

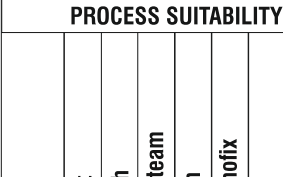


			PROCESS SUITABILITY							
			C.I NO.	Warm Exhaust	Cold Pad Batch	Pad Dry Pad Steam	Pad Dry Steam	Pad Dry Thermofix	Econtrol [®]	Dischargeability
1%	4%	PRODUCT NAME								
		BILZOL YELLOW H7GL	Y 57	S*	S	NS	NS	NS	NS	A
		BILZOL YELLOW GL	Y 37	S	S	S	S	S	S	B
		BILZOL YELLOW FG	Y 42	S*	NS	NS	NS	NS	NS	A
		BILZOL YELLOW GR	Y 15	S	S	S	S	NS	S	A
		BILZOL YELLOW HRNL	0 107	S	S	S	S	NS	S	A
		BILZOL GOLDEN YELLOW R	-	S	NS	NS	NS	NS	NS	A
		BILZOL YELLOW RTN	Y 24	S*	NS	NS	NS	NS	NS	B
		BILZOL ORANGE 2R	-	S	NS	NS	NS	NS	NS	A
		BILZOL ORANGE 3R	0 16	S	S	S	NS	NS	NS	A
		BILZOL RED F3B	R 23	S	S	S	S	NS	NS	A
		BILZOL BRILLIANT RED BB	R 21	S	NS	NS	NS	NS	NS	A
		BILZOL BRILLIANT RED RB	R 198	S	S	S	S	NS	S	C
		BILZOL RED GF	-	S	NS	NS	NS	NS	NS	C
		BILZOL RED C2GL	R 106	S*	NS	NS	NS	NS	NS	A
		BILZOL RED 5B	R 35	S*	S	NS	NS	NS	NS	A

LIGHT FASTNESS				SOLUBILITY (g/l)		WASHING			PERSPIRATION			PERSPIRATION								
						C06/C2			M&S C7 (ACIDIC)			M&S C7 (ALKALINE)								
1/1 SD (AATCC 16 E)	1/3 SD (AATCC 16 E)	1/1 SD (ISO B02)	1/3 SD (ISO B02)	Water 30°C	In presence of Salt 50°C (90 g/l.)	Effect	Stain (cotton)	Stain (Nylon)	Effect	Stain (Cotton)	Stain (Nylon)	Effect	Stain (Cotton)	Stain (Nylon)	Chlorinated Water Jis L-0884 (10mg)	Dry Rubbing (M&S C8)	Wet Rubbing (M&S C8)	Perborate Wet Fade (M&S C9A)	Repeated Domestic Washing (M&S C10A)	
4-5	4	5-6	5	200	150	4-5 R	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	3-4 R	5	4	4-5	3 R	
4-5	4	6-7	6	200	<5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4	5	4	4-5	4 R	
4	3-4	4	3-4	60	40	4-5	5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	3	5	4	3-4	3-4 R	
4-5	4	6	5-6	200	50	4-5 R	4-5	4	4-5	4-5	4-5	4-5 R	4-5	4-5	4	5	4	4	3-4 G	
4	3-4	4	3-4	200	200	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4 R	5	4	4	4	
4	3-4	3-4	3	60	60	4-5	4-5	4-5	4 Br	4-5	4-5	4 Br	4-5	4	3-4 G	5	4	4	4	
4-5	4-5	5-6	5	50	20	4-5	5	4-5	4 R	4-5	4-5	3-4 R	4-5	4-5	4 DI	5	4	4-5	3 DI	
3-4	3	3-4	3	150	100	4-5	4-5	4	4-5	4-5	4-5	4-5 R	4-5	4	4	5	4	4-5	4	
4	3-4	4	3-4	60	<5	4-5	4-5	4-5	4-5 R	4-5	4-5	4 R	4-5	4-5	4	5	4	4-5	2-3	
4-5	4	4-5	4	200	100	5	4-5	4-5	5	4-5	4-5	5	4-5	4-5	4-5	4-5	3-4	4-5	3-4	
4	3-4	4	3-4	100	20	4-5	4	4-5	4-5	4-5	5	4-5	4-5	4-5	4	5	5	3-4	2-3	
3-4	3	3-4	3	200	120	4-5	4-5	4-5	4 BI	4-5	4-5	4 BI	4-5	4-5	3-4 Y	5	4	3-4	2-3	
3-4	3-4	3-4	3-4	200	200	4-5	4-5	4-5	4 BI	4-5	5	4 BI	4-5	4-5	3-4 Br	4-5	3-4	4	3 BI	
3-4	3	3-4	3	150	80	4-5	4-5	4-5	4-5	4-5	4-5	4-5 R,DI	4-5	4-5	3-4	5	4	3-4	1-2	
3-4	2-3	3	2-3	80	60	4-5	4-5	5	4-5	4-5	5	4-5	4-5	4-5	4 BI	5	4	2-3	3-4	



