denactive dyes

SMART CHOICE FOR REACTIVE DYEING

dena dyes

www.denadyes.com

DENACTIVE

Based on these facts Denactive supplies reactive dyes which are good coordinated with the individual requirements of system. This pattern card provides detailed information on the use Denactive Dyes. The following table shows a general overview of the characteristics of the different dye groups. This table can be used to narrow down the dye selection taking into account the requirement profile or the dyeing process. More specific selection of dye combinations is possible in the folowing technical information of dyes tables.

VS SERIES	XF SERIES	HF SERIES	LC SERIES
This series contains dyestuffs in vinylsulfone molecular structure. It is used for dyeing light and medium tones. There are dyestuffs suitable for exhaust, Pad Batch and Pad steam systems.	They are bifunctional dyestuffs with a special structure. It is used as a solution for dyeing light and medium tones with repeatability problems.	They are bifunctional dyestuffs with a special structure. It is used as a solution for dyeing light and medium tones with fastness problems. They are dyestuffs with high light fastness, weather fastness and oxidative fastness.	They are bifunctional dyestuffs. It is used for dyeing light, medium and dark tones. They are suitable for dyeing in exhaust and pad batch systems.

SD SERIES	SF SERIES	CONVENTIONAL DYES	ASSISTANT DYES	BLACK SERIES
They are bifunctional dyestuffs. It is used for dyeing medium and dark tones. They are suitable for dyeing in exhaust and pad batch systems.	They are bifunctional dyestuffs with a special structure. Used for dyeing dark and very dark tones. They have good fastness values. It is an environmentally and budget friendly series with low usage amounts.	They are bifunctional dyestuffs. It is used for dyeing light, medium and dark tones. They are paints suitable for dyeing in the drawing system. They are competitively priced paints.	It contains auxiliary dyes needed to obtain vivid, bright orange, pink and red tones.	They are dyestuffs in vinylsulfone structure. this range has a wide colors and fastness options.

DYE SELECTION

VS Series

DENACTIVE VS dyes are reactive dyes with one or two vinyl sulphone groups. They have very good dye properties on cellulosic fibers and an impressively wide selection of dischargeable dyes. Used for varios dyeing methods such as exhaustions dyeing, cold pad- batch dyeing and continuous dyeing. Economic royal blue are available in this series.

- Denactive Yellow 4GL
- Denactive Blue BB
- Denactive Blue RSP
- Denactive Blue DERL
- Denactive Blue MRL
- Denactive Blue SRL
- Denactive Turq. Blue G 133%
- Denactive Turq. Blue G 250%
- Denactive Turq. Blue G 266%

XF Series

The dyes in the DENACTIVE XF series have excellent trichromatic compatibility and color repeatability. They are especially used as a solution to the repeatability problems of viscose fabrics. Paints in this class are suitable for dyeing methods such as exhaust dyeing, cold pad batch and pad steam.

- Yellow DEXF
- Red DEXF
- Blue DE-RF
- Blue DE-NF
- Navy Blue BSF

HF Series

DENACTIVE HF series are dyestuffs with high light, perspiration light, weather conditions and oxidative washing fastness even in very light tones. Paints in this class are suitable for dyeing methods such as exhaust dyeing, cold pad batch and pad steam.

- Brillant Yelllow HF
- Yellow HF
- Ultra Yellow HF
- Red HF
- Red Brown HF
- Olive HF
- Green HF
- Blue HF
- Dark Blue HF
- Navy HF
- Black HF

LC Series

DENACTIVE LC dyes are bifunctional reactive dyes, the main advantages of which are the very good reproducibility and a high fixing level economical dyes for exhaust, cold pad-batch and continuous process.

- Yellow LC
- Red LC
- Blue LC
- Navy Blue LC

SD Series

DENACTIVE SD dyes are reactive dyes with a multifunctional anchor system, high light fastness and good multiple washing fastness. Thanks to their good colour-build up, they are also recommended for darker shades. Due to high exhaustion and fixation even at deep shades the waste water dye-load is low. They are used in exhaust dyeing, CPB dyeing and continuous dyeing processes.

- Yellow SD
- Red SD-4B
- Navy SD

SF Series

DENACTIVE SF dyes are bi-reactive dyes. The combination of two different VS groups give these dyes exceptional affinity and fixation with good leveling due to balanced primary and secondary exhaustion. Excellent combination for super deep and dark shades. Very deep shades can be achieved with relatively low dye concentration. All are dischargeable and suitable for CPB.

- Yellow SF
- Amber SF
- Orange SF
- Red SF
- Maroon SF
- Blue SF
- Navy SF-W
- Navy Blue SF

Conventional Dyes

They are budget friendly, low unit cost but also conventional dyestuffs. They can be applied in the exhaust system.

- Yellow 3R 150%
- Red 3B 150%
- Blue BRF

Denactive Assistant Dyes

They are auxiliary dyes that are especially needed in bright orange, pink and red tones.

- Orange 2RL
- Scarlet 2G
- Red GF

Black Series

DENACTIVE Black Series ensure high performance at black shades for cellulose fibers. There is a wide range of products. Dye selection should be made considering the desired properties of fabric. Especially in cases where high light fastness and washing fastness with oxidative bleach are required, a high fastness dye such as Black DG should be preferred.

