

Technical description

BDS 2000

B Decontamination Agent System

1. Introduction

It is intended for the quick and effective disinfection of all known biological warfare agents on the surfaces of military and defence material (particularly armoured or non-armoured vehicles as well as other military equipment) within the temperature range of approx. -30 °C to + 49 °C. Therefore, BDS 2000 can be used under all relevant climate conditions according to STANAG 2895, including winter conditions (at temperatures below zero a frost protection agent must be added).

The requirements on B-decontamination are partly in conflict with the provisions defined in relevant legislations in the areas of human and veterinary medicine and food hygiene. None of the official disinfection agent lists (DGHM, DVG, RKI, etc.) covers the aspects and influencing factors relevant to B-decontamination.

Most of the agents previously provided in NATO forces for B-decontamination are problematic, in particular, with respect to their environmental compatibility, and do not meet the requirements of the application technology. Furthermore, they usually only cover part of the relevant pathogens.

Peracetic acid (PAA) is the only substance without any gaps with respect to all known biological pathogens. The agent can deactivate all known viruses, bacteria, spores and fungi. Even chlorine, chlorine separators, iodine separators, formaldehyde, formaldehyde separators, and glutaraldehyde show weaknesses relative to yeasts, moulds and partly also relative to non-enveloped viruses. Beyond that, almost all substances can develop resistances against different microbial pathogens.

The biological decontamination system BDS 2000 is based on a special thermally stable peracetic acid and is used as aqueous foam for the decontamination of biologically contaminated surfaces. Alternatively, the active peracetic acid component is distributed using a thermal aerosol generator for the biological decontamination of interior spaces. BDS 2000 is ecologically safe. Active ingredient PAA breaks down into acetic acid, water and oxygen.

The investigations of independent test institutes confirm the pronounced biological decontamination effect of the BDS 2000 system and its efficiency against anthrax (including a very good sporicidal effect) and the highly pathogenic avian influenza virus of type A even at temperatures down to -30 °C.

The reduction factors for the decontamination of anthrax spores are outstanding. When BDS 2000 decontamination foam (with a peracetic acid concentration of 2 % and an exposure time of 30 minutes) is used, the log reduction after surface decontamination was greater than 7 (for 75 % of the test measurements greater than 7.5).

The influenza A virus was destroyed using relatively low PAA concentrations and within shortest contact times, not only in suspensions, but also on absorbent, porous, protein-contaminated surfaces such as wooden germ carriers. Lowering the temperature from 0 °C to minus 5 °C did not influence the virucidal activity. Only after the temperature was lowered to minus 30 °C, minor effectiveness losses were observed. Given these facts, it is recommended to apply BDS 2000 decontamination foam of at least 0.4 litres per m² with a concentration of approx. 0.2 % peracetic acid and an exposure time of 15 minutes (at 0 °C) or 30 minutes (at minus 5 °C and minus 30 °C) for the decontamination (disinfection) of influenza viruses after a proper cleaning (pre-treatment).

2. Technical description

BDS 2000 contains two components for the preparation of a B-decontamination agent used for the disinfection of surfaces or interiors contaminated with biological particles. Its areas of application include, among other things, animal husbandry, the food industry, laboratories or for use after terrorist/military attacks with relevant substances.

Before application on surfaces, the liquid decontamination agent is prepared by mixing the two components (Alcapur + Wofasteril) with water. The automated Futuretech systems are particularly suitable and are tailored to these components.

After applying the foam and leaving it to react for the respective period of time, the decontamination agent is rinsed off using a high-pressure water jet. BDS 2000 can be used between -30 °C and +49 °C (-22° F and 120° F). In the temperature range below 0 °C, a frost protection agent (e.g., monopropylene glycol) must be added.

BDS 2000 can also be applied as an aerosol using suitable equipment. Based on its special stabilisation, component 1 (Wofasteril) can also be applied as a solo product with the help of a thermal aerosol generator (e.g., Kärcher SN 50 Decon) for the biological decontamination of interiors.

Alcapur is the buffer component of the BDS 2000 decontamination agent system, which minimizes odour and corrosive characteristics of peracetic acid and adjust the pH value of the application-ready solution to the near-neutral range.

Wofasteril is the active component of the BDS 2000 decontamination system. It contains stabilised peracetic acid as an active ingredient.

