ZETESAN DHT –

Special dispersing agent for levelling- and energy optimized dyeing of polyester

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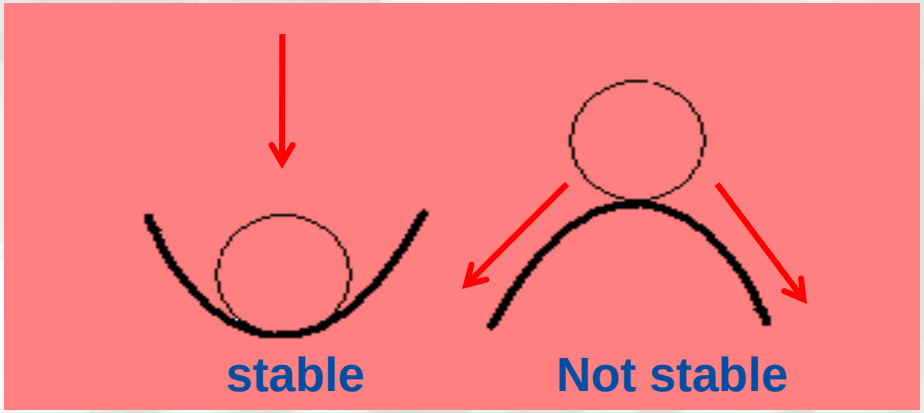
DESIRED characteristics of modern dyeing systems:

Short dyeing time	-> save time
Short liquor ratio	-> save water
High density	-> save energy
High quality	-> fastness, levelling

ONLY POSSIBLE, IF THE DYEING SYSTEM IS THERMODYNAMIC STABLE !



Requirements for a stable dyeing system:

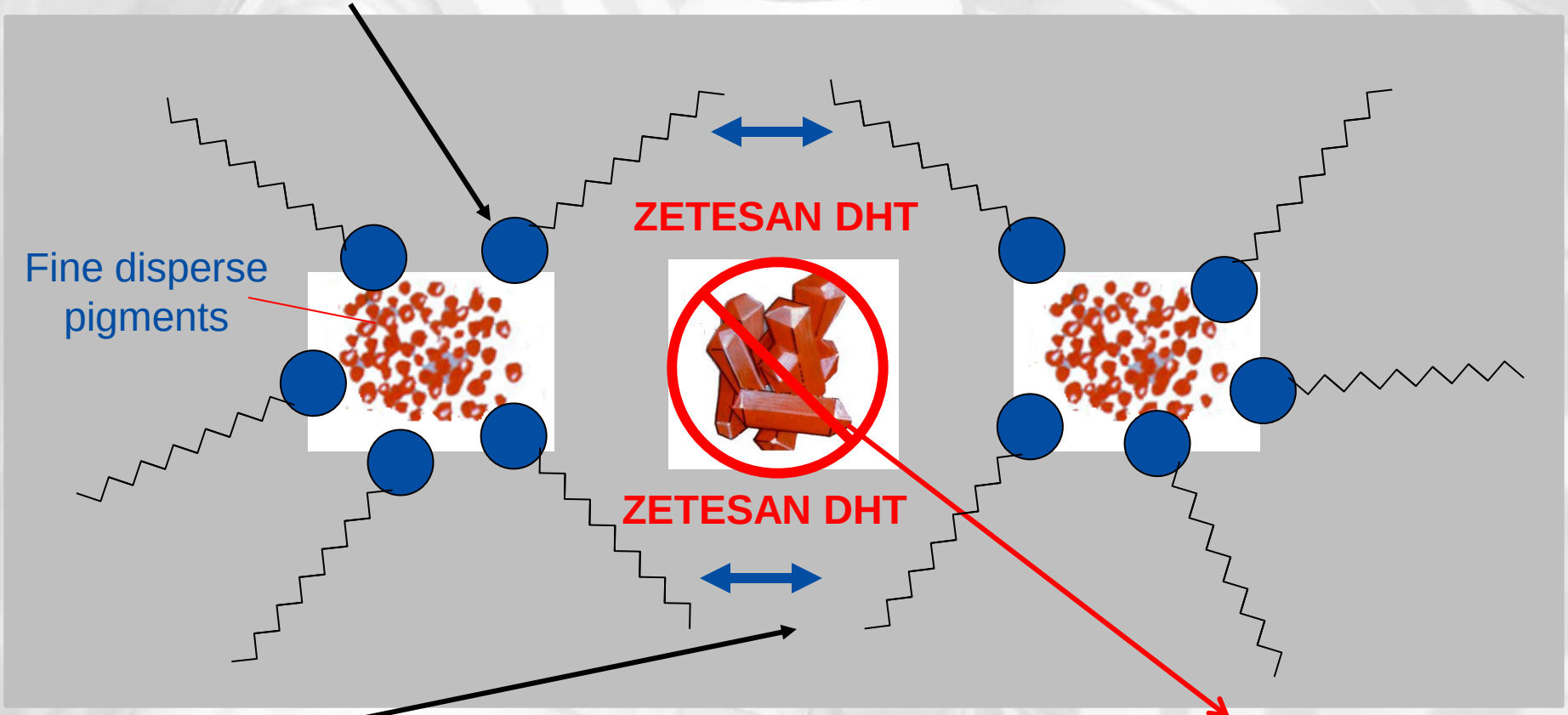
controlled dye exhaustion in dye take up phase
don t exceed maximal dyeing speed (higher density -> higher dyeing speed)
no differences in the dye concentration
uniform and perfect liquor through put
no differences in dyebath temperature

