Building Biology Products
and services

Highfrequency

- for large-area shielding of high-frequency electromagnetic waves
- very good tear resistance with soft quality, antistatic, elastic
- 100 % textile properties
- elastic knitted fabric for a wide range of applications
- Organic Cotton, kbA (controlled organic cultivation)
- The New Antiwave quality is a right-left jacquard knit, in a combination of combed organic, certified organic cotton and silver coated polyamide

  The coating does not consist of controversial nano-silver, but of 20 % pure silver that surrounds the entire polyamide fibre. The metallic silver is absolutely harmless to human health and to nature.

  Pure silver has a natural antibacterial effect and can also have a positive effect on skin problems as well as excessive sweating and body odour.

  Thanks to the innovative fabric construction and the use of high-quality materials, this knitted fabric protects against electromagnetic radiation with an efficiency of > 99 %. This is confirmed by an expert opinion by the EMF test lab Bavaria.

  Particularly suitable for making linen, pillowcases, blankets, etc.

  New Antiwave is a particularly easy-care quality. A high-quality finish ensures that the shielding property is retained even after several washes. Due to the antibacterial effect of the silver, washing at 30 - 40 °C is sufficient.

Order-No.: 100981, 100982, 100983, 101081
Short-Desc.: AW Men-Shirt - M, L, XL, XXL, XXXL

Shielding knitted fabric

New Antiwave - Men-Shirts

Type	MHz	dB	in %
DVB-T2	470 - 690	**26**	**> 99,0**
LTE / 5G wide	700 - 750	**26**	**> 99,0**
GSM, LTE	920 - 960	**26**	**> 99,0**
GSM, LTE	1800 - 1880	**23**	**> 99,0**
DECT	1880 - 1900	**23**	**> 99,0**
LTE, 5G wide	2110 - 2170	**21**	**> 99,0**
W-LAN 2400	2400 - 2500	**20**	**~ 99,0**
5G fast	3400 - 3700	**17**	**~ 98,0**
W-LAN 5200	5150 - 5350	**13**	**~ 95,0**

Technical data

available sizes:	M, L, XL, XXL, XXXL ≈ 5, 6, 7, 8, 9
thickness:	ca. 0,5 mm ± 10 %
colour:	hell grey / silver
basis weight:	ca. 145 g/m²
mesh size:	< 0,1 mm x 0,1 mm opaque
composition:	89 % Cotton (Organic) 9 % Polyamide 2 % Silver
properties:	very good tear resistance with soft quality, antistatic, elastic
wash cycles:	~ 40 x
basis of examination:	IEEE Standard 299™-2006
shielding effectiveness:	max. 26 dB (> 99 %)

Care instructions

	particularly gentle washing (delicate or wool wash cycle at 30 or 40 °C)
	gentle ironing on level 1 (iron at low temperature)
	bleaching not allowed No detergents with bleach
	do not tumble dry
	no dry cleaning

Scope of application

public areas, home

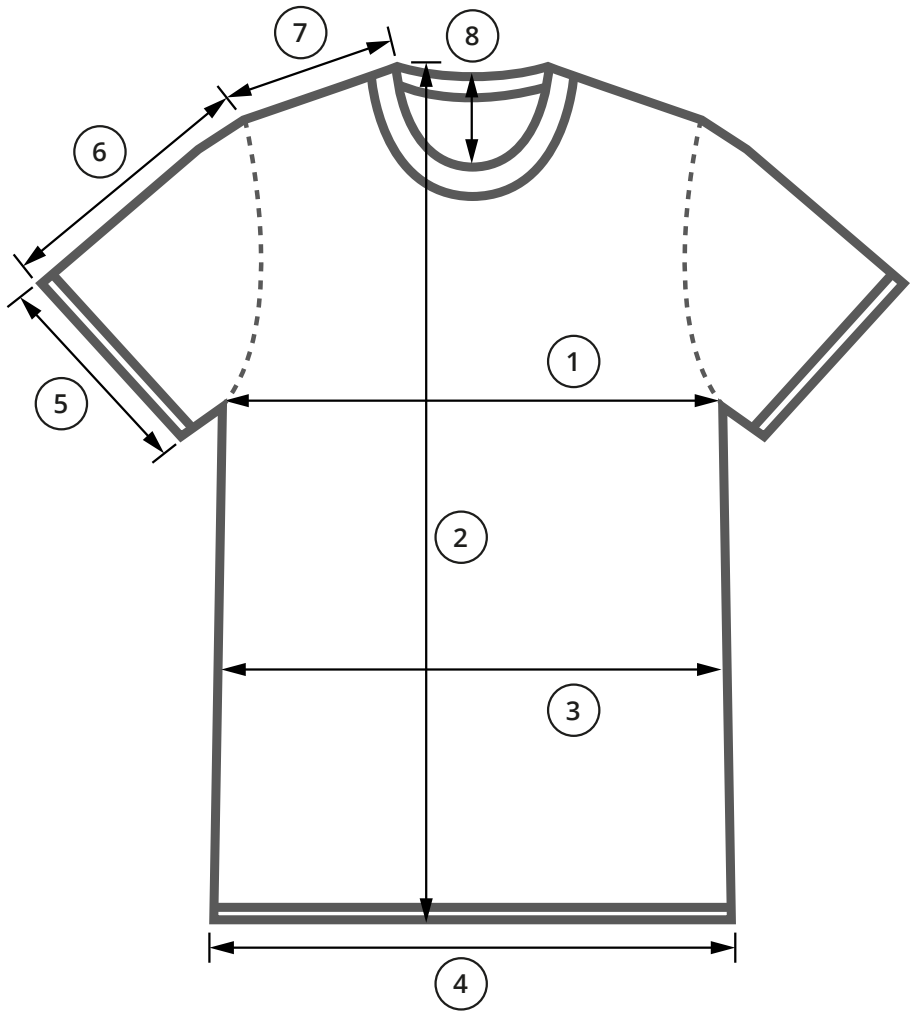
can be used as outerwear or underwear

Biologa Danell GmbH • Hauptstraße 27 • 72336 Balingen • GERMANY • +49 7433 955 7172 • info@biologadanell.com • www.biologadanell.com

New Antiwave - Size/Dimensions

Men-Shirts

No.	Dimensions (in cm)	M 50	L 52	XL 54	2XL 56	3XL 58/60	Tol ±
1.	Bust	**48**	**51**	**54**	**58**	**59**	3 %
2.	Total length	**73**	**75**	**77**	**78**	**80**	3 %
3.	Waist	**48**	**50**	**53**	**57**	**59**	3 %
4.	Seam bottom	**49**	**51**	**54**	**57**	**59**	3 %
5.	Arm width	**17**	**18**	**18**	**19**	**19**	3 %
6.	Arm length	**24**	**24**	**24**	**24**	**25**	3 %
7.	Sholder width	**13**	**14**	**15**	**15**	**17**	3 %
8.	Neckline	**8**	**8**	**8**	**9**	**10**	3 %

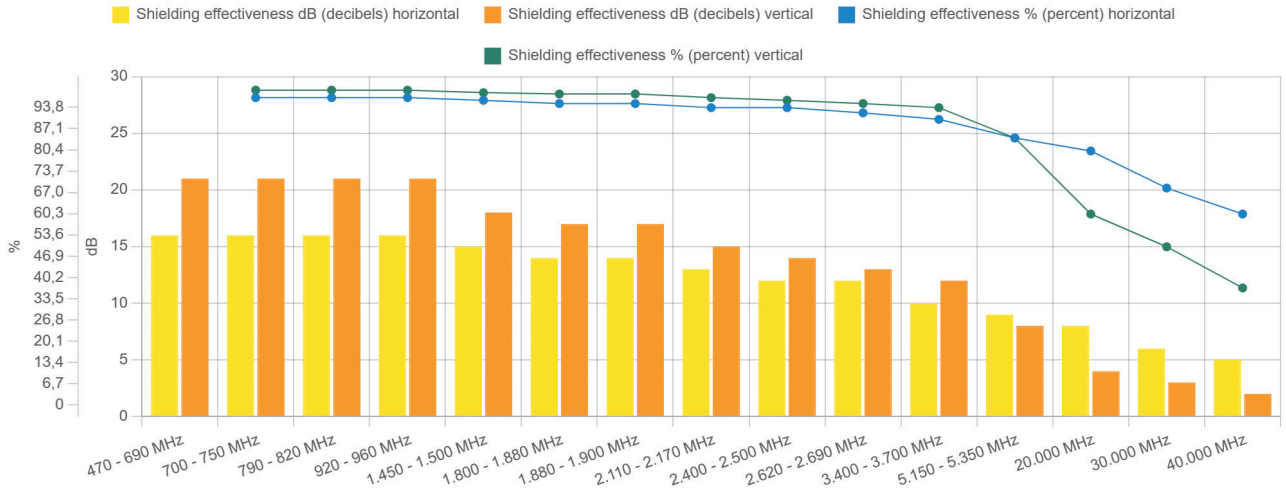


Biologa Danell GmbH • Hauptstraße 27 • 72336 Balingen • GERMANY • +49 7433 955 7172 • info@biologadanell.com • www.biologadanell.com