1%	4%	PRODUCT NAME	C.I NO.	Warm Exhaust	Cold Pad Batch	Pad Dry Pad Steam	Pad Dry Thermofix	Econtrol ®	Dischargeability
		BILZOL BROWN GR	BRN 18	S*	S	NS	NS	NS	A
		BILZOL VIOLET 5R	V 5	S	S	S	S	NS	B
		BILZOL BLUE 3R	BL 28	S	S*	S	S	S	A
		BILZOL BRILLIANT BLUE R	BL 19	S	S*	NS	NS	NS	C
		BILZOL BRILLIANT BLUE RE 150%	BL 19	S	NS	NS	NS	S	C
		BILZOL BLUE BB	BL 220	S	S	S	S	NS	B
		BILZOL TURQUOISE BLUE PG	BL 21	S	S	S	S	S	C
		BILZOL TURQUOISE BLUE H2GP	-	S	S	NS	NS	NS	C
		BILZOL GREEN 6B	BL 38	S	S	S	S	S	C
		BILZOL NAVY BLUE GG	BL 203	S	S	NS	NS	NS	A
		BILZOL NAVY JB	BL 250	S	S	NS	NS	NS	A
		BILZOL BLACK B	BLK 5	S	S	S	S	S	A
		BILZOL GREY MRE	-	S	S	S	NS	S	C
		BILZOL BLACK RL	BLK 31	S	S	S	S	NS	B
		BILZOL BLACK HFRL	-	S	NS	NS	NS	NS	A



