

SUSTAINABLE TEXTILES – PART XII

REF: TT/ JULY 2022/ WK 3

Innovation in recycled fiber

Besides recycled cotton and polyester, lot of researches is going on in the direction of making other recycled fibers. Following are some innovations in this direction which could help in better and sustainable textile waste management along with other environmental benefits.

- a) **Recycled Nylon** - Recycled nylon diverts waste from landfills and its production uses lesser resources than virgin nylon that includes water and energy. Nylon is a strong, super-lightweight synthetic fiber which has several uses, but it is a petroleum-based material, and producing it has a high cost in energy and greenhouse gases. Recycled nylon can lessen the use of petroleum as a raw material source and reduces greenhouse gas emissions from manufacturing.

Impact on environment from nylon production
Nitrous oxide is released during the production of nylon, which is harmful for environment.
Nylon production is a process, which is very water consuming. Large amounts of water are used to cool the fiber.
Nylon production is a process that is very energy consuming.

Using recycled nylon also promotes new recycling streams for nylon products that are no longer functional. Recycled nylon is made from pre-consumer fabric waste; it also comes from post-consumer materials. Pre-consumer waste material, which comes from industrial processes, includes scraps of material in a factory that would have otherwise been sent to a landfill. The postconsumer materials come from products like fishing nets, worn-out clothes, and discarded carpets.

The methods for processing of polyamide waste are mechanical, which is not related to chemical transformation. The mechanical methods include grinding and other techniques.

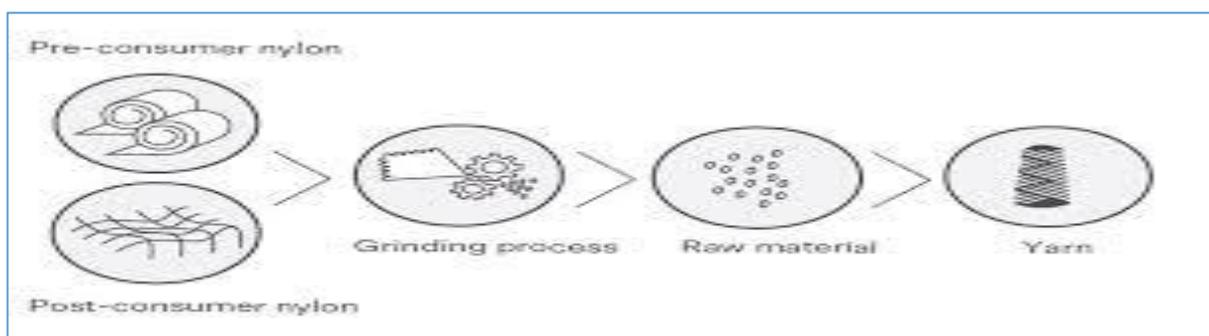


Fig 1.1 Recycling of nylon by grinding

Ref: sacogreen.com

In another method, the materials are melted at high temperatures. This process destroys contaminants and transforms the material into a reusable form. Nylon melts at a much lower temperature, leaving contaminants behind. As a result, it must be thoroughly cleaned before being recycled. When the recycled nylon is processed into yarns, the fabric produced has all the qualities that of nylon i.e. it retrieves back to its original quality, wicking properties, breathability, quick-drying etc.

Besides recycling process being expensive, there is another drawback of recycled nylon over virgin nylon. While the laundering process of recycled nylon, the garments may release micro plastics in the water. These micro plastics may end up in oceans which are not good for aquatic life and the environment. To avoid these micro plastics to release into the laundry water, garments made of recycled fabrics have special wash care instructions. A lot of research is currently being conducted to improve the quality and reduce the costs of the recycling process.

- b) **Recycled Wool** - Recycled wool is also very sustainable option. Apart from diverting used wool garments from landfills, it saves a considerable amount of water, reduces land use for sheep grazing and avoids the use of chemicals for dyeing. Recycled wool contributes to a reduction of air, water, and soil pollution. Recycled wool is produced from both pre-consumer sources, such as factory scraps, and postconsumer ones, such as returned garments. Once the woolen materials are collected, they are sorted by color and mechanically shred the fibers so they can be spun into new yarn.

There are three main processes in wool recycling.

- **The closed loop system** - A mechanical process that turns garments to the raw fiber state and turns the fiber into yarn again, then to produce new products (particularly suitable for wool knitwear).
- **The open loop system** - Here, the wool from a previous product becomes the basis for a new, usually industrial product such as insulation or mattress padding.
- **Re-engineering** - Recycle old items into new products, like making a bag from an old woolen jacket, or using production waste such as trimmings to make other items.

Most of the recycled wool is blended with recycled polyester to increase the length of the fiber. Few certification labels exist to ensure consumers that wool is really recycled.



References:

1. <https://www.the-sustainable-fashion-collective.com/>
2. <https://www.patagonia.com/>
3. <https://www.sustainyourstyle.org/>
4. <https://therunningrepublic.com/>

.....To be continued.....

UNSCRAMBLE THE JUMBLE WORDS
CUDONTIORP
ETAMALRI
AELGNIV
SERECHAR

Last week`s Answers: 1) CONSUMER 2) ENVIRONMENT 3) LIMITED 4) HANDMADE

Wishing you a great week ahead!

Technical Tuesdays is a knowledge sharing initiative by Resil Chemicals Private Limited
arc@resil.com | www.resil.com.