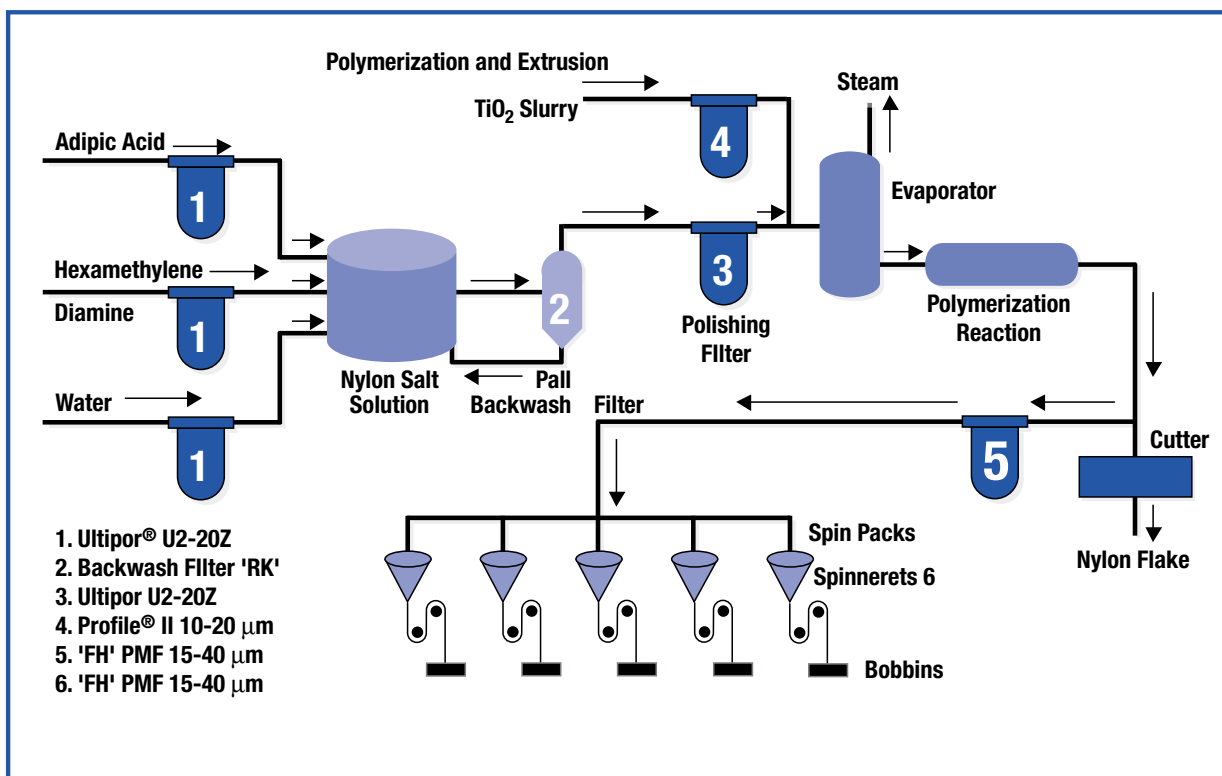




Nylon 66 Fiber Production



Production Process

Nylon 66 fibers for use in textiles, carpet, and tire cord are produced by extruding molten polymer through spinnerets and stretching to their final thickness and weight.

The polymer melt must be homogeneous, gel free, and without oversize additive agglomerates to achieve high quality fiber and yields. Filtration of the process feedstreams, additive slurries, and polymer melt itself are essential to help eliminate fiber breaks and enhance fiber strength and uniformity. *Not only is fiber quality improved, but production rates can be higher with less process downtime.*

Pall Recommendations

- Hexamethylene Diamine and Adipic Acid** - Ultipor GF Plus® grade U2-20Z is recommended for this feedstream for promoting an efficient nylon salt reaction.
- Water feed** to the nylon salt reactor should be filtered with Ultipor GF Plus grade U2-20Z cartridges to remove harmful minerals that will contaminate the nylon salt intermediate.
- For the nylon salt solution** a Pall Rigmesh® grade K backwash filter is recommended if contaminant concentration levels are high, followed by an Ultipor GF Plus grade U2-20Z polishing filter. These filters remove extrinsic particulate contamination such as iron oxides and other debris which will reduce polymerization efficiency and fiber quality.
- For the TiO₂ slurry** in water, Profile® II cartridge grades RF100 to RF200 (rated 10-20 µm absolute) are recommended for nylon 66 manufacture. The make up water should also be filtered with Ultipor GF Plus grade U010Z before mixing with TiO₂. Filtration of TiO₂/water slurry stops passage of large particles which could reduce the tensile strength and quality of the finished fiber.
- The final nylon 66 polymer "transfer line"** filter typically consists of high pressure pleated PMF™ elements 10-40 µm depending on the denier fiber being produced. For the finest denier nylon fiber grade FH100 10 µm absolute is recommended. *PMF elements ensure superior quality nylon fiber, and the ability to spin at high draw off rates with near "zero breaks."*

7. **Screen packs at the spinneret** are commonly used to remove oversized particles and gel which might plug the spinneret die. Where the flow versus pressure drop will allow, FS or FH Series PMF media in the 10-40 µm range with Rigimesh support is recommended.

8. **Deionized Water** used in preparing additive slurries, nylon salt solution, and spin finishes should be filtered both upstream and downstream of the mixed bed deionizers and at point of use in the nylon process to ensure consistently clean DI water free of iron and other foreign matter. Profile II 10 µm cartridges are recommended in the utilities area and 2 µm at point of use.



Industrial Process

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