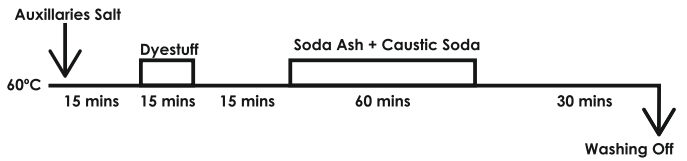
LIGHT FASTNESS				SOLUBILITY (g/l)		WASHING		PERSPIRATION		PERSPIRATION							
						C06/C2		M&S C7 (ACIDIC)		M&S C7 (ALKALINE)							
1/1 SD (AATCC 16 E)																	
1/3 SD (AATCC 16 E)																	
1/1 SD (ISO B02)																	
1/3 SD (ISO B02)																	
Water 30°C																	
In presence of Salt 50°C (90 g/l.)																	
Effect																	
Stain (cotton)																	
Stain (Nylon)																	
Effect																	
Stain (Cotton)																	
Stain (Nylon)																	
Effect																	
Stain (Cotton)																	
Stain (Nylon)																	
Chlorinated Water Jis L-0884 (10Mg)																	
Dry Rubbing (M&S C8)																	
Wet Rubbing (M&S C8)																	
Perborate Wet Fade (M&S C9A)																	
Repeated Domestic Washing (M&S C10A)																	
4-5	4	5-6	5	200	150	4-5 R	4-5	4-5	4-5	4-5	4-5	4-5	4-5	3-4 R	5	4	4-5
4	3-4	6	5-6	200	60	4-5	4-5	5	4 BI	4-5	4-5	4 BI	4	5	4 BI	4	4-5
4	3-4	6	5-6	120	40	4-5	4	4-5	3-4 DI	4-5	4-5	3-4 DI	4-5	4-5	4	4-5	4-5
4-5	4	6	5-6	200	200	4-5 G	4-5	4	4 DI	4-5	4-5	4-5	4-5	4-5	4 G	4-5	3-4
4-5	4	6	5-6	200	200	4-5 G	4-5	4	4 DI	4-5	4-5	4-5	4-5	4-5	4 G	4-5	3-4
4	3-4	6	5-6	200	120	4-5	4-5	4-5	4-5	4-5	4-5	4 DI	4-5	4-5	4	4-5	3-4
4	3-4	6	5	200	150	4 Y	3	3-4	4-5	4	4	4	3-4	4	4 Y	4-5	3
4-5	4	6	5	200	150	4 Y	3	3-4	4-5	3-4	3-4	4-5	3	4	4 Y	4-5	3
4-5	4	6	6	200	200	4-5 Y	3	4	4-5 BI	4-5	4-5	4-5	3-4	4-5	4	4-5	3
4-5	4	4-5	4	200	100	5	4-5	4-5	5	4-5	4-5	5	4-5	4-5	4-5	3-4	4-5
3-4	2-3	4	3	200	200	4-5 R	4-5	4-5	4-5	4-5	4-5	4-5 Br	4-5	4-5	3-4 Y	4-5	3-4
3-4	2-3	4	3-4	200	200	4-5 R	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	3-4 Y	4-5	3-4
3-4	3-4	5	4	200	100	4	3-4	4-5	4 R	4-5	4-5	4 Y,G	4	4	3-4	4-5	4
4	3-4	4	3	200	200	4-5	3-4	4-5	4	4-5	4-5	4	4-5	4-5	3	4-5	3-4
3-4	-	3-4	-	200	120	4-5 R	4-5	4	4	4-5	4-5	4-5	4-5	4-5	3 G	4-5	4



BILZOL VS DYES

		PROCESS SUITABILITY						
4%	8%	PRODUCT NAME	C.I NO.	Warm Exhaust	Cold Pad Batch	Pad Dry Pad Steam	Pad Dry Thermofix	Econtrol ®
		DEEP BLACK N-150	-	S	S	S	NS	NS
		BLACK SJ	-	S	S	NS	NS	NS
		BLACK GRD	-	S	S	S	NS	NS

WARM EXHAUST DYEING METHOD (MIXED ALKALI)



% DYE	SALT (g/l)	SODA ASH (g/l)	CAUSTIC SODA 50% (ml/l)	WASHING – OFF
<0.1	20	5	0	10 mins at 50°C (soft water)
0.1 – 0.5	20 – 25	5	0.6 – 0.75	10 mins at 50°C
0.5 – 1.0	25 – 40	5	0.75 – 0.9	(at pH 5-6 with acetic acid)
1.0 – 2.0	40 – 50	5	0.9 – 1.2	10 mins at 80°C (soft water)
2.0 – 3.0	50 – 60	5	1.2 – 1.5	10 mins at 95°C (soft water)
3.0 – 5.0	60 – 80	5	1.5 – 2.0	10 mins at 80°C (soft water)
>5.0	80 - 100	5	2.0	10 mins at 25°C (soft water)

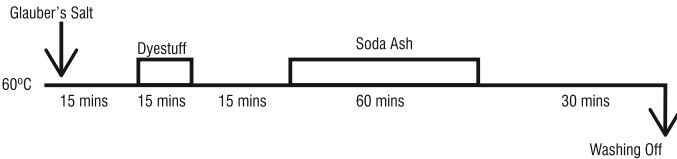


BILZOL VS DYES

LIGHT FASTNESS					SOLUBILITY (g/l)</
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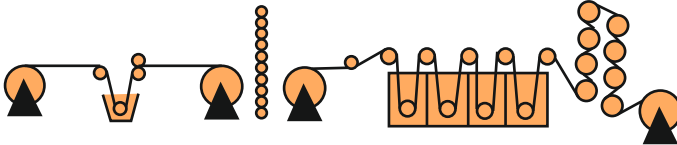


