

## **Application Method : 1      GARMENT DYEING**

Dyeing is carried out in a Drum dyeing machine.

- Fill the Machine with water (based on mlr) and add :  
3-5 gpl Dyesulp BB.  
2 gpl watersoftner/chelating agent.  
0.2 gpl good wetting agent.
- Prime the desized garments in the above liquor for 5-10 Minutes at room temperature.
- Add required quantity of **NAVSULF** Dye and run for 5 minutes at room temperature all the while raising the temperature to 60°C to 90°C (Whichever is required)
- Run for 30-45 Minutes depending on the depth of the shade.
- Drop Bath and give overflow rinse till water is clear.
- Oxidise with sodium Bi Chromate or any strong oxidising agent as desired at PH 5-6 for 15 to 20 minutes.
- Finally rinse and soap at 70°C with 1-2 gpl non ionic soap and 1 gpl soda ash (for black shades).

## **Application Method : 2      JIGGER DYEING**

- Run for 2 ends at room temperature in a bath containing :  
5 GPL Dyesulp BB (Anti Oxidant)  
1-2 gpl of water softner/chelating agent.  
0.2 gpl of good wetting agent.
- add NAVSULF dye at room temperature over 2 ends gradually raising the temperature to 60°C.
- Add 15 gpl Glauber s salt/vaccum salt over 2 ends, continue at 60°C or gradually raise till 90°C (whichever is required\*).
- Run at this temperature to 4-6 ends (Depending on the shade).
- Drop the Bath and give overflow rinse until clear water is seen.
- Oxidise in Bath containing  
3-5 gpl Sodium bichromate/or any good oxidising agent.  
3-5 gpl Acetic acid (adjust PH upto 5-6  
Run for 4 ends at 50°C
- Wash until clear and then soap at 70°C with :  
1-2 gpl non ionic detergent  
1-2 gpl soda ash ( only for Blacks ).

(\*Dyeing at 60°C is recomended wherever there are temperature constrains either due to boiler inefficiencies or due to fabric being processed requiring lower temperatures. For best fastness, dyeing at high temperature is recommended.)

► **Application Method : 3          PAD - STEAM**

- The NAVSULF dyes are specially suitable for this type of application because of the ease of preparing the pad feed liquor and therefore being able to fix the starting temperature more easily.

- **Preparation of Pad Liquor :**

x gpl NAVSULF Dye.

5-10 gpl Dyesulp BB ( Anti-Oxidant).

1-2 gpl Water softener/Chelating agent.

0.25 gpl Wetting agent.

10 gpl Glauber Salt ( for Blacks only ).

- **Process sequence as follows :**

# Pad at 60°C (90°C for Blacks ).

# Steam for 50-60 seconds with saturated steam at 102 C-104°C

# Rinse, Oxidise, soap, etc using eight compartments as follows.

**Compartment 1-2 :** All overflow washes at 50 °C.

**Compartment 3-4 :** Oxidise with 2-3 gpl sodium bi chromate/any good oxidising agent and 3-4 gpl Acetic acid ( PH 5-6 ) at 50°C.

**Compartment 5 :** Hot wash at 60°C.

**Compartment 6 :** Soap with 1-2 gpl of non ionic soap at 70°C (1 gpl soda ash may be added for Blacks only ).

**Compartment 7-8 :** Cold wash.

(For Blacks it is recommended to add 1-2 gpl Sodium acetate in the last compartment.)

► **Application Method : 4          WARP DYEING (Of Denim Yarn)**

Two types of machines are used for this purpose :

**1) Slasher Dyeing :**

In this machine the yarn is dyed in the warp sheet. The warp threads are processed lying parallel to each other. Dyeing is directly followed by sizing in one continuous run.

**2) Rope Dyeing :**

These machines are longer than the slasher type. The warp yarns are joined to gether in the form of rope. Around 300-400 threads form a rope. rope opening is done at the end of process after which the sizing operation is carried out separately, but in the same continuous run.

In both the cases the yarn is first passed through tank/s containing a wetting (alkaline stable) agent along with caustic soda at boiling temperature, followed by 4-5 troughs containing the dye liquor with airing passage between them. The temperature of the pad liquor is around 50-60°C while for Blacks it is 80°C. The machine speed is generally 28 mtrs/minute. while the dipping time in each dye trough is 12 seconds and the airing time between the dye troughs is 20 seconds.

This is followed by rinsing ( 1 or 2 troughs depending upon the depth of the shade.) Finally the fabric is dried at 70 °C.

### **NAVSULF Liquid dyes on Denim : ( Various options)**

- 1) Sulphur Bottoming.
- 2) Sulphur topping.
- 3) Sulphur Black.
- 4) Sulphur Colours.
- 5) Overdyeing.

Disclaimer : Information and recommendations contained in the shade card or as otherwise supplied to the users are believed to be reliable, but it is for the user to satisfy themselves of the suitability of the product for its own particular purpose.

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## SULPHUR DYES

### ★ Application : (Dyeing Method)

A. Dissolution of dyestuffs : The sulfur dyes should be dissolved in a sodium sulphide solution in alkaline medium before they can be used for dyeing.

Generally the best method for dissolving of the dyestuffs is to paste with required amount of Turkey Red Oil (T.R.O.) and add requisite amount of sodium sulphide of 80% grade and hot water. Boil for 10-12 minutes to ensure the complete dissolution of the dyestuffs Filter the dissolved (Leuco) colour solution through muslin cloth, fine seive.

B. To start dyeing, the dyeing, the dye bath is set at 50°C containing :-

1-2	g/l	Wetting agent	}	Blank bath
2	g/l	Soda ash		
6 to 8	g/l	Soduim sulphide 60% quality		
1:5M:L:R				

Enter the fabric in a blank (above bath) and run for 10 minutes.

Add predissolved colour solution in two parts and raise the temperature to 60°C to 65°C. At Add common salt or Glauber 10-15 g/l in two parts and raise the temperature to the boil and continue the dyeing for 50-60 minutes at same temperature (generally 8 ends

Oxidation / After treatment	Effect, as comparted to air oxidation
0.5 to 1 g/l sodium perborate at 40°C for 15 minutes	Brighter Redder / Bluer
1-2 ml/l Hydrogen Peroxide (30%) at 40°C for 15 minutes 1-3 ml/l Acetic Acid (80%) at 40°C for 5 minutes	Similar to air oxidation
1-5 g/l Potassium or Sodium Bichromate and 1-5 g/l Acetic Acid (80%) at 60°C for 15 minutes	Duller Redder / Bluer

**NOTE :** Sulfur dyes can be mixed with each other to get number of fancy shades