Type	MHz	Description
DVB-T2	470 - 690	digital video broadcasting – terrestrial, 2nd generation, TV via antenna
LTE / 5G wide	700 - 750	from 4G, now 5G NR without beamforming / MIMO
GSM, LTE	920 - 960	from 2G - D1, now 5G NR without beamforming / MIMO
GSM, LTE	1800 - 1880	from 2G - D2, E network, now 5G NR without beamforming / MIMO
DECT	1880 - 1900	wireless phone
LTE, 5G wide	2110 - 2170	from 3G, formerly UTMS, now 5G NR without beamforming / MIMO
W-LAN / WiFi 2400	2400 - 2500	wireless LAN
5G fast	3400 - 3700	5G NR - new frequency band with beamforming / MIMO
W-LAN / WiFi 5200	5150 - 5350	wireless LAN

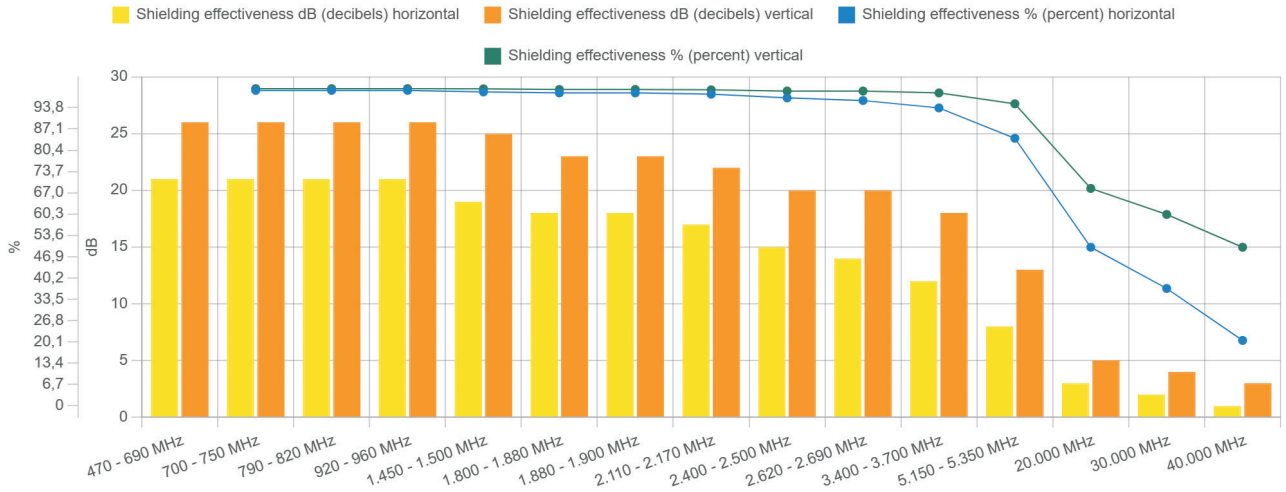
Shielding values according to test report: EMF Test Lab Bavaria

Shielding effectiveness - Antiwave OC white - unstretched - 470 MHz to 40.000 MHz (40 GHz)



1.000 MHz = 1 GHz -/- (according to test report EMF Test Lab Bavaria)

Shielding effectiveness - Antiwave OC white - stretched - 470 MHz to 40.000 MHz (40 GHz)



1.000 MHz = 1 GHz -/- (according to test report EMF Test Lab Bavaria)

Biologa Danell GmbH • Hauptstraße 27 • 72336 Balingen • GERMANY • +49 7433 955 7172 • info@biologadanell.com • www.biologadanell.com

Building Biology Products
and services

Home textiles

Washing instructions incl. symbols (DIN EN ISO 3758:2012)

Content - Washing options

Detergent 1
Machine washing 2
Hand wash 3
Washing test - Biologa Danell shielding textiles 4
Further information 12
Frequently asked questions 12

Applies to the following products

HOME TEXTILES	Topas CS, Topas SN, Swiss Shield Naturell, Swiss Shield Evolution, Swiss Shield Daylite, Swiss Shield Wear, Swiss Shield Ultima, Sunshine 64, Dali, Picasso, New Antiwave
CANOPIES	Topas-BE, Topas-BD, Topas-BU, TOPAS-SN Swiss Shield Naturell-BE, Swiss Shield Naturell-BD, Swiss Shield Naturell-BU Swiss Shield Evolution-BE, Swiss Shield Evolution-BD, Swiss Shield Evolution-BU Swiss Shield Daylite-BE, Swiss Shield Daylite-BD, Swiss Shield Daylite-BU
CLOTHING	Antiwave Women-Shirts, Shorts, Leggings, Antiwave Men-Shirts, Shorts, scarfs, Beanies

Best care

Detergent

Tested and recommended detergents

Ecover / Wool and delicates detergent

Ingredients:

- 5-15 %: Anionic surfactants
- < 5 % Non-ionic surfactants
- Soap
- Fragrances - Limonene
- Preservatives
- 2-Brom-2-Nitropropan-1,3-Diol
- Water
- Table salt
- Citric acid

Sodasan / Wool & Fines

Ingredients:

- < 30 % water
- 5-15 % sugar surfactant (non-ionic surfactant)
- Coconut fatty alcohol sulphate (anionic surfactant)
- < 5 % evaporated salt
- Alcohol (ethanol)
- Vegetable lecithin
- Citrate
- Natural perfume oil
- Limonene
- Geraniol
- Preservative
- 2-Brom-2-Nitropropan-1,3-Diol

Detergent and laundry quantity

Detergent quantity:

- Always use as less detergent as possible. As a rule, umbrella textiles are only slightly dusty.

- **Ecover: approx. 20 ml**
- **Sodasan: approx. 20 ml**
  (Further detergent recommendations:
- Sonett sensitive detergent
- Sonett olive detergent for wool and silk
- Sonett Olive Detergent for Wool and Silk sensitive

Quantity shielding textiles

- Fill the laundry drum only with shieling materials.
- You will find the max. laundry load in the delicates programme in the instructions for your washing machine. (usually 1.2 - 1.5 kg)

Wash test

Biologa shielding textiles can usually be washed 40 times and more. The screening attenuation, as with all screening textiles, decreases during this process, but the remaining function still fulfils a strong high-frequency reduction (min. 90 %).

You can see the complete washing test in the appendix (page 10).

The above information corresponds to the current state of development. In any case, they are to be regarded as non-binding, as we have no influence on the washing and the conditions regarding water etc. vary locally. Claims arising from this information are therefore excluded. The same applies to the commercial and technical advice and information provided free of charge and without obligation. We therefore recommend that you carry out your own tests to determine whether the product is suitable for the intended use. With the publication of these versions, all previous technical information (leaflets, installation recommendations and other versions intended for similar purposes) become invalid.

***Biologa Danell GmbH • Hauptstraße 27 • 72336 Balingen • +49 7433 955 7172 • info@biologadanell.com • www.biologadanell.com

© 2022 Biologa Danell GmbH - The graphics, photos and texts used here may only be used with the express permission of Biologa Danell GmbH.

EN-WASCH.TEC-HTEX-V2.1.1-090622

Washing machine

Machine washing

Individual steps

M1: 30 °C delicates/wool wash / DO NOT SPIN!

This wash cycle has a particularly gentle mechanical treatment. Reduce the amount of laundry considerably (fill the drum only up to one third). Set the appropriate washing programme.

(Antiwave products 40 °C delicates)

M2: Do not bleach

Bleaching is not possible. Use only bleach-free detergents. If in doubt, try on a concealed area or sample.

M3: Do not tumble dry

The textiles do not tolerate tumble drying.

M4: Do not iron hot

Maximum temperature of the iron soleplate of 110 °C. Also corresponds to the iron temperature level „polyacrylic/polyamide (nylon) /acetate“. Do not iron with steam. Iron with a dry intermediate cloth if necessary. Do not warp.

M5: Professional cleaning

Dry cleaning is not possible. Do not treat with solvents. Do not use stain removers containing solvents.

No wet cleaning possible.

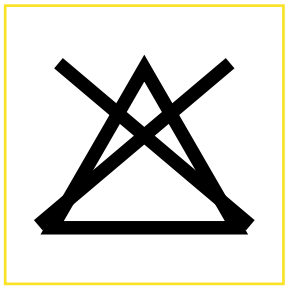
M6: Natural drying (optional)

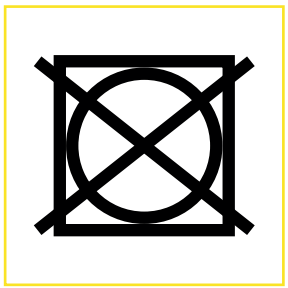
Drying on the clothesline in the shade

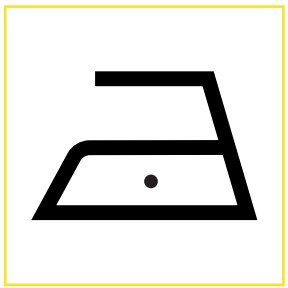
M7: Natural drying (optional)

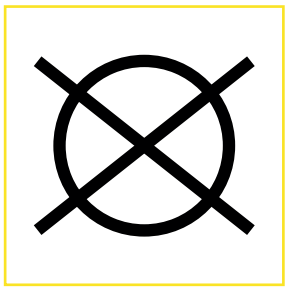
Drying on the clothesline from a dripping wet state in the shade