HOT EXHAUST DYEING METHOD (VACTIVETurquoise & Green Shades)



% DYE	SALT (g/l)	SODA ASH (g/l)	WASHING – OFF
<0.1	20	3	10 mins at 50°C (soft water)
0.1 – 0.5	20 – 35	3	10 mins at 50°C (at pH 5-6 with acetic acid)
0.5 – 1.0	35 – 40	3-5	10 mins at 80°C (soft water)
1.0 – 2.0	40 – 50	5-8	10 mins at 95°C (soft water)
2.0 – 3.0	50 – 60	8-10	10 mins at 80°C (soft water)
3.0 – 5.0	60 – 80	10-12	10 mins at 20°C (soft water)
>5.0	80 - 100	12-15	

COLD PAD BATCH DYEING METHOD



1.Cold Silicate Method –

Mixing pump required: Add 100 g/l urea to dye liquor (as necessary for solubility)

DYESTUFF (g/l)	SODIUM SILICATE (38° Be)	CAUSTIC SODA 50% (ml/l)	WASHING – OFF
<20	50 ml/l	11	Cold (soft water)
30	50 ml/l	14	Cold (soft water)
40	50 ml/l	14	60°C (soft water)
50	50 ml/l	14	60°C (soft water)
60	50 ml/l	17	95°C (soft water + detergent)
70 - 100	50 ml/l	20	95°C (soft water + detergent)
			95°C (soft water)
			Warm (soft water)

Batch 16 hours at 25° C

2. Tropical Method

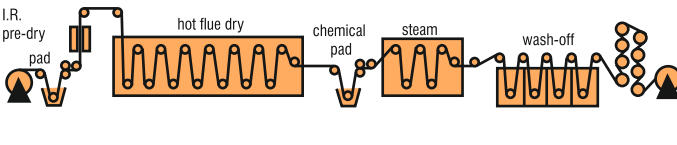
DYESTUFF (g/l)	SODIUM SILICATE (38° Be)	CAUSTIC SODA 50% (ml/l)	WASHING – OFF
<5	100 ml/l	4	Cold (soft water)
10	100 ml/l	6	Cold (soft water)
20	100 ml/l	7	60°C (soft water)
30	100 ml/l	9	60°C (soft water)
40	100 ml/l	9	95°C (soft water + detergent)
50	100 ml/l	10	95°C (soft water + detergent)
80	100 ml/l	11	95°C (soft water)
100	100 ml/l	14	Warm (soft water)

Batch 16 hours at 35° C

3. Silicate – Free Method

DYESTUFF (g/l)	SODIUM SILICATE (38° Be)	CAUSTIC SODA 50% (ml/l)	WASHING – OFF
20	30	4	50°C (soft water)
40	30	6	60°C (soft water, pH 5-6 with acetic acid)
60	30	8	95°C (soft water + sequestrant)
80	30	10	95°C (soft water + sequestrant)
100	30	12	95°C (soft water + sequestrant)
>100	30	14	80°C (soft water)
			60°C (soft water)
			Cold (soft water)

Pad – Dry – Chemical Method – Steam Method



Pad: dye, wetting agent, mild oxidant, anti – migrant

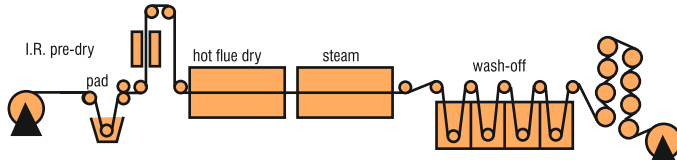
IR pre – dry, Dry: 110 – 130°C

Chemical pad:

DYESTUFF (g/l)	COMMON SALT (g/l)	SODA ASH (g/l)	CAUSTIC SODA 30%(ml/l)	WASHING – OFF
<20	250	20	3	1. 50°C soft water
20 – 40	250	20	4	2. 60°C soft water (acetic acid to pH 5 – 6)
>40	250	20	6	3. 95°C soft water + sequestrant
				4. 95°C soft water + sequestrant
				5. 95°C soft water + sequestrant
				6. 80°C soft water
				7. 60°C soft water
				8. Cold Wash