Influencing factors by the dyer:

Temperature profile	-> f (fabric, machinery)
Dyes	-> f (fastness, shade)
Dispersing agent	**-> f (stability of the dye dispersion)**
Levelling agent	-> f (retarding, accelerating)

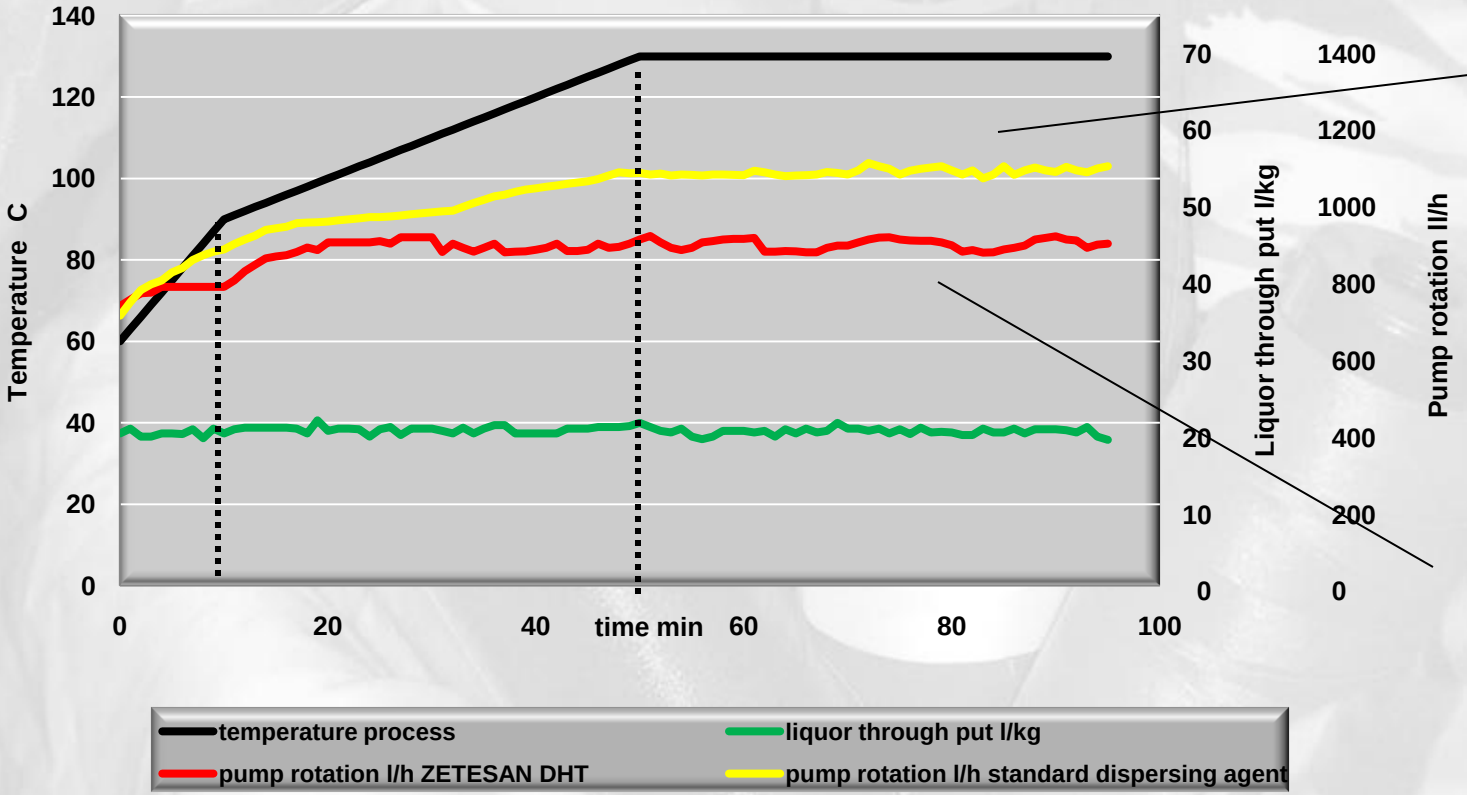
Stability of the dispersion – function of ZETESAN DHT

