

Association of Applied Hygiene (VAH)
Disinfectants Commission



Current Status of Information on the VAH Listing of Foams/Sprays for the Disinfection of Hard Surfaces and Medical Devices

As of 23 August 2021

Principles of Surface Disinfectant Efficacy Testing

The hard surface disinfectant formulations and application methods are continuously changing. In addition to wipes, foams have become popular in recent years. Consequently, the available standardized test methods must be adapted or new methods developed to reflect these everyday use conditions and confirm the efficacy of the application methods.

The chemical procedures used for surface disinfection make a distinction in principle between the application methods **“with mechanical action”** (wiping) and **“without mechanical action”** (spraying without wiping) (Figure 1). For VAH certification and listing, the application method determines which test method is required for simulated-use testing.

Surface Disinfection **“with Mechanical Action”**

As a rule, surface disinfectants are used in a wiping process [1, 2]. For this application method, the disinfectant is distributed with a cloth exerting gentle pressure, whereby here the mechanical action is therefore viewed as a component of the overall disinfection process. The amount of disinfectant needed for wipe disinfection is less than for spray disinfection. This is reflected in the test methodology [3].

The surface must be thoroughly wetted.

Table 1 explains the wipe disinfection application methods and the pertinent test methods required for VAH certification and listing.

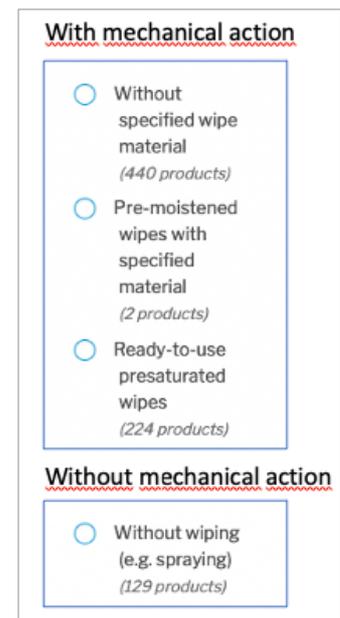


Figure 1: Surface disinfectant application methods. Screenshot, Search Details: Surface Disinfection in “Advanced Search”. VAH List online, as of 1 September 2021.

Table 1: Surface disinfection application methods – overview including test methodology.

SURFACE DISINFECTION with mechanical action (wiping) (Link to VAH List)	PRODUCT TYPE	APPLICATION METHOD	TEST METHOD REQUIRED FOR VAH CERTIFICATION
<ul style="list-style-type: none"> ○ Without specified wipe material 	<p>The disinfectant is applied as a ready-to-use disinfectant or is diluted on site (according to dosage information) and spread on the surface with any wipe material or mop of the user's choice that is soaked with disinfectant.</p>		<p>VAH Method 14.2 or EN 16615</p> <p>plus requirements described in [2]</p>
<ul style="list-style-type: none"> ○ Pre-moistened wipes with specified material 	<p>The specified wipes are pre-moistened with disinfectant, either with the ready-to-use disinfectant concentrate or in the specified dilution according to dosage information.</p>		<p>VAH Method 14.2 or EN 16615</p> <p>plus requirements described in [2]</p> <p>Note: The wipe size, wipe material and weight in g/cm² as well as saturation volume are specified in the VAH List</p>
<ul style="list-style-type: none"> ○ Ready-to-use pre-saturated wipes 	<p>The pre-saturated wipes are provided by the manufacturer ready to use.</p>		<p>VAH Method 14.2 or EN 16615</p> <p>plus requirements described in [3]</p>

Photos: C. Ilschner, Bonn

Special Case: Foams or Sprays for Wipe Disinfection

Application method

For some time now, **foams/sprays** have been available for wipe disinfection of surfaces, including manual **wipe disinfection** of medical device surfaces. The application recommendations for foams/sprays **differ depending on the manufacturer's instructions**. The **spray heads (nozzles)** and the **amount** of disinfectant released with one puff also differ. The predominant application methods for foams/sprays are as follows:

1. The foam/spray is applied directly to the surface and immediately distributed with a dry cloth/wipe.
2. The foam/spray is first applied to a dry cloth/wipe and immediately distributed on the surface with this cloth.

This means that in both cases the use of foams/sprays **involves a mechanical action**.

For an effective disinfection process the cloth must deliver sufficient disinfectant and the surfaces must be **thoroughly wetted**. Special attention must be paid to this during application, also because the foam/spray is usually applied to dry cloths.

Test methodology: Information for manufacturers and laboratories

The current test methods for chemical surface disinfection procedures with mechanical action, VAH method 14.2 or the European standard EN 16615 (4-field test for wipe disinfection), are adapted to the testing of liquids with specific wipes (usually with a volume of < 5 ml/m²) or with non-specific wipes (usually with a volume of approx. 10 ml/m²) ([4], see also Table 1). Disinfection with foams or sprays in the "spray and wipe" application form is not reflected here. When testing these foams or sprays, a (non-specific) cloth soaked with the disinfectant liquid is always used according to VAH method 14.2 or EN 16615, but not in combination with the spray or foam generated from the liquid and the cloth.

The VAH therefore published a communication already in 2020 explaining the requirements for the certification of the two above-mentioned foam application methods [5]: Since so far there are no specific established test methods for foams, for certification of foams and sprays with mechanical action the Disinfectants Commission requires that these be tested in principle according to VAH method 14.2 or EN 16615 as liquid in combination with wipes. **In addition** to this test, a **benchmark test** with *Staphylococcus aureus* must be carried out for the foam/spray (see Table 2), in which the product is tested according to the intended method of use or application method.