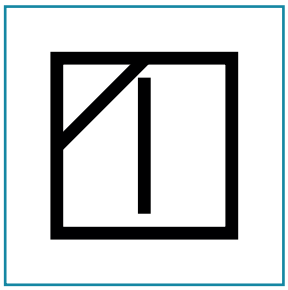
M1: WASH / SPIN


M2: BLEACHING


M3: TUMBLER - DRYING

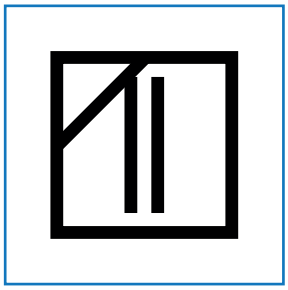

M4: IRONING


M5: Professional cleaning

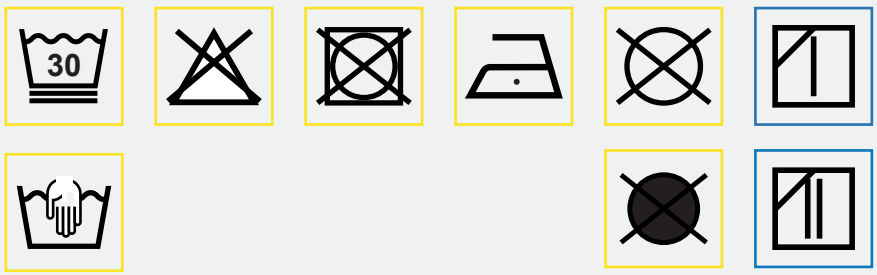

M7: NATURAL DRYING 1

Pre-drying

See Fig. 1 (next page)


M8: NATURAL DRYING 2

General overview of applicable washing symbols



CARE CODE: **AXXAXBX**

The above information corresponds to the current state of development. In any case, they are to be regarded as non-binding, as we have no influence on the washing and the conditions regarding water etc. vary locally. Claims arising from this information are therefore excluded. The same applies to the commercial and technical advice and information provided free of charge and without obligation. We therefore recommend that you carry out your own tests to determine whether the product is suitable for the intended use. With the publication of these versions, all previous technical information (leaflets, installation recommendations and other versions intended for similar purposes) become invalid.

***Biologa Danell GmbH • Hauptstraße 27 • 72336 Balingen • +49 7433 955 7172 • info@biologadanell.com • www.biologadanell.com

© 2022 Biologa Danell GmbH - The graphics, photos and texts used here may only be used with the express permission of Biologa Danell GmbH.

Washbasins, tubs

Hand wash

Individual steps

H1: Hand wash,

Water temperature lukewarm to max. 30°C.

1. Fill your washbasin or, depending on the size, your bathtub with lukewarm water.

2. Add a teaspoon of detergent (e.g. ecover / Sodasan). Wool detergent, mild detergent without chlorine, without bleach, without optical brighteners. Do not use fabric softener.

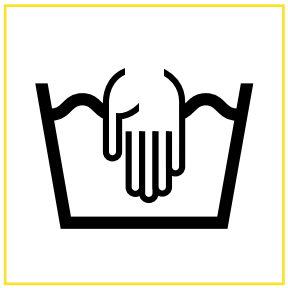
3. Place the textile in the water. Soaking time is usually not necessary as the textile is usually only slightly dusty and not excessively soiled. If so, then less than one minute.

4. Place the textile floating in the water, avoid kneading, wringing, rubbing, strong rubbing and twisting.

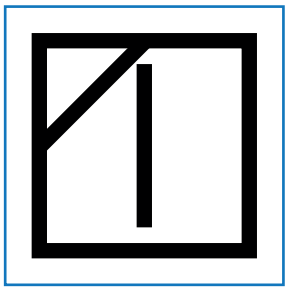
5. Rinse the textile in clean water. Do not spray or rinse under running water. Repeat the process approx. 2 x

6. For pre-drying and subsequent damp hanging, it is recommended to lay the textile on a towel and gently roll it up including the textile. You can also treat the textile as described under H2.

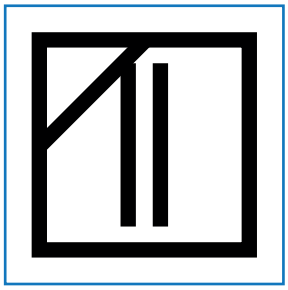
7. Dripping wet hanging without the towel technique is also possible as indicated in H3.



H1: Hand wash



H2: Natural drying
Clothesline - Shade



H3: Natural drying
Clothesline dripping wet - shade

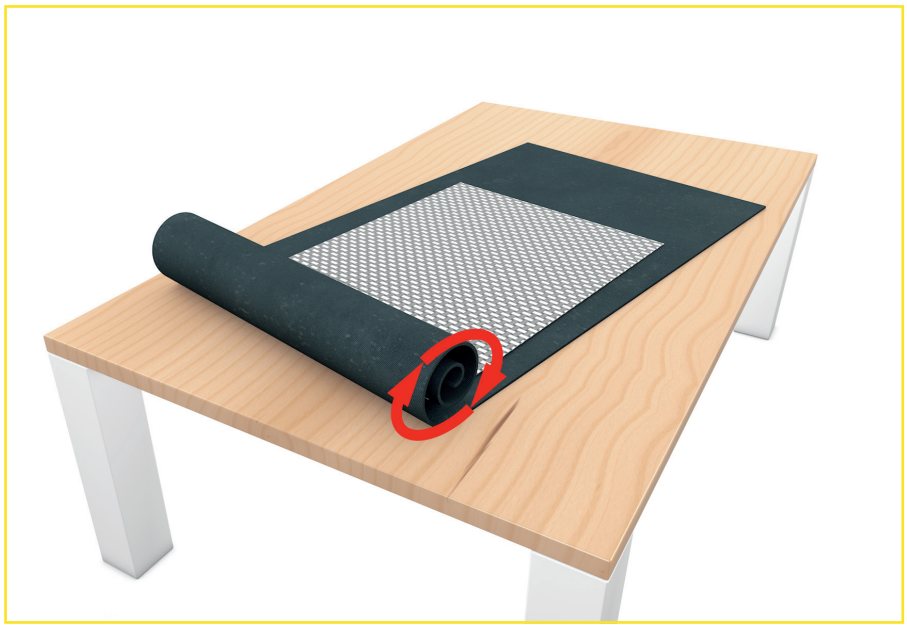


Fig. 1: Pre-dry in towel - hand wash and machine wash

The above information corresponds to the current state of development. In any case, they are to be regarded as non-binding, as we have no influence on the washing and the conditions regarding water etc. vary locally. Claims arising from this information are therefore excluded. The same applies to the commercial and technical advice and information provided free of charge and without obligation. We therefore recommend that you carry out your own tests to determine whether the product is suitable for the intended use. With the publication of these versions, all previous technical information (leaflets, installation recommendations and other versions intended for similar purposes) become invalid.

***Biologa Danell GmbH • Hauptstraße 27 • 72336 Balingen • +49 7433 955 7172 • info@biologadanell.com • www.biologadanell.com

© 2022 Biologa Danell GmbH - The graphics, photos and texts used here may only be used with the express permission of Biologa Danell GmbH.

Wash test

Washing test - Biologa Danell shielding textiles

Test machine specifications

Type: Bauknecht WA Sensitive 44 Di

Settings used:

- Programme: Delicate laundry 30 °C (curtains and delicate clothes)
- Max. load: 1.5 kg
- Water consumption: 60 litres
- Consumption: 0.4 kWh
- Duration: 0:46 hrs.
- Spin: OFF
- No prewash
- No fabric softener
- No cold wash

Laundry quantity

- 7 samples each approx. 1 sqm/per piece (ins. 1.5 kg)

- Topas CS
- Sunshine 64 (ecru/white)
- Swiss Shield Naturell
- Swiss Shield Evolution
- Swiss Shield Daylite
- Picasso
- Dali

Additional information

- Water quality varies from place to place. You can ask your waterworks for the current data. For copyright reasons, the water quality data from the company headquarters cannot be published here.
- The settings of the washing modes of your washing machine may differ from those used here. You will find them in the instruction manual of your washing machine.
- The environment in which the textile is used has an influence on its durability (salt water, chemical substances, etc.).

Detergents used

Ecover / Wool and delicates detergent

Ingredients:

- 5-15 %: Anionic surfactants
- <5 % Non-ionic surfactants
- Soap
- Fragrances - Limonene
- Preservatives
- 2-Brom-2-Nitropropan-1,3-Diol
- Water
- Table salt
- Citric acid

Sodasan / Wool & Fines

Ingredients:

- <30 % water
- 5-15 % sugar surfactant (non-ionic surfactant)
- Coconut fatty alcohol sulphate (anionic surfactant)
- <5 % evaporated salt
- Alcohol (ethanol)
- Vegetable lecithin
- Citrate
- Natural perfume oil
- Limonene
- Geraniol
- Preservative
- 2-Brom-2-Nitropropan-1,3-Diol

Detergent quantity

- Ecover: 20 ml
- Sodasan: 20 ml

Comparative measurements

- The comparative measurements were carried out with an ADVANTEST R3131 incl. generator (9 kHz-3 GHz).
- The comparative measurements were always carried out with the same environmental variables as far as possible.
- The 2021 batch of all umbrella textiles was used as a reference.