In terms of environmental impact, BDS 2000 in its application concentration meets the requirements of Water Hazard Classification 1 (slightly hazardous to water).

The starting components are stable when stored and represent an optimal combination for conventional cleaning and decontamination. This type of system ensures safe and easy handling according to the requirements of the user (e.g. the German Armed Forces (Bundeswehr), the Dutch Armed Forces and Civil Protection).

2. Technical data

BDS 2000 – Wofasteril	
Trade name:	Wofasteril
Active ingredients:	Thermally stable peracetic acid, corrosion and odour inhibitors
Colour:	Green yellow (fresh), almost colourless (after 6 - 8 months)
Odour:	Pungent
Density at 20°:	1.18 g/cm ³
Vapour pressure:	16 hPa
pH value (20 °C):	3.1
Shelf life:	Maximum 2 years from manufacturing and with correct storage in the case of Wofasteril SC 250, in the case of Wofasteril SC Super, 1 year*

* From date see batch label, only with proper transport and storage.

BDS 2000 - Alcapur	
Trade name:	Alcapur
Ingredients:	Buffer substances, surfactants
Colour:	Colourless
Odour:	Characteristic

Density at 20°:	1.25 g/cm ³
Vapour pressure:	23 hPa
pH value (20 °C):	13.4
Shelf life:	4 years*

* From date see batch label, only with proper transport and storage.

Note: The ready-to-use BDS 2000 solution has a pH value of approx. 8.

3. BDS 2000 product range

3.1 BDS 2000, 20 l (normal container) standard scope of delivery



Note:

- Component 1 of BDS 2000 is delivered in a white canister
- Component 2 is delivered in a blue canister for better differentiation.

Piece	Designation	Part number	NSN	Shelf live [months]*
BDS 2000, 15 l (normal container) includes:				
1	Component 1 (Wofasteril SC Super), 10 l Peracetic acid concentration approx. 12.5 % <u>Basic package:</u> In a UN-tested canister (material: PE), with film label and tamper-proof seal <u>Transport unit:</u> Pallet with 60 basic packages (secured with shrink-wrap film)	6.295-945.0		12
1	Component 2 (Alcapur), 10 l <u>Basic package:</u> In a UN-tested 10 l canister (material: PE, blue), with film label and tamper-proof seal <u>Transport unit:</u> Pallet with 60 basic packages (secured with shrink-wrap film)	6.295-946.0		48

* From date see batch label, only with proper transport and storage.

The following alternatives also include peracetic acid in the stabilised form, which is known for its biocidal character. Different from Wofasteril SC Super, Wofasteril SC 250 contains in average twice the concentration of peracetic acid and can be stored in stable condition approx. twice as long under correct storage conditions. However, the products listed below are not registered as biocide.

3.2 Standard scope of delivery of the oxidation and decontamination chemical, 15 l (normal container)



Note:

- Component 1 of BDS 2000 is packaged in a UN-tested cardboard box and marked accordingly.
- Component 2 is delivered without repackaging directly in the canister.

Piece	Designation	Part number	NSN	Shelf live [months]*
BDS 2000, 15 l (normal container) includes:				
1	Component 1 (Wofasteril SC 250), 5 l filling volume Peracetic acid concentration approx. 25 % <u>Basic package:</u> In a UN-tested 6 l canister (material: PE), with film label and tamper-proof seal <u>Transport unit:</u> Pallet with 72 basic packages (secured with shrink-wrap film)	6.295-145.0	6850-12-373-5844	24
1	Component 2 (Alcapur), 10 l <u>Basic package:</u> In a UN-tested 10 l canister (material: PE), with film label and tamper-proof seal <u>Transport unit:</u> Pallet with 60 basic packages (secured with shrink-wrap film)	6.295-146.0	6850-12-373-5664	48

* From date see batch label, only with proper transport and storage.

3.3 Standard scope of delivery of the oxidation and decontamination chemical, 15 l (small container)



Note:

Components 1 and 2 of BDS 2000 are packaged in a UN-tested cardboard box and marked accordingly.

