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Uniperol™ Bleach types

**Stabilized reducing agents for bleaching wool, silk,
cellulosic and polyamide fibres**

Uniperol™ Bleach IN

Standard

type, without fluorescent brightener

Uniperol™ Bleach AN

With neutral-

white fluorescent brighteners

Uniperol™ Bleach AR

With

reddish-white fluorescent brighteners

Chemical nature Reduction bleaching agents based on sodium dithionite together with stabilizers, biodegradable complexing agents and pH buffers; phosphate-free.

The standard type is Uniperol™ Bleach IN, with no fluorescent brightener.

Uniperol™ Bleach AN and Uniperol™ Bleach AR contain fluorescent brighteners.

Physical form Uniperol™ Bleach IN is a white powder; Uniperol™ Bleach AN and Uniperol™ Bleach AR are yellowish powders.

Shelf life The Uniperol™ Bleach types can be kept in the original sealed containers at temperatures below 35°C for at least 2 years. Once containers have been opened, the contents should be used up quickly. Containers should be closed tightly after use. Unlike hydrosulfite, Uniperol™ Bleach types stored in standard containers do not ignite spontaneously on absorbing moisture. They are not hazardous materials.

Properties

Appearance White or yellowish powders.

Physical and chemical data	Bulk density (g/dm ³)	approx. 1100 - 1200
	Solubility (g/l at 20 °C)	Uniperol™ Bleach IN approx. 250 Uniperol™ Bleach AN and AR approx.150
	pH (10 g/l)	approx. 9 - 9.5
	Stability to	
	alkalis	good
	acids	low
	hard water	good
	heavy-metal salts	good

Stability to hard water Their insensitivity to water-hardening substances is a special feature of the Uniperol™ Bleach types and distinguishes them from phosphate-stabilized products. Even in hard water, the bleached textile material remains free of deposits of all kinds and retains its natural handle. Hard-water salts contained in cotton are dissolved out, improving the stability of the white effect in storage.

and is also suitable for wool.

Uniperol™ Bleach AR contains medium-affinity, level-dyeing brighteners with average wet-fastness properties. The white shade of this product is particularly popular on wool and furskins. Uniperol™ Bleach AN is preferred to Uniperol™ Bleach AR on these substrates only when an especially high standard of wet fastness is required, e.g. for machine-washable goods or those that are to be printed (and washed off).

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Dependence of effect on substrate

Uniperol™ Bleach	IN	AN	AR
Wool	###	###	###
Silk	###	###	###
Animal hair	###	###	###
Feathers	###	###	###
Cotton	###	###	###
Bast fibres	###	###	###
Hard fibres	###	###	###
Straw, wood, etc.	###	###	###
Viscose	###	###	###
Polynosic fibres	###	###	###
Triacetate	5	5	5
Polyamide 6 and 66	###	###	###
Polyester	5	5	5
Polyacrylonitrile	5	5	5
Cuprammonium	###	###	###
Acetate	5	5	5
Furskins	###	###	###

1 very effective 3 effective 5 little effect

Antichlorination effect

The Uniperol™ Bleach types all rapidly remove active chlorine and chloramines from wool, e.g. following antifelt treatments with Basolan ### DC, hypochlorite or chlorite.

Binding of heavy-metal ions

The Uniperol™ Bleach types all contain complexing agents that bind heavy-metal ions, including iron ions and rust, that are present in the water or the goods for bleaching.

Application to textiles

Pretreatment

Textile materials that are soiled or contain grease, spinning oils or sizes are scoured or desized before bleaching.

Natural fibres are prebleached with hydrogen peroxide. Only through a combination of oxidation and reduction bleaching is an optimum white effect, good light fastness and storage stability, and a good brightening effect obtained.

Prebleaching with peroxide can be omitted with synthetic and regenerated fibres and with light-coloured silk qualities.

