



Processing of Polyester & Microfiber

MICROFIBER

Fineness of a synthetic yarn is defined in 'decitex' or 'denier'.

Decitex : weight of 10,000 meter yarn, grams
 Denier : weight of 9,000 meter yarn, grams

Decitex Perfilament (dtexpf)

It is decitex of a yarn, divided by number of filaments, eg.

1 / 170 / f 200 yarn
 ↑ ↑ ↑

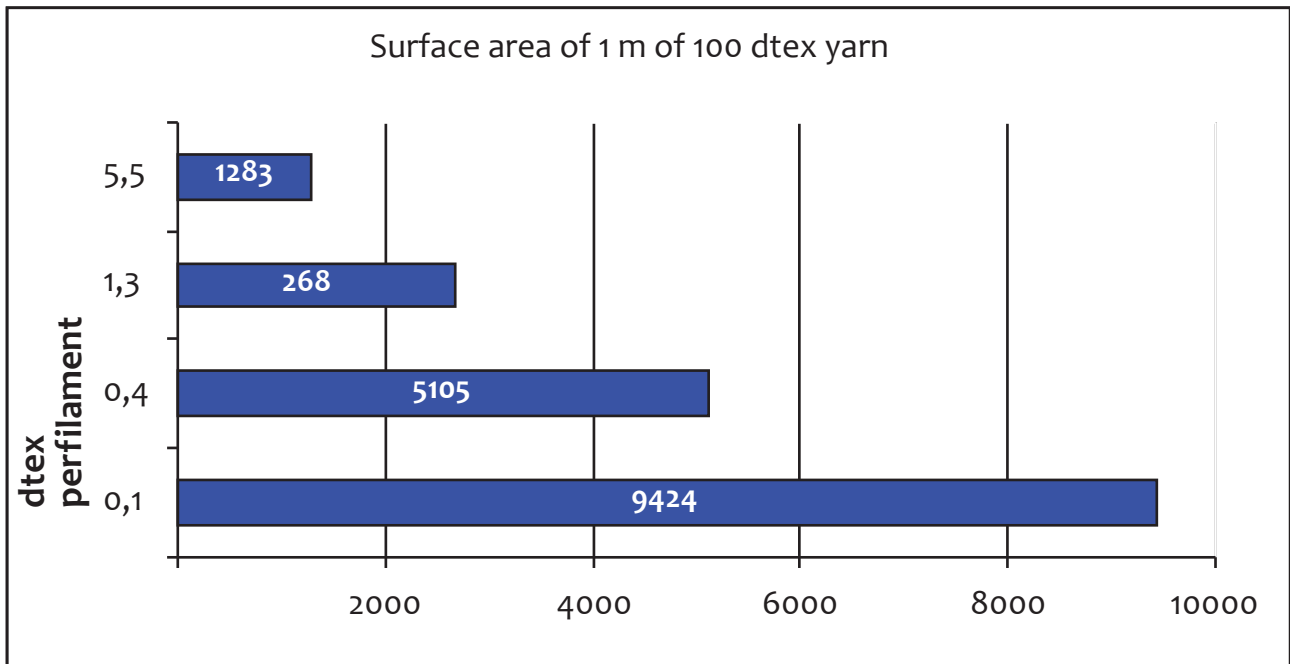
Single yarn decitex number of filament

A microfibre is defined as a yarn which contains filaments of less than 1 decitex per filament (dtexpf).

Conventional filament	2,6 - 6 dtexpf
Weight reduced polyester	1,2 - 1,6 dtexpf
Micro fiber	0,3 - 1 dtexpf

SURFACE AREA of 1 m, 100 dtex yarn (1 m, 100 dtex yarn)

- The greater the surface area, greater the amount of lubricants in spinning. So more efficient chemicals to remove these lubricants.
- More disperse dye required to achieve the same relative visual strength as on coarse yarns.
- Hence wet rubbing fastness will be lower.
- Due to enlarged surface area, sublimation fastness will be lower.



MICROFIBER EFFECTS

- Softness,
- Absorbancy,
- Rapid cooling moisture transport,
- Anti creasing effect and stability,
- Special touch effect like 'Moist Touch'.