Steam: 90 secs (saturated steam)

Pad – Dry – Steam Method



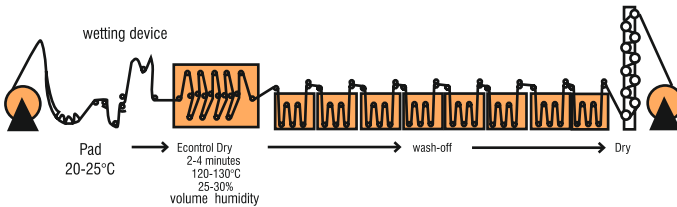
Mixing pump required:

Pad: dye, wetting agent, anti – migrant, mild – oxidant, 50-100 g/l urea, alkali

DYESTUFF (g/l)	SODA ASH (g/l)	WASHING – OFF
<10	10	1. 50°C soft water
10 – 50	20	2. 60°C soft water (acetic acid to pH 5 – 6)
>50	25	3. 95°C soft water + sequestrant
		4. 95°C soft water + sequestrant
		5. 95°C soft water + sequestrant
		6. 80°C soft water
		7. 60°C soft water
		8. Cold Wash

IR pre – dry, Dry: 100 – 120°C,
Steam: 90 secs (saturated steam)

Econtrol® Method



Mixing pump required:

Pad: dye, wetting agent, mild oxidant, anti – migrant, sequestering agent, alkali

DYESTUFF (g/l)	COMMON SALT (g/l)	CAUSTIC SODA 50% (ml/l)	WASHING – OFF
<20	20	5	1. 50°C soft water
20 – 40	20	9	2. 60°C soft water (acetic acid to pH 5 – 6)
40 - 60	20	12	3. 95°C soft water + sequestrant
>60	20	14	4. 95°C soft water + sequestrant
			5. 95°C soft water + sequestrant
			6. 80°C soft water
			7. 60°C soft water
			8. Cold Wash

Fixation time 2 - 4 mins

CUSTOMER BENEFITS

- + Wide range of products for broad shade gamut
- + Multiple options for economical black & Navy shades
- + Range of dischargeable dyes for ground shades
- + Good wash-off properties for good fastness levels

DYE SELECTION FOR WARM EXHAUST DYEING

Pale Shades

- + Bilzol Yellow GR
- + Bilzol Brilliant Red BB
- + Bilzol Blue BB

Medium – Heavy Shades

- + Bilzol Golden Yellow HRNL
- + Bilzol Black B
- + Bilzol Brilliant Red BB

DYE SELECTION FOR COLD PAD BATCH DYEING

Pale Shades

- + Bilzol Yellow GL
- + Bilzol Orange 3R
- + Bilzol Blue BB

Medium – Heavy Shades

- + Bilzol yellow GR
- + Bilzol Orange 3R
- + BILactive Blue BB

Very Heavy Shades

- + Bilzol Golden Yellow HRNL
- + Bilzol Black B
- + Bilzol Brilliant Red BB

DYE SELECTION FOR PAD – DRY – PAD – STEAM/ PAD – DRY – STEAM / ECONTROL DYEING

Pale Shades

- + Bilzol Yellow GR
- + Bilzol Brilliant Red RB
- + Bilzol Blue BB

Medium – Heavy Shades

- + Bilzol Golden Yellow HRNL
- + Bilzol Brilliant Red RB
- + Bilzol Blue GG

*Glauber's Salt is recommended

ABBREVIATIONS

- | | | |
|-------------------------|------------------------------------|---------------------|
| + Bl – Bluer | + G – Greener | + R - Redder |
| + Dl – Duller | + A – White Discharge | + B – Moderately |
| + Y – Yellower | + S - Suitable | + Discharge |
| + C – Non Dischargeable | + Dk – Darker | + NS – Not Suitable |
| + Br – Brighter | + S* Suitable for pale shades only | |



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BILZOL VS DYES (REACTIVE DYES)

