

Lanadol – the original in wet cleaning

Booklet for professional users



www.kreussler.com

Welcome

to the world of Kreussler wet cleaning

For a long time, sensitive textiles made of wool, cotton or blended fabrics could only be cleaned using solvents that presented a hazard to health and the environment. In cooperation with Miele, Kreussler developed in 1991 the original wet cleaning using the Lanadol procedure which is based on the cleaning power of water in conjunction with mild surfactants, protective substances, and computercontrolled technology. Since then, Lanadol wet cleaning has been systematically refined and established worldwide.

We have prepared this application-specific booklet so you can familiarise yourself perfectly with our procedures.

We recommend this booklet as a decision-making aid and working document for all those who

- intend to open a commercial dry cleaning business,
- intend to add wet cleaning to their range of services as operators of a cleaning business,
- intend to replace a dry cleaning machine,
- and are already applying wet cleaning using Lanadol products and intend to extend their knowledge.

We will explain the basics of Lanadol wet cleaning and the machine-specific requirements.

We will then show you the benefits that wet cleaning presents and what you need to consider during the process.

This information is then complemented with a multitude of practical advice for the care of textiles and for the optimisation of your quality and productivity.

Let us discuss how you can use the potential of professional wet cleaning using the Lanadol procedure for your operation's future.

Your Kreussler Team

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So why not water?

In 1986, we seriously considered this question, based on the report of H. Frank and W. Frank of the Institute of Toxicology at the University of Tübingen, published in the German magazine "Naturwissenschaften" (Issue 72/1985, Springer Verlag). They wrote about the effects of UV radiation on plant diseases triggered by chlorine exposure. Since then, we have thought a lot about alternatives to perc and CFC. We used halogenated CFC, ester, ketones, alcohol-azeotropes, hydrocarbons, and volatile silicones which we applied a patent for. However, all those alternatives were no longer assessed against perc or CFC alone but always also against water, and it became perfectly clear that water could not be beaten if we succeeded in eliminating textile shrinkage. This was our path, and when the perc discussions started we were already on our way. Our objective then was not the replacement of perc but the superior cleaning system – in competition with perc.

Initial reflections of Dipl. Ing. Kaspar Hasenclever, long-standing managing director and head of Kreussler Textile Care Development

The birth of wet cleaning: The Kreussler textile cleaning system

In the 1990s, things got serious for the textile cleaning industry in Germany. The common use of organic solvents such as CFC and perc was partly prohibited because of the hazardous effects on living organisms, plants, air, water, and soil and partly subject to considerable restrictions which threatened the existence of dry cleaners, e.g. in residential areas or near shopping centres.

Another reason for the serious situation of dry cleaners was the fashion-related increase in women's and men's outer garments that did not necessarily need to be dry cleaned but could be cleaned in a domestic washing machine; which made such appliances with the freshness and cleanliness that they gave the garments a future competitor for dry cleaning. Both conditions resulted in a considerable decline in the utilisation of dry cleaning services and therefore also in the number of dry cleaning operations.

In view of the above, Kaspar Hasenclever developed a procedure that allowed even non-washable textiles to be cleaned using the "solvent water" without the risk of shape changes, shrinkage or other damages. It was based on sophisticated mechanics and specially developed cleaning products - the Lanadol product range. He chose the description "wet cleaning of non-washable textiles" for this procedure and had the patent for it registered for Kreussler.









Essential requirements for the procedure were specially adapted machines and driers. The cooperation with the washing machine manufacturer Miele allowed Kreussler to have Miele develop the associated washing and drying technology according to Kreussler specifications for wet cleaning using Lanadol products and to further optimise it as "Miele System Kreussler".

On 3rd of December 1991, the textile cleaning system was introduced to the professional public as the solvent-free alternative to conventional dry cleaning. The attendants could convince themselves of the performance and potential of the new system by wet cleaning their own non-washable textiles.

After more than 25 years, this constantly refined and improved original procedure has become an integral part of commercial textile cleaning and is regarded as the standard for wet cleaning of washable and non-washable textiles. Meanwhile, several countries offer financial incentives for the transition from dry cleaning using solvents to the more environmentally sound wet cleaning option.



Illustration: Press conference for the introduction of the new procedure on the 3rd of December 199rd

Lanadot WET CLEANING

What is wet cleaning?

With Lanadol wet cleaning, Kreussler developed a procedure that really cleans in water. The Lanadol wet cleaning procedure is clearly different from cleaning procedures for textiles which, according to their care labels, qualify as washable. Such textiles do not require the more complex treatment of wet cleaning. They can, for example, generally be cleaned easily and at low cost using the easy-care programs (30 °C, 40 °C) and delicates programs. The care of these textiles was not the primary objective of wet cleaning as developed by Kreussler in 1991 to change the market.

Therefore, Lanadol wet cleaning is about sensitive and often also high-grade clothing. The focus of traditional wet cleaning is on textiles with the care label (P) and/or (F)which cannot be treated using normal washing and drying procedures due to the risk of felting and shrinkage.

Changed mix of goods in cleaning companies

Wet cleaning is more complex than its traditional definition as a professional cleaning process using water for sensitive and non-washable textiles with the care label (P) and (F). In the future, it must be focused more on textile composition and processing than merely on the care label. This approach has always been represented and pursued by Kreussler. Fibre technology as well as the classification and sorting of textiles by materials and their characteristics are therefore focal points in our customer trainings and seminars.

For example, a jacket with a high content of cotton can be removed from the drier with far less residual moisture than a jacket made of 90% new wool.