- Black B 150%
- Black B 165%
- Black TNN
- Black DN
- Black NG
- Black NNG
- Black DG
- Black C-DN
- Black HF

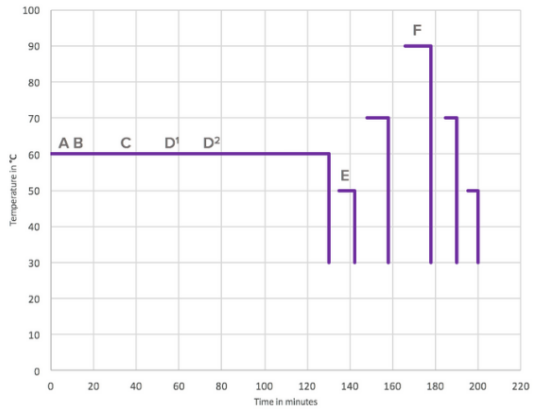
Dyeing Processes

Exhaust Processes

The recommended dyeing temperature of the Denactive dyes is 60°C. The best dyeing results are obtained at this temperature. The recommended auxiliaries and the correct application amounts are listed int the process descriptions.

Isotermal Process

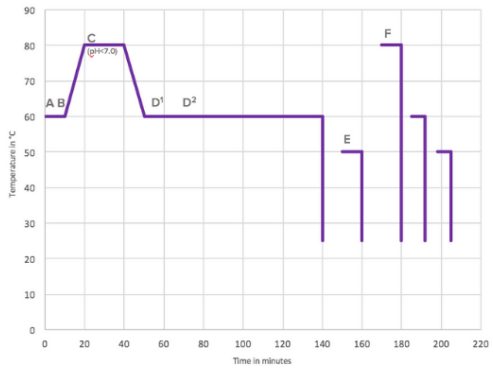
Universal process for excellent reproducibility and levelness. If a dosage control system is used, the sodium carbonate and dye can be added progressively which leads to a steady increasing fixing curve and therefore the best possible levelness is reached. In addition, premature hydrolysis of the dye is prevented. This means the highest possible colour yield.



A	0,3	g/l	Denova Speedy
	0,3	g/l	Denraw N40 new
B	x	%	Denactive Dyes
C	y	%	Salt
D^1	1	g/l	Caustic Soda
D^2	z-1	g/l	Caustic Soda
E	0,5	ml/l	Acedic Acid 80%
F	0,5-1	%	Denova Worker

Migration Process 80/60 °C

This method is recommended for difficult to dye materiels like ryon-spadex, viscose rayon, mercerized cotton etc. The dye bath pH solution should be below 7 during the migration stage (before adding alkali) to avoid dye hydrolysis. Therefore special attention should be given to the pH of Glauber salt.



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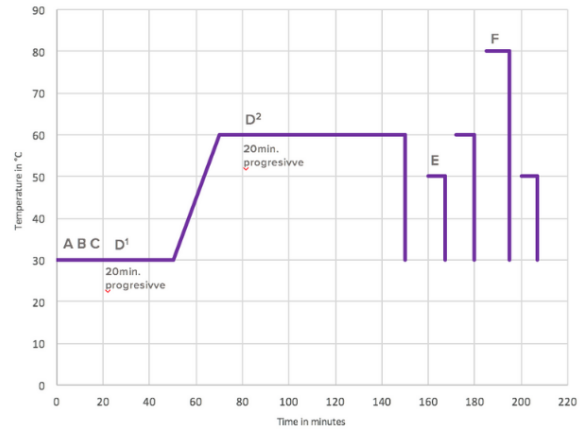
C	y	%	Salt
D^1	1	g/l	Caustic Soda
D^2	z-1	g/l	Caustic Soda
E	0,5	ml/l	Acedic Acid 80%
F	0,5-1	%	Denova Worker

Temperature Increasing Process

Color yield is better in temperature increasing process due to increased substantivity of dyestuff. The two step addition of alkali ensures better levelling. For best leveling results all alkali may be added at 60°C.



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D^1	1	g/l	Caustic Soda
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E	0,5	ml/l	Acedic Acid 80%
F	0,5-1	%	Denova Worker

The optimum dyeing temperature for Turquoise Blue G and Yellow 3GL dyes is 70-80 C. Soda should be preferred as alkali and sodium sulfate as salt.(There are more compounds that cause water hardness in NaCl, this causes loss of efficiency in dyeing and also negatively affects the solubility of some dyestuffs. Na_2SO_4 salt should be preferred for dyestuffs with limited solubility such as turquoise). It is not recommended to use Denova speedy when dyeing turquoise. When working with Denactive Blue RSP, Blue SRL and Blue MRL, the amount of salt should not exceed 50 g/l.

For pale to medium shades, isothermal method is preferred for better levelling. The soda ash concentration maybe reduced by about 30-40% from the quantities described above. It is recommended that soda ash be added at 70-80°C for better levelling.