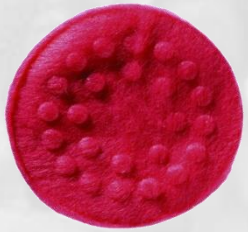
Hydrophobic parts of **ZETESAN DHT** adsorbs at the dye molecule



Repulsion forces of the hydrophilic PEG-chains prevent dye agglomeration
-> stable dispersion

Dispersing effect of ZETESAN DHT

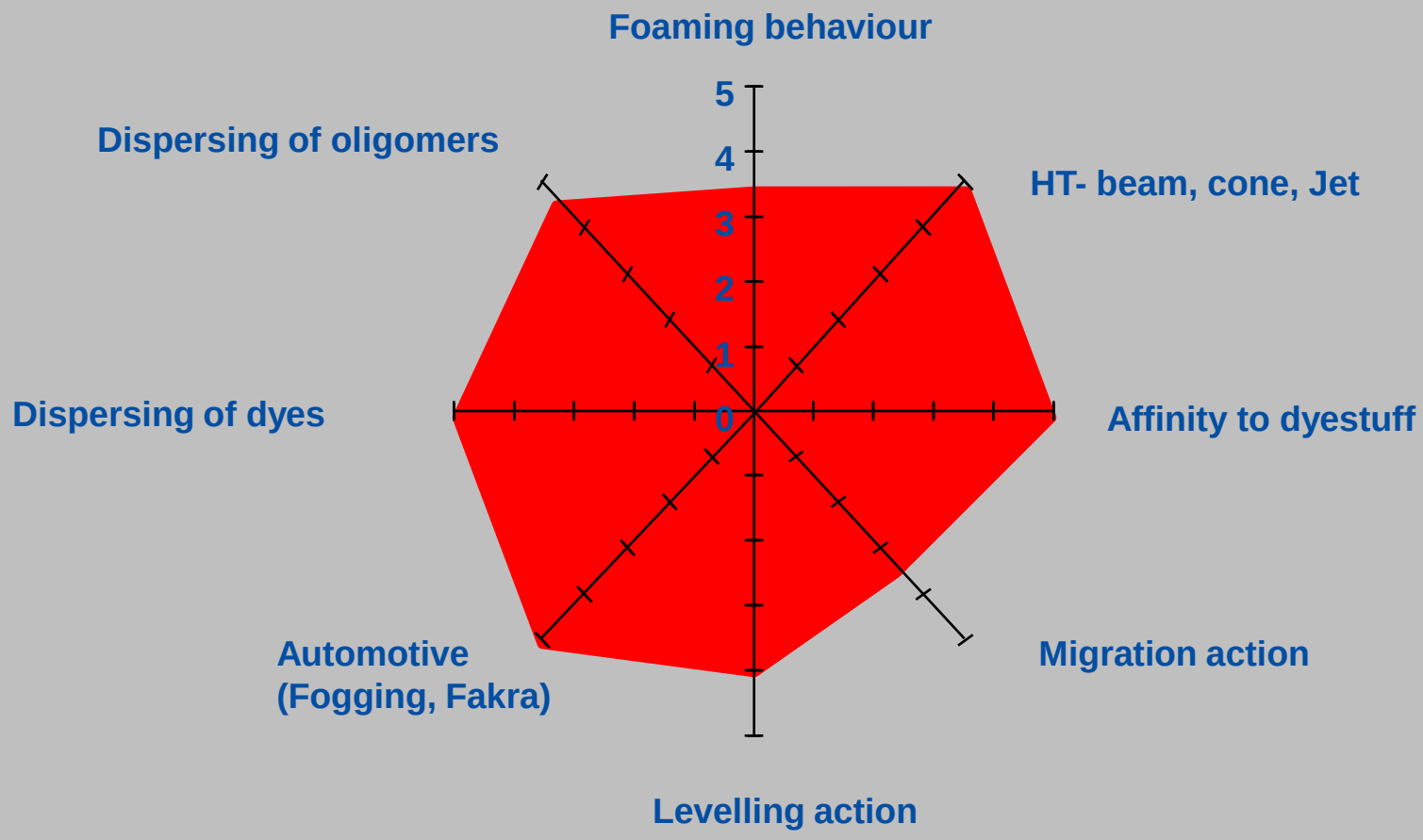




- lower increase of the pump power during critical heating-up phase -> **no agglomerations -> higher levelling effect**
- lower level of the pump power with **ZETESAN DHT** -> **save energy**

=> better distribution of the disperse dyes (more higher stability of the dispersion)

