



SULPHUR (SULFUR) DYES

APPLICATION & ONLINE SHADE CARD

Sulphur (Sulfur) dyes find their main use for dyeing cotton and re-generated cellulose in the form of yarn, piece goods, and garments or as a component in blends. Sulphur (Sulfur) dyes have good dyeing build-up properties and have very good all round fastness properties except for hypochlorite. Sulphur (Sulfur) dyes have typical dull shades which are required by the denim and bottoms industry.

JIGGER DYEING

PRE DYEING PRECAUTIONS

1. Ensure even batching on roll.
2. Ensure proper scouring.

PREPARATION OF DYE BATH

Since material:Liquor ratio is important, the amount of water added initially, should be approximately 80-100 liters less as the addition of steam for heating will certainly increase the water.		
The Chemicals are introduced in the bath at 40 ^o C temperature.	1.0 g/l	Anionic wetting agent (TRO 50%).
	2.5 g/l	Soda ash (Na ₂ CO ₃).
	2.5 g/l	Anti-oxidant.
	5.0 g/l	Sodium sulphide flakes (Na ₂ S) 60%.
	1.0 g/l	Water softening agent (EDTA, HMP).
Run 2 Ends after addition of the chemicals.		

PREPARATION OF DYE SOLUTION

1. Paste the dye with little amount of anionic wetting agent, little water and Soda ash (half quantity of the dye).
2. Dissolve the required amount of Sodium sulphide flakes (Na₂S) 60% (as indicated against the name of the dye on further pages) to convert the dyestuff in soluble form (leuco form).
3. Mix the above mixture and boil the entire solution for 4-5 minutes to solubilise sulphur dye.

DYEING PROCEDURE

1.	On completion of 2 ends after the addition of chemicals, add the dye solution in two lots, half immediately and the balance after 1 end.	½ dye solution ½ dye solution
2.	The starting temperature should be less than 40 ^o C. Run for 20 minutes gradually raising the temperature to 60 ^o C (Where the jigger has direct heating arrangements, the temperature should be increased at the conclusion of the end.)	

3.	Add Glaubers salt/ Vacuum salt and run for 15 minutes.	7.5 g/l	
4.	Add additional quantity of Glaubers salt/Vacuum salt and run for 15 minutes.	7.5 g/l	
5.	Gradually in 30 minutes raise the temperature from 60°C to 90°C.		
6.	At 90°C run for 15-20 minutes.		
7.	At the conclusion of the dyeing rinse the fabric with cold water.		
8.	Add Hydros (Na ₂ S ₂ O ₄) and run for 15 minutes.	1.0 g/l	Only for Blue shade.
9.	Repeat a rinse this time with hot water and then with cold water.		

OXIDATION

1	Oxidize with Hydrogen peroxide (H ₂ O ₂), if bright shades are required or else with Sodium bichromate, which will enhance the fastness properties. Run for 15 minutes at 40-60°C.	2 g/l 1-4 g/l	Hydrogen peroxide (30%) or (1 – 4 g/l Sodium bichromate) Acetic acid (80%)
2	Rinse with cold water for 15 minutes.		

SOAPING

1	Soap for 15-20 minutes at 90°C (In case of black dyed goods add 5 g/l Soda ash.)		
2	Rinse with cold water for 15 minutes.		

IMPORTANT POINTS TO NOTE

1. In case of heavy depth, especially for blacks a final rinse in a solution containing 1-3 g/l Soda ash (Na₂CO₃) is advisable.
2. Use of cationic auxiliaries should be avoided.
3. The dyeing apparatus made up of stainless steel should be used.
4. The quantity of Sodium sulphide (Na₂S) should be adequate. Insufficient quantity of Sodium sulphide will leave undissolved dye in dyebath resulting in bronziness and poor rubbing fastness.
5. Temperature is a very important factor for dyeing of Sulphur (Sulfur) colours. For dark shades like blacks, blues, browns dyeing should start at 40-50°C and gradually be raised to 80-90°C.
6. Glaubers salt promotes the exhaustion of the dye bath but excess quantity may cause bronziness and surface dyeing may result.

