Technical Information (USA)

Sanitized® T 20-19

Hygienic finish for textiles, including their use in contact with human skin

Fields of Application

Textiles, including textiles used in permanent direct contact with the human skin.

Application possible on CO, WO and blends of these fibers.

Examples:

Apparel
Underwear, outer garments, work wear, sportswear, outdoor garments

Home textiles
Furniture, curtaining, bathroom textiles, terrycloth, tea towels, table cloths, wipers

Bedding textiles
Mattresses, casings for pillows and quilts, bed sheets, fitted bed sheets, covers for pillows and duvets, mattress protectors

Mode of Action and Advantages

Substrates treated with Sanitized® T 20-19 are noted for their proven, outstanding skin tolerance and are safe for man and environment.

Sanitized® T 20-19 has a reliable and durable bacteriostatic effect against a large number of gram-positive and gram-negative bacteria and some yeasts such as representatives of the Candida group.

Sanitized® T 20-19 is bound to the fiber surface.

Advantages:

- Lasting hygienic freshness and wear comfort
- Prevents development of odors caused by microbes
- Excellent wash fastness
- Good compatibility with textile chemicals like fluorocarbons, flame retardants, softeners, binders, linking agents, etc.
- Excellent temperature stability
- Dermatologically tested
- The active substance is free from AOX
- Easily bio-degradable
- EPA approved
- bluesign® filed
- Accepted for OEKO-TEX Standard 100

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Characteristics

Composition	Silane-functional tetraalkylammonium compound in a high-boiling glycol ether
Commercial form	25 kg jerry cans
pH value (20 °C)	6.7-8.7 (5 % in water)
Ionic character	Slightly cation-active
Density at 20 °C	1.0-1.04 g/cm³
Viscosity	Approx. 30 cP (20°C)
Flashpoint	65 °C
Appearance	Yellowish, clear liquid with amine-like odor
Solubility	Soluble in tap water up to max. 5 %. (Attention: the product is sensitive to impurities caused by ion exchangers)
Compatibility*	Can principally be applied in combination with textile chemicals in the same bath. Compatibilities must be tested in pre-trials, particularly in applications with a single bath using optical brighteners and anion-active textile auxiliaries. Influence of thermo-migrating dyes on textiles containing PES is possible. This has to be checked in pre-trials.
Fastness*	Fastness to washing, light and perspiration.
Temperature stability	Stability on textiles assured up to approx. 180°C
Reaction at air	Sanitized® T 20-19 is a reactive product. (Its fixation strength bases on this reactivity). Packages must immediately be relocked after discharging of product. This precaution prevents hydrolysis of the product which would make it unworkable for application.
Ecology	Easily bio-degradable acc. to OECD 301 A
Skin tolerance	The product in its commercial package is reactive and corrosive; handle only using protection gloves, protection clothing and goggles (see MSDS). In the application process, the product reacts with the textile surface and loses its reactivity and corrosivity. Textiles treated with Sanitized® T 20-19 have been tested for skin irritation properties. No sensitization or irritation has been observed.

* These statements concerning the compatibility and fastness of the finish are indications of the possibilities known to us for the use of our product and reflect the state of our knowledge at the present time. Specific performance parameters for finished material should, in each case, be assessed by the user before commercial application.

Special remark* Material that contains butylated hydroxytoluene (BHT) or derivatives thereof and that is used for packaging of textiles treated with Sanitized® T 20-19 may lead to discoloration (phenolic yellowing) of the textiles. Therefore, it has to be ensured that all package material, including sheeting, clips, stickers, labels, tags, outer packages, change package materials etc. is free from BHT or compounds with a similar effect. Should this not be ensured, a consecutive treatment following the recipe indicated below is recommended.