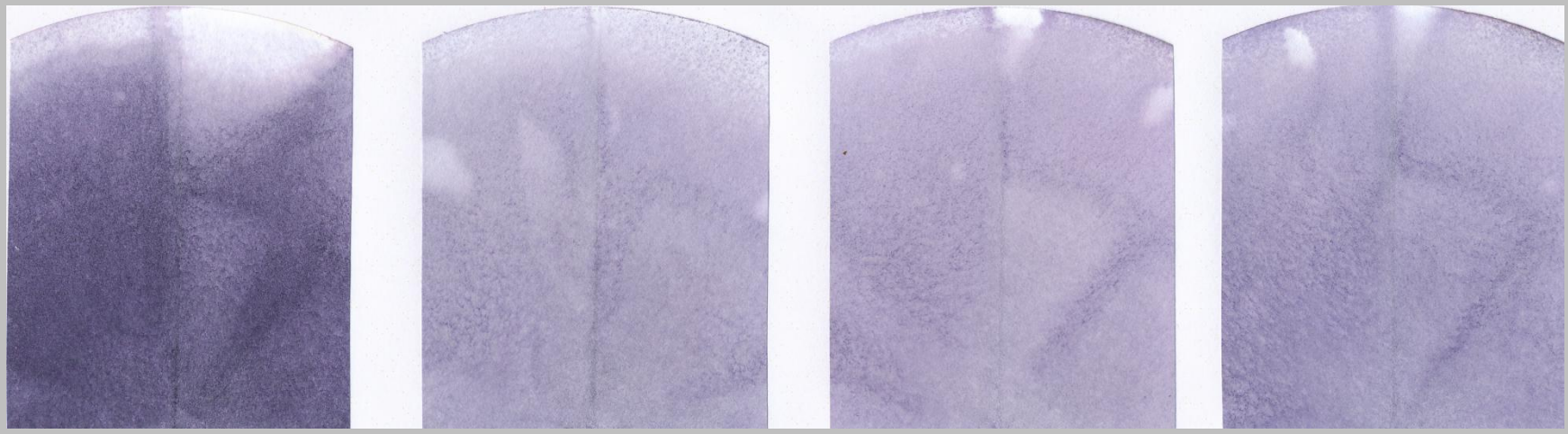
Profile of ZETESAN DHT



Test dyestuff dispersing power

Recipe: 0.5 g/l Foron Blue S-2RN
pH 4.5 with acetic acid 60%
x g/l dispersing agent

Method: 115 C, 30 min
cooling down to 80 C
filtration through blue ribbon filter



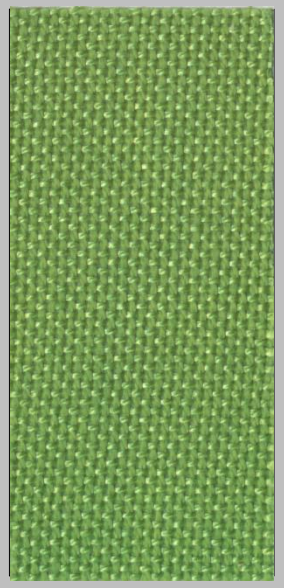
without dispersing agent | **1 g/l ZETESAN DHT** | **1 g/l CHT-Dispergator XHT** | **1 g/l Levegal DLP**

dyestuff dispersing power of inner layer – beam dyeing

Fabric:	100% Trevira® CS (ready to dye)
Recipe:	0.30% Dorosperse Yellow XLD 0.20% Lumacron Brilliant Blue SR 200% 0.40 ml/l SETACID A 40 x g/l dispersing agent
LR:	1:10, pump only I → O

Program:	add auxiliaries heat up to 125 C add dyestuffs (fast) run 125 C, 20 min cool down to 80 C rinsing, drying