DISSOLUTION OF DYESTUFF

Method A: (Outside the drum dyeing machine)

Prepare as follows

1	Sulphur (Sulfur) dye	As per % shade.
2	Sodium sulphide (Na ₂ S)	As indicated against the name of the dye on further pages.
3	Soda ash (Na ₂ CO ₃)	½ the quantity of dye.
4	Water softening agent (EDTA/HMP)	250-300gm
5	Anionic wetting agent (e.g. TRO 50%)	100-250gm

Dissolve Sodium sulphide, Soda ash, water softener and TRO in 10-15 litre boiling water. Use this water to dissolve the dyestuff. Keep to stand for 5 minutes at boil to ensure complete reduction and dissolution of dyestuff.

Method B:

The entire items from 1-5 above are added in the drum dyeing machine containing around 150 litres of water. It is then thoroughly boiled for 5-10 minutes and machine kept running for 5-10 minutes to ensure complete dissolution. Then make up the liquor to 300 litres with cold water. This will bring down the temperature to 50⁰-60⁰C.

Method B is recommended when dyeing dark shades, where the quantity of dyestuff is large.

DYEING

1.	Prepare the dye bath as follows.	5.0 g/l 2.5 g/l	Sodium sulphide 60% Soda ash
2.	Enter the garments and run for 5 minutes at 40 ⁰ C		
3.	Add dissolved dye very gradually (in parts).		
4.	Raise temperature to 60 ⁰ C.		
5.	Add 20-30 g/l Glaubers salt and gradually raise temperature to 90 ⁰ C. Continue dyeing for 20-30 minutes.		
6.	Give overflow rinsing.		
7.	Drain and carry out oxidation in fresh bath containing At 50-60 ⁰ C for 20 minutes.	2 g/l 2 g/l	Potassium bichromate/H ₂ O ₂ Acetic acid
8.	Drain and rinse in cold water for 5-10 minutes		
9.	Give soaping at boil		
10.	Finally give 1 hot and 1 cold wash.		



ONLINE SHADE CARD



SULPHUR DYES

ON MERCERISED COTTON DRILL FABRIC

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		LIME YELLOW 110 1%	3%
		YELLOW RR 115 1%	3%
		SUNSET YELLOW G 150 1%	3%
		BRIGHT GOLD 180 1%	3%
		GOLDEN BROWN 210 1%	3%
		CALF BROWN 2G 215 1%	3%
		MUSTARD 220 1%	3%
		OAK BROWN 225 1%	3%
		CALF BROWN 240 1%	3%
		MUSK BROWN 303 1%	3%
		GARNET 315 1%	3%
		BORDEAUX CONC. 340 1%	3%
		RED BROWN 360 1%	3%
		RED BROWN 370 1%	3%
		PEACOCK BLUE 410 0.5%	1.5%



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		SAPHIRE BLUE SR 415 0.5%	1.5%
		AZURINE BLUE 425 1%	3%
		PEACOCK BLUE 455 1%	3%
		BLUE B 500 0.5%	1.5%
		NAVY BLUE NCMP 510 0.5%	1.5%
		DEEP BLUE 515 0.5%	1.5%
		INDIGO BLUE 533 0.5%	1.5%
		ULTRAMARINE BLUE 550 0.5%	1.5%
		BLUE 552 0.5%	1.5%
		SCOTCH BLUE 555 0.5%	1.5%
		NAVY BLUE 563 0.5%	1.5%
		DENIM BLUE 564 0.5%	1.5%
		MARINE BLUE 565 0.5%	1.5%
		FASHION BLUE 568 0.5%	1.5%
		ULTRAMARINE 570 0.5%	1.5%



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		SKY BLUE 577 0.5%	1.5%
		FANCY NAVY 581 0.5%	1.5%
		NAVY BLUE ST 582 0.5%	1.5%
		GERMAN BLUE 583 0.5%	1.5%
		THUNDER BLUE 586 0.5%	1.5%
		AFRICAN GREY 587 0.5%	1.5%
		SEA GREEN 605 1%	3%
		CHARLIE GREEN 610 1%	3%
		JADE GREEN 2G 615 1%	3%
		PEA GREEN FB CONC. 620 1%	3%
		PISTA GREEN 625 1%	3%
		BOTTLE GREEN 630 1%	3%
		ELAICHI GREEN 632 1%	3%
		JUNGLE GREEN 635 1%	3%
		MEHANDI GREEN 637 1%	3%



