



PROTELAN FM

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ZSCHIMMER & SCHWARZ

for the best performance



Textile auxiliaries

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Foam molding process / problems:

The foam molding process of PA/elastane fabric is done at 120 sec at 200°C.

Requirements of customers are:

- **brilliant white or coloured fabrics**
- **very low yellowing of fabric or foam during molding**
- **Phenolic yellowing test minimum grade 4**
- **final pH value pH 5.5 to pH 7**

(special for retailer: Victoria Secret, Embray, Wendy Fair)



Using PROTELAN LG / LGA or competition products, the Phenolic yellowing test is passed but the molding test failed. A nearly neutral pH value on fabric can lead to worse Phenolic yellowing results.





ZSM has developed a special product for foam molding process to meet all of the demands.

PROTELAN FM

(FM - means foam molding)



Comparison of ZSM yellowing inhibitors against storage yellowing using in foam molding process:

| Antioxidant against storage yellowing | | without | PROTELAN LG | PROTELAN LGA | PROTELAN FM |
|----------------------------------------------------------------------------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| padding, pre-setting scouring OBA protection against storage yellowing padding, post-setting | | 3 g/l PROTELAN ATY-P 1 g/l TISSOCYL RC 9 1 % Blankophor CF 300 without 3 g/l PROTELAN ATY-P | 3 g/l PROTELAN ATY-P 1 g/l TISSOCYL RC 9 1 % Blankophor CF 300 3% PROTELAN LG 3 g/l PROTELAN ATY-P | 3 g/l PROTELAN ATY-P 1 g/l TISSOCYL RC 9 1 % Blankophor CF 300 3 % PROTELAN LGA 3 g/l PROTELAN ATY-P | 3 g/l PROTELAN ATY-P 1 g/l TISSOCYL RC 9 1 % Blankophor CF 300 3 % PROTELAN FM 3 g/l PROTELAN ATY-P |
| Evaluations: Degree of whiteness after foam molding 120 sec at 200°C | before molding after molding | 159.4 CIE 148.2 CIE | 159.4 CIE 136.1 CIE | 159.4 CIE 129.9 CIE | 159.8 CIE 149.6 CIE |
| Phenolic yellowing test | |  grade 3 |  grade 4 |  grade 4-5 |  grade 4 |
| pH value on fabric | | pH 6.0 | pH 5.6 | pH 4.9 | pH 5.7 |
| Requirements | low difference grade 4 pH 5.5-7 | Molding: ✓ Phenolic: failed pH value: ✓ | Molding: failed Phenolic: ✓ pH value: ✓ | Molding: failed Phenolic: ✓ pH value: failed | Molding: ✓ Phenolic: ✓ pH value: ✓ |



Recommendation for the application of **PROTELAN FM**

During the application of PROTELAN FM and the optical brightening, please pay attention to the following:



- The optical brightener should be applied at **pH 4-4.5** by using **citric acid**.
- PROTELAN FM is applied in exhaust process in a separate bath after optical brightening.

The pH value has **NOT** to be adjusted by any acids.

- After treatment by using PROTELAN FM no rinsing process is necessary / required.
- PROTELAN FM shows a higher foaming behaviour than PROTELAN LG.

We recommend to use a defoamer during the treatment (e.g. CEFATEX ENN).



Recipe for PA/EL optical white:

| Step | Recipe | Process |
|----------------------------------|------------------------------------------------|---------------------------------------------------------------------------------|
| 1. padding and pre-heat setting | 3 g/l PROTELAN ATY- P | dry-in-wet, pick up 60-80%, neutral pH value, 60 sec at 195°C |
| 2. scouring | 1 g/l TISSOCYL RC 9 | 20 min at 60 - 70°C LR 1:8, rinsing |
| 3. OBA | 1.0 % Blankophor CF 300% pH 4.5 citric acid | 30 min at 98°C, LR 1:8 hot rinsing |
| 4. anti-yellowing | 3 – 5 % PROTELAN FM | fresh bath LR 1:8 20 min at 70°C no pH adjustment necessary no rinsing |
| 5. padding and post-heat setting | 3 g/l PROTELAN ATY-P x g/l softener | wet-in-wet, pH 5.5 – 6 drying 60 sec at 140°C |

← Protection against yellowing during pre-heat setting



← Protection against storage yellowing

← Protection against yellowing during molding



PROTELAN FM

Common antioxidant

Foam molding with fabric



No yellowing of fabric after molding

Strong yellowing of fabric after molding

Take away the fabric:

Foam molding without fabric

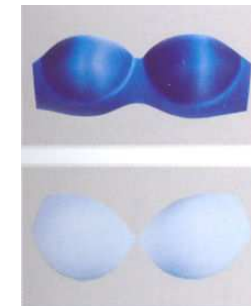


No yellowing of foam after molding

Strong yellowing of foam after molding



Foam molding unit



Molded articles of clothing



For the best performance of your foam molded PA/elastane fabrics:

PROTELAN FM

the powerful yellowing inhibitor



- brilliant white or coloured fabrics
- very low yellowing of fabric or foam during molding
- Phenolic yellowing test minimum grade 4
- final pH value pH 5.5 to pH 7