without dispersing agent



1 g/l ZETESAN DHT

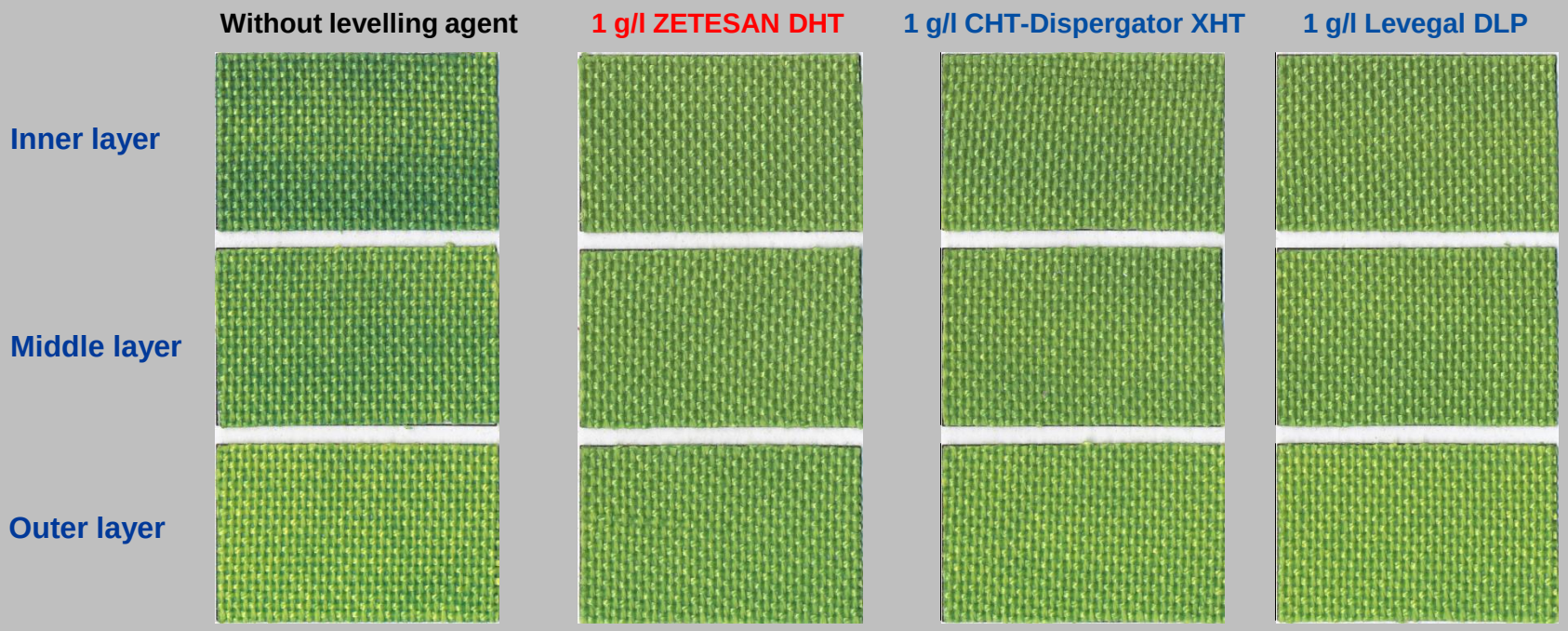
1 g/l CHT-Dispergator XHT

1 g/l Levegal DLP

levelling test (extreme shading) with disperse dyes

Fabric:	100% Trevira® CS (ready to dye)
Recipe:	0.30% Dorosperse Yellow XLD 0.20% Lumacron Brilliant Blue SR 200% 0.40 ml/l SETACID A 40 x g/l dispersing agent