Salt and alkali tables for Denactive Dyes

Liquor Ratio:1:10 (%100 Cellulose)								
Dyes (% o.w.f.)	Un-merserized Cotton				Mercerized Cotton and Viscose			
			Soda ash + Caustic Soda (38°Be)				Soda ash + Caustic Soda (38°Be)	
	Salt (g/l)	Soda (g/l)	Na_2CO_3(g/l)	NaOH (g/l)	Salt (g/l)	Soda (g/l)	Na_2CO_3(g/l)	NaOH (g/l)
<0,1	10	10	10	-	10	10	10	-
0,1-0,5	20	15	5	0,5	15	12	12	-
0,5-1,0	30	20	5	0,5	20	15	5	0,5
1,0-2,0	40	20	5	1,0	30	20	5	1,0
2,0-3,0	50	20	5	1,0	40	20	5	1,0
3,0-4,0	60	20	5	1,5	50	20	5	1,5
4,0-5,0	70	20	5	1,5	60	20	5	1,5
5,0-6,0	80	20	5	2,0	70	20	5	2,0
≥ 6,00	80-100	20	5	2,0	80	20	5	2,0

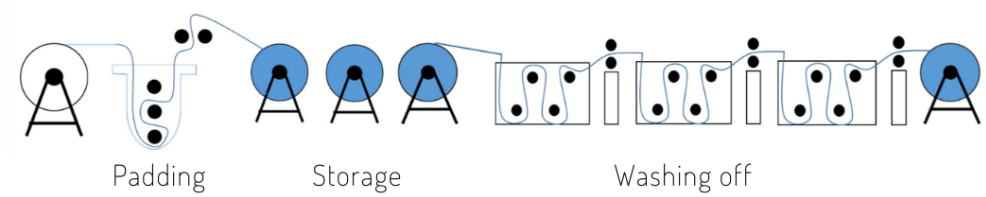
Salt and alkali tables for Denactive Dyes

Liquor Ratio:1:5 (%100 Cellulose)								
Dyes (% o.w.f.)	Un-merserized Cotton				Mercerized Cotton and Viscose			
			Soda ash + Caustic Soda (38°Be)				Soda ash + Caustic Soda (38°Be)	
	Salt (g/l)	Soda (g/l)	Na_2CO_3(g/l)	NaOH (g/l)	Salt (g/l)	Soda (g/l)	Na_2CO_3(g/l)	NaOH (g/l)
<0,1	8	10	10	-	8	10	10	-
0,1-0,5	15	15	5	0,5	12	12	12	-
0,5-1,0	25	20	5	0,5	15	15	5	0,5
1,0-2,0	30	20	5	1,0	20	20	5	1,0
2,0-3,0	40	20	5	1,0	30	20	5	1,0
3,0-4,0	50	20	5	1,5	40	20	5	1,5
4,0-5,0	60	20	5	1,5	50	20	5	1,5
5,0-6,0	70	20	5	2,0	60	20	5	2,0
≥ 6,00	80-90	20	5	2,0	70	20	5	2,0

Liquor Ratio:1:15 (%100 Cellulose)								
Dyes (% o.w.f.)	Un-merserized Cotton				Mercerized Cotton and Viscose			
			Soda ash + Caustic Soda (38°Be)				Soda ash + Caustic Soda (38°Be)	
	Salt (g/l)	Soda (g/l)	Na_2CO_3(g/l)	NaOH (g/l)	Salt (g/l)	Soda (g/l)	Na_2CO_3(g/l)	NaOH (g/l)
<0,1	12	10	10	-	12	10	10	-
0,1-0,5	25	15	5	0,5	20	12	12	-
0,5-1,0	35	20	5	0,5	25	15	5	0,5
1,0-2,0	50	20	5	1,0	40	20	5	1,0
2,0-3,0	60	20	5	1,0	50	20	5	1,0
3,0-4,0	70	20	5	1,5	60	20	5	1,5
4,0-5,0	80	20	5	1,5	70	20	5	1,5
5,0-6,0	90	20	5	2,0	80	20	5	2,0
≥ 6,00	90-110	20	5	2,0	80-100	20	5	2,0

Cold Pad-Batch Prosesi

Cold pad batch process apart from being more economical is also more environment friendly, especially when dyeing with silicate-free process. We have described the general procedures for CPB process.



Procedure

- The dried fabrics after pre-treatment are padded with padding solution containing dyes and chemicals.
- The padded fabrics are rolled up on a beam, wrapped with plastic sheet and stored for 10-24 hours (usually overnight) to allow the dyes to be fixed.
- After washing off to remove unfixed dyes, the process is completed.

Alkali Mixer

In the cold pad batch dyeing , strong alkali and salt in padding liquor sometimes cause aggregation and precipitation of dyes. Therefore it is recommended that the two dyes solution and chemical solution are mixed just before padding by means of alkali mixer. The padding solution may be rapidly replenished.

Storage

The padded fabrics are rolled up and immediately wrapped with a plastic sheet. It is preferable to keep the roll slowly rotating during storage in order to minimize migration of dyestuff and uneven dyeing as also to maintain constant temperature, prevention of evaporation and attack by harmful gases.

Washing off

If large quantities of fabrics are dyed, a continuous type of washer is needed. Smaller batches maybe washed in winch, beck or jet.

Washing begins with a cold rinse. The silicate/caustic on the fabric is removed by rinsing with water at 50 C. Thus, the pH drops to 8-8.5. The pH should be lowered by cold rinsing so that there is no deviation in color. If the boiling temperature is passed without lowering the pH, color differentiation occurs. In the next cabins, the temperature is increased up to the boiling point (95 oC) and there is a liquor prepared with the addition of reactive washing soap in the boats. Washing is completed by treating the fabric with acetic acid liquor in the last bath.

When formulating the padding solution, the following points may be considered

Selecting the dye it should be ensured that dyes with the same dyeing properties such as fibre affinity, liquor stability and fixing speed should be used. This information is given in the respective tables. Urea can be used in the case of very dark dyeing or also for cooling the padding liquor.