It is not possible to develop a generally applicable, **standardized test for foams and sprays** due to different spray heads and the associated different doses dispensed and foaming rates (i.e. volume of foam per ml of liquid) of the commercially available products. Therefore, the manufacturers must submit or re-submit additional product-related benchmark tests if they wish to have a foam or spray VAH-certified for "spray and wipe" application. This benchmark test supports the manufacturers' application recommendations for foams/sprays.

Benchmark testing should include **2 test areas per concentration-contact time ratio** applied for **and 1 test surface per WSH control** to be additionally tested in a test run with the standard wipe.

Table 2: VAH requirements for testing and certification of foams or sprays with mechanical action.

SURFACE DISINFECTION with mechanical action (wiping) (Link to VAH List)	PRODUCT TYPE	APPLICATION METHOD	TEST METHOD REQUIRED FOR VAH CERTIFICATION
Special case Foams/Sprays spray and wipe	The disinfectant is either 1) sprayed directly onto the surface and immediately distributed with a dry cloth or 2) first sprayed onto a dry cloth and then distributed over the surface.		VAH Method 14.2 or EN 16615 plus benchmark test with <i>S. aureus</i> according to VAH Method 14.2 or EN 16615

Photos: C. Ilschner

For **application method 1**, the manufacturer's recommended number of puffs (strokes) is sprayed onto the test area. Half of the puffs are sprayed directly in front of test area 1 in order to place the unitary weight (granite block according to the VAH method 14.2) there for testing with the wipe. The other puffs are sprayed directly onto test field 1 and wiped immediately afterwards. The wiping process and recovery of the test organism are carried out according to VAH method 14.2 and EN 16615, respectively. The contact time begins with the completion of the wiping process. The number of puffs (incl. volume in ml or g) per test area must be specified in the test report.

For **application method 2**, the number of puffs per cloth recommended by the manufacturer is sprayed onto the cloth stretched on the granite block and wiped immediately afterwards according to VAH method 14.2 or EN 16615. The contact time begins with completion of the wiping process. The number of strokes (incl. volume in ml or g) per wipe and test area must be specified in the test report. For this purpose, the difference between the weight of the damp cloth before wiping (dry cloth plus puff volume) and the weight of the cloth after the wiping process must be determined.

The assessor's **application recommendations must specify the number of puffs** (strokes) required for sufficient wetting of the test surface or cloth.

These requirements apply from **2 September 2021**. For foams or sprays used with mechanical action and certified before this date and for which the corresponding benchmark tests are not yet available, these must be submitted **by 30 June 2022**.

Designation of additional tests for foams and sprays for use with mechanical action in the VAH Disinfectants List for users

Users can find foams or sprays with the above application recommendations in the VAH List online in the detailed search under "**Surface disinfection with mechanical action**", "**without specified wipe material**". In future, the information on application method tested according to the benchmark test will be entered in the "Additional remarks" field: Foam/spray on wipe or/and foam/spray on surface.

In the print edition of the VAH List, these products are listed in chapter 3.1.

Note: For efficacy testing of foams for hygienic hand disinfection, see VAH communication of May 2020 [6].

Surface Disinfection "without Mechanical Action"

Surface disinfectants in the category "without mechanical action" are applied to dry surfaces by spraying or foaming without subsequent wiping. This application method is used when wipe disinfection is not possible, for example, for niche surfaces that are difficult to access or open-pored surfaces. Products listed in the category "**without mechanical action**" **must not be distributed with wipes during the contact time unless they have additionally been tested and certified for application with wipes.**

For sprays and foams, too, **ensure thorough wetting of the entire surface** to be disinfected (Table 3). Distribute or remove excess disinfectant only after expiry of the contact time.

Table 3: Requirements for testing foams and sprays without mechanical action.

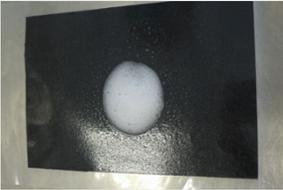
SURFACE DISINFECTION Without mechanical action (spraying) (Link to VAH List)	PRODUCT TYPE	APPLICATION METHOD	TEST METHOD REQUIRED FOR VAH CERTIFICATION
<ul style="list-style-type: none"> ○ Without wiping (e.g. spraying) 	The disinfectant is applied as a ready-to-use disinfectant or is diluted on site (according to dosage information) and is not distributed with a wipe during the contact time.		VAH Method 14.1 or EN 17387; (or EN 13697; EN 14349; EN 16438 with modified conditions) [4]

Photo: C. Ilschner, Bonn

Disinfectants used without wiping must be selected in the print edition of the VAH Disinfectants List from section 3.1 in the column "without mechanical action" or by clicking on the option "without mechanical action"/"without wiping" in the detailed search of the online edition of the VAH List (cf. Figure 1).

For **occupational safety and health** reasons, spray disinfection is only permissible in exceptional cases [7, 8]. The extent to which foam disinfection is less critical in terms of occupational safety and health compared with spray disinfection has not yet been conclusively evaluated.

Specific training is necessary for the proper implementation of the respective disinfection procedures, taking into account the application method and the properties of the product formulation, i.e. solution, pre-saturated wipe, ready-to-use wipe, foam or spray.

References

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