Wet cleaning concepts that promote cleaning without prior sorting and generally encourage the complete drying of the textiles misjudge the risk of damage with sensitive textiles.

Kreussler offers extra safety

With Lanadol wet cleaning, we recommend a concept that is adapted to the characteristics of the textiles. This ensures the cost-efficient and easy treatment of insensitive textiles as well as maximum protection for sensitive textiles. With only two procedures, Lanadol DRY and Lanadol SENSITIVE, we offer the comprehensive solution for your business. This ensures cleanliness and economic efficiency while avoiding the risk of damage.

Latest trends that support wet cleaning:

- these textiles can be wet cleaned easily.
- This trend is becoming more pronounced by the increasing branch expansion J by the current significance of online trading (e.g. Zalando, asos etc.).
 - This allows a compensation for the decline of high-grade formal brand clothing at the cleaners.



Even less sensitive textiles are icreasingly labeled with (P) or (W). This "overlabelling" is caused by the manufacturers' need for security as in case of doubt they always demand the allegedly safest and gentlest textile care for reasons of liability. However, with the necessary expert knowledge and fibre technology,

At the same time, formal clothing (e.g. suits for men and women) is more and more frequently manufactured using lower-grade and also less sensitive fibres. Formal and elegant fashion is therefore becoming more affordable for more customers who will have them cleaned increasingly by professional cleaners.

in stationary trading (e.g. PRIMARK[®], H&M, Pull&Bear[®], Mango) and also

Jabanao MET CLEMMING

Set an example with wet cleaning

For many cleaning businesses, the Lanadol procedures have become the key to excellent service for textiles. You should also use this potential to reposition yourself!

Be prepared to meet your customers needs in a quick and flexible manner

All over the world, there is an increasing number of operations and service providers who adapt their working processes partially or completely to wet cleaning in order to ensure uncompromising cleanliness and hygiene in an economical, efficient and environmentally friendly manner. There are above all operations who have understood the current trends and set a good example:

- Environment-conscious textile cleaners who conver from dry cleaning to wet cleaning or start with the environmentally friendly alternative in the first place
- Laundries who want to expand their range of services
- Textile service operations that are quickly and easily available by their customers
- Operations that establish long-term relationships with their customers with attractive and eventful in-store marketing concepts. Attracted by comprehensive store design through improved floor planning and upto-date merchandise presentation of additional items to entertainment approaches, customers will gladly return to these operations with their modern style

- Inhouse laundries or external special service providers who offer nursing and residential homes textile cleaning services with high demands on assured hygiene
- Providers specialised in cleaning corporate fashion

Wide range of services

Not only has the number of users increased but also the variety of services that can be integrated perfectly into the wet cleaning procedure:

- Laundry service for shirts, jeans, blouses, dresses, and suits
- Special services for sportswear, outdoor textiles, and rainwear
- Care service for bridal wear and evening dresses
- Eiderdown cleaning service

Lanadol wet cleaning meets all the requirements for a textile service that handles activities for working people and other service-oriented customers which are often seen as inconvenient and time-consuming. Lanadol wet cleaning is more cost-effective than domestic cleaning and has all the chances to distinguish itself as a modern service with a wide range of options.

Wide range of applications

Textiles	Dry cleaning
Suits	++
Trousers, skirts	++
Dresses, blouses	+
Sportswear and protective clothing	+
Easy care and leisure wear	+
Home textiles/curtains	+
Shirts	+
Bed and pillow service	-
Underwear, bedwear, table linen	-

Rating:

++ = good

- + = possible
- (+) = possible with restrictions
- = not possible

Wet cleaning	Laundry	
++	-	
++	-	
++	(+)	
++	(+)	
++	+	
+	+	
++	++	
++	+	
+	++	



Positive eco-balance

Lanadol wet cleaning is undoubtedly the cleanest, most eco- and health-friendly kind of textile care. It does not use solvents and relies on mild but highly effective chemicals and economic use of water and energy. As this approach is ecologically sensible, wet cleaning technology is even subsidised in many countries (particularly in France and in the USA).

Wet cleaning regains lost acceptance

To satisfy the increase in environmental awareness and the latest ecotoxicological findings, pressure from legislation on the operators of dry cleaning businesses increased and the compliance with the restrictions became ever more complex. Lanadol wet cleaning has put an end to these substantial legal and official difficulties, and it has turned the shortcomings of an entire trade into flourishing figures for the environment and also for the cleaning companies and their customers. The eco-label "Blue Angel" that cleaning companies can apply for is a prime example of ecologically viable actions to protect man and nature.

Pioneering work for environmental protection

The RAL UZ 104 "Wet cleaning" was the first ecolabel granted for commercial textile cleaning. Consumers had previously known the label "Blue Angel" particularly from household products that were manufactured according to ecological criteria. The granting of this ecolabel shows the innovative character and the pioneer status of wet cleaning in professional textile care. We gladly support our customers in the application for the granting of the ecolabel "Blue Angel".

Positive for the working atmosphere in the cleaning trade

The employees of many wet cleaning businesses appreciate the pleasant working atmosphere since wet cleaning using the Lanadol procedures requires only water as well as cleaning agents that are biodegradable and have been dermatologically tested with "very good results"; there is no need for hazardous solvents.



Efficiency – the key to success

Wet cleaning is not only environmentally friendly and efficient, it is also a success under economic aspects: Inexpensive to purchase, widely subsidised and economical in the consumption of water, energy and the biodegradable, environmentally compatible Lanadol products.