The urea should be added at a temperature of below 50 °C. To prevent change of shade from selvedge to centre during padding, a high liquor circulation should be ensured. With lightweight fabrics dyeing should be performed with a low trough level and a high fabric speed. To ensure a high liquor stability it should be ensured that the temperature of the padding liquor is not higher than 25 °C. Addition of urea makes the padding liquor cool. A low liquor stability results in tailing. Dye and alkali solutions with a 4:1 ratio are combined just before the padder with a mixing pump or doser and added to the dye trough.

The application amounts of dye, auxiliaries and fixing alkalis are based on the overall volume of the padding liquor. It is important that the fabric has cooled properly to ensure reproducibility. If the fabric temperature is too high, the liquor stability is lowered which results in a change of shade from selvedge to centre.

A constant production speed should generally be ensured. Different speeds influence the liquor pick-up and result in tailing. After padding the fabric is loaded with a straight line edge. In order to ensure optimum fixation of the dye, the dyed fabric must be packed in an air-tight plastic film and left for a certain time at room temperature to suit the dyes used. Packing the fabric in an airtight package prevents carbon dioxide from the air partially neutralising the fixing alkali and stops the top layers of fabric and the edges of the fabric drying out.

For a successful pad-batch painting;

- The fabric must be well pre-treated.
- The fabric should be smooth and dry, and the dryness should be the same at every point.
- It should be ensured that the sizing agent is completely removed.
- It should be ensured that the hydrophilicity of the fabric is good and homogeneous across the width.
- The fabric surface pH should be in the range of 6-7.
- The fabric must be cooled so that it does not increase the dyeing liquor temperature

Sodium Silicate Method

Silicate 50 Method;
This is the standard procedure for liquor temperature of 20-30°C. It is a highly reliable method allowing short to medium fixation times with a reduced sodium silicate requirement. A mixing pump is required.

The amounts given refer to total volume of pad liquor. The dye, wetting agent and urea (where required) should be mixed with the sodium silicate and caustic soda in a mixing pump (mixing ratio 4:1) before padding. Together they form the total liquor volume.

Dye liquor (Volume of solution 800 parts)
x g/l Denactive dyestuff
1 g/l Denova Speedy
100 g/l urea (if required to improve solubility)

Alkali solution (Volume of solution 200 parts)
50ml/l Sodium silicate
7-22ml/l Caustic soda 50%

Recommended amounts of alkali:

Sodium Silicate				**Dyestuff (g/l)**			
				0-10	**11-40**	**41-60**	**>61**
°Be	**Na O:SiO**	**g/l**	**ml/l**	**Caustic Soda 50%(ml/l)**			
37-40	1:3.3	65	50	7	12	17	22

Padding liquor temperature: 20-30°C
Fixation temperature: 20-30°C

The goods rolled up after padding are immediately wrapped in plastic film. If this wrapping is delayed in timing, obviously uneven dyeing may be obtained at the outer layers and at the selvedges of the rolled goods.

For production batches we generally recommended a minimum fixation time of 8 hours. If the temperature is lower than recommended, the minimum fixation time must be increased.

Sodium Silicate Metod:

Silicate Silicate Tropical Method;
The tropical method permits dyeing in countries with a tropical climate. Increasing to 100 ml/l of silicate and reducing the caustic soda quantities results in a high liquor stability at temperatures of 30 – 35°C. The higher application amounts of silicate can result in a higher quantity of deposits on rollers. In addition, an intensive washing stage is necessary before neutralization to prevent silicate precipitation and resulting marks on the fabric.

Dye liquor (Volume of solution 800 parts)
x g/l Denactive dyestuff
1 g/l Denova Speedy
100 g/l urea (if required to improve solubility)

Alkali solution (Volume of solution 200 parts)
95ml/l Sodium silicate
23,5-38,5ml/l Caustic 50%

Recommended amounts of alkali:

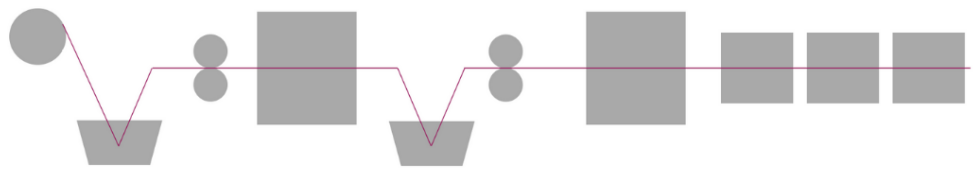
Sodium Silicate				Dyestuff (g/l)					
				<20	30	40	50	60	70-100
Be	Na O:SiO	g/l	ml/l	38 °Be Caustic (ml/l)					
37-40	1:3.3	130	95	23,5	28,5	28,5	33,5	33,5	38,5

Padding liquor temperature: 30-40°C
Fixation temperature: 30-40°C

The goods rolled up after padding are immediately wrapped in plastic film. If this wrapping is delayed in timing, obviously uneven dyeing may be obtained at the outer layers and at the selvedges of the rolled goods.
For production batches we generally recommended a minimum fixation time of 8 hours. If the temperature is lower than recommended, the minimum fixation time must be increased.

Continuous Process
Continuous dyeing with reactive dyes is divided into two main processes; one-bath and two-bath processes.
Since alkali is added in dye padding solution in the one-bath continuous dyeing, some dyes may cause problems in stability of padding bath and padded cloth. Therefore it is advisable to select dyes suitable for this method. As dyes and alkali are separately applied on the material to be dyed in the two-bath continuous dyeing, it is possible to select wide range of dyes for this method.