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Recipe overview

Recipe overview

Initial temperature:

for Uniperol™ Bleach IN = treatment temperature

for Uniperol™ Bleach AN = 30 °C

for Uniperol™ Bleach AR = 50 °C

Recipe:

... g/l Uniperol™ Bleach

1 g/l Kieralon### OLB Conc. or (for Uniperol™ Bleach AN) Uniperol### SE

or Uniperol AC High Conc.

Treat for ... min at ... °C (see table).

Rinse.

Substrate	Uniperol Bleach (g/l)	Temperature (°C)	Time (min)
Wool (not oxidatively prebleached)	2-6	60-80	20-60
Wool (prebleached with peroxide)	2-6	50-70	20-60
Silk (degummed)	2-4	60-80	20-60
Cotton	1-3	60-80	15-30
Bast and hard fibres	2-4	60-80	30-60

Regenerated cellulose	2-4	60-80	15-30
Polyamide 6 and 66	2-4	60-80(130 ¹)	20-30 (10)
Bristles, straw, etc.	2-6	20-50	2-8 h

¹HT hydrofixation

The application rates are selected from within the given range according to the bleaching effect desired and the liquor ratio. The lower end of the given concentration range applies particularly to long liquors; the higher end to short liquors. To achieve the best possible standard of fastness, the fluorescent brightening types are usually combined with Uniperol™ Bleach IN, so that most of the white effect is achieved through chemical bleaching and the remainder through fluorescent brightening. The total amount of Uniperol™ Bleach should lie within the range given in the table.

Pad-steam process for polyamide and viscose

Pad with
1 g/l Kieralon OLB Conc.
20 – 60 g/l Uniperol™ Bleach AN
Liquor pickup 50-80 %
2 – 5 min saturated steam at 102 °C
Rinse.

Dissolving Uniperol Bleach

Stir the Uniperol™ Bleach types into water at 40-50 °C or, where possible, simply strew them into the circulating liquor. The solutions have only limited stability. They should be prepared shortly before they are required and not stirred more vigorously than necessary or heated.

Uniperol Bleach types**Further additions**

Additions to the bleaching bath can improve the effect:

- Kieralon OLB Conc. for scouring and to improve the bleaching effect. It prevents the redeposition of impurities solubilized by reduction and has a levelling effect on fluorescent brighteners.

- Levelling agents such as Uniperol SE or AC High Conc.

Recommended with Uniperol™ Bleach AN because it contains highaffinity brighteners.

- Other anionic or nonionic fluorescent brighteners as required.

- An addition of acetic acid towards the end of the bleaching process increases the brightening effect of Uniperol™ Bleach AR

(final 15 min at pH 5).

- Ammonia or soda to neutralize carbonized, chlorinated or acidprebleached

wool (pH initially 7-9).

- Mothproofing agents (anionic or nonionic, with Uniperol™ Bleach IN also cationic).

- Avoid aftertreatment with softeners that have a yellowing effect or reduce the fluorescence of the brightening. Cationic softeners should be pretested. Basosoft### SWK is suitable despite its weakly cationic reaction.

Procedure

Uniperol™ Bleach IN is best added after the liquor has been raised to the final temperature, e.g. to 60 °C in the case of wool (see table on page 5). On the other hand, Uniperol™ Bleach AN is added at 30 °C and Uniperol™ Bleach AR at a maximum of 50 °C to ensure level uptake of the fluorescent brighteners, the liquor then being heated up to the prescribed bleaching temperature. If the liquor or goods circulation is inadequate, bleaching is carried out below the temperature given in the table and the bleaching time extended.

The bleaching time is very dependent on the textile material, temperature, pH, liquor circulation and exposure to air. Since the best results are obtained when the bath is dropped shortly before its reductive effect is exhausted, it is advisable to test the liquor exhaustion during the first runs (page 7). It is not advisable to replenish the liquor and reuse it for further batches.

After the liquor has been dropped, the goods are rinsed with warm water. To ensure that any residual reducing agent on wool does not subsequently give rise to an unpleasant odour, add 1 ml/l hydrogen peroxide 35 % to the final rinsing bath or the softening bath.