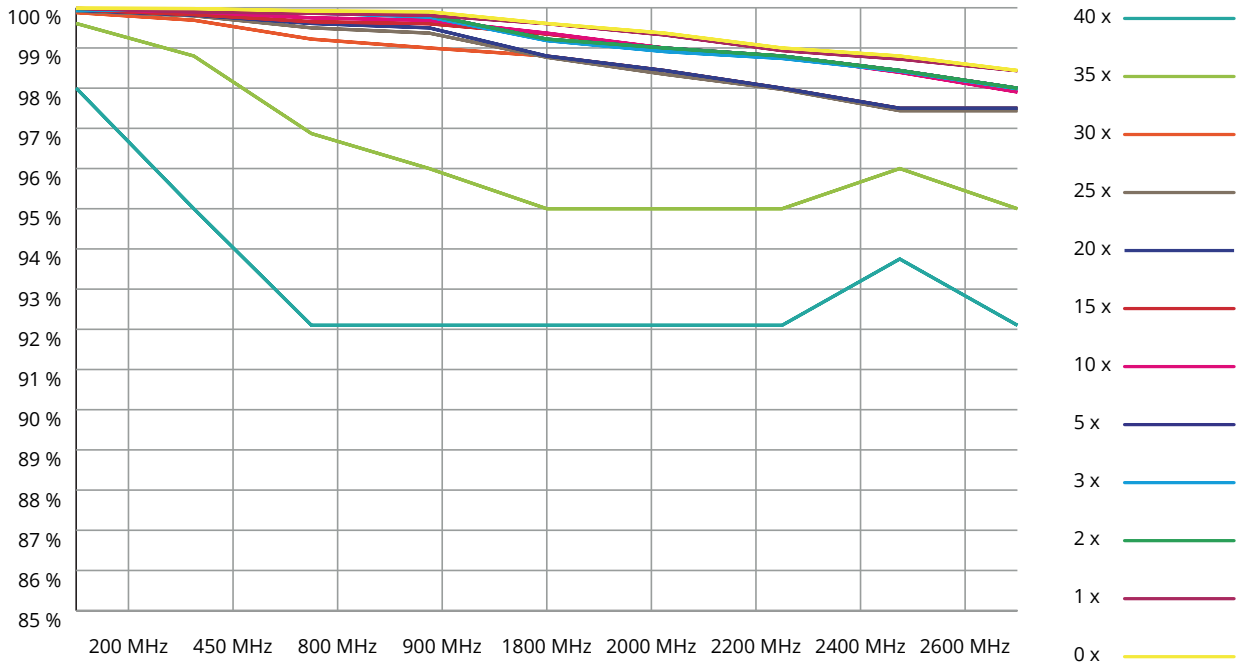
The above information corresponds to the current state of development. In any case, they are to be regarded as non-binding, as we have no influence on the washing and the conditions regarding water etc. vary locally. Claims arising from this information are therefore excluded. The same applies to the commercial and technical advice and information provided free of charge and without obligation. We therefore recommend that you carry out your own tests to determine whether the product is suitable for the intended use. With the publication of these versions, all previous technical information (leaflets, installation recommendations and other versions intended for similar purposes) become invalid.

***Biologa Danell GmbH • Hauptstraße 27 • 72336 Balingen • +49 7433 955 7172 • info@biologadanell.com • www.biologadanell.com

© 2022 Biologa Danell GmbH - The graphics, photos and texts used here may only be used with the express permission of Biologa Danell GmbH.

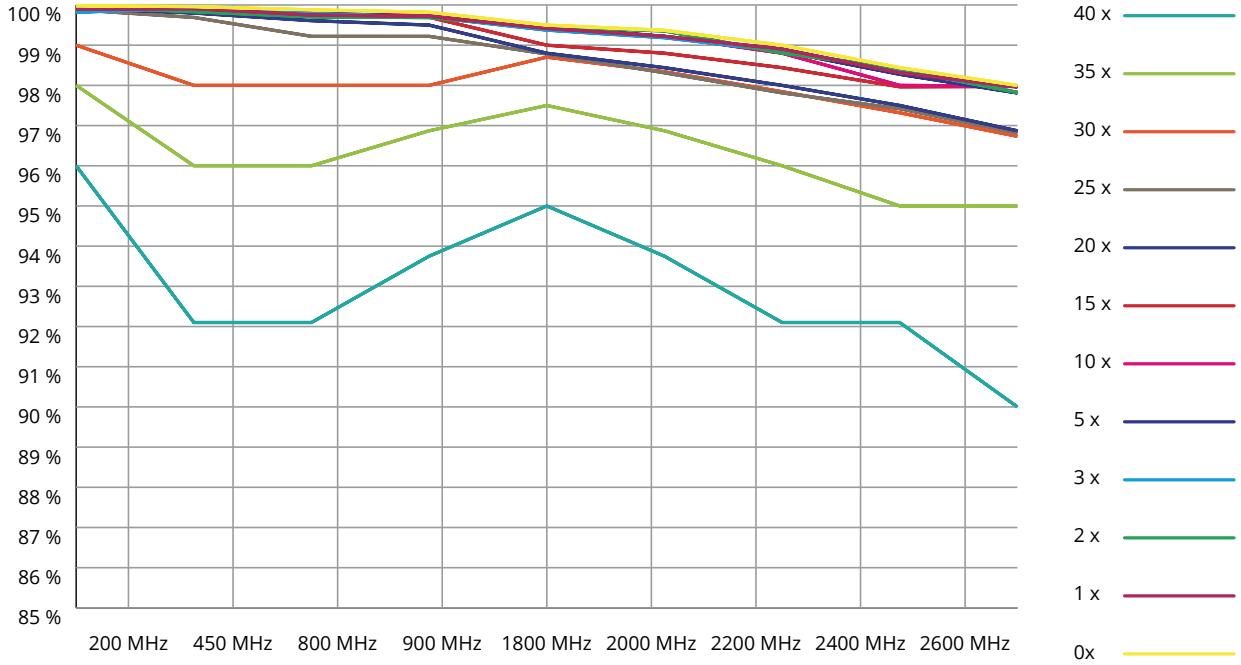
Wash test

Wash test - Topas CS - Ecover



Wash test

Wash test - Topas CS - Sodasan



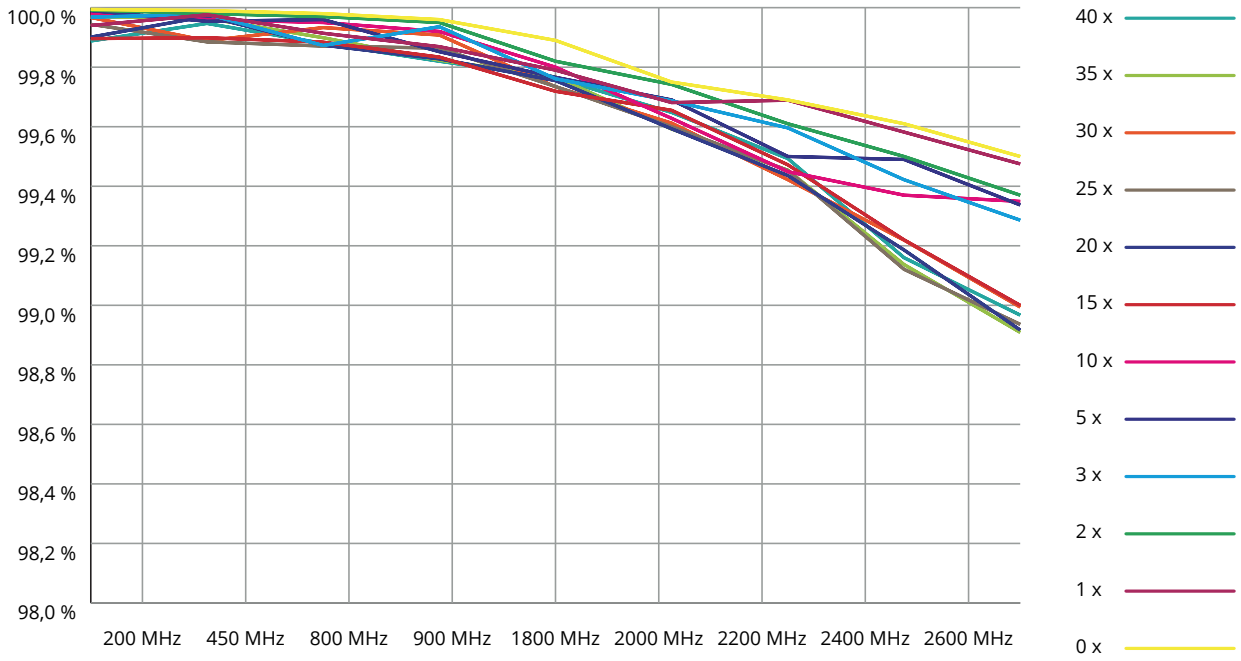
The above information corresponds to the current state of development. In any case, they are to be regarded as non-binding, as we have no influence on the washing and the conditions regarding water etc. vary locally. Claims arising from this information are therefore excluded. The same applies to the commercial and technical advice and information provided free of charge and without obligation. We therefore recommend that you carry out your own tests to determine whether the product is suitable for the intended use. With the publication of these versions, all previous technical information (leaflets, installation recommendations and other versions intended for similar purposes) become invalid.

***Biologa Danell GmbH • Hauptstraße 27 • 72336 Balingen • +49 7433 955 7172 • info@biologadanell.com • www.biologadanell.com

© 2022 Biologa Danell GmbH - The graphics, photos and texts used here may only be used with the express permission of Biologa Danell GmbH.