LR:	1:10, pump only I → O

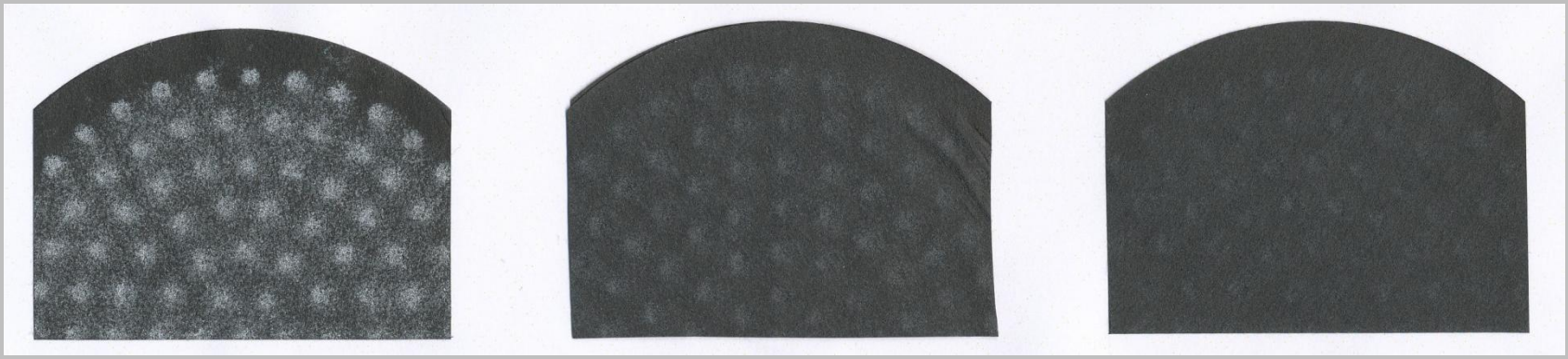
Program:
add auxiliaries
heat up to 125 C
add dyestuffs (fast)
run 125 C, 20 min
cool down to 80 C
rinsing, drying



filter test - Oligomer dispersing power

Recipe: 1.5 g/l oligomers
0.5 ml/l SETACID A40 (acid buffer)
x g/l dispersing agent

