

5.1. **Instructions for use**

See use specific instructions for use.

5.2. **Risk mitigation measures**

Disconnecting the product container manually:

The use of eye protection (chemical goggles) consistent with EN 166 or equivalent during handling of the product is mandatory.

Wear a protective coverall [type 3 or type 4] consistent with EN 14605 or equivalent.

Wear protective chemical resistant gloves meeting the requirements of European Standard EN 374 or equivalent during product handling phase (glove material to be specified by the authorisation holder within the product information).

Use of respiratory protective equipment (RPE) providing a protection factor of 40 is mandatory. Providing at least a powered air purifying respirator with helmet/hood/mask (TH3 (EN 12941 or equivalent)/TM3 (EN 12942 or equivalent)), or a full-face mask (EN 136 or equivalent) with particle filter P3 (EN 12083 or equivalent).

During tank cleaning & maintenance:

Wear a protective coverall [type 3 or type 4] consistent with EN 14605 or equivalent.

Wear protective chemical resistant gloves meeting the requirements of European Standard EN 374 or equivalent during product handling phase (glove material to be specified by the authorisation holder within the product information).

Use of respiratory protective equipment (RPE) providing a protection factor of 10 is mandatory. Providing at least a powered air purifying respirator with helmet/hood/mask (TH1 (EN 12941 or equivalent)/TM1 (EN 12942 or equivalent)), a half/quarter mask (EN 140 or equivalent) or a full-face mask (EN 136 or equivalent) with particle filter P2 (EN 12083 or equivalent) each or a filtering half mask (FFP2, EN 149 or equivalent).

Draining, cleaning and maintenance of closed re-circulating system:

Wear a protective coverall [type 3 or type 4] consistent with EN 14605 or equivalent.

Wear protective chemical resistant gloves meeting the requirements of European Standard EN 374 or equivalent during product handling phase (glove material to be specified by the authorisation holder within the product information).

Loading/unloading slurry tanks:

Wear protective chemical resistant gloves meeting the requirements of European Standard EN 374 or equivalent during product handling phase (glove material to be specified by the authorisation holder within the product information).

The product must be poured using an automated dosing system.

Ensure that application is carried out in well-ventilated areas.

Use engineering controls to maintain airborne level below exposure limit requirements or guidelines.

Use an approved air-purifying or positive-pressure supplied-air respirator depending on the potential airborne concentration.

Regarding the personal protective equipment listed in this section, this is without prejudice to the application by employers of Council Directive 98/24/EC and other Union legislation in the area of health and safety at work.

See section 6 for the full references to this act and the European Standards.

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

IF INHALED: Move to fresh air and keep at rest in a position comfortable for breathing.

If symptoms: Immediately call 112/ambulance for medical assistance.

IF SWALLOWED: If conscious, immediately rinse mouth. Give something to drink, if exposed person is able to swallow. Do NOT induce vomiting. Call 112/ambulance for medical assistance.

IF ON SKIN: Immediately wash skin with plenty of water. Thereafter take off all contaminated clothing and wash it before reuse. Continue to wash the skin with water for 15 minutes. Call a POISON CENTRE or a doctor. If skin irritation or rash occur: Get medical advice.

IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing for at least 15 minutes. Call 112/ambulance for medical assistance.

Information to Healthcare personnel/doctor:

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

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. Spills or discharge to natural waterways is likely to kill aquatic organisms.

Personal precautions, protective equipment and emergency procedures in case of accidental release measures: Evacuate area. Keep upwind of spill. Ventilate area of leak or spill. Only trained and properly protected personnel must be involved in clean-up operations. Use appropriate safety equipment.

Methods and materials for containment and cleaning up: Avoid making contact with spilled material, since glutaraldehyde will be absorbed by most shoes. When cleaning up a spill always wear the appropriate protective equipment, including respiratory protection, gloves, protective clothing and eye protection. A self-contained breathing apparatus or respirator and absorbents may be necessary, depending on the size of the spill and the adequacy of ventilation.

Small spills: Wear the correct protective equipment including gloves and protective clothing and cover the liquid with absorbent material. Collect and seal the material and the dirt that has absorbed the spilled material in polyethylene bags and place in a drum for transit to an approved disposal site. Rinse away the remaining spilled material with water to reduce odour, and discharge the rinsate into a municipal or industrial sewer, not into a natural waterway.