Padding application	
Hydroperm RPU liq.	20 g/l
Siligen TOW liq. c	5 g/l
Umidol APY	10 g/l
Sanitized® T 20-19	X g/l (quantity as shown in the table)
pH	6.0-6.5

Application

Pretreatment

The durability of a Sanitized® treatment demands that textiles are free of all impurities and foreign substances (e.g. brighteners, surfactants, unfixed dyes, coning oils, etc.) before the textile is treated with a Sanitized® product. To achieve the best performance it is mandatory to follow the below procedure:

The textile should show the following values before application of the Sanitized® product :
Drop test: Sink-in time < 3 Sec. knitted fabric
Drop test: Sink-in time < 10 Sec. woven fabric or similar
pH value of the textile material: Target pH < 7

These values indicate that the textile is pure. The ultimate proof is given by an extraction with analysis of the extract. For yarn dyed articles every color must fulfil the aforementioned requirements.

Discontinuous pre-wash for textiles > 5 % elasthane
Treatment on jet machine (liquor ratio 1:10)

1. 1-2 g/l Humectol C liq
   1 g/l Dekol2005 liq c
   30 minutes at 85°C, then drain
2. Rinse warm (80 °C) for 10 minutes, then drain
3. 2 g/l Sirrix NE liq
   2 g/l acetic acid 60 %
   15 minutes at 40 °C, then drain
4. Rinse cold for 10 minutes

Discontinuous pre-wash for textiles < 5 % elasthane
Treatment on jet machine (liquor ratio 1:10)

1. 2 g/l Imerol JSF liq
   1 g/l Dekol 2005 liq c
   0.5 g/l caustic soda
   30 minutes at 85 °C, then drain
2. Rinse warm (80 °C) for 10 minutes, then drain
3. 2 g/l Sirrix NE liq
   2 g/l acetic acid 60 %
   15 minutes at 40 °C, then drain
4. Rinse cold for 10 minutes

Continuous prewash
Treatment on a continuous washing machine with six washing chambers.

1. Chamber	2. Chamber	3. Chamber	4. Chamber	5. Chamber	6. Chamber
water: 85° C	water: 85° C	water: 85° C	water: 85° C	water: 40° C	cold water
2 g/l Hostapal MRZ liq 1 g/l Dekol 2005 liqc 1 g/l caustic soda	2 g/l Hostapal MRZ liq 1 g/l Dekol 2005 liqc 1 g/l caustic soda			3 g/l Sirrix NE liq 3 g/l acetic acid 60%	

After the washing process the pH-Value of the textile should be < pH 7 as well as for the drop-test a value of < 3 seconds for knit fabric < 10 seconds for woven fabric should be attained.

Application

Padding process

Recommendations

Dosages %	Requirements
0.2-0.3	5-10 Home launderings
0.3-0.4	< 20 Home launderings
0.4-0.8	>20 Home launderings

Concentration

The application concentration of Sanitized® T 20-19 has to be determined according to substrate type and structure, other textile effects aimed at, as well as the desired permanence of the finish. The range varies from 0.2 to 1.0 %, referring to the dry weight of the treated textile. The recommended start concentration for trials on material with a weight of approx. 120-300 g/m^2 and a use life implying wash fastness during 20 wash cycles is 0.6 % Sanitized® T 20-19. Best results are obtained on CO, CO blends and wool.

Application concentrations:

m (Textile (g/m^2)	**Application conc. [%] Sanitized® T 20-19**			*m(Textile g/m^2)*	**Application conc. [%] Sanitized® T 20-19**		
	CO*	WO			CO	WO	
				130	0.6	0.7	
				150	0.6	0.7	
70	0.8	1.0		200	0.6	0.6	
80	0.7	0.9		330	0.4	0.5	
120	0.6	0.8		400	0.4	0.4	

* Also for CO/PES blends with at least 1/3 CO

Bath / preparation

For padding applications the undiluted and unfiltered Sanitized® T 20-19 is stirred as last component into the already completed bath.

Padding: feed the whole quantity of water (drinking resp. tap water) in the bath. Then add additional chemicals e.g. dyestuffs, wetting agents, dispersions, sewability improvers, handle improvers, fluorocarbons, flame retardants, etc. Finally, stir the undiluted Sanitized® T 20-19 into the bath.

The bath must be used up within a few hours. Sanitized® T 20-19 is not sensitive to water hardness and temperature. The product itself is mpt pH-sensitive and can be applied at values ranging from strongly acid to neutral. The product can be used at any pick up ratio.