Pad Dry- Pad Steam Process
Classic procedure for continuous dyeing of woven fabrics. It is primarily used for cellulose articles with a high yardage. This process is characterised by a high productivity, a good fabric appearance as well as a good colour yield.
The use of a dosing pump is not necessary with this process.



Padding Solution
x g/l Denactive dyestuff
1-2 g/l Denova Speedy
5-10 g/l Neoprint DP (Antimigration agent)
5-10 g/l Dengol N (Oxidation agent)
0-50g/l Urea (If required)
Liquor temperature: 20-25°C
Liquor pick up: 60-70%

Drying 110-120 C , 2 min.

Alkali Padding Solution
250g/l Salt
5-10 ml/l Caustic soda %50
0-20gl/l Soda ash
Temperature 20°C, picking up 70-80%

Steaming: 45-80 sec. in saturated steam (101-105°C)

Continuous washing off on an open-width washer with 7 compartments (standart recommendation)

Fastness Test Methods

The following fastness properties were tested:

Light Fastness (ISO 105 B-02)
Expose test specimen and european ISO light fastness scale 1-8 to light until the change of shade of the test specimen corresponds to grade 4 on the grey scale.

Perspiration Light Fastness (ISO 105 B07)
Test under permanent exposure to light in accordance with ISO 105 B02, Alkali and acidic test solution as specified in ISO 105 B07.

Washing Fastness 50°C (ISO 105 C06)
50°C; 30min; liquor volume:150ml; 25 steel balls; 4g/l ECE-A reference detergent and 1g/l sodium perborate.

Oxidative Washing Fastness (ISO 105 C09)
60°C; 30min; liquor volume:100ml; 4g/l ECE -B reference detergent, 1g/l sodium perborate and 1,8g/l TAED(100%)

Colour Fastness to Water (ISO 105 E01)
Wet out test specimen with water, place under a 5kg weight (12.5 kPa pressure) for 4 h at 37 C (without circulating air)

Perspiration Fastness (ISO 105 E04)
Wet out test specimen with alkaline and acid perspiration solutions and place under a 5kg weight (12.5 kPa pressure) for 4 h at 37 C (without circulating air).

Colour Fastness to Chlorinated Water (ISO 105 E03)
Treat specimen with a solution of sodium hypochlorite or lithium hypochlorite containing 20mg/l active chlorine at pH 7.5. Liquor ratio 100:1. Treat for 1h at 27°C.

Rubbing Fastness (ISO 105 X12)
Dry rubbing fastness; crockmeter, 10 cycles.
Wet rubbing; impregnate test specimen with distilled water (100% liquor pick up). Crockmeter, 10 cycles.

DENACTIVE VS DYES

Denactive® VS	%100 Cotton Supreme	Pyhsical Properties							Process Suitability					Fastness Properties															
					Staining of other fibers										Perspiration Light Fastness (ISO 105 B07)		Washing Fastness (ISO 105 C06)			Water Fastness (ISO 105 E01)			Perspiration Fastness (ISO 105 E04)				Rubbing Fastness (ISO 105 X12)	
																							Acid		Alkali			
		Dyeing Depth (%o.w.f.)	Solubility at 25°C (g/l)	Solubility at 25°C with Glauber's salt 50g/l	Polyester	Wool	Poliamid	Acrylic	Exhaust Dyeing	Pad Batch Dyeing	Continuous Dyeing	Optimum Dyeing Temp. (°C)	Dischargeability	Light Fastness (ISO 105 B02-Grade 4)	Asid	Alkali	Change of Shade	Staining of shade (CO)	Oxidative Washing Fastness (ISO 105 C09)	Change of Shade	Staining of cotton	Chlorinated Water Fastness (ISO 105 E03)	Change of Shade	Staining of Shade	Change of Shade	Staining of Shade	Dry	Wet
Yellow 4GL		%2	100	60	4-5	4-5	4-5	4-5	S	S	S	60	B	3-4	4	4	4-5	4-5	4-5	4-5	4	3	4-5	4-5	4-5	4-5	4	4
Blue BB		%2	200	120	5	2	3-4	5	S	S	S	60	B	4-5	4	4	5	5	4 On T.	5	4-5	3-4	5	4-5	5	4-5	4-5	3-4
Blue RSP		%2	150	100	5	2	2	4-5	S	S	NS	60	C	4-5	4	4	5	5	4 On T.	5	5	4	5	4-5	5	4-5	5	4
Blue DE-RL		%2	200	125	4-5	3	3	4-5	S	S	NS	60	C	5	4-5	4-5	4-5	4	3-4 On T.	4-5	3-4	3	4-5	4	4-5	4	4-5	3-4
Blue MRL		%2	150	100	5	1-2	1-2	4-4	S	NS	NS	60	C	5	4	4	5	4-5	4-5 On T.	5	4-5	3	5	4-5	5	4-5	4-5	3-4
Blue SRL		%2	150	100	5	1-2	1-2	4-5	S	NS	NS	60	C	5	4	4	5	4-5	4-5 On T.	5	4-5	3	5	4-5	5	4-5	4-5	3-4
Turq. Blue G 133%		%2	200	150	4	1-2	3	4	S	S	S	80	C	4	3	3	5	3-4	4 On T.	5	4	4	5	4-5	5	3-4	4-5	3-4
Turq. Blue G 250%		%2	200	150	4	1-2	3	4	S	S	S	80	C	4	3	3	5	3	4 On T.	5	4	4	5	4-5	5	3-4	4-5	3
Turq. Blue G 266%		%2	200	150	3-4	1-2	2-3	3-4	S	S	S	80	C	4	3	3	5	3	4 On T.	5	4	4	5	4	5	3	4	3

