



MEISEI CHEMICAL WORKS, LTD

## Speciality Chemical and Auxiliaries

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### BATHOTEX FS-370E

Bathochromatic (color deepening effect) finishing agent

BATHOTEX FS-370E, a bathochromic agent for polyester, exhibits eminent effects in deepening color shade especially black shade. BATHOTEX FS-370E does not change hand of finished fabric.

#### GENERAL PROPERTIES

Appearance : White liquid  
Ionic activity : Cationic  
pH : Acidic  
Solubility : Easily soluble in water

#### CHARACTERISTICS

BATHOTEX FS-370E has following character.

- 1) BATHOTEX FS-370E exhibits excellent bathochromic effect for dyed polyester fabrics especially black dyed cloth.
- 2) In combination use with Meikanate CXE, it shows excellent durability against dry cleaning.
- 3) BATHOTEX FS-370E does not affect hand of fabrics.
- 4) BATHOTEX FS-370E contains fluorine type resin, however it doesn't contain PFOA, PFOS, APEO.

#### APPLICATION

- 1) BATHOTEX FS-370E is used by padding method.
- 2) Dilute with water to desired concentration before use.
- 3) Dosage of BATHOTEX FS-370E is varied by the kind of material and structure but generally 30 ~ 50 g/L is recommendable.
- 4) In case of using it with anti-static agent, 10g/L of DELECTOL MAP is recommended. In case of using it with cross linking agent, 3 ~5 g/L of MEIKANATE CXE is recommended.

#### Caution for use :

BATHOTEX FS-370E is used by padding method and keep the padding bath in cool. (under 30°C) to avoid stability trouble.

Avoid to use homo-mixer for bath preparation because it may destroy emulsion stability.

In combination use with other chemicals, agents should be mixed after diluting each agents with more than 5 times volume of water respectively.

Also it is necessary to confirm the affection to miscibility, bathochromic effect and color fastness.

BATHOTEX FS-370E is easily affected by residual of dyeing chemicals, alkaline substance. So sufficient washing before the treatment is required.

Un-even dryness or drying speed cause uneven deepness by un-even bathochromatic effect. At the first dry process, infrared heater is recommended because it does not blow wind and avoid migration. Non-touch dryer is also recommended for drying to avoid migration because of mild blow. Don't use cylinder dryer to avoid migration.

It is recommendable that drying temperature is 100 ~ 130°C and curing temperature is 160°C for 180 sec, 170°C for 60 sec, or 180°C for 30 sec.

Pad roller should be a precision machine. Uneven pressure and squeeze cause uneven color depth (uneven bathochromatic effect). Please make sure crease-free in the process. Un-even pressure and squeezing at mangle may cause uneven color depth. To keep same shade (same bathochromatic effect), keep constant speed in not only padding but also drying process. Stopping machine causes un-even deepness. As BATHOTEX FS-370E shows water repellency effects. So re-touch or re-dyeing becomes very difficult. Pre-test is needed before production. Durability of home laundry and dry cleaning should be checked before production. Regarding the bath stability of BATHOTEX FS-370E, please keep pH weakly acidic ~ neutral and temperature under 30 °C in the finishing bath since the effect of bathochromatic and color fastness are affected by pH and temperature.

Depending on color shade, depth, kind of fabric, etc, the color fastness may affect by BATHOTEX FS-370E application. So pre-test is needed before production. Chalk mark, color change, color fastness by time lapse, water spot, whitening by abrasion, slippage which cause stress mark should be checked before production.

**EXAMPLE :**

1. Bathochromatic, effect and influence to color fastness

Tested fabric : Polyester for black formal (dyed)

Treating conditions : Pad 1 dip 1 nip  
 Wet pick up 80%  
 Dry (non-touch dryer) 130°C for 120 sec.  
 Cure 170°C for 30 sec.

Results :

Table 1 (concentration : g/L)

Recipe No.		1	2	3	4	Untreated (Original dyed cloth)
BATHOTEX FS-370E		40	60	40	60	
DELECTOL MAP				10	10	
Bathochromatic effect (L*)	Initial	10.56	10.49	9.71	9.43	11.53
	After DC	10.78	10.67	10.27	9.94	—
$\Delta L^*$		0.22	0.18	0.56	0.51	—
Rubbing fastness	Dry	4-5	4-	4	3-4	4-5
	Wet	4-	3-4	3-4	3+	5

\* DC: Dry Cleaning

Table 2 : In case of using with MEIKANATE CXE.

Recipe No.		1	2	3	4	5	6	Untreated
BATHOTEX FS-370E		40	40	40	60	60	60	
DELECTOL MAP		10	10	10	10	10	10	
MEIKANATE CXE			3	5		3	5	
Bathochromatic effect (L*)	Initial	9.71	9.68	9.73	9.43	9.45	9.61	11.53
	After DC	10.27	10.07	9.89	9.94	9.68	9.73	—
$\Delta L^*$		0.56	0.39	0.15	0.51	0.23	0.12	—
Rubbing fastness	Dry	4	3-4	3+	3+	3+	3+	4-5
	Wet	3-4	3-4	3-4	3+	3+	3	5

### 2. Solution pH and influence to bathochromatic effect

Recipe :  
 BATHOTEX FS-350E            60 g/L  
 DELECTOL MAP                10 g/L  
 MEIKANATE CXE               0.5 g/L

\* The pH of above solution is adjusted by malic acid or soda ash. The pH of unadjusted solution is 6.7.

Tested fabrics :                    Polyester for black formal (dyed)

Treating conditions :  
 Pad                                    1 dip 1 nip  
 Wet pick up                        80%  
 Dry (non-touch dryer)        130°C for 120 sec.  
 Cure                                    170°C for 30 sec.

Results :

pH of solutions		4	5	6	7	8	Unadjusted
Bathochromatic effect (L*)	without MEIKANATE CXE	10.40	10.26	9.98	9.93	9.91	12.04
	With MEIKANATE CXE	10.50	10.39	10.25	10.00	10.02	

### 3. Dosage and bathochromatic effect

Recipe :  
 BATHOTEX FS-350E            30 ~ 80 g/L  
 DELECTOL MAP                10 g/L  
 MEIKANATE CXE               0.5 g/L

Tested fabrics :                    Polyester for black formal (dyed)

Treating conditions :  
 Pad                                    1 dip 1 nip  
 Wet pick up                        80%

Dry (non-touch dryer) 130°C for 120 sec.

Cure 170°C for 30 sec.

Results :

Concentration of solutions (g/L)		30	40	60	80	Not pH adjusted
Bathochromatic effect (L*)	without MEIKANATE CXE	10.22	9.80	9.63	9.52	11.73
	with MEIKANATE CXE	10.15	9.88	9.68	9.69	

### Evaluation method

Bathochromatic effect :

Measured by Spectral color difference meter SZ-Σ80

The piled 4 pieces of specimen is measured L\*, a\*, b\*.

Color fastness : JIS L 0849-71 2 method

Dry cleaning : JIS L 1092-92 3 2 (2) method and dry at room temp.

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### FOR YOUR PRODUCTION

Above suggestions described concerning uses and data in this bulletin are based on our laboratory tests, therefore users should make their own tests to determine the suitability of these products for their own particular purpose. However, because of various factors affecting results, MEISEI CHEMICAL WORKS, LTD. MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR PURPOSE, other than that the material conforms to its applicable current Standard Specifications. Statements herein, therefore, should not be construed as representations or warranties. Statements concerning the use of the products or formulations described herein are not to be construed as recommending the infringement of any patent and no liability for infringement arising out of any such use is assumed.

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