

ACTIVES PERFORM.

Water Treatment Portfolio for Microbial Control and Oxidation

X Oxone™

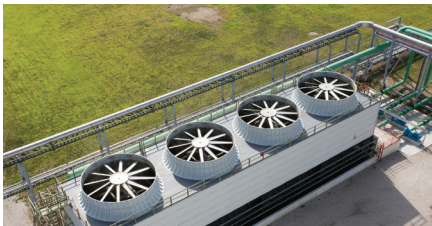
X Aquacar™

X Kathon™

X Preventol®

Our broad portfolio of microbial control and oxidation products for Europe, Middle East and Africa provides comprehensive solutions for the prevention and remediation of water contaminants. Whether caused by microbes or chemicals, we offer the appropriate treatment solution to mitigate their effects.

Industrial & Process Water



Cooling systems

Wastewater Treatment & Reuse



Industrial

Recreational & Potable Water



Recreational



Paper production



Municipal



Potable

Microbial control

Water provides an ideal environment for microbial growth. Our product portfolio includes a wide range of options specifically designed to control the growth and proliferation of bacteria, algae, and fungi in bulk water, as well as biofilms. Left untreated, these microorganisms may lead to operational inefficiencies, microbiologically induced corrosion (MIC) and health risks.

Our water treatment technologies are effective against a broad spectrum of microorganisms over a wide range of conditions. They are compatible with other water treatment chemicals and effective in a variety of water-intensive applications and systems, such as cooling water systems, membrane filtration, paper manufacturing, as well as municipal and potable water.

Chemical oxidation

Water scarcity and the detrimental impact of pollutants are driving the need for efficient and sustainable treatment processes. Chemical oxidation is an effective method for removing contaminants in various industries, ranging from recreational pool water, to mining, food, pharmaceutical, chemical and municipal wastewater.

Oxone™ monopersulfate compound - our powerful, specialty oxidizer - can effectively eliminate a wide range of organic and inorganic pollutants. In recreational water, harmful chloramine generation is prevented. In industrial applications, odors, cyanide species, arsenic (III) complexes and persistent organic compounds can be removed.

LANXESS
Energizing Chemistry

The following table shows key product options and key features and benefits for water applications by active substance:

Table 1: Our portfolio overview

Chemistry and Product Name*	Active Ingredient	Key Features and Benefits
Potassium monopersulfate	CAS 70693-62-8	<ul style="list-style-type: none"> ■ Broad-spectrum microbial control ■ High oxidation power with kinetically fast reactions ■ Chlorine-free and odorless ■ Good safety profile and low environmental impact ■ Easy to transport, store & handle ■ Does not corrode stainless steel
Oxone™ monopersulfate compound	90 %	
Glutaraldehyde	CAS 111-30-8	<ul style="list-style-type: none"> ■ Very broad microbial control spectrum: bacteria (including slime-forming and anaerobic), spores, yeast, fungi, algae, protozoa, etc. ■ High compatibility with equipment and additives ■ High performance in anaerobic conditions ■ Fast speed of action ■ Readily biodegradable
Aqucar™ GA 50	50 %	
Klarix™ GA 50		
Aqucar™ GA 24	24 %	
Klarix™ GA 24		
Aqucar™ GA 135	13.5 %	
Klarix™ GA 135		
DBNPA	CAS 10222-01-2	<ul style="list-style-type: none"> ■ Very fast acting, unique curative treatment options ■ High compatibility with equipment and additives, including membranes ■ Broad-spectrum control of bacteria (including slime-forming and Legionella), fungi, yeast, cyanobacteria and algae
Aqucar™ DB 100	100 %	
Aqucar™ DB 20	20 %	
Bronopol	CAS 52-51-7	<ul style="list-style-type: none"> ■ Attractive balance of speed of action and length of protection, providing high preservation performance ■ Broad-spectrum bacterial efficacy (including slime-forming and anaerobic) ■ High compatibility with equipment and additives ■ Highly complementary with other active substances
Aqucar™ BP 100	100 %	
Preventol® P 100		
Preventol® P 30	30 %	
Preventol® P 72 W	14 %	
CMIT/MIT	CAS 55965-84-9	<ul style="list-style-type: none"> ■ Broad-spectrum performance: bacteria (including slime-forming and Legionella), yeast, fungi ■ Rapid inhibition of microbial growth and enzyme synthesis ■ Attractive balance of speed of action and length of protection, providing high preservation performance ■ High compatibility with equipment and additives, including membranes ■ Effective at very low concentrations, resulting in attractive cost-to-treat ■ Readily biodegradable ■ Broad range of product offerings, differing in solvent, dilution and stabilization
Kathon™ WT	14 %	
Kathon™ CF 1400		
Kathon™ LX 1400		
Klarix™ CM 14		
Preventol® IT 14		
Preventol® IT 14 MV		
Preventol® D 7 Plus	2.2 %	
Kathon™ WTE	1.5 %	
Kathon™ CF 150		
Preventol® D 7		
Preventol® D 7 CF		
Preventol® D 7 LT		
DGH	CAS 13590-97-1	<ul style="list-style-type: none"> ■ Broad-spectrum performance: bacteria (including Legionella, slime-forming and anaerobic), algae, fungi ■ Effective at very low concentrations ■ High compatibility with equipment and additives ■ Broad pH application range ■ Lower foaming compared to quaternary ammonium compounds
N-2000 Antimicrobial	35 %	
N-2001 Antimicrobial		
EDDM	CAS 3586-55-8	<ul style="list-style-type: none"> ■ Attractive balance of speed of action and length of protection, providing high preservation performance ■ Available as 97% concentrated liquid ■ Low cost-to-treat
Preventol® EDDM	97%	
DCOIT	CAS 64359-81-5	<ul style="list-style-type: none"> ■ Very strong algicidal performance ■ Fast-acting ■ Rapid degradation
Klarix™ 4000	4.25 %	
Aqucar™ DC 4P25		