MICROFIBER PROCESSING

Light Weight Silks

Desize, scour

Heat seat

Weight reduction

Dye

Dry, finish

Peach Skin

Desize, scour

Dry

Padding,(emerising chemicals)

Emerize

Dye

Dry, finish

Woven Sports Wear

Desize, scour

Dry

Causticise
Emerize
Heat set

Dye

Dry, finish

PREPERATION

- Because of large surface area, 2 - 5 times higher amounts of fiber lubricants are loaded compared with conventional coarse fibers. So efficient scouring agent necessary to remove excess amount of oils and waxes.
- Size chemicals should be checked. It could be ;
 - Acrylate based,
 - Polyester based,
 - Polyvinyl alcohol based, chemicals.
- FIXECLEAN JT 200% is multifunctional, lubricant and wax emulsifier for PAD application.

Recipe	PVA, Acrylate Size	Polyester Size
FIXECLEAN JT 200%, ml/L	5 - 10	5 - 10
Na ₂ CO ₃ , g/L	-	1 - 2
NaOH, g/L	1 - 2	-
EXOLINE PAD	5	5
pH	10 - 11	8 - 9

- EXOLINE PAD is pick-up enhancer for hydrophobic surfaces.

FIXECLEAN JT 200%

- Fiber finish and silicon oil emulsifier, on microfiber, and elastane fibers.
- Blend of nonionic emulsifiers.
- Applicable in stenter padders. Does not require preliminary washing.
- Prevents yellowing during thermo fixation at 180 - 190 °C.
- In subsequent washing no detergent no wetting agent, is required.
- Usage amount in the padder,

FIXECLEAN JT 200% 5 - 10 ml/L .

OLIGOMERS

- They are low molecular weight esters, formed during polymerization.
- Generally, oligomers are between 1,5 - 3,0 % of fiber. If polymerization is not controlled properly, it climbs to 6 - 7 % !.

Problem Caused

- White powder deposits on bobbins, dyeing spinning and winding machines.
- Agglomeration with dispers dyes, and hence dye spots, unlevelness and poor rubbing fastness.

OLIGOMERS-DYEING

- Oligomer formation is catalysed by;
 - Carrier dyeing,
 - High temperature dyeing,
- 130 °C dyeing generates more, compared to 120 °C ,
 - Longer staying time at 130 °C,
- Oligomer formation is reduced by,
 - Discharging dye bath at high temperature,
 - Efficient dispersing agent for oligomers,
 - Reductive clearing with dispersing agent.

MEGAMIN 4/11

- Reduction cleaner in acidic bath.
- In dye bath, after cooling down to 90 °C .
- No additional acid or dispersing agent.

MEGAMIN 4/11	2 - 3 ml/L
Temp.	85 - 90 °C
Time	20 min

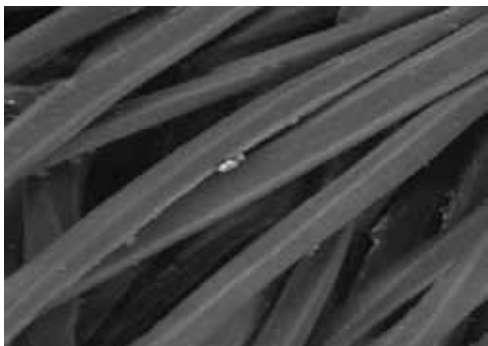
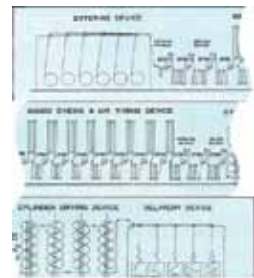
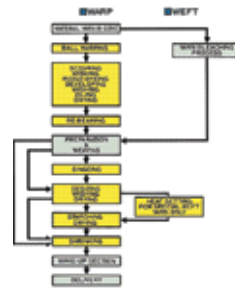
MEGAMIN 12

- Reduction cleaner in alkaline bath, at 95 °C .
- No H₂S odor around application area.
- No fading on wet dyed fabrics.