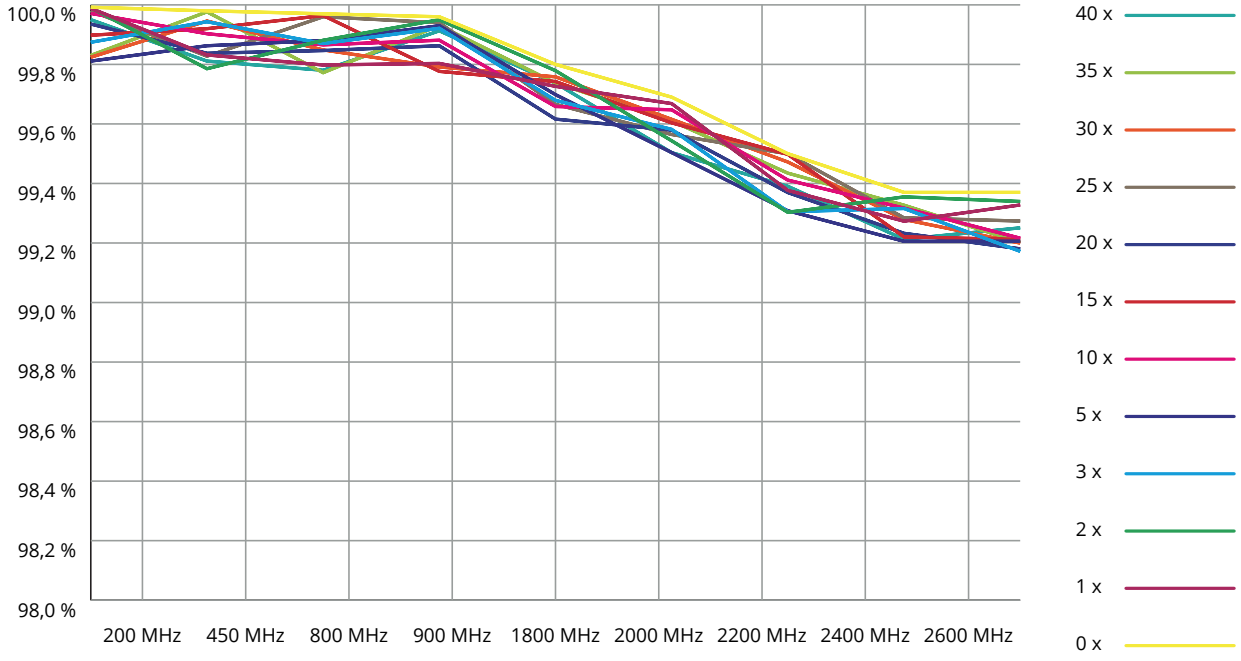
Wash test

Wash test - Sunshine 64 - Ecover



Wash test

Wash test - Sunshine 64 - Sodasan



The above information corresponds to the current state of development. In any case, they are to be regarded as non-binding, as we have no influence on the washing and the conditions regarding water etc. vary locally. Claims arising from this information are therefore excluded. The same applies to the commercial and technical advice and information provided free of charge and without obligation. We therefore recommend that you carry out your own tests to determine whether the product is suitable for the intended use. With the publication of these versions, all previous technical information (leaflets, installation recommendations and other versions intended for similar purposes) become invalid.

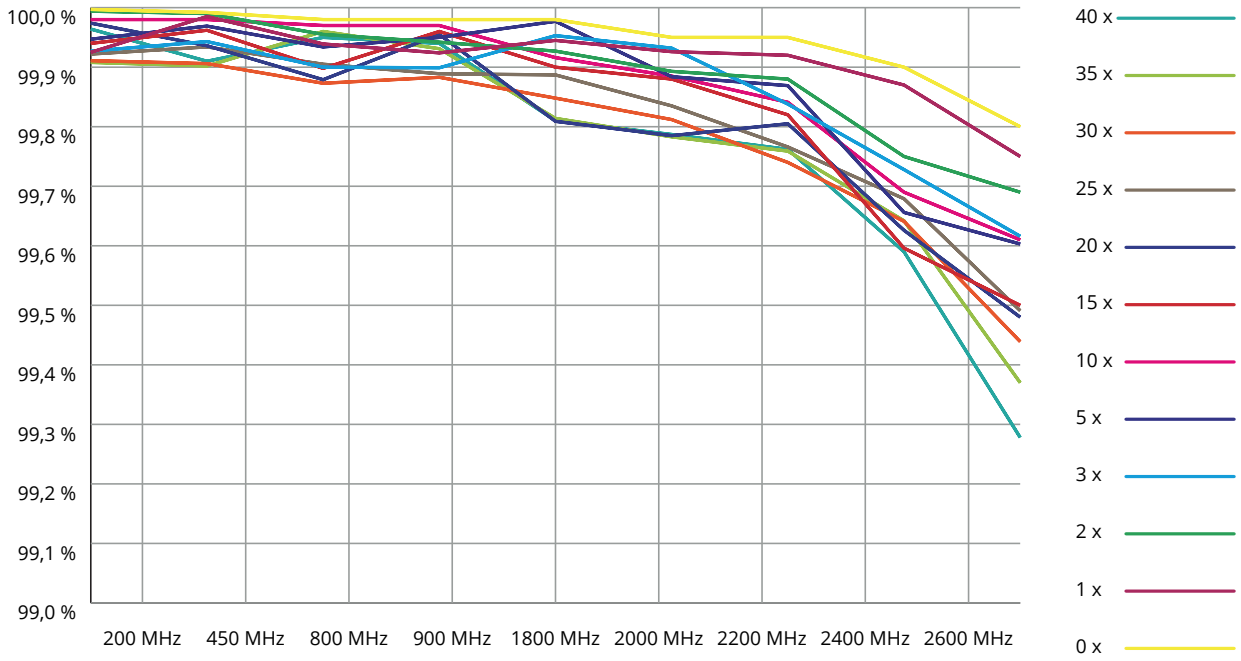
***Biologa Danell GmbH • Hauptstraße 27 • 72336 Balingen • +49 7433 955 7172 • info@biologadanell.com • www.biologadanell.com

© 2022 Biologa Danell GmbH - The graphics, photos and texts used here may only be used with the express permission of Biologa Danell GmbH.

EN-WASCH.TEC-HTEX-V2.1.1-090622

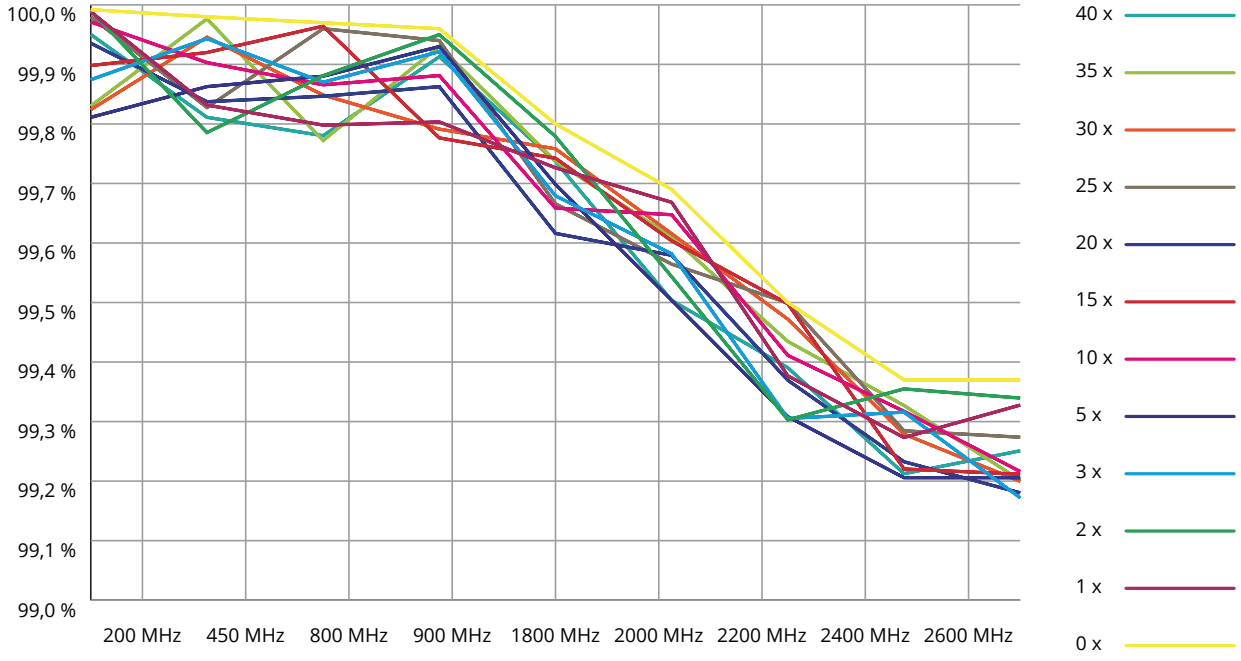
Wash test

Wash test - Swiss Shield Naturell - Ecover



Wash test

Wash test - Swiss Shield Naturell - Sodasan



The above information corresponds to the current state of development. In any case, they are to be regarded as non-binding, as we have no influence on the washing and the conditions regarding water etc. vary locally. Claims arising from this information are therefore excluded. The same applies to the commercial and technical advice and information provided free of charge and without obligation. We therefore recommend that you carry out your own tests to determine whether the product is suitable for the intended use. With the publication of these versions, all previous technical information (leaflets, installation recommendations and other versions intended for similar purposes) become invalid.

