

# ANTIBIO-994RX

- Antimicrobial Agent

**ANTIBIO-994RX** is used in clothing, bedclothes, interior articles and textiles. And it is a persistent antimicrobial agent with excellent washing resistance.

## ◆ SPECIFICATION

### \* APPEARANCE

Light Yellowish Liquid

### \* IONIC NATURE

Cationic

### \* pH(1% aq. Sol'n)

7.0 ± 1.0

### \* SP.GR(at 25°C)

1.05 ± 0.05

### \* SOLUBILITY

Easily soluble in cold water.

### \*STORAGE STABILITY

Min. 1 year under cool and dry conditions

when stored in original sealed, packaging.

### \* COMPATABILITY

Compatible with nonionic and cationic materials.

## ◆ FEATURES

- 1) **ANTIBIO-994RX** provides good antimicrobial effect to natural and synthetic fibers. It removes staphylococcus aureus which causes bed smell.
- 2) **ANTIBIO-994RX** maintains antimicrobial efficiency even after washing 10 times and it shows almost durable antimicrobial efficiency if it is treated together with resin. But the durability to antimicrobial efficiency depends on kinds of fibers.
- 3) If **ANTIBIO-994RX** is used with glyoxal resin or melamine resin, persistent antimicrobial efficiency will be improved better.
- 4) It is environmental-friendly product as APEO-free and NPEO-free.

## ◆ APPLICATION FIBERS

Suitable for all kinds of fibers such as Cotton, Rayon, Polyester, Nylon, Acryl, Wool, Silk, T/C, N/P, etc.

## ◆ HOW TO USE

Recommended use levels are 2~50 g/l according to kinds, density, thickness of fibers and treatment methods.



**Ro Chem International SDN BHD**

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## RECOMMENDED RECIPE

### 1) Padding method

- **ANTIBIO-994RX** : 30-50 g/ℓ
- Processing method : Padding at room temperature.
- Dry conditions : Dry 50-80 m/min at 150-180°C  
after passing 3 Kg/ cm<sup>2</sup> mangle.
- Pick Up : 70~80%

### 2) Dipping method

- **ANTIBIO-994RX** : 10-30 g/ℓ
- Processing method : Dipping for 20min at 40-50°C.
- Dry conditions : Dry 50-80 m/min at 150-180°C  
after passing 3 Kg/ cm<sup>2</sup> mangle.
- Bath ratio : 1:10-1:30

### 3) Spray method

- **ANTIBIO-994RX** : 2-4 g/ℓ
- Processing method : Spray at room temperature.
- Dry conditions : Dry at room temperature  
and properly treat according to the process.

◆ **NOTICE**

- **ANTIBIO-994RX** may impair the fluorescent whitening effect in using together with fluorescent dyestuff.  
Therefore preliminary trials must be carried out.

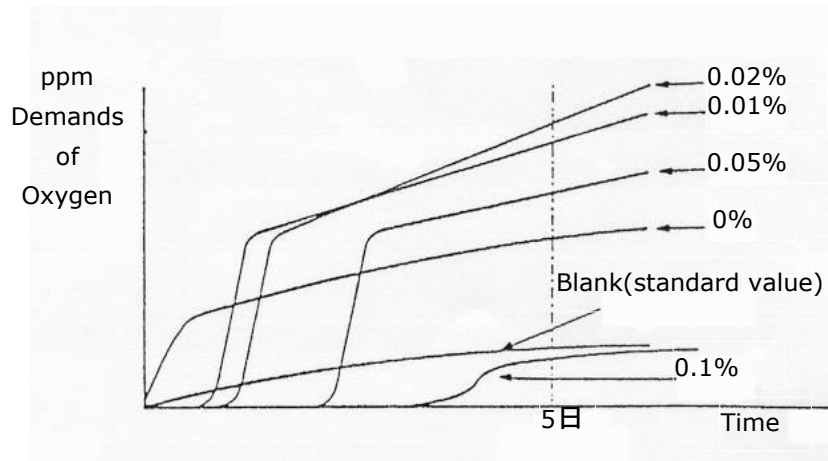
◆ **RESULTS OF SAFETY AND POLLUTION TEST**