Large spills: In case of nasal and respiratory irritation, vacate the room immediately. Personnel cleaning up should be trained and equipped with a self-contained breathing apparatus, or an officially approved or certified full-face respirator equipped with an organic vapor cartridge, glove, and clothing impervious to glutaraldehyde, including rubber boots or shoe protection. Deactivate with sodium bisulfite (2-3 parts (by weight) per part of glutaraldehyde), collect the neutralized liquid and place in a drum for transit to an approved disposal site.

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

The biocidal product, when being disposed of in its unused and uncontaminated state should be treated as a hazardous waste according to EC Directive 2008/98/EC.

Deactivate with sodium bisulfite (2-3 parts (by weight) per part of glutaraldehyde), collect the neutralized liquid and place in a drum for transit to an approved disposal site. If the concentration of glutaraldehyde is up to 2%, deactivate by the addition of aqueous sodium hydroxide solution in an amount sufficient to maintain a pH of 12 for 8 h, followed by neutralization (i.e. neutral pH) with the careful addition of an inorganic acid e.g. hydrochloric acid, before disposal by appropriate means. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. Do not dump into any sewers, on the ground, or into any body of water. Avoid release to the environment. High-temperature incineration is an acceptable practice glutaraldehyde burns cleanly to carbon dioxide and water.

Containers used to store glutaraldehyde solutions are non refillable. Do not reuse or refill the containers. Containers should be triple or pressure rinsed with water promptly after they are emptied. They can then be offered for recycling or reconditioning for biocidal products, or they can be punctured and disposed of in a sanitary landfill or by other procedures approved by national and local authorities. Send waste liquid from rinsing of used containers to an approved waste handling facility.

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

Do not store in and avoid contact with aluminum, carbon steel, copper, mild steel, iron. Avoid contact with amines, ammonia, strong acids, strong bases, strong oxidizers.

Store at temperatures <40 °C

Shelf life:

meta SPC GA 24: 24 months in HDPE and 12 months in stainless steel

6. **OTHER INFORMATION**

The full titles of the EN standards referenced in the Risk mitigation measures are:

EN ISO 374 – Protective gloves against dangerous chemicals and micro-organisms

EN 166 – Eye protection against chemicals.

EN 14605 – Protective clothing against liquid chemicals – Performance requirements for clothing with liquid-tight (Type 3) or spray-tight (Type 4) connections, including items providing protection to parts of the body only (Types PB [3] and PB [4]).

EN 12941 - Respiratory protective devices - Powered filtering devices incorporating a loose fitting respiratory interface - Requirements, testing, marking

EN 12942 – Respiratory protective devices - Powered filtering devices incorporating full face masks, half masks or quarter masks - Requirements, testing, marking

EN 136 - Respiratory protective devices. Full face masks. Requirements, testing, marking

EN 140 - Respiratory protective devices - Half masks and quarter masks - Requirements, testing, marking

EN 149 - Respiratory protective devices - Filtering half masks to protect against particles - Requirements, testing, marking

EN 12083 - Respiratory protective devices – Filters with breathing hoses, (Non-mask mounted filters) – Particle filters, gas filters, and combined filters – Requirements, testing, marking

Council Directive 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work (fourteenth individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC) (OJ L 131, 5.5.1998, p. 11).

With respect to the “Category (ies) of users” note: “Professionals (including industrial users) means trained professionals if this is required by national legislation.

7. **THIRD INFORMATION LEVEL: INDIVIDUAL PRODUCTS IN THE META SPC 2**7.1. **Trade name(s), authorisation number and specific composition of each individual product**

Trade name(s)			Bactron B1125G	Market area: EU				
			Nalco® 73500G	Market area: EU				
			Nalco® 73500GA	Market area: EU				
			BIO- C11125AG	Market area: EU				
			Nalco® WT-407G	Market area: EU				
			EC6111EG	Market area: EU				
			FBE4980G	Market area: EU				
Authorisation number			EU-0035028-0002 1-2					
Common name	IUPAC name	Function	CAS number		EC number		Content (%)	
Glutaraldehyde	1,5-pentanedial	Active substance	111-30-8		203-856-5		24,2 % (w/w)	