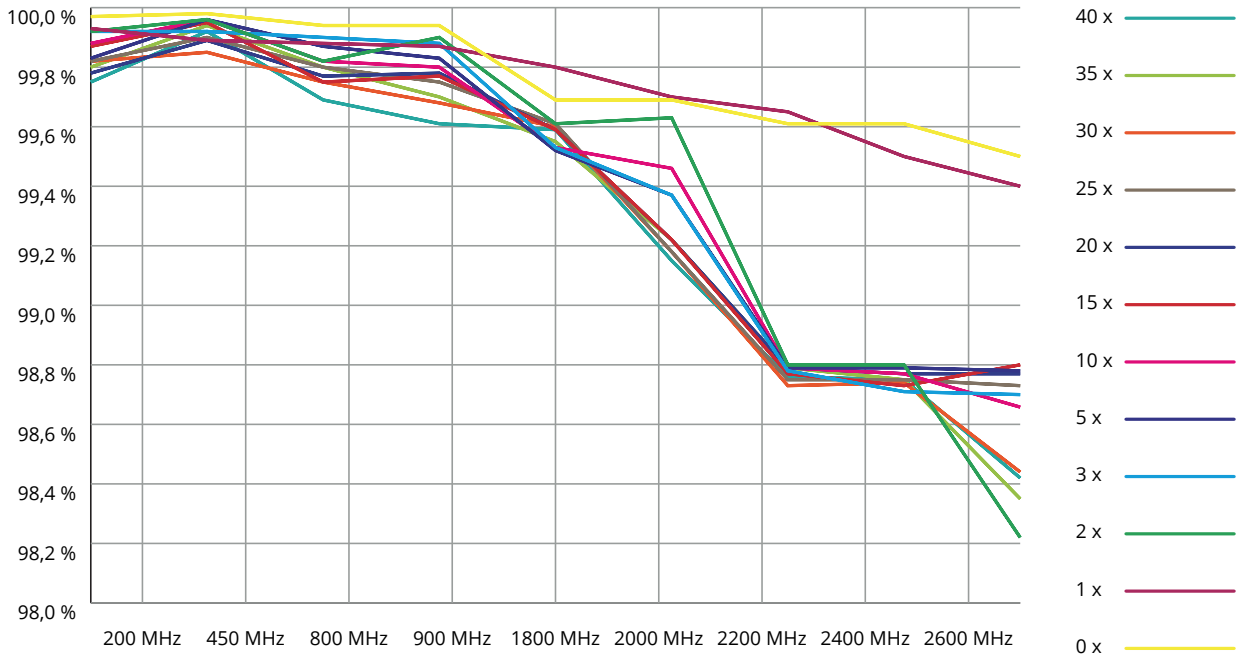
***Biologa Danell GmbH • Hauptstraße 27 • 72336 Balingen • +49 7433 955 7172 • info@biologadanell.com • www.biologadanell.com

© 2022 Biologa Danell GmbH - The graphics, photos and texts used here may only be used with the express permission of Biologa Danell GmbH.

EN-WASCH.TEC-HTEX-V2.1.1-090622

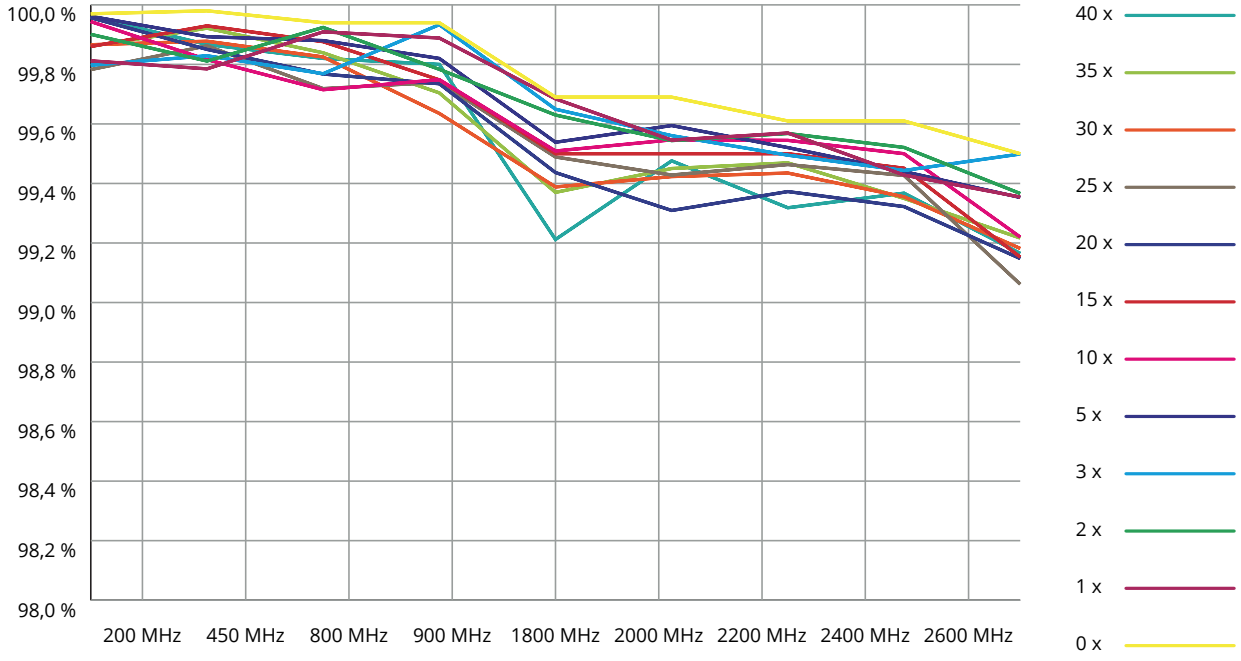
Wash test

Wash test - Swiss Shield Evolution - Ecover



Wash test

Wash test - Swiss Shield Evolution - Sodasan



The above information corresponds to the current state of development. In any case, they are to be regarded as non-binding, as we have no influence on the washing and the conditions regarding water etc. vary locally. Claims arising from this information are therefore excluded. The same applies to the commercial and technical advice and information provided free of charge and without obligation. We therefore recommend that you carry out your own tests to determine whether the product is suitable for the intended use. With the publication of these versions, all previous technical information (leaflets, installation recommendations and other versions intended for similar purposes) become invalid.

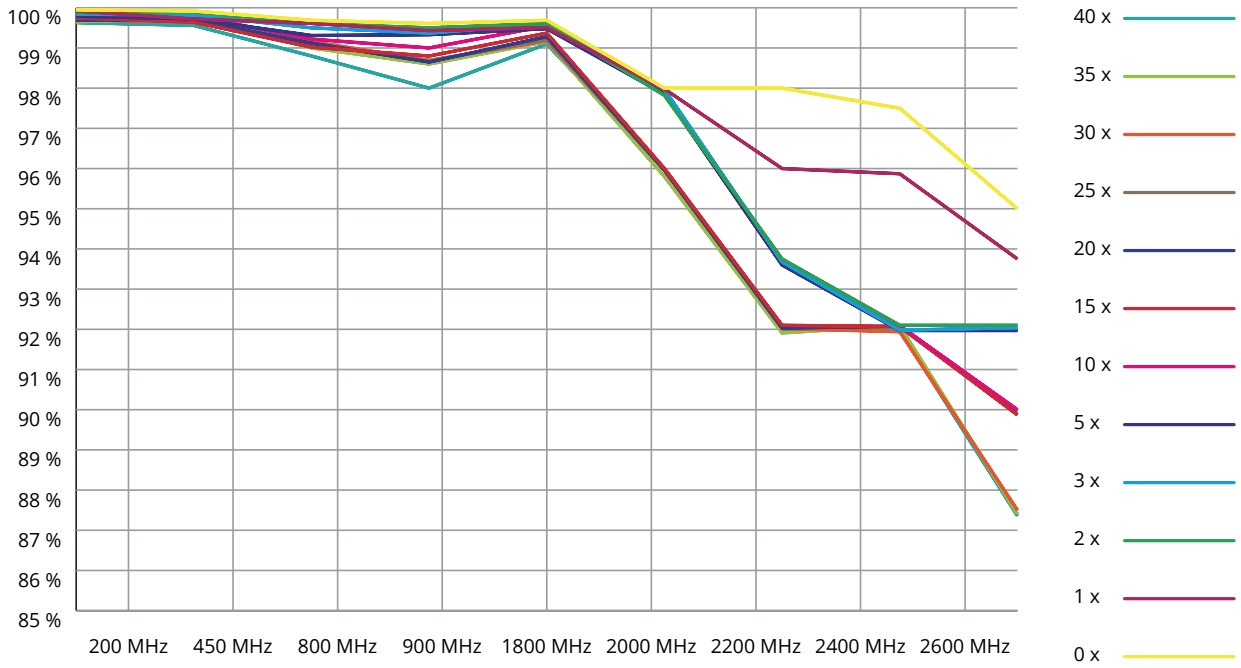
***Biologa Danell GmbH • Hauptstraße 27 • 72336 Balingen • +49 7433 955 7172 • info@biologadanell.com • www.biologadanell.com

EN-WASCH.TEC-HTEX-V2.1.1-090622

© 2022 Biologa Danell GmbH - The graphics, photos and texts used here may only be used with the express permission of Biologa Danell GmbH.