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Application concentration g/l, depending on pick up:

Application concentration [%]	liquor pick up [%]								
	40	50	60	70	80	90	100	110	120
	g Sanitized® T 20-19 / l liquor								
0.2	5.0	4.0	3.4	2.9	2.5	2.2	2.0	1.8	1.7
0.3	7.5	6.0	5.0	4.3	3.8	3.3	3.0	2.7	2.5
0.4	10.0	8.0	6.7	5.7	5.0	4.4	4.0	3.6	3.3
0.5	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
0.6	15.0	12.0	10.0	8.6	7.5	6.7	6.0	5.5	5.0
0.7	17.5	14.0	11.7	10.0	8.8	7.8	7.0	6.4	5.8
0.8	20.0	16.0	13.3	11.4	10.0	8.9	8.0	7.3	6.7
0.9	22.5	18.0	15.0	12.9	11.3	10.0	9.0	8.2	7.5
1.0	25.0	20.0	16.7	14.3	12.5	11.1	10.0	9.1	8.3

Drying / condensation

Drying temperature up to max. 180°C. The product is fixed sufficiently with thermal condensation at 160 °C.

Quality testing by Bromophenol Blue Test

The Bromophenol Blue Test is a qualitative test giving semi-quantitative results if carried out with a UV/VIS-photometer and under condition that the substrate has not been washed.
A test description is available from SANITIZED AG.

Remark: Other cationic textile chemicals (e.g. softeners, fixing agents, etc.) may influence the result of the Bromophenol Blue Test.

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Exhaust process

Application concentration

The application concentration of Sanitized ® T 20-19 has to be determined according to substrate type and structure, other textile effects aimed at, as well as the desired permanence of the finish. The range varies from 0.4 to 1.0 %, referring to the dry weight of the treated textile. The recommended start concentration for trials on material with a weight of approx. 120-300 g/m^2 and a use life implying wash fastness during 20 wash cycles is 0.6 % Sanitized ® T 20-19. Best results are obtained on CO, CO blends and wool at an exhaust temperature of 40°C to appr.120°C.

m (Textile g/m^2)	Application conc. [%] Sanitized® T 20-19		*m(Textile g/m^2)*	Application conc. [%] Sanitized® T 20-19	
	CO*	WO		CO	WO
			130	0.6	0.7
			150	0.6	0.7
70	0.8	1.0	200	0.6	0.6
80	0.7	0.9	330	0.4	0.5
120	0.6	0.8	400	0.4	0.4

* Also for CO/PES blends with at least 1/3 CO

Bath / preparation

For exhaust applications Sanitized® T 20-19 has to be applied as first component. Usually, softeners and other effect additives can be applied subsequently in the same bath. Other used effect agents e.g. wetting agents, sewability improvers, handle improvers, fluorocarbons, flame retardants, etc. are added to the bath after a certain retention time.

Application concentration g Sanitized® T 20-19 /100 l liquor depending on relation textile:liquor

Application concentration [%]	Bath relation 1:x									
			5	6	7	8	9	10	11	12
	g Sanitized® T 20-19 / 100 l liquor									
0.2			40.0	33.4	28.6	25.0	22.2	20.0	18.2	16.7
0.3			60.0	50.0	42.9	37.5	33.4	30.0	27.3	25.0
0.4			80.0	66.7	57.1	50.0	44.4	40.0	36.4	33.3
0.5			100.0	83.3	71.4	62.5	55.6	50.0	45.5	41.7
0.6			120.0	100.0	85.7	75.0	66.7	60.0	54.5	50.0
0.7			140.0	116.7	100.0	87.5	77.8	70.0	63.6	58.3
0.8			160.0	13.3	114.3	100.0	88.9	80.0	72.7	66.7
0.9			180.0	150.0	128.6	112.5	100.0	90.0	81.8	75.0
1.0			200.0	166.7	142.9	125.0	111.1	100.0	90.0	83.3
1.1			220.0	183.3	157.1	137.5	122.2	110.0	100.0	91.7
1.2			240.0	200.0	171.4	150.0	133.3	120.0	109.1	100.0