DENACTIVE XF SERIE

Denactive® XF	%100 Cotton Supreme	Pyhsical Properties							Process Suitability					Fastness Properties																	
		Dyeing Depth (%o.w.f.)	Solubility at 25°C (g/l)	Solubility at 25°C with Glauber's salt 50g/l	Staining of other fibers				Exhaust Dyeing	Pad Batch Dyeing	Continuous Dyeing	Optimum Dyeing Temp. (°C)	Dischargeability	Light Fastness (ISO 105 B02-Grade 4)	Perspiration Light Fastness (ISO 105 B07)		Washing Fastness (ISO 105 C06)		Oxidative Washing Fastness (ISO 105 C09)	Water Fastness (ISO 105 E01)		Chlorinated Water Fastness (ISO 105 E03)	Perspiration Fastness (ISO 105 E04)				Rubbing Fastness (ISO 105 X12)		
					Polyester	Wool	Poliamid	Acrylic							Asid	Alkali	Change of Shade	Staining of shade (CO)		Change of Shade	Staining of cotton		Acid		Alkali		Dry	Wet
																							Change of Shade	Staining of Shade	Change of Shade	Staining of Shade		
Yellow DEXF		%2	150	100	5	2	3-4	4-5	S	S	S	60	A	5	4	4	5	4-5	4	4-5	5	4	5	5	5	5	4-5	4
Red DEXF		%2	150	100	5	2	4-5	4	S	S	S	60	X	4-5	3-4	3	4-5	5	4	5	4-5	4	4-5	4	5	4	4-5	3
Blue DE-RF		%2	100	80	5	1	2	4	S	S	S	60	C	5	4	4-5	4-5	4-5	4	4-5	4	3-4	5	4	5	3-4	4-5	3-4
Blue DE-NF		%2	100	80	5	2	2	4	S	S	S	60	X	4-5	4	3-4	5	4	4-5 On T.	5	4	3-4	5	4-5	5	4	4-5	3-4
Navy Blue BSF		%2	150	100	5	2	3	4	S	S	S	60	A	4	3-4	3	5	4-5	3 Off T.	5	4	2-3	5	4	5	3-4	4-5	3

DENACTIVE HF SERIE

Denactive® HF	%100 Cotton Supreme	Pyhsical Properties							Process Suitability					Fastness Properties																	
					Staining of other fibers										Perspiration Light Fastness (ISO 105 B07)		Washing Fastness (ISO 105 C06)			Water Fastness (ISO 105 E01)			Perspiration Fastness (ISO 105 E04)				Rubbing Fastness (ISO 105 X12)					
																							Acid		Alkali						
		Dyeing Depth (%o.w.f.)	Solubility at 25°C (g/l)	Solubility at 25°C with Glauber's salt 50g/l	Polyester	Wool	Poliamid	Acrylic	Exhaust Dyeing	Pad Batch Dyeing	Continuous Dyeing	Optimum Dyeing Temp. (C)	Dischargeability	Light Fastness: (ISO 105 B02-Grade 4)	Asid	Alkali	Change of Shade	Staining of shade (CO)	Oxidative Washing Fastness (ISO 105 C09)	Change of Shade	Staining of cotton	Chlorinated Water Fastness (ISO 105 E03)	Change of Shade	Staining of Shade	Change of Shade	Staining of Shade	Dry	Wet			
Brillant Yellow HF		2%	80	60	5	2	3	4-5	S	S	S	60	B	5	4	4	5	4-5	4	4-5	5	4	5	5	5	5	4-5	4			
Yellow HF		2%	150	100	5	2	3-4	4-5	S	S	S	60	A	4-5	3-4	3	4-5	5	4	5	4-5	4	4-5	4	5	4	4-5	3			
Ultra Yellow HF		2%	200	200	4	2-3	2-3	3-4	S	S	S	60	B	5	4	4-5	4-5	4-5	4	4-5	4	3-4	5	4	5	3-4	4-5	3-4			
Red HF		2%	100	20	4	2-3	3	4	S	S	S	60	A	4-5	4	3-4	5	4	4-5 On T.	5	4	3-4	5	4-5	5	4	4-5	3-4			
Red Brown HF		2%	100	100	4-5	3-4	4	4-5	S	S	S	60	B	4	3-4	3	5	4-5	3 Off T.	5	4	2-3	5	4	5	3-4	4-5	3			
Olive HF		2%	100	100	4-5	4	4	5	S	S	S	60	A																		
Blue HF		2%	100	80	5	2	2	4	S	S	S	60	B																		
Dark Blue HF		2%	100	<40	5	2	2	4	S	NS	NS	60	B																		
Navy Blue HF		2%	100	100	5	2	3-4	4-5	S	S	S	60	B																		
Green HF		2%	200	200	4	2	4	4	S	S	S	80	B																		
Black HF		6%	150	100	5	2-3	2	3-5	S	S	S	60	A																		

