**FLAME RETARDANT FINISH – PART III**

REF: TT/ MARCH 2018 / WK 3

## The Factors that Affect Flame Resistance of a Fabric

- **Fiber Content -** The flame resistance of a fabric is dependent on the fiber from which it is made. Cellulosic fibers like cotton, flax, viscose rayon etc., are low flame resistant fabrics. Wool fabrics are difficult to ignite. Nylons and polyester are thermoplastic fibers and shrink from the flame.
- **Yarn types -** Yarn structure does not affect the flame resistance of a fabric.
- **Fabric structure -** Flammability is independent of the fabric structure. It doesn't matter whether it is weaved, knitted, laced, bonded, or felted fabric.
- **Fabric weight -** Fabric weight affects flammability of the fabric. For a given fiber the flame resistance rating of fabric has been found to be directly proportional to its weight.

## Application Areas for Flame Retardant Finish in Textiles

- Firefighters and emergency personnel uniform
- Military and airline services
- Floor covering and upholstery

## Test Methods to Check the Flame Resistivity of a Fabric

- **ASTM D1230** standard test method for flammability of apparel textiles
- **NFPA 702** standard for classification of the flammability of wearing apparel
- **FTMS 191-5908 16 CFR-1610** Flammability of Wearing Apparel - (45 Degree Flammability) - In which the time, for the flame to travel 5 inches over fabric sloping at 45-degree angle is measured in seconds.

Fig 1.1: 16 CFR 1610 Flammability test

- **The Visual Timing Test**: A fabric strip is suspended vertically and then ignited from the bottom edge, and then the rate of flame spread is determined.
- **The Hoop Test**: In which the rate of flame spread is determined over the fabric mounted on a semicircular frame.

To be continued…

Wishing you a great week ahead!

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