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Flakes or Thread-Like Material Inside Chrom Syringe Barrels - Tech Information

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Overview

It is normal under certain conditions to observe small flakes or thread-like material inside plastic chromatography syringe barrels.

These visual artifacts result from the syringe's material composition and the manufacturing processes designed to ensure smooth and consistent plunger performance.

What Causes the Flakes or Threads?

During production, the polypropylene resin used to mold syringe barrels contains a slip agent, most commonly oleic acid amide. This additive is intentionally incorporated to:

- Minimize friction between the plunger and the syringe barrel
- Promote smooth, consistent motion during aspiration and dispensing
- Support long-term usability and functionality of two-part syringe designs

The slip agent is distributed uniformly throughout the plastic and gradually migrates to the surface over time. Although this migration is usually invisible, it can occasionally present as white flakes or fibrous threads, particularly when:

- The plunger is moved repeatedly or with excessive force
- The plunger is removed and reinserted
- High vacuum or pressure conditions draw material past the sealing interface

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Is This a Cause for Concern?

No. These flakes are chemically inert and non-reactive, and oleic acid amide is widely used in medical-grade polymers. The presence of this material does not compromise sample integrity or instrument performance. However, visible particulates may raise concern for users unfamiliar with this normal characteristic of two-component syringe assemblies.

Best Practices to Minimize or Manage This Effect

To ensure optimal syringe performance in chromatographic workflows:

- Avoid unnecessary or excessive plunger movement
- Refrain from reinserting the plunger unless required
- Use syringes as single-use items in ultra-trace or highly sensitive applications

- Visually inspect syringes before use in critical workflows
- If particulates are visible and problematic, consider pre-rinsing with the mobile phase or sample solvent

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