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Guideline recipes

Bleaching of wool

Peroxide bleaching stage

0.5 g/l Kieralon OLB Conc.

2 – 5 g/l Prestogen Activator W liq

10 – 25 g/l hydrogen peroxide 35 %

45 min at 70 °C.

Rinse.

Reduction bleaching stage

1 g/l Kieralon OLB Conc. or (with Uniperol™ Bleach AN)
Uniperol SE or 0.5 g/l Uniperol AC High Conc.

2 – 6 g/l Uniperol™ Bleach IN, AR or AN, or a combination of these
(12 % Uniperol™ Bleach as a percentage of the weight of wool
produces optimum results)

30 – 60 min at 60 °C

In the case of Uniperol™ Bleach AR, add 1 % acetic acid 60 % 15 min
before the end.

Rinse, adding

1 ml/l hydrogen peroxide 35 % to the final rinsing bath or the softening
bath.

Note: If prebleaching is omitted, bleach with Uniperol™ Bleach for 30 –
60 min at 70 °C.

Bleaching of cotton

Peroxide bleaching stage

1 g/l Kieralon OLB Conc.

1 g/l Prestogen D 2000

1 – 2 g/l caustic soda

3 – 6 g/l hydrogen peroxide 35 %

1 h at the boil.

Rinse.

Reduction bleaching stage

2 – 3 g/l Uniperol™ Bleach IN or AN (optimum is 6 % on the weight
of the goods)

0.5 – 1 ml/l acetic acid 60 % to adjust to pH 5 – 6

15 – 30 min at 60 – 80 °C.

Rinse or soften with

1 – 2 g/l Basosoft SWK

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Bleaching of viscose fibres

Reduction bleaching stage

1 g/l Kieralon OLB Conc.

2 – 4 g/l Uniperol™ Bleach IN or AN (optimum is 8 %)

15 – 30 min at 60 – 80 °C.

Rinse or soften with

1 – 2 g/l Basosoft SWK

Bleaching of polyamide fibres

Reduction bleaching stage

0.5 g/l Uniperol SE or 0.25 g/l Uniperol AC High Conc.

2 – 4 g/l Uniperol™ Bleach IN or AN (optimum is 6 %)

20 – 30 min at 60 – 80 °C or 10 min at 130 °C (HT hydrofixation)

Rust removal

The Uniperol™ Bleach types all remove iron compounds from all types of (white) textiles, but Uniperol™ Bleach IN is usually preferred. Occasional spots are treated by wetting the affected areas and strewing on a little Uniperol™ Bleach IN. After a short time the fabric is rinsed, and if necessary the treatment is repeated. More extensive staining is treated by applying Uniperol™ Bleach IN in a long liquor, the application rate and treatment time being at least double those in the bleaching recipes. Preventive treatment of cotton fabrics with Uniperol™ Bleach IN to protect them against catalytic damage in the peroxide bleach requires the same concentrations and treatment times as those for bleaching.

Testing the liquor

The exhaustion of the bleaching bath can be monitored with vattesting paper, which turns green as long as sodium dithionite is present. The reducing agent content can be determined more exactly by titration.

For this purpose, mix 20 ml of the bleaching liquor with 5 ml formaldehyde (prediluted 1:1 with water), add distilled water, a few drops of acetic acid and starch solution, and titrate with 0.1 N iodine solution until a permanent blue colour is obtained. To determine the treatment time, the residual concentration can be calculated sufficiently accurately as follows:

Uniperol Bleach (g/l) = consumption of 0.1 N iodine (ml) / 3

Optimum bleaching results are obtained if the bleaching liquor is dropped when the residual concentration is 0.1 – 0.2 g/l Uniperol Bleach.

Safety

When using this product, the information and advice given in our **Safety Data Sheet** should be observed. Due attention should also be given to the **precautions** necessary for handling chemicals.

Note

The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed. Responsibility for compliance with the requirements of the downstream textile market rests with the textile processor.