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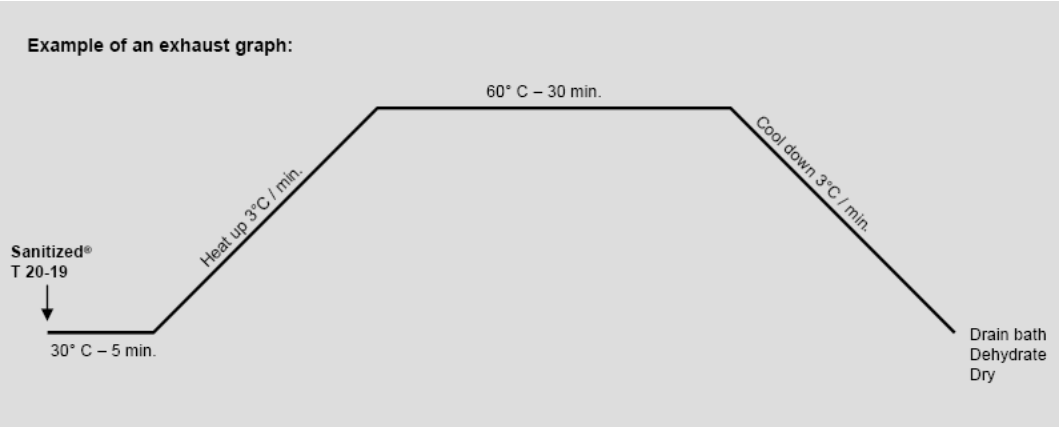
Process prescription

Best results are achieved at a short bath ratio and a slightly acid pH value.

Exhaust process:

- Prepare the required quantity of water
- Add the wetting agent
- Adjust the pH value with acetic or citric acid to pH 4.5-5
- Add the required amount of Sanitized® T 20-19
  (If Sanitized® T 20-19 is added from a preparation receptacle, fill in the 12- to 20-fold quantity of water, stir in Sanitized® T 20-19 until the liquid is homogeneous, then add to the processing liquor)
- Process during a short period; 5 min. 30°C
- Heat up at a ratio of 1-3°C/min.
- Keep during 15-20 min. at processing temperature
- Add the other compatible textile chemicals
- Keep during another 15-20 min. at processing temperature (if no additional textile chemicals are required, the recommended processing duration should be at least 30 min. at maximum processing temperature)
- Cool down to 1-3°C/min.
- Discharge liquor
- Dehydrate and dry (120°C)



Drying / condensation

Drying temperature up to max. 180°C. The product is fixed sufficiently with thermal condensation at 160 °C.

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Microbiological Control

In order to check the effectiveness of the treated textiles the following test method is recommended:

Test:

Germ count	*JIS L 1902 - 2002*	*bacteria*

A simple quality control of the finish during production is possible by use of a water-based color test, respecting some limitations.
Information on these test methods is available at local representatives.

Disclaimer

All claims made on any material have to comply with pesticide registration (PR) Notice 2000-1 or any substituting notice issued by U.S. Environmental Protection Agency, Antimicrobials Division, Washington, D.C.

Sanitized® Quality Seal

With a signed license agreement we transfer the rights to use the Sanitized® quality seal to you. Only substrates corresponding with the SANITIZED standard are allowed to carry the Sanitized® quality seal. Please ask for the detailed SANITIZED documentation on license agreements.

Storage / Handling

Storage stability

12 Months from delivery date, in original sealed containers

Temperature Stability

The best storage conditions are between 15°C-25°C. Transitory deviations of the best storage conditions do not damage the product but temperatures should not exceed 40°C.

The product is not sensitive to frost. Low temperatures may cause partial crystallizing. Heating up at temperatures of about 40°C restore the original liquid state again; however, this is not necessary as the product can be processed also in partially crystallized state.

Reaction to air

Sanitized® T 20-19 is a reactive product. Packages must be relocked immediately after use of product. Storage stability is based on sealed containers. The product is damaged if air can slowly be diffused into it, e.g. at storage in open cans or retention in open preparation receptacles.

Further safety and ecology related information is given in the Material Safety Data Sheet (MSDS).