Method: 130 C, 20 min
cooling down to 70 C
vacuum filtration through black ribbon filter



without dispersing agent

1 g/l ZETESAN DHT

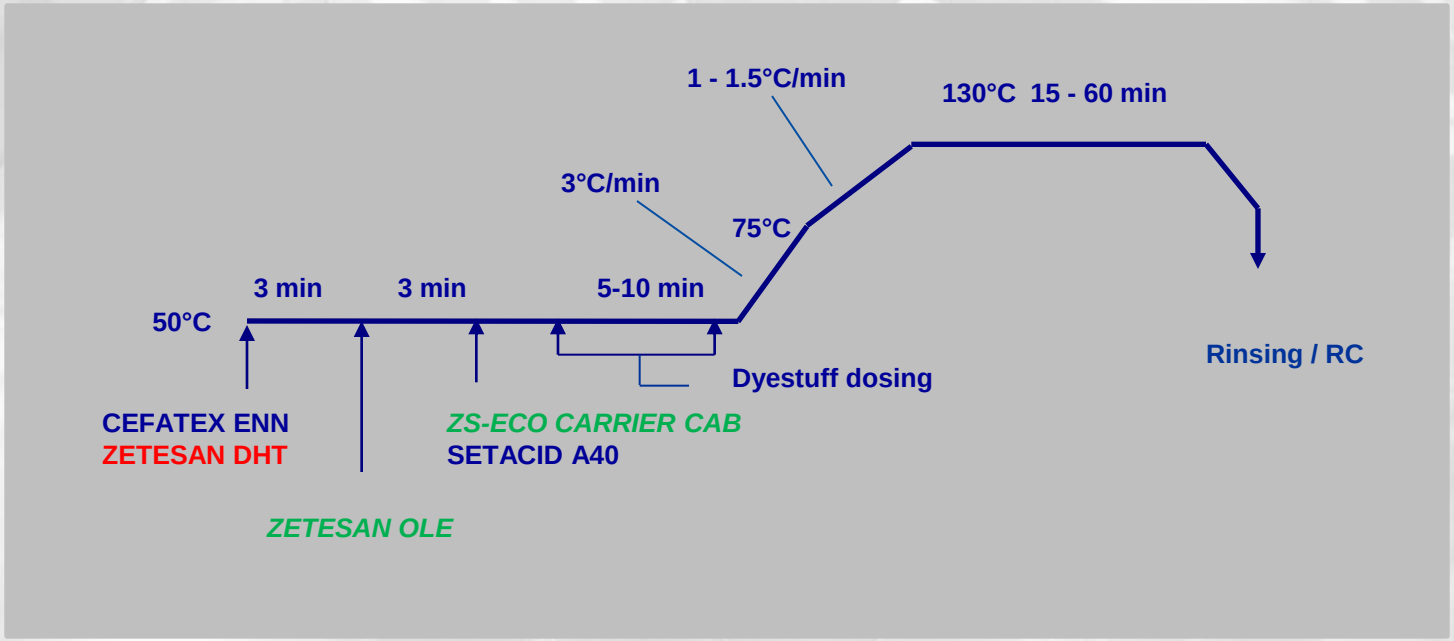
1 g/l ZETESAN DHT +
1.5 g/l ZETESAN OLE

Migration test with disperse dyes

Fab ric: undyed polyester
yellow pre-dyed polyester (1 % Palanil Yellow 5G)
pink pre-dyed polyester (1 % Palanil Red 3BF)
blue pre-dyed polyester (1 % Palanil Dark Blue 3RT)
(same fabric weight)

LR: 1 : 10, pH 5.5 (SETACID A 40)
Program: heat up to 130 C (30 min)

Dyeing process – optimized for critical fabrics



Recipe:	**0,5 – 1 g/l**	**CEFATEX ENN (de-aerator)**
	0,5 – 1 g/l	**ZETESAN DHT (special dispersing agent)**
	0.2 – 0.5 g/l	***optional :ZS-ECO CARRIER CAB (diffusion accelerrator)***
	1.0 ml/l	**SETACID A40 (acid buffer) pH 4-5**
	1– 2 g/l	***optional : ZETESAN OLE (oligomer dispersing agent)***
	x %	**disperse dyes**