Piece	Designation	Part number	NSN	Shelf live [months]*
Packaging unit for smaller devices (e.g. Decon Sprayer)		6.295-639.0		
Complete set:				
1	Complete set including both basic packages:			
	<u>Component 1:</u> 1 UN-tested cardboard box with 10 UN-tested containers with 4 bottles, each with 125 ml of Wofasteril SC 250, PE bottles, with film label and tamper-proof seal Peracetic acid concentration approx. 25 % <u>Component 2:</u> 1 UN-tested cardboard box with 5 UN-tested containers with 2 bottles, each with 1 litre of Alcapur, PE bottles, with film label and tamper-proof seal	6.295-640.0	6850-12-389-7850	24
				48

* From date see batch label, only with proper transport and storage.

4. Application information for BDS 2000

4.1 General aspects

BDS 2000 is designed for B-decontamination of biologically contaminated surfaces.

The user must know and comply with the applicable application information and safety regulations when handling and using BDS 2000.

Due to the danger of B-contaminants (e.g., microbial pathogens), suitable body and respiratory protective equipment must be worn when handling and using BDS 2000.

Wofasteril, Alcapur and water must be mixed strictly adhering to the respective mixing and application specifications.

4.2 Decontamination of surfaces

Decontamination agent system BDS 2000 (mixture of Wofasteril SC, Alcapur and water according to the respective application specification) can be used for the decontamination of surfaces using suitable portable decontamination sprayers (DS 10 with foam nozzle), decontamination modules (high-pressure

decontamination modules with automatic addition of decontamination agent) via spray and foam lances, spray generators, etc. For this reason, BDS 2000 is preferably used in the form of aqueous decontamination foam.

0.25 - 1 % PAA is recommended for standard applications (e.g., 1 - 4 % Wofasteril SC 250 and 2 - 8 % Alcapur in water). The ratio between Wofasteril SC 250 and Alcapur in the aqueous decontamination solution must always be approx. 1 : 2.

It must be ensured that the BDS 2000 foam is thoroughly applied to the entire surface to be decontaminated (quantity: approx. 0.4 - 0.6 l/m²). If necessary, reapply the foam after approx. 5 to 10 minutes. The decontamination foam is rinsed off during after-treatment.

The waste water generated during decontamination can contain hazardous substances (in particular, during pre-treatment). Therefore, it should be collected and disposed according to the applicable regulations.

4.3 Decontamination of interior spaces

Component Wofasteril SC is used with the help of an aerosol generator (e.g., thermal aerosol generator SN 50 Decon) as highly effective aerosol for the B-decontamination of interior spaces.

The regulations regarding the used application system must be observed as well when using decontamination agents.

5. Application examples

1. Use of the active peracetic acid component (Wofasteril SC) in combination with a surfactant buffer mixture (Alcapur) as aqueous foam using high-pressure decontamination modules (with spray lances and foam nozzles) for the decontamination of biologically contaminated surfaces



2. Application of the active peracetic acid component as aerosol using a thermal aerosol generator (hot mist generator) for B-decontamination of interior spaces.



5. Disposal

The disposal of BDS 2000 must comply with the respectively current national regulations. Information on disposal must be obtained from the respectively relevant safety data sheet.

6. Storage and transport

- The shelf life always refers to the duration after filling. Date see batch imprint. Only valid with proper transport and storage.
- At least 50% of the maximum shelf life is guaranteed upon delivery ex works
- If the maximum shelf life is desired on delivery ex works, minimum order quantities are required
- Information on application can be found in the operating instructions or on the labels.
- Further information on the respective chemicals can be found in the respective material safety data sheets.

Information on transport according to international guidelines must be obtained from the respectively current safety data sheets. Major temperature fluctuations should be avoided during transport. The product must be transported protected against frost (at least +8 °C).

The components must be stored in dry and cool conditions, protected against light (no direct sunlight), frost (controlled temperature conditions of 10° - 20 °C).

Special procurement and transport information

Based on the classification of the Wofasteril preparations in hazard class 5.2 (organic peroxides), the respective restrictions on storage, transport, etc. must be observed (see safety data sheet).

Air transport of the mentioned Wofasteril containers is not possible according to the current IATA guidelines.

Sea transport of normal containers in hot regions is usually possible in refrigerated containers. Interruptions in the cold chain must be avoided. During transport under cold weather conditions or in cold regions, transport in refrigerated containers is not necessary. However, the containers must be protected against frost.

There are usually no sea transport restrictions in place for small BDS 2000 containers. The minimum order quantities and possible costs for refrigerated containers must be observed in the procurement process of BDS 2000.