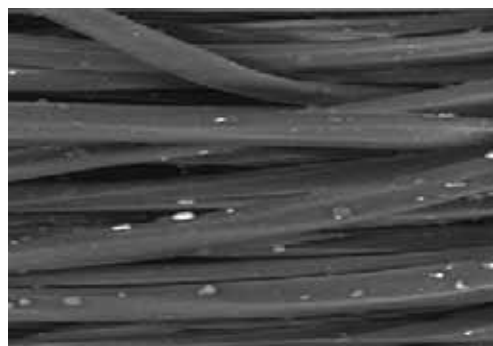
MEGAMIN 12	1 - 2 g/L
NaOH, fl	3 - 4 g/L
EXOLUBE NC	1 g/L
Temp.	95 °C
Time	20 min

EXOLUBE NC

- Verstile levelling, dispersing and lubricating chemical.
- Blend of anionic oil esters, APEO free.
- Effective re-levelling agent for PES fibers.
- Ensures crease-free dyeing.
- Prevents formation/oligomer agglomerates, during the dyeing.
- Application amount 0,5 - 1 ml/L .



With EXOLUBE NC



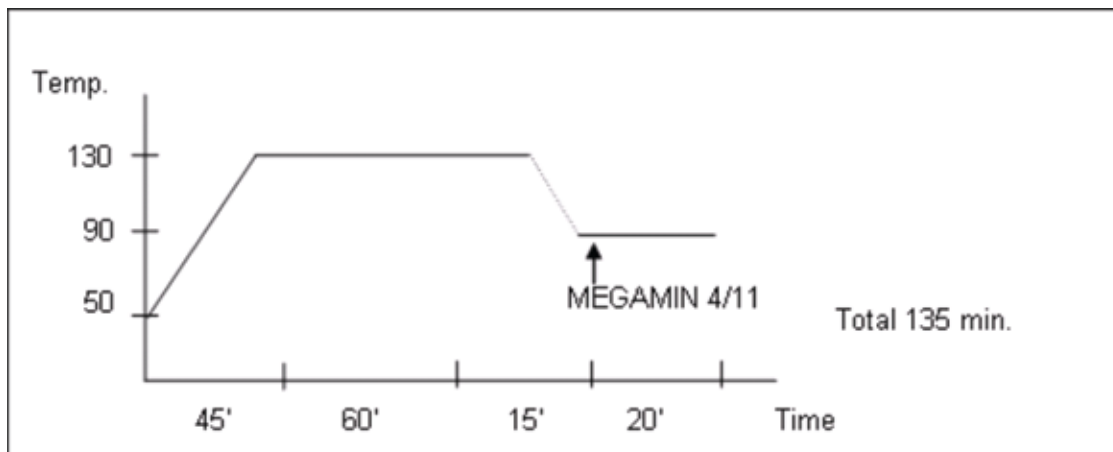
Without EXOLUBE NC

REDUCTION CLEARING

- Reduction clearing is carried out to improve;
 - Dry rubbing fastness,
 - Oligomer formation,
 - Sublimation fastness.

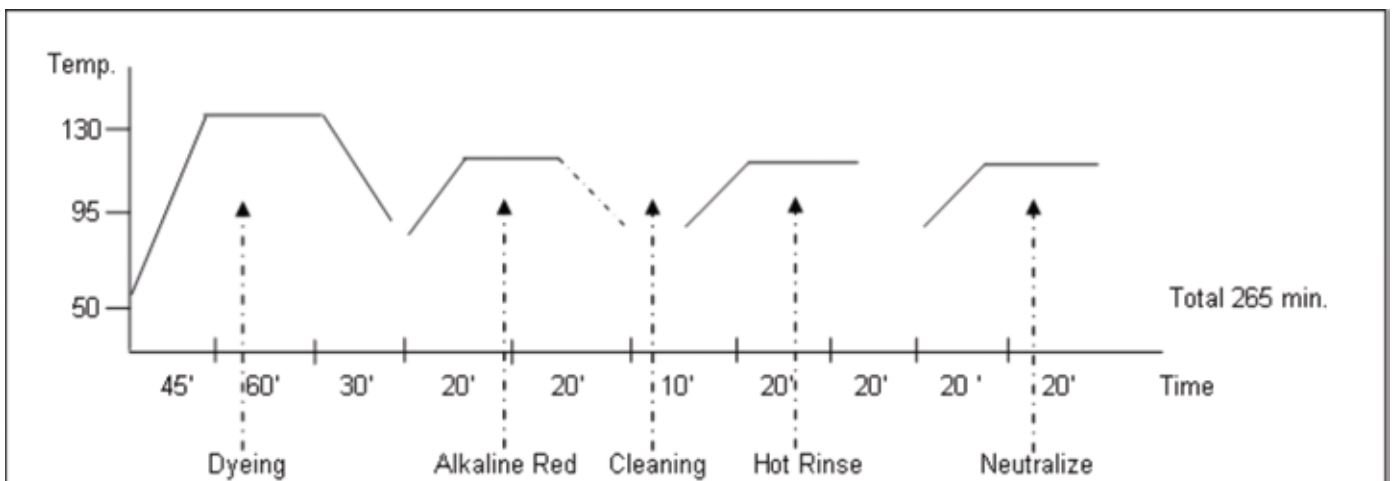
One Bath Dyeing-Reduction Clearing MEGAMIN 4/11

