

End-of-pigment fiber melting



Summary of Content

Pigments in fibers influence melting behavior, thermal stability, and color retention, and their incorporation must be carefully managed to maintain fiber quality during melt processing.

Pigment Effects on Fiber Melting

When pigments are added to polymer melts for fiber production, they can significantly affect the thermal and rheological properties of the polymer. For example, in melt electrospinning of polylactic acid (PLA), adding colorants increased the melt viscosity by over 100% but reduced electrical resistance, which can influence fiber formation and diameter control. Similarly, in polypropylene (PP) fibers, pigments must be thermally stable at melt temperatures to avoid color degradation, as fibers can degrade before the pigment loses color if stabilizers are not used.

Methods of Incorporating Pigments

- **Melt Pigmentation (Spun-Dyed Fibers):** Pigments are added directly to the polymer melt or pre-melted polymer chips before extrusion. This ensures uniform color throughout the fiber and avoids post-dyeing steps.
- **Dope-Dyeing:** Pigments are dispersed in the polymer solution or melt before fiber formation, as in Lyocell or other man-made cellulosic fibers. This method embeds pigments within the fiber matrix, improving wash fastness and abrasion resistance.
- **Pigment Concentrates:** Pigments are pre-processed into concentrates to prevent agglomeration and ensure smooth incorporation into the polymer melt, which is critical for maintaining fiber quality and consistent color.

Article Content

Complete recycling of polymers and dyes from polyester/cotton

We focus on a clean, cost-effective, and destruction-minimized fiber-to-fiber recycling, suitable for polyester/cotton

The Effect of Dye and Pigment Concentrations on the Diameter of Melt ...

Solution electrospinning produces finer fibers but requires toxic solvents. Melt electrospinning is more environmentally friendly, but is

A Review on Melt-Spun Biodegradable Fibers

The Advanced Fibers group at Empa (Switzerland) has performed several studies on the melt-spinning of bicomponent

Investigation of the Dyeing Behavior and Color Performance

However, DSC measurements were conducted to analyze the thermal behavior of these new fibers, focusing on glass

Fiber Melting Peak

The melting peak corresponds to the process in which the ordered structure of crystalline regions in the fiber is disrupted. The height

Multicomponent Fiber Extrusion

Two melt extrusion methods of polymer fiber production are commercially accepted. One involves the use of prechipped polymer and

Production and Recycling of Dope-Dyed Lyocell Fibers with Pigment

This study describes the production of sustainable dope-dyed Lyocell-type fibers using pigments and the recycling of

Physical characterization and biodegradation of fibers produced by

Among various approaches, biodegradable fibers produced via melt-spinning are starting to emerge as a promising

Crayola FAQ

Crayola Crayons begin to melt at around 105° Fahrenheit and have a melting point between 120° - 147° Fahrenheit. The melting

The Effect of Dye and Pigment Concentrations on the Diameter of Melt ...

Melt electrospinning is more environmentally friendly, but is also technically challenging due to the low electrical

Contact Us

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