TRINITY COLLEGE FOR WOMEN
NAMAKKAL

DEPARTMENT OF COSTUME DESIGN & FASHION

TEXTILE WET PROCESSING

EVEN SEMESTER

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COLOUR FASTNESS

Color fastness of a dyed material: Color fastness, in normal sense, refers to the resistance of color of a dyed or printed textile to various types of influences (e.g. water, light rubbing etc.) to which they are normally exposed in textile manufacturing and in practical sense. So we can say color fastness is the resistance of the color to fade or bleed by some agencies like washing, light, water, chlorine, perspiration, ironing etc.

Color fastness is usually assessed separately with respect to:

1. Changes in the color of the specimen being tested, that is color fading;
2. Staining of undyed material which is in contact with the specimen during the test, that is bleeding of color.

Grey scale:

Grey scale is an empirical scale containing a series of pairs of neutrally colored chips, showing increasing contrast within pairs. It is used visually to assess contrasts between the pairs of patterns. For example, in order to give numerical assessment of color changing and staining two sets of standard grey scales are used.

The ISO grey scales have two series of chips against which the change of color of a specimen and that of staining of adjacent uncolored specimen can visually assessed and rated on a 1-5 scale.

Two sets of standard grey scales are used to assess color fastness.

- One for assessing change in color
- Other for staining.

Color fastness to Wash

Principle of wash fastness:

1. A dyed material is laundered, rinsed and dried in contact with specified adjacent fabric (MFF).
2. The special composite sample is treated under appropriate condition in a chemical bath for a recommended time.
3. The abrasion action is accomplished by the use of liquor ratio and an appropriate number of steel balls.
4. The change in color of dyed sample (specimen) and the staining of the adjacent fabric (MFF) is assessed by recommended Grey scale.

Color fastness to Wash

Apparatus and Material needed:

- Wash wheel with a thermo statically controlled water bath rotating speed of 40 ± 2 rpm.
- Stainless steel container of capacity 55 ± 5 ml.
- Stainless steel ball of diameter 0.6 cm and weight 1 gm.
- SDC MFF (Acetate, Cotton, Nylon, Polyester, Acrylic, Wool)
- Thermometer
- Sewing machine
- Dryer
- Color matching cabinet
- ISO scales

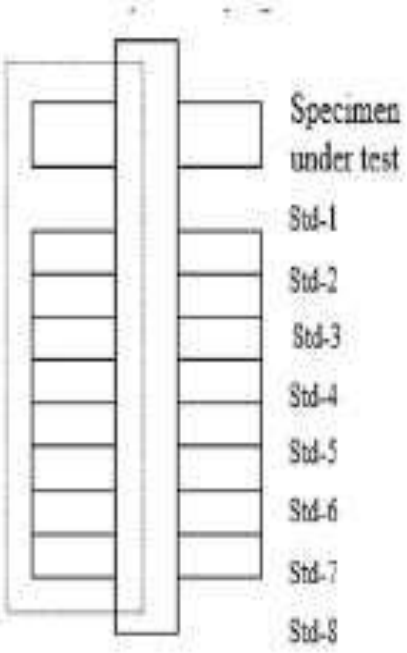
Light Fastness

Light fastness is the resistance to fading of dyed textiles when exposed to daylight. Exposure to sunlight is a test of the behavior of the sample under actual conditions of use but takes long time. ISO recommended that, The sample should be tested together with standard dyed wool controls of light fastness 1-8 respectively.

Procedure:

In standard condition-

1. The sample and standards are mounted half covered and half exposed to daylight. The sample must be protected from rain by a glass sheet not less than 5cm away (well ventilation due to moisture and heat). The specimen and standards should be kept under sun and continue 24hrs until sufficient fading. Reference sample and the tested sample are cut at same size and those are accommodated on the template.
2. The specimens are mounted in a frame facing south in northern hemisphere and facing north in southern hemisphere at an angle equal to the latitude of the place.
3. The way of carrying out the test is to mount the standards and specimens as-



Fastness rating	Dye	C.I. number
1	Acilan Brilliant +Blue FFR	Acid Blue 109
2	Acilan Brilliant +Blue FFB	Acid Blue 109
3	Coomassie Brilliant +Blue R	Acid Blue 109
4	Supramine Blue EG	Acid Blue 109
5	Solvay Blue RN	Acid Blue 109
6	Alizarine Light Blue 4GL	Acid Blue 109
7	Soledon Blue 4BC powder	Sol. Vat Blue 5
8	Indigozol Blue AGG	Sol. Vat Blue 8

4. The sample must be protected from rain by glass sheet.

5. One quarter of the sample and standards are covered with opaque fabric. Thus it is exposed until standard-1 will be fade and equivalent to standard-4 on change in color grey scale.

6. Then cover up one quarter of previously exposed portion of the sample and standards by another opaque sheet. Thus it is exposed until standard-7 will be fade and equivalent to standard-4 on change in color grey scale

7. Result will be terminated and opaque will be taken out, three stripes will be found in specimen and standards.

8. The zones of specimen are compared with zones of standards. The light fastness of a dyed sample is the number of the wool standard that has faded to same extent as the exposed area of the sample.

Light fastness grades-

Grade	Degree of fading	Light fastness type
Grade-8	No fading	Out standing
Grade-7	Very slight fading	Excellent
Grade-6	Slight fading	Very good
Grade-5	Moderate fading	Good
Grade-4	Appreciable fading	Moderate
Grade-3	Significant fading	Fair
Grade-2	Extensive fading	Poor
Grade-1	Very extensive fading	Very poor

Rubbing fastness

Rubbing fastness is the resistance to fading of dyed textiles when rubbed against a rough surface. This test determines the fastness of dyestuff to either wet or dry rubbing.

Procedure:

- Test specimen 15cm x 5cm (may be more, it has no effect) is placed on the base of the Crockmeter.
- Square of white test cloth (5cm x 5cm) of cotton desized, bleached but without finish (as ready to dye)
- Specimen is attached to the finger of the crockmeter.
- This finger is used in rubbing action on the sample specimen i.e. rubbing 10cm long to and for 10 times at 10seconds.
- 20 rubs in 10s and finger pressure on the specimen is 9N.
- For testing dry and wet rubbing, separate sample is used.
- Rubbing test is both for warp way and weft way.
- For wet rubbing, sample is dry but standard cloth is wet.
- Change in color in the specimen and staining in the white cloth is determined by grey scale.

In both cases, for both dry and wet rub test, the fastness to rubbing is rated 1-5.

Rating 1 means the worst rubbing fastness.

Rating 5 means the best rubbing fastness.

Perspiration Fastness

The garments which come into contact with the body where perspiration is heavy (like neck, under arm etc) may suffer from serious local discoloration. Fastness to perspiration is the resistance to color of textile against the discoloration effect of acidic or alkaline perspiration.

Two artificial perspiration solutions are made as follows-

Chemicals	Solution A	Solution B
l-histadine monohydrochloride mono-hydrate ($C_5H_9O_2N_3HCl.H_2O$)	0.5gm	0.5gm
Sodium chloride	5.0gm	5.0gm
Di-sodium hydrogen orthophosphate ($Na_2HPO_4.2H_2O$)	2.5gm	2.2gm
Distilled water	1000ml	1000ml
P^H (adjust with NaOH)	8	5.8

THANK YOU