DENACTIVE LC SERIE

Denactive® LC	%100 Cotton Supreme	Pyhsical Properties							Process Suitability					Fastness Properties																
					Staining of other fibers										Perspiration Light Fastness (ISO 105 B07)		Washing Fastness (ISO 105 C06)			Water Fastness (ISO 105 E01)			Perspiration Fastness (ISO 105 E04)				Rubbing Fastness (ISO 105 X12)			
																							Acid		Alkali					
		Dyeing Depth (%o.w.f.)	Solubility at 25°C (g/l)	Solubility at 25°C with Glauber's salt 50g/l	Polyester	Wool	Poliamid	Acrylic	Exhaust Dyeing	Pad Batch Dyeing	Continuous Dyeing	Optimum Dyeing Temp. (C)	Dischargeability	Light Fastnessı (ISO 105 B02-Grade 4)	Asid	Alkali	Change of Shade	Staining of shade (CO)	Oxidative Washing Fastness (ISO 105 C09)	Change of Shade	Staining of cotton	Chlorinated Water Fastness (ISO 105 E03)	Change of Shade	Staining of Shade	Change of Shade	Staining of Shade	Dry	Wet
Yellow LC		%2	200	200	5	2-3	3	4	S	S	NS	60	B	6	4	4	4-5	4	4 On T.	4-5	4-5	4	4-5	4-5	4-5	4-5	4-5	3-4
Red LC		%2	200	100	4	2	3	4	S	S	NS	60	C	4-5	4	3	4-5	4-5	4 On T.	4-5	4-5	4	4-5	4-5	4-5	4-5	4-5	3-4
Blue LC		%2	200	150	3-4	3	3	4-5	S	S	S	60	C	4	3-4	3-4	4-5	3-4	4-5 On T.	4-5	4-5	3	4-5	4	4-5	3-4	4-5	4
Navy LC		%2	200	120	4-5	3-4	4-5	4	S	S	S	60	C	4	3	3	5	4-5	4 On T.	4-5	4	4	4-5	3-4	4-5	3	4-5	3

DENACTIVE SD SERIE

Denactive® SD	%100 Cotton Supreme	Pyhsical Properties							Process Suitability					Fastness Properties															
		Dyeing Depth (%o.w.f.)	Solubility at 25°C (g/l)	Solubility at 25°C with Glauber's salt 50g/l	Staining of other fibers				Exhaust Dyeing	Pad Batch Dyeing	Continuous Dyeing	Optimum Dyeing Temp. (C)	Dischargeability	Light Fastnessi (ISO 105 B02-Grade 4)	Perspiration Light Fastness (ISO 105 B07)		Washing Fastness (ISO 105 C06)		Oxidative Washing Fastness (ISO 105 C09)	Water Fastness (ISO 105 E01)		Chlorinated Water Fastness (ISO 105 E03)	Perspiration Fastness (ISO 105 E04)				Rubbing Fastness (ISO 105 X12)	
					Polyester	Wool	Poliamid	Acrylic							Asid	Alkali	Change of Shade	Staining of shade (CO)		Change of Shade	Staining of cotton		Acid		Alkali		Dry	Wet
																							Change of Shade	Staining of Shade	Change of Shade	Staining of Shade		
Yellow SD		2%	200	200	4	2-3	2-3	3-4	S	S	S	60	B	5	4-5	4	4-5	3-4	4-5	4-5	4-5	4	5	4-5	5	4-5	4-5	3-4
Red SD-4B		2%	150	80	4-5	4-5	4-5	4-5	S	S	S	60	C	4	4	3-4	4-5	4-5	4-5	4-5	4	4	4-5	4-5	4-5	4-5	4-5	4-5
Navy SD		2%	200	200	4	2	2-3	4	S	S	S	60	A	3	2-3	2-3	4-5	4-5	4	4-5	4-5	4	4-5	4-5	4-5	4-5	4-5	3-4

DENACTIVE SF SERIE

Denactive® SF	%100 Cotton Supreme	Pyhsical Properties							Process Suitability					Fastness Properties																
					Staining of other fibers										Perspiration Light Fastness (ISO 105 B07)		Washing Fastness (ISO 105 C06)			Water Fastness (ISO 105 E01)			Perspiration Fastness (ISO 105 E04)				Rubbing Fastness (ISO 105 X12)			
																							Acid		Alkali					
		Dyeing Depth (%o.w.f.)	Solubility at 25°C (g/l)	Solubility at 25°C with Glauber's salt 50g/l	Polyester	Wool	Poliamid	Acrylic	Exhaust Dyeing	Pad Batch Dyeing	Continuous Dyeing	Optimum Dyeing Temp. (C)	Dischargeability	Light Fastnessı (ISO 105 B02-Grade 4)	Asid	Alkali	Change of Shade	Staining of shade (CO)	Oxidative Washing Fastness (ISO 105 C09)	Change of Shade	Staining of cotton	Chlorinated Water Fastness (ISO 105 E03)	Change of Shade	Staining of Shade	Change of Shade	Staining of Shade	Dry	Wet
Yellow SF		2%	150	120	4-5	4-5	4-5	4-5	S	S	S	60	B	4	4	3-4	4-5	4-5	4-5	4-5	4	4	4-5	4-5	4-5	4-5	4	4
Amber SF		2%	100	40	4-5	4-5	4-5	4-5	S	S	S	60	A	4	4	3-4	4-5	4-5	4-5	3-4	4	4	5	4-5	5	4-5	4	4
Orange SF		2%	100	40	4-5	4-5	4-5	4-5	S	S	S	60	C	4	4	3-4	4-5	4-5	4-5	3-4	4	4	4-5	4-5	4-5	4-5	4	4
Red SF		2%	80	60	4-5	4-5	4-5	4-5	S	S	S	60	B	4-5	4	4	4-5	4-5	4-5	4-5	4	4	5	4-5	5	4-5	4	4
Maroon SF		2%	100	80	4-5	3-4	3	4	S	S	S	60	B	4	4	3-4	4-5	3 4	4-5 On T.	4-5	4	3	4-5	4-5	4-5	3-4	4	3-4
Blue SF		2%	200	200	4-5	3-4	3-4	4	S	S	S	60	B	4-5	4	4	4-5	4-5	4 On T.	4-5	4	3	4-5	4-5	4-5	4	4-5	3-4
Navy Blue SF		2%	150	100	4-5	3-4	3-4	4 5	S	S	S	60	A	3-4	3	3	4	4-5	3 Off T.	4-5	3-4	2-3	4	3-4	4	3	4-5	3
Navy SF-W		2%	200	200	4-5	3	3-4	4 5	S	S	S	60	A	3-4	3	3	4	4-5	2-3 Off T.	4-5	4-5	2-3	4-5	4-5	4-5	4	4	2-3