Shorter batch times for higher profitability

Besides the aformentioned benefits, there is another strong argument for wet cleaning: Its high profitability due to the shorter batch times and a short retention time of approx. 20 minutes per load in the wet cleaning machine and 3 to 30 minutes in the drier. This ensures an effective use of the machines (2-3 batches per hour) and means that the initial investment pays off more quickly.

Excellent performance at low consumption



The amount of water per kg of wet cleaned textiles is approx. 6 litres so that the fresh water consumption is lower than the cooling water demands in dry cleaning. Unlike in dry cleaning, there are no costs for the disposal of chemical residues. The cleaning process itself consumes significantly less energy and water so that the overall cost balance for wet cleaning is more favorable.

Absence of solvents minimizes the hazard potential



The site selection is far easier as there are no restrictions for solvent-free wet cleaning, and a further advantage is the fact that government subsidies may be claimed in some cases for wet cleaning as the most ecological kind of textile care.



Kreussler customer service: always there for you

What type of companies can use wet cleaning? Do we recommend retrofitting your system or reinvestment? And how do we support our customers in machine setup and staff training? Use our website as well as the know-how and the experience of our competent application engineers and of our office service.

Individual consulting - tailored to your requirements

Textile companies, laundries, new special services and trade providers – each industry segment has its own requirements. We offer individual consulting on how to integrate wet cleaning programs into existing washer extractors and how to fit drum driers with residual moisture sensor machine technology. We also tell you when an investment in the latest models that have been designed especially for wet cleaning technology is the most sensible solution. Our field representatives have many years of experience in commercial textile care and share their experience to support you in your decision-making.

Comprehensive support and ongoing training - at your place if needed

We are on the spot when it matters: For retrofits and conversions as well as for initial installations and calibration of new equipment technology. In addition, we offer you and your employees seminars and activities from basics to the latest developments in wet cleaning technology. Our practice-oriented trainings are usually held at our technical centre in Wiesbaden. Alternatively, we can also train your employees in inhouse seminars - at your site and customized to your company's requirements. Just send us an e-mail at Technikum@kreussler.com to learn more.

Always there for you

If you have any questions, we have time to answer them – on the phone or face-to-face. In addition to that, you find answers to a multitude of questions on our homepage www.kreussler.com.

The procedure and its benefits

What is the approach for the procedure? What does it do in comparison to dry cleaning? And what are the benefits for the textile care industry?



Cleanliness

Most of the common stains on textiles are water-soluble and can be removed with water far better than with solvent. They comprise of beverage stains, all forms of food stains, body excretions, salts, and also particles such as pigments or road dust. Wet cleaning offers distinctive advantages for removing these stains.



Protective fibre film

Natural fibres have the unfavorable tendency to swell in water. To prevent them from losing their size and shape, a protective colloid becomes effective during Lanadol wet cleaning, forming a film around the fibres which also reduces the tendency for felting. Further Lanadol products that have been specially created for the procedure ensure excellent cleaning and care results as well as brilliant colors, scented freshness, and skin-friendly characteristics.



Gentle machine technology

Another key to the success of the Lanadol wet cleaning system are the gentle washing, spinning, drying and finishing processes that provide additional protection against felting and shrinkage. They are based on an extremely low liquor level, short yet intense compression pulses, gentle drying and process-adapted finishing equipment and pressing technology.

Environmentally friendly procedure

Wet cleaning is performed using water and biodegradable cleaning agents. The Lanadol products therefore meet all the requirements for the environment label RAL UZ 104 and also for an application for the eco-label "Blue Angel", while the working environment benefits from being solvent-free as well.

High profitability

The costs for purchase and installation as well as the running costs are considerably lower than for conventional dry cleaning: Shorter batch times per washing and drying cycles have a positive effect on the machine investment while the low consumption of water, energy, and cleaning agents minimizes the costs for raw, auxiliary, and operating materials.



Machine requirements

Besides special fibre-protecting cleaning agents, the Lanadol wet cleaning procedure requires a particular cleaning and drying technology. The peculiarity of this machine technology is the introduction of frequencycontrolled motors, special carrier ribs and a drum design that ensures protection of the fabrics. High g-factors ensure improved dewatering of the textiles.

Conventional washer extractors are not always suited for wet cleaning, whereas wet cleaning machines can be used like conventional washing machines.

Modern drying technology for washer extractors

Sensitive textiles and even textiles that are labelled as "non-washable" are cleaned in water at low liquor level with a mechanical washing action consisting of intervals of short compression pulses and extended relaxation times. The batch is dewatered by high centrifugal acceleration during the spinning process. The textiles are then dried up to the defined residual moisture values by fabric-protecting drum driers with intelligent control and measurement systems.

Finishing equipment

A well-equipped ironing board is indispensable. Ideally, items such as blazers and suit jackets are perfected using a finisher. A trouser topper and a press facilitate working but are not strictly necessary. To put it in a nutshell: The finishing quality that a professional textile care operator provides is far superior to that of domestic appliances. Therefore, good finishing equipment is very important as the consumer has every right to demand a perfect finish of the cleaned clothing.