- Short time processing. Save 3 cycle.
- Labor, energy, chemical, water cost is low.



Two Bath Alkaline Reduction Clearing-MEGAMIN 15

- Better rubbing, sublimation fastness property.
- Superior oligomer cleaning.

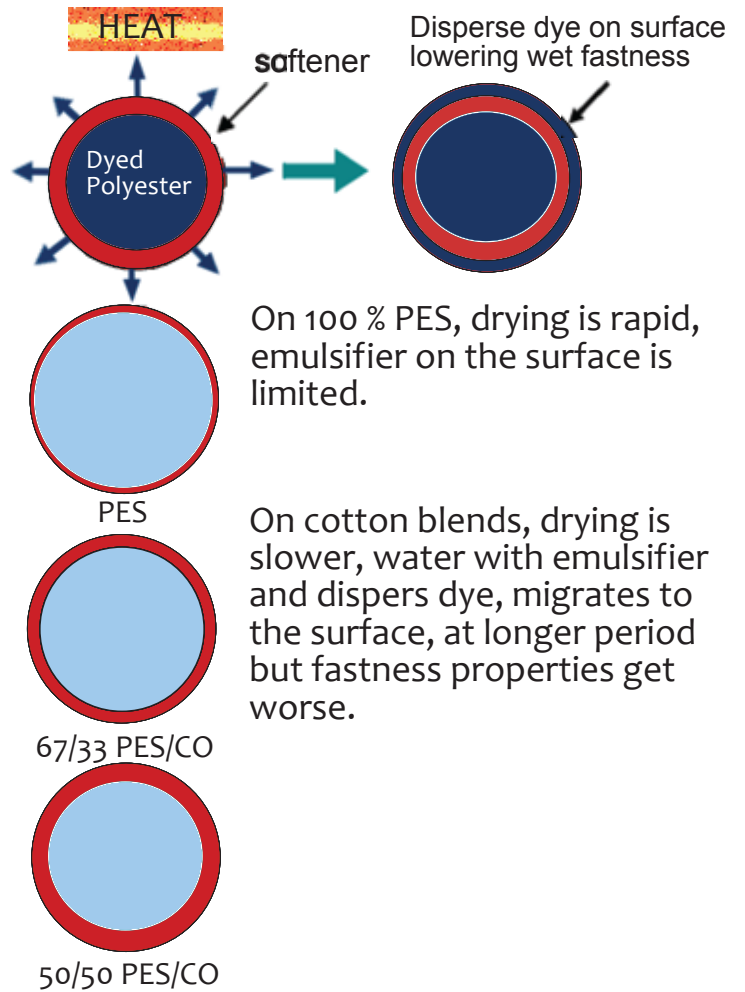


FINISHING

• During drying of PES fibers with the softeners, fastness properties deteriorate, due to migration of disperse dyes, from the core of the fiber into the softener.

Degree of deterioration proportionally increase with;

- Decreasing diameter of fiber,
- Increasing drying temperature,
- Decreasing particle dia of silikon softener,
- Increasing amount of cotton in PES/CEL blends,
- Increasing emulsifier amount in silicones.



UNIPES COMFORT

- It is concentrated polyester resin,
- Nonionic,
- Imparts soft hand with drape on PES,
- Polyester becomes antistatic and hydrophilic,
- Effective stain reducer,
- Durable to home laundering,
- In dyeing,
 - Levelling,
 - Anti-crease
 - Oligomer reduction.
- It is only for PES fiber,

	Dyeing	Finishing	
UNIPES COMFORT	1 ml/L	Exhaust	: 2 - 3 ml/L
		Padder	: 10 - 20 ml/L

For durability, drying is above 160 °C.