DENACTIVE ASSISTANT DYES

Denactive® Brillant Reds/Orange	%100 Cotton Supreme	Pyhsical Properties							Process Suitability					Fastness Properties																	
		Dyeing Depth (%o.w.f.)	Solubility at 25°C (g/l)	Solubility at 25°C with Glauber's salt 50g/l	Staining of other fibers				Exhaust Dyeing	Pad Batch Dyeing	Continuous Dyeing	Optimum Dyeing Temp. (°C)	Dischargeability	Light Fastness (ISO 105 B02-Grade 4)	Perspiration Light Fastness (ISO 105 B07)		Washing Fastness (ISO 105 C06)		Oxidative Washing Fastness (ISO 105 C09)	Water Fastness (ISO 105 E01)		Chlorinated Water Fastness (ISO 105 E03)	Perspiration Fastness (ISO 105 E04)				Rubbing Fastness (ISO 105 X12)	
																							Acid		Alkali			
					Polyester	Wool	Poliamid	Acrylic							Asid	Alkali	Change of Shade	Staining of shade (CO)		Change of Shade	Staining of cotton		Change of Shade	Staining of Shade	Change of Shade	Staining of Shade	Dry	Wet
Orange 2RL		2%	40	<5	4-5	2	3-4	4	S	NS	NS	60	C	3-4	3	3	4-5	3-4	4 Off T.	5	4-5	4-5	5	4-5	5	4-5	4-5	3
Scarlet 2G		2%	80	30	4-5	4-5	4-5	4-5	S	S	S	60	C	4	4	4	4-5	4-5	4-5	4-5	4	4	4-5	4-5	4-5	4-5	4	4
Red GF		2%	200	200	5	2	3	4	S	NS	NS	60	C	3-4	3-4	3	5	4	4 Off T.	5	4	3	5	4	5	3-4	4-5	3-4

DENACTIVE BLACK SERIE

Denactive® Blacks	%100 Cotton Supreme	Pyhsical Properties							Process Suitability					Fastness Properties															
					Staining of other fibers										Perspiration Light Fastness (ISO 105 B07)		Washing Fastness (ISO 105 C06)			Water Fastness (ISO 105 E01)			Perspiration Fastness (ISO 105 E04)				Rubbing Fastness (ISO 105 X12)	
																							Acid		Alkali			
		Dyeing Depth (%o.w.f.)	Solubility at 25°C (g/l)	Solubility at 25°C with Glauber's salt 50g/l	Polyester	Wool	Poliamid	Acrylic	Exhaust Dyeing	Pad Batch Dyeing	Continuous Dyeing	Optimum Dyeing Temp. (°C)	Dischargeability	Light Fastness (ISO 105 B02-Grade 4)	Asid	Alkali	Change of Shade	Staining of shade (CO)	Oxidative Washing Fastness (ISO 105 C09)	Change of Shade	Staining of cotton	Chlorinated Water Fastness (ISO 105 E03)	Change of Shade	Staining of Shade	Change of Shade	Staining of Shade	Dry	Wet
Black B 150%		2%	200	150	4	2-3	2-3	3-4	S	S	S	60	A	3-4	3	3	4-5	4-5	3 Off T.	4-5	4	3-4	5	3	5	3	4-5	3
Black B 165%		2%	200	150	4	2-3	2-3	3-4	S	S	S	60	A	3-4	3	3	5	5	4 Off T.	5	5	3-4	4 -5	4-5	5	5	4-5	3
Black TNN		6%	150	100	4	2-3	2	3-4	S	S	S	60	A	4	3-4	3-4	4	4	4 Off T.	4-5	3-4	2-3	5	2-3	4-5	4	4-5	3
Black DN		6%	150	100	4	2-3	2	3-4	S	S	S	60	A	4	3-4	3-4	5	4	3-4 Off T.	5	4	2-3	5	3	4-5	3	4	3
Black NG		6%	150	100	4	2-3	2	4	S	S	S	60	A	4	3-4	3-4	4-5	4-5	3 Off T.	4	3-4	2-3	5	2-3	4-5	3	4-5	3
Black DG		6%	150	100	4	2-3	2	3-4	S	S	S	60	A	4-5	4	4	5	4-5	4 On T.	5	3-4	3	5	3-4	4-5	3-4	4-5	3
Black C-DN		6%	150	100	5	2-3	2	3-5	S	S	S	60	A	4	4	4	5	4	4 On T.	5	2 3	3	5	2-3	4-5	3-4	4-5	3
Black HF		6%	150	100	5	2-3	2	3-5	S	S	S	60	A	4-5	4	4	5	4-5	4 On T.	5	2 3	3	5	2-3	4-5	3-4	4-5	3

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