Drum radius

DRUM DRIER

MACHINE Drum radius

Carrier ribs

Reversion

Spinning

Drum perforation

Level regulation

Drum design Airflow

Temperature control

Residual moisture



FINISHING EQUIPMENT

Finisher

Trouser topper

Ironing table



* The g-factor is a dimensionless number and is expressed as a multiple of the gravitational acceleration. By expressing the g-factor for a rotation, e.g. during the spinning process, the dewatering capacity of wet cleaning machines can be assessed by comparing their g-factors. In the cleaning industry, the g-factor is calculated by applying the following formula: $g = 5.6 \times d \times n^2 \times 10^{-4}$ [the drum diameter is given in meters, the drum speed is n in 1/min.]. The formula clearly shows that the g-factor is proportional to the drum diameter and to the square of the speed.

> 35 cm
Fine perforation with negative profile
Scoop ribs
Liquor ratio 1:3 must be possible
Requires freely programmable
regulation drive
q-factor* > 350; the higher the better

> 50 cm

Even periphery with rounded carrier ribs High-capacity airflow at low flow velocity Temperature program with control of air inlet and outlet temperature

Requires exact, self-calibrating electronic residual moisture measurement

With controlled hem and height tension, controllable air volume and air temperature. High airflow rate with good heat transmission

With tensioner for controlled vertical tension. High airflow rate with good heat transmission

With vacuum/blowing device and swing arm for sleeves. Press not strictly required but very useful for ironing trousers and for finishing jackets and coats



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Automated dosing systems

Automated dosing systems ensure compliance with predefined parameters, avoid costly overdosing and ensure the correct procedure workflow for each program. Set programs add exactly the components and quantities which are required for an optimum cleaning result, at the perfect time.

There is a big difference between wet cleaning and washing. The dosing system, different washing and drying programs as well as a customised range of wet cleaning agents and washing agents help to make that distinction. A system comprising of four pumps (two dual head pumps, see the illustration), two wet cleaning agents from the Lanadol product range and two washing agents (e.g. from the ESDOGEN product range) can be sufficient for the automated care of all your textiles: Load the machine, select the program and use the time until the program is finished for more important things. The dosing system in combination with the machine programming ensures the correct selection of the products and their exact dosage during the procedure.

Profitability and safety guaranteed

Pump blocks with four or six peristaltic or membrane pumps are the most frequently used arrangements in practice. Two pump sizes are available, depending on the machine size. The programming of the pumps is carried out wirelessly via a USB flash drive. The control has an integral batch counter that gives detailed information, e.g. about the frequency of the used programs or product consumption.

The technical service of Kreussler comprises consulting, installation, documentation, commissioning, and programming of the dosing equipment. From the integration of the latest technology into an existing machine fleet to the conception of a new operation - Kreussler finds the optimum solution for any need.



Illustration: Two double head pumps from Brightwell

Our solution for small to medium-sized laundries, textile cleaners with or without laundry and OPL operations (retirement homes etc.)

a) Peristaltic pumps (e.g. Brightwell WL and WH series)

• 2 to 8 pumps for 2 to 8 products

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- Modularly combinable system of WL (low flow) and WH (high flow) series flexibly expandable
- Good price-performance ratio
- In comparison to membrane pumps, regular hose replacement and recalibration required

b) Membrane pumps (e.g. Brightwell WHD series)

- 2 to 8 pumps for 2 to 8 products
- Modularly combinable system of low flow and high flow pumps – flexibly expandable
- In comparison to peristaltic pumps, more expensive to obtain
- Minimal maintenance and no hose replacement costs ensures safe and constant dosing of the chemicals over a long period

Both pump systems can be extended with:

- Empty notification
- Program selection switch
- Flushing unit





Sample installation for wet cleaning and washing with only four products. Installation with Brightwell pumps also possible.





The Lanadol product range – versatile solutions for a variety of requirements

Kreussler, as the inventor of wet cleaning, offers a full product range including a multitude of special solutions for non-washable modern outerwear made of sensitive fibres to leather and up to finishing and hygienic treatments at 20 °C, e.g. for retirement and nursing home textiles. All products of the Lanadol range are particularly environmentally friendly and free of phosphates, optical brighteners, EDTA, NTA, and musk fragrances. They also comply with the standards for washing and cleaning agents in accordance with the "Blue Angel"awarding regulations for wet cleaning.









Finishing



Leather

For wet cleaning leather and furs



For hygienic treatments







How wet cleaning works



Classification of goods

After the goods have been received, they are classified. The first classification criteria is the care labelling (washable or non-washable textiles). Textiles with the label (P) and (F) ("dry clean only") which are at the same time not labelled for any type of wet cleaning may be subject to treatment risks that are not recognisable during a simple revision of the goods. Particularly the interior parts of jackets may contain materials whose dimensional stability is insufficient so that the risk of textile damage exists or substantial finishing effort may be required. Wet cleaning using Lanadol SENSITIVE is usually possible provided that all technical requirements are met and the operating personnel have the necessary experience. The sensitivity of the textiles determines which care procedures are appropriate for the wet cleaning machine and the drier.

Sorting of goods

For stained textiles that were classified for the Lanadol SENSITIVE procedure, the stains must be spotted or pre-brushed. This intermediate step may not be required for textiles that were classified for the Lanadol DRY procedure; pre-brushing is not required here. After having been classified for the individual Lanadol procedures, the textiles are sorted by bright/dark colors and by their surface weight. The more insensitive a textile is, the more flexible it is for sorting. However, please avoid the treatment of sensitive silk or viscose materials, e.g. blouses or dresses, together with heavy wool or cotton textiles in one batch. If the amount of textiles is not sufficient to use the overall load capacity for the individual sortings, batches within the bright/dark and light/heavy sortings may be combined using the appropriate more gentle Lanadol procedure.

