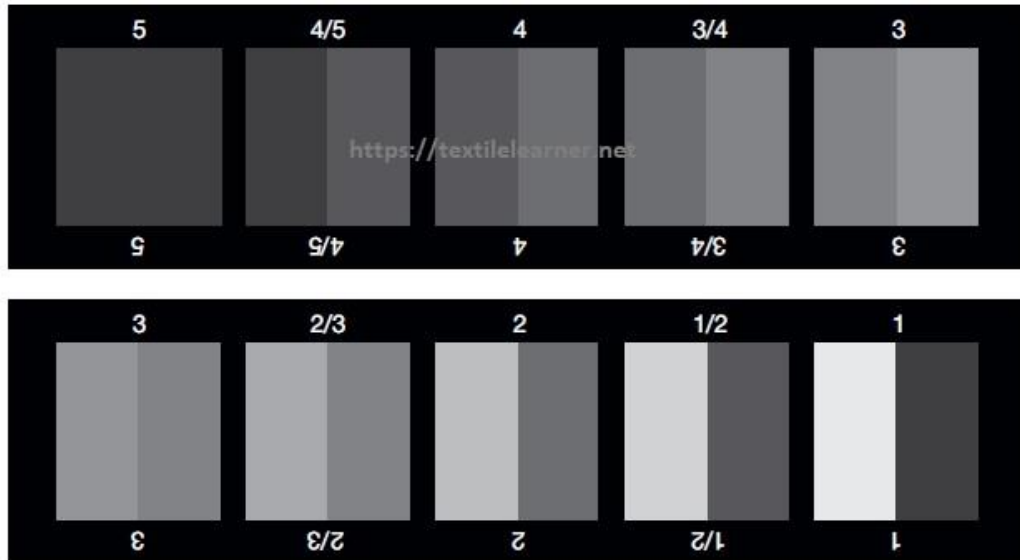


Color fastness is a term used in the dyeing of textile materials that characterizes a material's color's resistance to fading or running. Color fastness is the property of dyes and it is directly proportional to the binding force between photochromic dye and the fiber. The color fastness may also be affected by processing techniques and choice of chemicals and auxiliaries.

Fastness measurement scale is of 2 kinds. 1) Gray scale and 2) Blue Scale.



Gray scale

Gray scale is used for assessing the color shading in between products and the customer's approval sample or among pieces in production. Grey scaling has grades 1-5 and increases by half of the grade (1, 1 1/2, 2, 2 1/2, and so on.) with 5 being the greatest. Generally speaking, many overseas clients can accept above grade 4, while some can accept the grades 3-4.

Gray scale is of 2 kinds. 1) Gray scale for color change, 2) Gray scale for color staining

Grade for Wash & Other Fastness

Fastness grade	Fastness Type	Degree of fading	Degree of Staining
5	Excellent	No change	No staining
4	Good	Slight loss in depth	Very slight staining
3	Fair	Appreciable loss	Moderate staining
2	Poor	Significant loss	Significant staining
1	Very poor	Great loss in depth	Deep staining

Blue scale

For the assessment of light fastness, a special scale is used: the so called blue scale. It consists of eight standardized color panels (different blue dyes), sorted according to their light fastness. The most similar pair determines the degree of light fastness. This method can also be used to assess washing fastness and resistance to perspiration.

Light Fastness Scale/ Grade / Rating:

Grade	Degree of Fading	Light Fastness Type
8	No fading	Outstanding
7	Very slight fading	Excellent
6	Slight fading	Very good
5	Moderate fading	Good
4	Appreciable fading	Moderate
3	Significant fading	Fair
2	Extensive fading	Poor
1	Very extensive fading	Very poor

Different Types of Color Fastness

1. Color fastness to washing
2. Color fastness to laundering
3. Color fastness to water
4. Color fastness to rubbing/crocking
5. Color fastness to perspiration
6. Color fastness to light
7. Color fastness to sea water
8. Color fastness to chlorinated water
9. Color fastness to hot pressing
10. Color fastness to dry cleaning
11. Color fastness to heat treatments
12. Color fastness to bleaching agents
13. Color fastness to atmospheric contaminants
14. Color fastness to potting
15. Color fastness to decatizing
16. Color fastness to steaming
17. Color fastness to milling

Standards of Color Fastness

- **AATCC**- American Association of Textile Chemists and Colorists
- **SDC**- Society of Dyers and Colorists
- **ISO**- International Organization for Standardization

- In 1947, ISO made color subcommittee. ISO also grades the fastness:
 - For light fastness: 1~8
 - For other fastness: 1~5
- **ASTM-** American Society for Testing and Materials

Factors Affecting the Color Fastness Properties

1. The **molecular structure** (e.g.) of a dye molecule: If the dye molecule is larger in size, it will be tightly entrapped inside the inter-polymer chain space of a fiber. Thus the fastness will be better.
2. The **manner in which the dye is bonded** to the fiber or the physical form present.
3. The amount of dye present in the fiber i.e. **depth of shade**. A deep shade will be less fast than a pale or light shade.
4. The **chemical nature of the fiber**. For example, cellulosic fibers dyed with reactive or vat dyes will show good fastness properties. Protein fibers dyed with acid mordant and reactive dyes will achieve good fastness properties and so on. That is to say compatibility of dye with the fiber is very important.
5. The **presence of other chemicals** in the material.
6. The **actual conditions prevailing during exposure**.

Multifibre Strip

Multifibre DW	Multifibre TV
Secondary acetate	Triacetate
Cotton	Bleached cotton
Nylon	Nylon
Polyester	Polyester
Acrylic	Acrylic
Wool	viscose