* Trade names typically include a descriptor that may be specific to certain uses and regulatory approvals.

Chemical names: Potassium monopersulfate = Pentapotassium bis(peroxymonosulphate) bis(sulphate); Glutaraldehyde = 1,5-Pentanedial; DBNPA = 2, 2-Dibromo-3-nitriropionamide; Bronopol = 2-Bromo-2-nitro-1,3-propanediol; CMIT/MIT = 5-chloro-2-methyl-1,2-thiazol-3(2H)-one and 2-methyl-1,2-thiazol-3(2H)-one; DGH = Dodecylguanidine monohydrochloride; EDDM = (ethylenedioxy)dimethanol; DCOIT = 4,5-Dichloro-2-octyl-2H-isothiazol-3-one.

In addition to the key products highlighted in Table 1, there are further options available for water treatment. These offerings differ in composition and regulatory approvals, including biocidal products formulated with multiple active substances highly specific to region and application. Key examples in EMEA are Preventol® P 91 (bronopol and CMIT/MIT) and Preventol® DP 1021 (DGH and bronopol).

Regulatory and Technical Support

LANXESS is a global leader in support and advocacy of sustainable and responsible microbial control technologies. Based on our extensive experience and knowledge of biocidal regulations, we play a key role in the regulatory support of actives, products and applications.

In many countries, biocides may only be sold if they have been previously registered with and approved by the authority following a complex process. In Europe, for example, LANXESS ensures marketability by registering biocidal active substances and products in accordance with the Biocidal Products Regulation (BPR).

We support a significant number of active substances and biocidal products from our large product portfolio, based on extensive data packages. Our technical and regulatory experts can support you with the use of our biocidal products and with your registrations based on our ingredients. LANXESS local service laboratories can assist with microbiological and chemical testing as well as with application development.

Our worldwide regulatory and technical experts look forward to supporting you to find the most suitable solution for your needs.

Health and Safety Information: Appropriate literature has been assembled which provides information concerning the health and safety precautions that must be observed

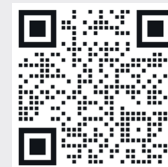


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For more information on our product portfolio and their applications please scan:



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Regulatory Compliance Information: Some of the end uses of the products described in this publication must comply with applicable regulations, such as the FDA, BfR, NSF, USDA, and CPSC. If you have any questions on the regulatory status of these products, contact – for business in the USA - the LANXESS Corporation Regulatory Affairs and Product Safety Department in Pittsburgh, PA, USA or for business outside US the Regulatory Affairs and Product Safety Department of LANXESS Deutschland GmbH in Germany.

Use biocides safely. Always read the label and product information before use.

The manner in which you use and the purpose to which you put and utilize our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. This application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety, and environmental standpoint. Such testing has not necessarily been done by us. Unless we otherwise agree in writing, all products are sold strictly pursuant to the terms of our standard conditions of sale. All information and technical assistance is given without warranty or guarantee and is subject to change without notice. It is expressly understood and agreed that you assume and hereby expressly release us from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance, and information.

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