Color fastness test

For more intense colors, it is recommended to perform a rub test to determine the color fastness of the textile: If a white cotton cloth soaked with a 1 % solution (=10 g/l) of Lanadol AKTIV is stained, the textile should be treated either seperately or together with darker textiles.

Cleaning, drying, and finishing

Subsequent to the preceding steps, the textiles are cleaned and dried using the appropriate procedures and then finished.

The Lanadol procedures in comparison

Lanadol DRY			
	Lanadol X-PRESS		
Type of goods/Application	For 90–95 % of all textiles (less sensitive textiles)		
Fibre type/Textile type	All fibres (except for silk, cashmere, new wool, linen, etc.)		
Examples	Jackets, blazers, men's suits, women's suits, coats, etc.		
Procedure description	Wet cleaning without pre-brushing with Lanadol X-PRESS		
Pretreatment	Pre-brushing not required *		
Drying	Full drying in the drier (Dry-to-Dry)		
Finishing	Low finishing effort		
Mechanical action	Reversion rhythm 3/27		
Loading	60–70 %		
Process time incl. drying and finishing	50-55 minutes		

* In case of extremely persistent stains, e.g. pen ink, rust, etc., please refer to the DEPRIT product range

	Lanadol SE
Lanado AVANT	Lanad AKT
Type of goods/Application	Highly sensitive non-
Fibre type/Textile type	Silk, angora, merino,
Examples	Dresses, jackets, blaz
Procedure description	Classical wet cleaning
Pretreatment	Pre-brushing/Pre-sp
Drying	Loosening in the drie
Finishing	Higher finishing effo
Mechanical action	Reversion rhythm 3/
Loading	50-60 %
Process time incl. drying and finishing	Approx. 24 hours incl



NSITIVE			
dol IV			
n-washable textiles			
o, cashmere, linen, new wool, down, etc.			
zers, woolen sweaters, evening wear, etc.			
ng using Lanadol AKTIV that does not require labeling			
potting for stained textiles			
ier/Air drying			
ort			
/57			
cl. air drying over night			

Lanadol DRY procedure for up to 95% of all textiles



This group comprises less sensitive textiles, e.g. robust textile blends made of wool and polyester that allow accelerated machine drying to low residual moisture values. However, the classification of materials fit for this procedure requires experience.

Sorting of goods

The goods are sorted by bright/dark colors and by surface weight. The textiles also need to be tested for color fastness. An important factor in the sorting process is the careful inspection for damages such as holes, tears, worn parts, and color defects. Always document detected defects, then check the pockets to ensure that they are empty.

Recommended products

A particularity of the Lanadol DRY procedure is the use of only two products as well as the elimination of pre-brushing:



Preparation and Pre-spotting

This step can be skipped in the Lanadol DRY procedure because of the particular product characteristics of Lanadol X-PRESS (highly effective multi-enzyme complex in combination with cold-active surfactants).

Pre-cleaning

In case of extreme staining, preclean the goods for 5 minutes using 3 ml/l Lanadol X-PRESS.

Cleaning using the Lanadol DRY procedure

Lanadol DRY is the procedure that ideally covers the aforementioned latest trends in textile care, particularly the increasing proportion of less sensitive clothing. It has been optimised with regard to cleanliness and productivity like no other procedure. For textiles made of wool or cotton blends with synthetic fibres such as viscose, a highly effective enzyme complex and a powerful surfactant system in the special cleaning agent Lanadol X-PRESS ensure excellent stain removal, so that pre-brushing is not required. The extraordinary performance of the procedure is due to the elimination of pre-brushing, the loading of up to 70 % and the full drying of the textiles. The batch times from cleaning to finishing amount to merely app. 50 minutes. In combination with the continuous working process without any bottlenecks, the Lanadol DRY procedure ensures a quick and flexible delivery service.

Wet cleaning procedure Lanadol DRY

Lanado

Machine load:

Water inlet:

Dosing:

Time and revolution rhythm:

Gentle reversion:

Temperature:

Bath drainage

Intermediate spinning:

Fibre protection

Machine load:
Water inlet:
Dosing:
Time and revolution rhythm:
Dosing:
Time and revolution rhythm:
Gentle reversion:
Temperature:
Bath drainage

Final spinning



60–70 %
Low level 1:3
5 ml Lanadol X-PRESS per litre of liquor
2 min. (3–5 sec. run, 25–27 sec. stop)
8 min. (3–5 sec. run, 25–27 sec. stop)
25–30 °C
1 min. at 450 rpm

60-70 %
Low level 1:3
3.5 ml Lanadol APRET per litre of liquor
2 min. (3–5 sec. run, 25–27 sec. stop)
3.5 ml Lanadol APRET per litre of liquor
2 min. (3–5 sec. run, 25–27 sec. stop)
2 min. (3–5 sec. run, 25–27 sec. stop)
25–30 °C

4 min. at 950 rpm

25

Lanado

Drying in the Lanadol DRY procedure

The sorting of the goods by identical drying behavior (surface weight, composition of materials) is particularly crucial here. If the drier allows limitation of the hysteresis between overshooting and undershooting the setpoint temperature, the hysteresis should be set to +/-3 °C. When given the choice between electrically heated and steam-heated drying, electrically heated driers rarely tend to overheating; they are slightly slower in reaching the setpoint temperature but are, like heat-pump tumble driers, a good choice for wet cleaned textiles. In general, good results can be achieved with each of the described systems provided that the parameters are set correctly.

