SYNTHETIC FIBERS

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MEANING OF SYNTHETIC FIBERS

- Synthetic fibers are manufactured from polymers made or synthesized by human being. Once the polymer is synthesized, fiber is made.(Regenerated fibers are made from naturally occurring polymers). They are also called as chemical fibers and noncellulosic manufactured fibers.
- Commonly used synthetic fibers are nylon, polyester, olefin, acrylic etc.

✓ Nylon is made up polyamides named as polycaprolactam (Nylon 6)and polyhexamethylene adipamide(Nylon 66) .

✓ Polyester is made up of ester of a dihydric alcohol and terephthalic acid.

✓ Acrylic is made from acrylonitrile.

PROPERTIES

I. PHYSICAL PROPERTIES

Strength: Synthetic fibers have good to excellent strength. Very little or no change is seen in wet and dry strength. These fibers have good abrasion resistance properties thus are durable.

Absorbency: These fibers exhibit low moisture absorbency, thus dries quickly. hey shows lack of comfort in humid climate.

Oleophilic: Synthetic fibers have high affinity for oils and greases, thus, it is very difficult to remove oily stains.

Light weight: Synthetic fibers are light in weight and lustrous.

Elasticity: Synthetic fibers are highly elastic so have good dimensional stability.

Resiliency: Resiliency of synthetic fibers is excellent. It resists wrinkles and when wrinkled it recovers well, whether wet or dry.

Static Electricity: All synthetic fibers produce static electricity.

Effect of Heat: On heating, nylon melt and drip andgives white smoke.

Polyester like nylon melt and drip and carry some flame down the drip. It burns with a black , waxy edge forming along the affected area.

Acrylic fibers shrinks on burning.

Effect of Light: Synthetic fibers have excellent resistance to sunlight.

Pilling: Synthetic fibers have tendency of pilling. They fibrillate or crack with abrasion.

II. CHEMICAL PROPERTIES

Effect of Acids: Synthetic fibers are resistant to most of the acids. Nylon fibers dissolve in concentrated formic acid. Polyester fibers disintegrate by strong sulfuric, hydrochloric and nitric acids. Acrylic fibers are soluble in nitric acid.

Reaction to Alkalis: Nylon has excellent resistance to alkali's. Polyester and acrylic have good resistance to weak alkalis, will degrade in strong alkalis.

Effect of Bleaches: Synthetic fibers are resistant to bleaches.

Affinity for dyes: Synthetic fibers are difficult to dye.

III. BIOLOGICAL PROPERTIES

Effect of micro organism: Synthetic fibers are not affected by moths, fungi and rot.

THANK YOU