- 1) Acute oral toxicity by mouse(male) : LD50=6,510 mg/Kg
- 2) Mutation by microorganisms : negative
- 3) Skin stimulation : near negative(2B)
- 4) Acute fish toxicity by a minnow(JISK-0102) : TLm = 41 ppm/24hrs
- 5) Chemical oxygen demand(JISK-0102) : COD=37ppm
- 6) Degradation of microorganisms by activated sludge (measured biochemical oxygen demand (BOD/5days) in each concentration with chloro meter):



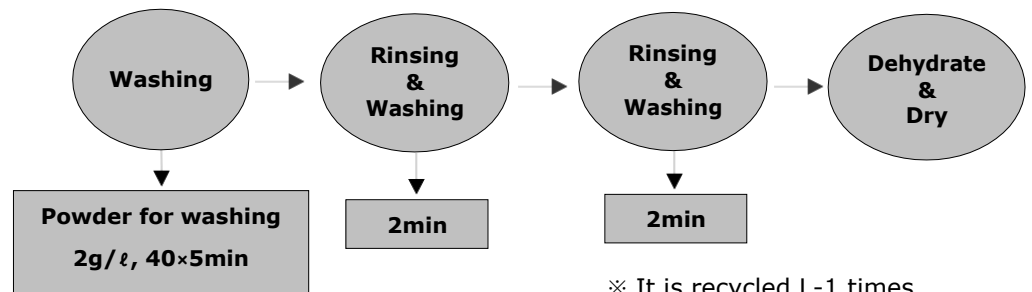
ANTIBIO-994	BOD in solution	Initial time of oxygen demand
0.00%	92 ppm	0.0 hr
0.10%	0 ppm	72.5 hrs
0.05%	122 ppm	33.0 hrs
0.02%	174 ppm	13.5 hrs
0.01%	52 ppm	10.0 hrs

※ Initial time of oxygen demand : degradation times of organic matter by activated sludge.



## ◆ EFFICIENCY TEST

- Test method of antibiotic effect for fibers treated with an antimicrobial agent.  
Microbe : Staphylococcus aureus FDA 209P(IFO 1732)  
Klebsiella pneumoniae(IFO 13277)
- Washing Resistance : by washing test method JISL-0217(No. 103)



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1) Halo test

By AATCC Test Method 90-1982

Antibiotic effect indication : Halo length of microbe

- × : Length of Halo
- (-) : A little Identification(Halo)
- : No Identification(Halo)

2) Restraint test of Microbe Breeding

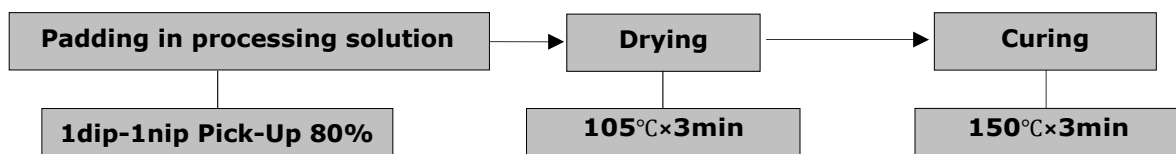
A ratio of decreased microbe (%) =  $(A-B)/A \times 100$

A : a number of increased microbes at initial stage

B : a number of alive microbes 18hrs later

## 1. Antimicrobial Processing Test of Cotton Broad

· Condition (Padding Method)



Result (HALO Test)

Antibiotic effect		Test No.	B	1	2
		Processing Sol'n	ANTIBIO-994	-	1% Sol'n
Efficiency	S.a.	L-0	0	5	6
		L-10	0	5	6
		L-20	0	4	5
		L-30	0	3	4
	K.p.	L-0	0	2	3
		L-10	0	0	0
		L-20	0	0	0
		L-30	0	0	0



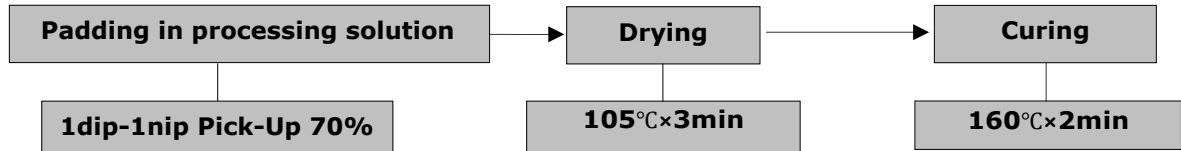
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## 2. Antimicrobial Processing Test of Blend (Polyester/Cotton(65/35))