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		BRONZE OLIVE 5050 1%	3%
		NICKLE GREEN 640 1%	3%
		DARK OLIVE GREEN 645 1%	3%
		BOTTLE GREEN 650 1%	3%
		BOTTLE GREEN 652 1%	3%
		MOSS GREEN 655 1%	3%
		DEEP GREEN 657 1%	3%
		OLIVE GREEN MSD 658 1%	3%
		TOYO GREEN 659 0.5%	1.5%
		LEMON OLIVE 661 0.5%	1.5%
		OLIVE 6020 1%	3%
		LIGHT OLIVE 360 1%	3%
		FOREST GREEN 3659 1%	3%
		OLIVE B 663 1%	3%
		NICKLE GREEN 665 1%	3%



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		MILITARY GREEN 666 1% 3%
		MILITARY GREEN 670 1% 3%
		MILITARY GREEN GM-100 1% 3%
		MILITARY GREEN MPS 1% 3%
		BRONZE OLIVE 680 1% 3%
		OLIVE BROWN 688 1% 3%
		MUSTARD KHAKI 701 1% 3%
		POLICE KHAKI 2G 702 1% 3%
		DUST KHAKI 703 1% 3%
		OLIVE KHAKI BPL 705 1% 3%
		KHAKI 33 1% 3%
		KHAKI SND 715 1% 3%
		KHAKI 721 1% 3%
		WINTER KHAKI 722 1% 3%
		TIGER KHAKI 723 1% 3%



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		BROWN 1 1%	3%
		BROWN 3 1%	3%
		BROWN 6 1%	3%
		LIZA BROWN 81 1%	3%
		APRICOT BROWN 83 1%	3%
		BROWN 88 1%	3%
		BROWN 90 1%	3%
		CHAMELI BROWN 93 1%	3%
		COCO BROWN 95 1%	3%
		SNUFF 96 1%	3%
		SUIT COFFEE 98 1%	3%
		RUST BROWN 99 1%	3%
		TOBACCO BROWN 726 1%	3%
		TOBACCO BROWN 733 1%	3%
		CAMEL BROWN 735 1%	3%



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		COFFEE BROWN 740 1% 3%
		CHOCOLATE BROWN 754 1% 3%
		VIOLET BROWN 760 1% 3%
		DARK RUBY 770 1% 3%
		MAROON 780 1% 3%
		MUSTARD BROWN 781 1% 3%
		BROWN BS 783 1% 3%
		BROWN MPBS 785 1% 3%
		ROCK BROWN 834 1% 3%
		DUSTY TOBACCO 837 1% 3%
		BLACK BROWN G 840 1% 3%
		BURGUNDY BROWN 843 1% 3%
		MOON ROCK G 844 1% 3%
		BROWN 2032 1% 3%
		BROWN 2033 1% 3%



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		BROWN 6870 1%	3%
		BROWN 6876 1%	3%
		BROWN 6878 1%	3%
		BROWN 6882 1%	3%
		DYNA GREY 1%	3%
		STEEL GREY RR CONC. 1%	3%
		SLATE GREY 22 1%	3%
		ELEPHANT GREY 1%	3%
		GREY NVS CONC. 1%	3%
		GREY 800 1%	3%
		STEEL GREY 810 0.5%	1.5%
		ASH GREY 813 0.5%	1.5%
		ASH GREY 818 0.5%	1.5%
		OCEAN GREY 820 0.5%	1.5%
		SILVER STONE GREY 828 0.5%	1.5%



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		OYESTER GREY 838 0.5%	1.5%
		DARK GREY SG 3820 0.5%	1.5%
		FEATHER GREY SG 3835 0.5%	1.5%
		GREY 910 1%	3%
		SILKY GREY 0.5%	1.5%
		JET BLACK 802 1%	5%
		BLACK 803 1%	5%
		DEEP BLACK R 1%	5%