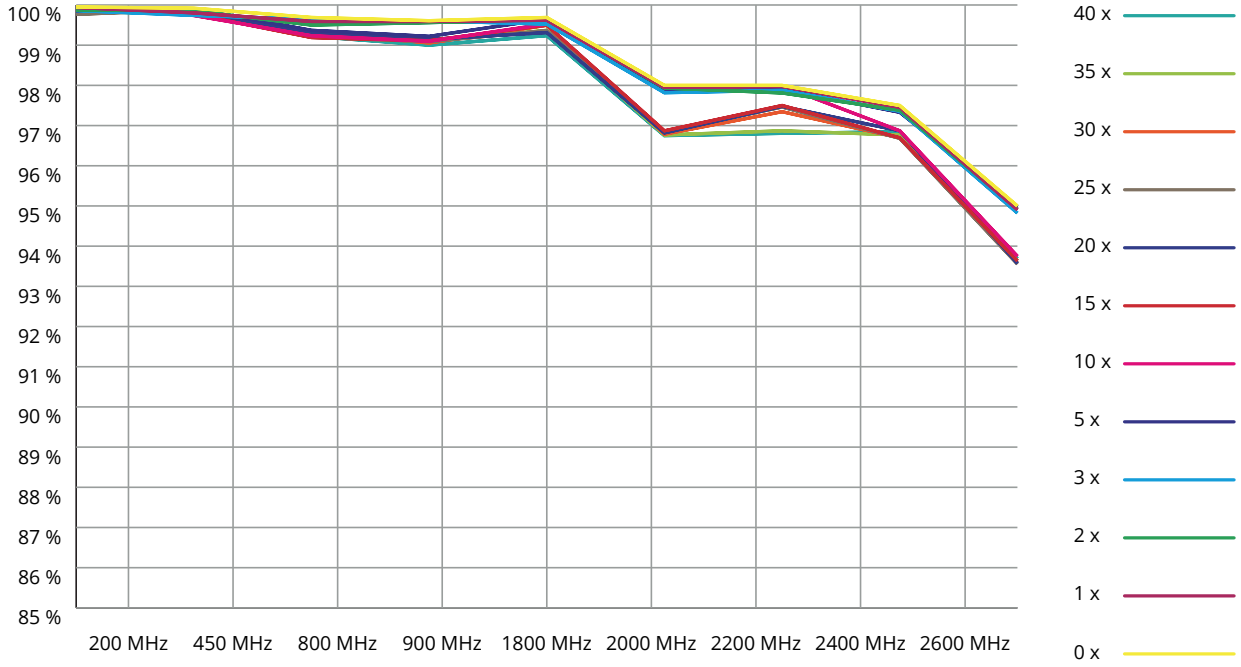
Wash test

Wash test - Swiss Shield Daylite - Ecover



Wash test

Wash test - Swiss Shield Daylite - Sodasan



The above information corresponds to the current state of development. In any case, they are to be regarded as non-binding, as we have no influence on the washing and the conditions regarding water etc. vary locally. Claims arising from this information are therefore excluded. The same applies to the commercial and technical advice and information provided free of charge and without obligation. We therefore recommend that you carry out your own tests to determine whether the product is suitable for the intended use. With the publication of these versions, all previous technical information (leaflets, installation recommendations and other versions intended for similar purposes) become invalid.

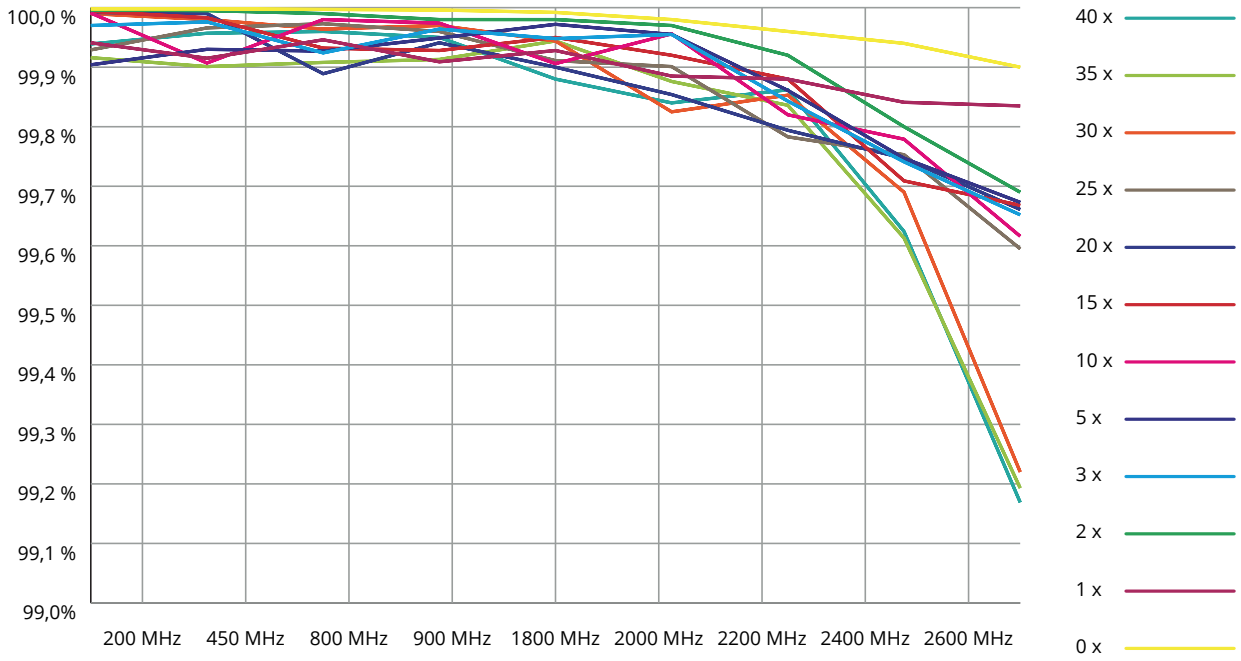
***Biologa Danell GmbH • Hauptstraße 27 • 72336 Balingen • +49 7433 955 7172 • info@biologadanell.com • www.biologadanell.com

© 2022 Biologa Danell GmbH - The graphics, photos and texts used here may only be used with the express permission of Biologa Danell GmbH.

EN-WASCH.TEC-HTEX-V2.1.1-090622

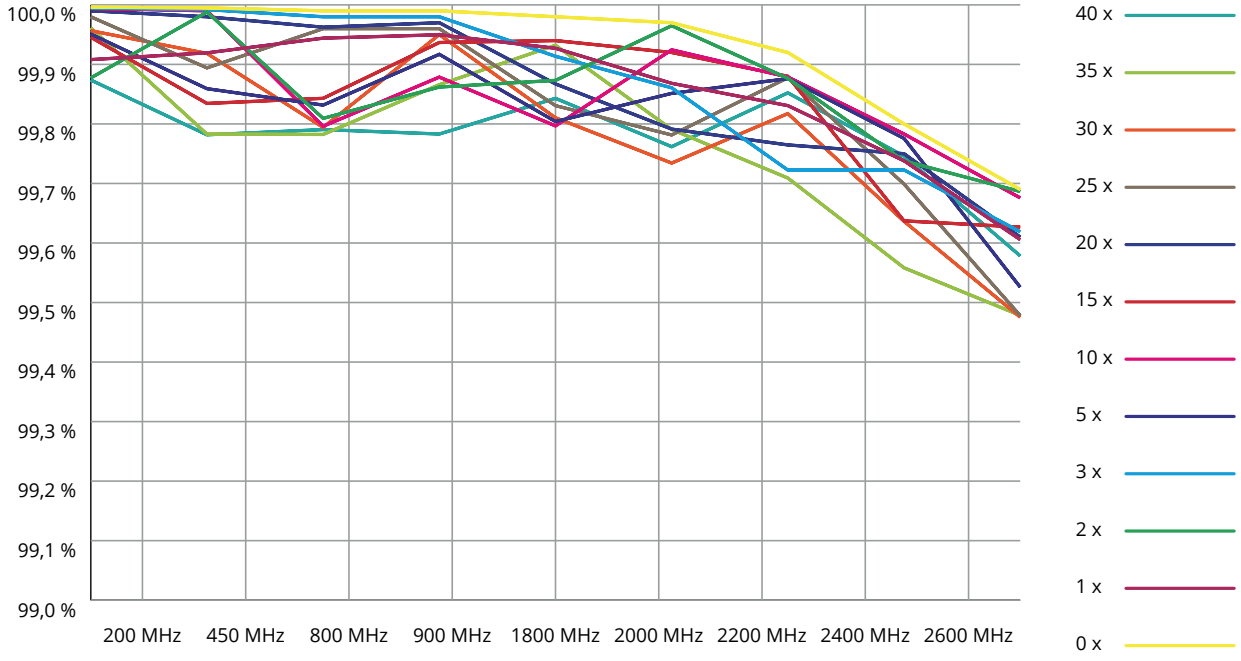
Wash test

Wash test - Picasso - Ecover



Wash test

Wash test - Picasso - Sodasan



The above information corresponds to the current state of development. In any case, they are to be regarded as non-binding, as we have no influence on the washing and the conditions regarding water etc. vary locally. Claims arising from this information are therefore excluded. The same applies to the commercial and technical advice and information provided free of charge and without obligation. We therefore recommend that you carry out your own tests to determine whether the product is suitable for the intended use. With the publication of these versions, all previous technical information (leaflets, installation recommendations and other versions intended for similar purposes) become invalid.