· Condition (Padding Method)

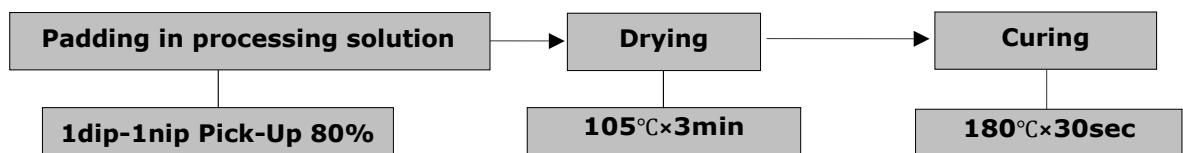


Result (HALO Test)

Antibiotic effect		Test No.	B	1	2
		Processing Sol'n	ANTIBIO-994	-	1% Sol'n
Efficiency	S.a.	L-0	0	5	6
		L-10	0	5	6
		L-20	0	4	5
		L-30	0	3	4
	K.p.	L-0	0	2	3
		L-10	0	0	0
		L-20	0	0	0
		L-30	0	0	0

## 3. Antimicrobial Processing Test of Polyester Knit

· Condition (Padding Method)



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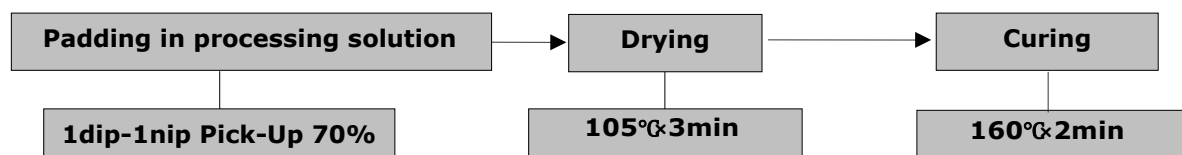
Result (HALO Test)

Antibiotic effect		Test No.	B	1	2
		Processing Sol'n	ANTIBIO-994	-	1% Sol'n
Efficiency	S.a.	L-0	0	5	6
		L-10	0	5	6
		L-20	0	4	5
		L-30	0	3	4
	K.p.	L-0	0	2	3
		L-10	0	0	0
		L-20	0	0	0
		L-30	0	0	0

#### 4. Antimicrobial Processing Test of Blend (Polyester/Cotton)

(In case of using together with Resin)

· Condition (Padding Method)



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## - Antimicrobial Agent

- Processing solution

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>ANTIBIO-994</b>	10 g/L	15 g/L	20 g/L	30 g/L
<b>Melamine-based Resin</b>	-	30 g/L	30 g/L	30 g/L

Result (HALO Test)

- Effect for Staphylococcus aureus

<b>Antibiotic effect</b> <b>Test No.</b>	<b>Halo Test</b>			<b>A ratio of decreased microbe (%)</b>		
	<b>L-0</b>	<b>L-5</b>	<b>L-10</b>	<b>L-0</b>	<b>L-5</b>	<b>L-10</b>
<b>No Treatment</b>	0	0	0	Breeding	Breeding	Breeding
<b>1</b>	5	5	5	> 99.9	> 99.9	> 99.9
<b>2</b>	6	6	5	> 99.9	> 99.9	> 99.9
<b>3</b>	6	6	5	> 99.9	> 99.9	> 99.9
<b>4</b>	6	6	5	> 99.9	> 99.9	> 99.9

- Effect for Klebsiella pneumoniae

<b>Antibiotic effect</b> <b>Test No.</b>	<b>Halo Test</b>			<b>A ratio of decreased microbe (%)</b>		
	<b>L-0</b>	<b>L-5</b>	<b>L-10</b>	<b>L-0</b>	<b>L-5</b>	<b>L-10</b>
<b>No Treatment</b>	0	0	0	Breeding	Breeding	Breeding
<b>1</b>	1	0	0	> 99.9	> 99.9	> 99.9
<b>2</b>	2	0	0	> 99.9	> 99.9	> 99.9
<b>3</b>	3	0	0	> 99.9	> 99.9	> 99.9
<b>4</b>	3	0	0	> 99.9	> 99.9	> 99.9

◆ **PACKAGE**

120 Kgs NET IN DRUMS.



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