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	Sodium Sulphide reqd. (60%) kg/kg of Dye	Fastness Properties			
		Light	Washing ISO4		
			Effect	Staining on Cotton	Staining on Viscose
Lime Yellow 110	2.25	4	4	4-5	4-5
Yellow RR 115	2.25	4	4	4-5	4-5
Sunset Yellow G 150	2.25	4	4	4-5	4-5
Bright Gold 180	1.75	4-5	4-5	4-5	4-5
Golden Brown 210	1.75	4-5	4-5	4-5	4-5
Calf Brown 2G 215	2	4	4-5	4-5	4-5
Mustard 220	2	4	4-5	4-5	4-5
Oak Brown 225	2	4	4-5	4-5	4-5
Calf Brown 240	2	4	4-5	4-5	4-5
Musk Brown 303	2	4	4-5	4-5	4-5
Garnet 315	2	4-5	4	4	4
Bordeaux Conc. 340	1.5	4-5	3-4	4	4
Red Brown 360	1.5	4-5	3-4	4	4
Red Brown 370	1.5	5	3-4	4	4
Peacock Blue 410	1.25	5	4	4	4
Sapphire Blue SR 415	1.25	5	4	4	4
Azurine Blue 425	1.25	5	4	4	4
Peacock Blue 455	1.25	5	4	4	4
Blue B 500	1.5	5-6	4	3-4	4
Navy Blue NCMP 510	1.5	5-6	4	4	4
Deep Blue 515	1.5	5-6	4	3-4	4
Indigo Blue 533	1.5	5-6	4-5	4-5	4-5
Ultramarine Blue 550	1.5	5-6	4-5	4-5	4-5
Blue 552	1.5	5-6	4	4	4
Scotch Blue 555	1.5	5-6	4-5	4-5	4-5
Navy Blue 563	1.5	5-6	4	4	4



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Fastness Properties

Sodium Sulphide reqd.
(60%) kg/kg of Dye

Light

Washing IS04

Effect

Staining on
Cotton

Staining on
Viscose

Denim Blue 564	1.5	5-6	4	4	4
Marine Blue 565	1.5	5-6	4-5	4-5	4-5
Fashion Blue 568	1.5	5-6	4-5	4	4
Ultramarine 570	1.25	5	4	4	4
Sky Blue 577	1.25	5	4	4	4
Fancy Navy 581	1.5	5-6	4-5	4	4
Navy Blue ST 582	1.5	5-6	4-5	4	4
German Blue 583	1.5	5	4-5	4	4
Thunder Blue 586	1.5	5-6	4-5	4	4
African Grey 587	1.5	5-6	4-5	4	4
Sea Green 605	1.5	5	3-4	3-4	3-4
Charlie Green 610	1.5	5	3-4	3-4	3-4
Jade Green 2G 615	1.5	5-6	3-4	4	4-5
Pea Green FB Conc. 620	1.5	5	3-4	4	4
Pista Green 625	1.5	5	4	4	4
Bottle Green 630	1.5	5	4	4	4
Elaichi Green 632	1.5	5	4	4	4
Jungle Green 635	1.5	5	4	4	4
Mehandi Green 637	1.5	5	4	4	4
Bronze Olive 5050	1.5	5	4	4	4
Nickle Green 640	1.5	5	4	4	4
Dark Olive Green 645	1.5	5	4	4	4
Bottle Green 650	1.5	5	4	4	4
Bottle Green 652	1.5	5	4	4	4
Moss Green 655	2	4-5	4	4	4
Deep Green 657	1.5	5	4	4	4