Drying is performed until the textiles have a dry grip. The residual moisture of the textiles is then in a range of 3 to 5 % which is ideal for the subsequent finishing. Depending on the make of the drier, the temperature and the preset residual moisture can be monitored; alternatively, the drying can be performed using the parameters temperature/time.

For mixed batches, temperature/time drying can achieve reliable results as residual moisture sensors measure an average residual moisture and therefore require similar drying characteristics of the textiles to ensure reliable measurements. Overdrying results in an increased finishing effort, and damages to the textiles may occur.

After the drying process, the textiles are placed on hangers before being inspected and finished. Stains that are still present after the main cleaning are posttreated using the products of the DEPRIT Professional product range.

Finishing

Basically, the same finishing techniques as for dry cleaning are applied. In the Lanadol DRY procedure, the drying up to dry grip essentially simplifies the finishing process, so most cases require only ironing.

Drying procedure Lanadol DRY					
Step	Operation	Time/min.	Reversion rhythm	T/°C Outlet	Heating
1	Drying	4'	/	42 °C	Heat medium Inlet 55 °C, Outlet 42 °C
2	Drying	25' (corresponds to 3–5% residual moisture)	1	32 °C	Heat medium Inlet 50 °C, Outlet 32 °C
3	Cool-Down	3'	/	/	1





This group comprises particularly sensitive textiles that cannot be cleaned with the usual domestic washing procedures. The treatment requires special handling to minimize the risk of textile shrinking or deformation. When the Lanadol SENSITIVE procedure is applied properly, sensitive knitwear made of wool, cashmere or lambswool is treated better and more ecologically than in perchloroethylene.

Sorting of goods

The textiles are sorted by bright and dark items. The batch is made up by textiles of comparable surface weight and stained textiles. If the clothing is stained, the pretreatment of the stains (pre-spotting) should be combined with a careful inspection of the textiles to be cleaned. Check for defects such as holes, tears, worn parts and color defects. Always document detected defects, then check the pockets to ensure that they are empty.

If required, the textiles must be checked for color fastness.

For the sorting of men's or women's jackets, textiles made of viscose or linen, sensitive knitwear and intensely colored silk items, cleaning using the Lanadol SENSITIVE procedure requires greater care and more expert knowledge than classic dry cleaning.

Recommended products



Preliminary work and pre-spotting

Identified stains are prespotted, e.g. by pre-brushing extensively stained spots such as collar insides, pocket openings, sleeve ends or trouser leg ends with a small amount of Lanadol AVANT. For stains that are difficult to remove we recommend the products of the DEPRIT Professional range.

Pre-cleaning

In case of extreme staining, pre-clean the goods for 5 minutes using 3 ml/l Lanadol AKTIV.

Cleaning using the Lanadol SENSITIVE procedure:

The Lanadol SENSITIVE procedure has been optimised to supplement the Lanadol DRY procedure with regard to particular safety for very sensitive textiles to ensure that such exclusive textiles are wet cleaned perfectly without the risk of shrinking, felting or color loss. The Lanadol SENSITIVE procedure uses relatively low loading and a very gentle reversion rhythm to reduce the mechanical stress on the textiles. This gentle mechanical action in combination with the particularly mild and fibre-protecting Lanadol AKTIV provides a long-term value retention for highly sensitive textiles.

Wet cleaning procedure Lanadol SENSITIVE

Machine load:

Water inlet:

Dosing:

NY.

Time and revolution rhythm:

Gentle reversion:

Temperature:

Bath drainage

Intermediate spinning:

Fibre protection

Machine load: Water inlet:

Dosing:

Time and revolution rhythm:

Gentle reversion:

Temperature:

Bath drainage

Final spinning:



50-60 %
Low level 1:3
5 ml Lanadol AKTIV per litre of liquor
2 min. (3–5 sec. run, 25–27 sec. stop)
8 min. (3–5 sec. run, 55–57 sec. stop)
20–30 °C
1 min. at 450 rpm

Low level 1:3

- 5 ml Lanadol APRET per litre of liquor
- 1 min. (3–5 sec. run, 25–27 sec. stop)
- 4 min. (3-5 sec. run. 55-57 sec. stop)
- 20-30 °C

3 min. at 1100 rpm or 4 min. at 950 rpm

Lanadol SENSITIVE



Drying

The drying characteristics of the textiles (surface weight, composition of materials) must be considered for the treatment in the drum drier. Dry textiles with similar drying characteristics in one batch and select a load that allows the textiles to drop loosely and circulate perfectly in the airflow. Drying removes most of the creases from the tissue. Program the air inlet temperature in the drum drier to a maximum of 80 °C and the air outlet temperature to no more than 60 °C.

Sensitive textiles such as suit jackets are dried up to a residual moisture of 12 to 15%, more durable fabrics to 5 to 8%. Loosen knitwear and light fabrics as well as sensitive jackets up in the drier for only 3 minutes and then unload the goods to prevent heat damage.

After the drying process, the textiles are placed on hangers and dried in the air before being inspected and finished. Stains that are still present after the main cleaning are posttreated using the products of the DEPRIT Professional product range.

Finishina

In addition to an ironing table, a finisher and a trouser topper are useful for a perfect finish. One-piece textiles such as trousers are blown dry on the topper and then either pressed using an ironing press or ironed using a vacuum/blowing ironing table. Please observe the exact position of the creases.