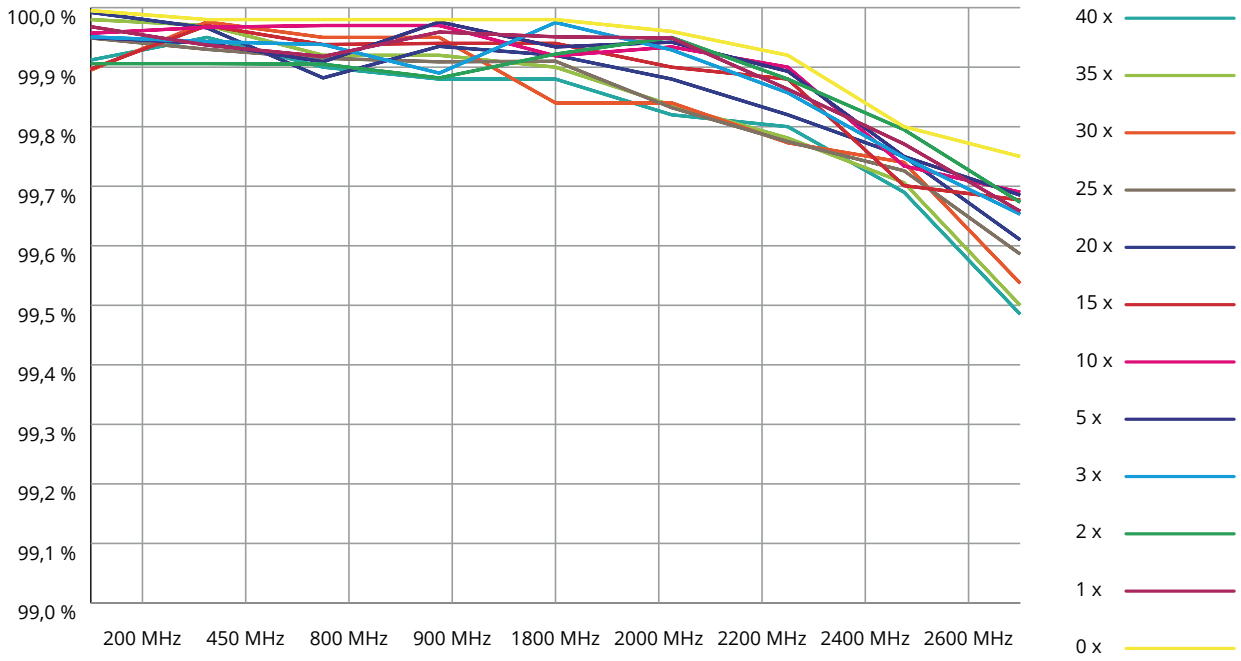
***Biologa Danell GmbH • Hauptstraße 27 • 72336 Balingen • +49 7433 955 7172 • info@biologadanell.com • www.biologadanell.com

© 2022 Biologa Danell GmbH - The graphics, photos and texts used here may only be used with the express permission of Biologa Danell GmbH.

EN-WASCH.TEC-HTEX-V2.1.1-090622

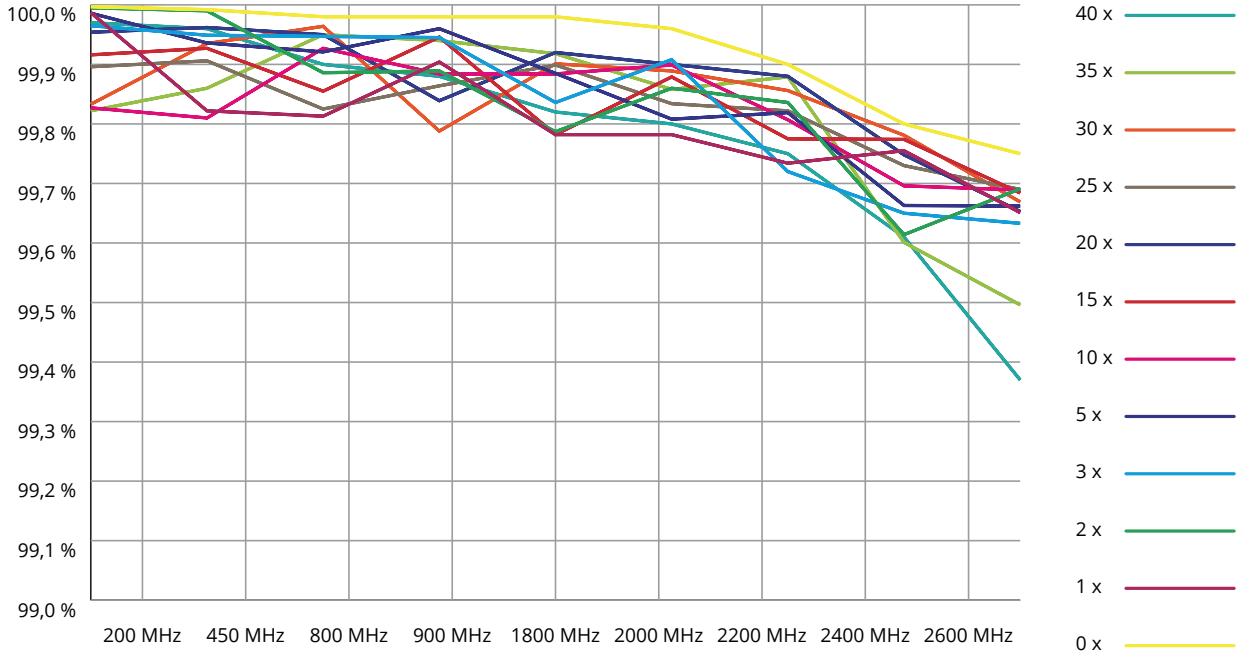
Wash test

Wash test - Dali - Ecover



Wash test

Wash test - Dali - Sodasan



The above information corresponds to the current state of development. In any case, they are to be regarded as non-binding, as we have no influence on the washing and the conditions regarding water etc. vary locally. Claims arising from this information are therefore excluded. The same applies to the commercial and technical advice and information provided free of charge and without obligation. We therefore recommend that you carry out your own tests to determine whether the product is suitable for the intended use. With the publication of these versions, all previous technical information (leaflets, installation recommendations and other versions intended for similar purposes) become invalid.

***Biologa Danell GmbH • Hauptstraße 27 • 72336 Balingen • +49 7433 955 7172 • info@biologadanell.com • www.biologadanell.com

© 2022 Biologa Danell GmbH - The graphics, photos and texts used here may only be used with the express permission of Biologa Danell GmbH.

EN-WASCH.TEC-HTEX-V2.1.1-090622

Washing instructions home textiles

Further information

Further information

Colour fastness (Dali+Picasso+Swiss Shield Naturell)

Shades, colour differences and batik-like discolourations are not manufacturing defects and do not represent quality defects. Silver-plated products or products made of natural cotton are subject to colour change. This usually has no influence on the screening attenuation of the material.

Washing temperatures

Higher washing temperatures are not necessary due to the antibacterial properties of silver.

Storage

If you do not use the purchased product immediately after purchase, we recommend that you leave it in its original packaging until use and store it in a dry place at normal room temperature (20 °C +/- 2 °C and 50 % +/- 10 % humidity). The storage location should not be exposed to direct sunlight and should be free from acidic and alkaline media.

Washing instructions home textiles

Frequently asked questions

FAQ

Durability of shielding textiles?	Shielding textiles are subject to chemical and mechanical wear just like conventional textiles. Do not wash shielding textiles too often and only ever wash them according to these instructions in order to achieve maximum durability. Measure from time to time. If your shielding textile has no or no longer sufficient attenuation, you should replace it. Biologa Danell has no influence on your environmental variables.
Can I also use shielding textiles outdoors?	Never use shielding textiles outdoors! Exclusively indoors in front of windows, doors, walls and on ceilings.
Which silver is used in shielding textiles?	Biologa Danell uses microsilver in shielding textiles. We does not sell products with incorporated nanoparticles.
Can the incorporated silver drop off the textile?	The silver is so firmly bonded to the yarn that it will not come off under normal mechanical stress. This is additionally reinforced by insulation.

The above information corresponds to the current state of development. In any case, they are to be regarded as non-binding, as we have no influence on the washing and the conditions regarding water etc. vary locally. Claims arising from this information are therefore excluded. The same applies to the commercial and technical advice and information provided free of charge and without obligation. We therefore recommend that you carry out your own tests to determine whether the product is suitable for the intended use. With the publication of these versions, all previous technical information (leaflets, installation recommendations and other versions intended for similar purposes) become invalid.

***Biologa Danell GmbH • Hauptstraße 27 • 72336 Balingen • +49 7433 955 7172 • info@biologadanell.com • www.biologadanell.com

© 2022 Biologa Danell GmbH - The graphics, photos and texts used here may only be used with the express permission of Biologa Danell GmbH.

EN-WASCH.TEC-HTEX-V2.1.1-090622