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	Sodium Sulphide reqd. (60%) kg/kg of Dye	Fastness Properties			
		Light	Washing ISO4		
			Effect	Staining on Cotton	Staining on Viscose
Olive Green MSD 658	1.5	5	4	4	4
Toyo Green 659	1.5	5	4	4	4
Lemon Olive 661	2	4-5	4	4	4
Olive 6020	1.5	5	4	4	4
Light Olive 360	1.5	5	4	4	4
Forest Green 3659	1.5	5	4	4	4
Olive B 663	1.5	5	4	4	4
Nickle Green 665	1.5	5	4	4	4
Military Green 666	1.5	5	4	4	4
Military Green 670	1.5	5	4	4	4
Military Green GM-100	1.5	4-5	4	4	4
Military Green MPS	1.5	5	4	4	4
Bronze Olive 680	1.5	5	4	4	4
Olive Brown 688	1.5	5	4	4	4
Mustard Khaki 701	2	4-5	4	4-5	4-5
Police Khaki 2G 702	2	4-5	4	4-5	4-5
Dust Khaki 703	2	4-5	4	4-5	4-5
Olive Khaki BPL 705	1.5	5	4	4	4
Khaki 33	1.5	5	4	4	4
Khaki SND 715	2	4-5	4	4-5	4-5
Khaki 721	2	4-5	4	4	4
Winter Khaki 722	2	4-5	4	4-5	4
Tiger Khaki 723	2	4-5	4	4-5	4
Brown 1	1.5	4-5	4	4	4
Brown 3	1.5	4	4-5	4	4
Brown 6	1.5	4	4-5	4	4



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	Sodium Sulphide reqd. (60%) kg/kg of Dye	Fastness Properties			
		Light	Washing ISO4		
			Effect	Staining on Cotton	Staining on Viscose
Liza Brown 81	1.5	4-5	4-5	4	4
Apricot Brown 83	1.5	4-5	4-5	4	4
Brown 88	1.5	5	4	4	4
Brown 90	1.5	5	4	4	4
Chameli Brown 93	1.5	4-5	4	4	4
Coco Brown 95	1.5	5	4	4	4
Snuff 96	1.5	5	4	4	4
Suit Coffee 98	1.5	5	3-4	4	4
Rust Brown 99	1.5	5	3-4	4	4
Tobacco Brown 726	1.5	5	4	4	4
Tobacco Brown 733	1.5	5	4	4	4
Camel Brown 735	1.5	4-5	4	4	4
Coffee Brown 740	1.5	5	4	4	4
Chocolate Brown 754	1.5	5	4	4	4
Violet Brown 760	1.5	5	4	4	4
Dark Ruby 770	1.5	5	4	4	4
Maroon 780	1.5	4-5	4	4	4
Mustard Brown 781	1.5	5	4	4	4
Brown BS 783	1.5	5	4	4	4
Brown MPBS 785	1.5	4-5	4-5	4	4
Rock Brown 834	1.5	5	4	4	4
Dusty Tobacco 837	1.5	5	4	4	4
Black Brown G 840	1.5	5	4	4	4
Burgundy Brown 843	1.5	5	4	4	4
Moon Rock G 844	1.5	5	4	4	4
Brown 2032	1.5	4-5	4	4	4



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		Light	Washing ISO4		
			Effect	Staining on Cotton	Staining on Viscose
Brown 2033	1.5	4-5	4	4	4
Brown 6870	1.5	4-5	4	4	4
Brown 6876	1.5	4-5	4	4	4
Brown 6878	1.5	4-5	4	4	4
Brown 6882	1.5	4-5	4	4	4
Dyna Grey	1.5	5	4	4	4
Steel Grey RR Conc.	1.5	5-6	4	4	4
Slate Grey 22	1.5	5-6	4	4	4
Elephant Grey	1.5	5	4	4	4
Grey NVS Conc.	1.5	5-6	4	4	4
Grey 800	2	5	4-5	4	4
Steel Grey 810	1.5	5	4	4	4
Ash Grey 813	1.5	6	4-5	4-5	4
Ash Grey 818	1.5	5-6	4-5	4-5	4
Ocean Grey 820	1.5	5-6	4-5	4-5	4
Silver Stone Grey 828	1.5	5	4	4	4
Oyester Grey 838	1.5	5	4	4	4
Dark Grey SG 3820	1.5	5-6	4	4	4
Feather Grey SG 3835	1.5	5	4	4	4
Grey 910	1.5	5	4-5	4	4
Silky Grey	1.5	5	4-5	4	4
Jet Black 802	1.5	5-6	4-5	4	4
Black 803	1.5	5-6	4-5	4	4
Deep Black R	1.5	5-6	4-5	4	4

Disclaimer: The shade seen on online shade card may vary from the original shade when seen on fabric.