For multiple-layer textiles such as jackets or coats, the pocket flaps should be smoothed before the finisher is used to ensure that particularly the pocket seam looks perfect and smooth. For men's suit jackets, quickly iron the lapel as well as the collar that is usually underfed with woolen fleece to facilitate finishing. Then attach the textile to the finisher, align the tensioners as accurately as possible with the sleeve seam, button jackets and coats up and secure them in the front area with a press-protected retainer. Align the textile body with the adjustable clamps of the finisher; during finishing, the device is slightly stretched vertically to ensure crease-free drying. Finish the textile without or with little steam but intense hot air. After that, place the textiles onto hangers (ideally contoured hangers) and allow them to dry in the room air (e.g. over night). Finally iron the lining and finish the garment.

Finisher and trouser topper facilitate the finishing process enormously. Experienced employees can operate both devices side by side which is a significant improvement of productivity and quality of the finish.

Drying procedure Lanadol SENSITIVE					
Step	Operation	Time/min.	Reversion rhythm	T/°C Outlet	Heating
1	Drying	2–3'	1	60 °C	Loosen for 2–3 min.
2	Remove immediately and place onto hangers				
3	Air drying				





Lanadol SENSITIVE SILK procedure

Textiles made of silk are highly sensitive. The sorting of the goods and the preliminary work is carried out as for the SENSITIVE procedure. We recommend to test these textiles for color fastness. Particularly for dyes on silk and viscose, a rub test with a white cotton cloth soaked in a solution of 1 % Lanadol AKTIV (10 ml Lanadol AKTIV per litre of water) is required. If the cotton cloth is stained, the corresponding textiles must be treated separately or with dark textiles.

Recommended products



Cleaning, drying, and finishing

For silk and acetate, the spinning cycle of the Lanadol SENSITIVE procedure is adapted to the sensitivity of the garments. Therefore, it is helpful to create a Lanadol SEN-SITIVE SILK program when programming the wet cleaning machine. In the SILK program, the final spinning time is reduced to 1 min. at 500 to 600 rpm. Acetate evening gowns or very fine and expensive silk garments like e.g. kimonos are highly sensitive and should be placed on hangers to dry in the air completely without spinning after bath drainage. Drying is carried out according to the Lanadol SENSITIVE procedure.

Note :

Sensitive silk textiles can be wet cleaned in a net bag, particularly to protect accessories. If ties or silk ties are to be wet cleaned, the tie fleece should be secured with a tie clip. If tie clips or protective nets are not available, the tie should at least be rolled up and fastened.

Wet cleaning procedure Lanadol SENSITIVE SILKMachine load:50–60%*Machine load:60% *Water inlet:cow level 1:3Dosing:5 ml Lanadol AKTIV per litre of liquorTime and revolution rhythm:2 min. (3–5 sec. run, 25–27 sec. stop)Gentle reversion:8 min. (3–5 sec. run, 55–57 sec. stop)Temperature:0–30 °CBath drainage1 min. at 300 rpm

Machine Ioau.
Water inlet:
Dosing:
Fime and revolution rhythm:
Gentle reversion:
Temperature:
Bath drainage
Intermediate spinning:
Fibre protection
Machine load:
Water inlet:
Dosing:
Time and revolution rhythm:
Gentle reversion:
Temperature:
Bath drainage
Einal chinning.

Final spinning:

50-60 %	*
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Low level 1:3
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- 5 ml Lanadol APRET per litre of liquor
- 1 min. (3-5 sec. run, 25-27 sec. stop)
- 4 min. (3–5 sec. run, 55–57 sec. stop)
- 20-30 °C

1 min. at 500–600 rpm



Lanadol HYGIENIC procedure

This procedure is usually applied for sensitive outerwear as e.g. in retirement homes. Since wool and silk react sensitively to bleaching or hygienic agents such as peracetic acids, the active-oxygen-free Lanadol ABAC was developed which can be used both in the Lanadol SENSITIVE procedure as well as in the Lanadol DRY procedure.

Recommended products

In the SENSITIVE procedure:



Precleaning

In case of extreme staining, pre-clean the goods for 5 minutes using 3 ml/l Lanadol AKTIV.

Cleaning, drying, and finishing

Cleaning, drying, and finishing depend on whether the textile was initially sorted to the Lanadol SENSITIVE or the DRY procedure. For outerwear from retirement homes, Lanadol DRY drying or Lanadol DRY short drying is generally applied due to the required fast throughput and the type of the garments.

In the DRY procedure:



Wet cleaning procedure	Lanadol SENSITIVE	Lanadol DRY
Machine load:	50-60 %	60-70 %
Water inlet:	Low level 1:3	Low level 1:3
Dosing:	5 ml Lanadol AKTIV per litre of liquor	5 ml Lanadol X-PRESS per litre of liquor
Time and revolution rhythm:	2 min. (3–5 sec. run, 25–27 sec. stop)	2 min. (3–5 sec. run, 25–27 sec. stop)
Gentle reversion:	8 min. (3–5 sec. run, 55–57 sec. stop)	8 min. (3–5 sec. run, 55–57 sec. stop)
Temperature:	20–30 °C	25–30 °C
Bath drainage		
Intermediate spinning:	ng: 1 min. at 450 rpm	
	+	

Hygiene	Lanadol SENSITIVE	Lanadol DRY	
Machine load:	50-60 %	60–70 %	
Water inlet:	Low level 1:3	Low level 1:3	
Dosing:	1 ml Lanadol ABAC per litre of liquor	1 ml Lanadol ABAC per litre of liquor	
Time and revolution rhythm:	1 min. (3–5 sec. run, 25–27 sec. stop)	1 min. (3–5 sec. run, 25–27 sec. stop)	
Gentle reversion:	4 min. (3–5 sec. run, 55–57 sec. stop)	4 min. (3–5 sec. run, 25–27 sec. stop)	
Temperature:	20–30 °C	25–30 °C	
Bath drainage			
	+		

Final spinning:

4 min. at 950 rpm



Lanadol SENSITIVE LEATHER procedure



The Lanadol SENSITIVE LEATHER program is suited for the wet cleaning of leather, of suede and, with appropriate modification, even of UGG[®] boots. Leather is wet cleaned as described for the SENSITIVE program.

Recommended products



Cleaning, drying, and finishing

Lanadol LICKER is used in the finishing bath instead of the textile finishing agent. However, as the wet cleaning of leather is rather an exception for most users, the investment in an additional dosing pump for Lanadol LICKER is usually not worthwhile. Therefore, if Lanadol LICKER is added manually through the rinsing trays, premix the required concentration of leather oil and add the licker oil through the rinsing tray to the second bath. Our technicians will gladly assist you in the creation of a wet cleaning program for leather. The final spinning of leather is typically performed as intermittent spinning to prevent the dreaded phenomenon of drum prints on the wet cleaned leather.

After the intermittent spinning, the still wet and heavy leather is dried cold in the drum drier for approx. 10 minutes, then the leather parts are placed onto contoured hangers and allowed to dry in the air. The air-dried leather is then rolled cold (without heating) in the drum drier for approx. 20 minutes to break its dry rigidity and to make the leather soft and supple. For suede leather, hard polyurethane sponges may be added during the rolling process to brush up the leather surface.

Leather jackets can then be brushed up. Remove boots made of suede with fur lining after wet cleaning followed by short spinning, then stuff the interior of the boots with absorbent paper and allow the boots to dry in the air. The surface of suede leather boots also needs to be brushed up to deepen the color impression and to make the leather supple again.

Wet cleaning procedure Lanadol SENSITIVE LE

Machine load: Water inlet:

Dosing:

Time and revolution rhythm:

Gentle reversion:

Temperature:

Bath drainage

Intermediate spinning:

Relubrication

Water inlet:

Dosing:

Time and revolution rhythm:

Gentle reversion:

Temperature:

Bath drainage

Final spinning:

AT	HER
	50-60 %
	Low level 1:3
	5 ml Lanadol AKTIV per litre of liquor
	2 min. (3–5 sec. run, 25–27 sec. stop)
	8 min. (3–5 sec. run, 55–57 sec. stop)
	20–30 °C
	1 min. at 450 rpm

low	level	1:3
LOW	LCVCL	1.0

5 ml Lanadol LICKER per litre of liquor

2 min. (3–5 sec. run, 25–27 sec. stop)

4 min. (3–5 sec. run, 55–57 sec. stop)

20-30 °C

Intermediate spinning: 1:30 min. at 400 rpm, 30 sec. Redistribution with reversion, then 3 min. at 750 rpm



Our advertising material for you



The benefits of Lanadol wet cleaning in a nutshell

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Your (new) customers will be thrilled:

• Excellent and hygienic cleaning results

- Superior safety for sensitive materials and sophisticated textiles
- Even textiles with care label (F), (P) and "hand wash" can be wet cleaned using the Lanadol procedure
- A wide range of implementation options for all service areas of textile cleaning
- Outstanding acceptance by the public
- Acquisition of new customers who are generally against dry cleaning
- Extended service offers and therefore ensured competitiveness
- Brilliant colors and protective fibre film
- Scented freshness
- Pleasant sensation on the skin

Save money in the costs for purchase, operation, and maintenance:

- There are no distillation residues that need to be disposed of for a fee
- Low consumption quantities for water, energy, and cleaning agents
- Short batch times and therefore increased yield of the machine investment
- Lower costs for purchase and maintenance
- Double profitable investment as wet cleaning machines can also be used for washing

Simply the most environmentally friendly kind of textile care:

- Wet cleaning uses water and biodegradable cleaning agents
- The Lanadol products comply with the requirements for the granting of the eco-label "Blue Angel"
- No emission of volatile organic compounds into the atmosphere
- No risk of air or soil pollution
- · Improved working atmosphere in the cleaning operation as no solvents are used







Kreussler was founded in 1912. The family business is currently managed by the fourth generation and has two divisions: Textile Care and Pharma. Environmentally friendly and future-oriented innovations, highest quality and responsibility for the conservation of resources are integral parts of the corporate philosophy. The high-quality, highly concentrated detergents and washing auxiliaries do not contain phosphates, borates or perborates, APEO, EDTA or NTA. A sophisticated wastewater treatment system and the use of solar panels and heat exchangers for energy supply are part of the company's sustainability concept. Quality and environmental awareness are confirmed by the certification under EN ISO 9001:2015 and DIN EN ISO 14001:2015. Kreussler follows the guidelines of the Responsible Care initiative. As an internationally oriented enterprise, Kreussler has five subsidiary offices in the USA, UK, France, Italy, and Sweden, as well as technical field services in many other countries. For worldwide deliveries, Kreussler operates a network of competent partner companies. Production is exclusively at the corporate headquarters in Wiesbaden where the in-house R&D department is also located.

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Note: The information submitted by our company is based on our present knowledge as well as on the present state or research and refers to the proper use and handling of the Lanadol products as described in the technical bulletins and safety data sheets. It is the sole responsibility of the user to determine the suitability of our products for a specific application. We guarantee the perfect quality of our products under the terms of our general sales conditions. Any existing industrial property rights must be respected.