Guidelines for Complete Dissolution and Avoiding Residue

Water Soluble Sewing Thread

1. Purpose

This guide provides practical guidance for achieving complete dissolution of water soluble thread and avoiding residue during garment washing processes.

Water soluble thread is designed to dissolve in water under appropriate conditions.

Incomplete dissolution is not a product defect in most cases. It is usually the result of process conditions.

2. Key Principle

Water soluble thread dissolves reliably when sufficient water, temperature, movement, and time are present.

If any of these are reduced, dissolution may be incomplete.

3. Critical Factors Affecting Dissolution

The following factors directly influence whether the thread dissolves completely.

3.1 Liquor Ratio (Water Volume)

- Sufficient water must be available for dissolution
- Low liquor ratio reduces water flow and limits removal

Low water volume is one of the most common causes of residue.

3.2 Temperature

- 20°C water soluble thread is designed to dissolve at or above approximately 20°C
- Lower effective temperatures slow or prevent dissolution

Temperature must be consistent throughout the wash.

3.3 Time (Wash Duration)

- Dissolution is not instantaneous
- Insufficient wash time may leave partially dissolved material

3.4 Mechanical Action (Movement)

- Water must flow through the garment
- Agitation or movement helps remove dissolved material

Limited movement reduces the effectiveness of dissolution.

3.5 Garment Construction

- Thick fabrics
- Multiple layers
- Tight seams
- Dense structures

These restrict water penetration and slow dissolution.

3.6 Fabric Type

Different materials affect water flow differently.

- Heavy denim and dense fabrics require more washing action
- Lightweight fabrics allow easier dissolution

3.7 Chemical Additives and pH

- Detergents, enzymes, and finishing agents may affect dissolution

- Extreme pH conditions may influence behaviour

Chemical systems should be validated together with the thread.

3.8 Residual Finishes or Oils

- Oils or finishes on fabric may reduce water penetration
- This can delay or prevent full dissolution

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4. Common Causes of Residue

Incomplete dissolution is typically caused by one or more of the following:

- Reduced liquor ratio
- Reduced wash temperature
- Shortened wash cycle
- Insufficient movement
- Dense garment construction
- Interaction with chemicals

Cost-saving adjustments to washing processes frequently increase the risk of residue.

5. Drying Before Complete Dissolution (Critical)

If the thread has not fully dissolved and the garment is subjected to heat (e.g. tumble drying):

- Remaining material may solidify
- Removal becomes more difficult or impossible through normal washing

Garments must not be dried until dissolution is confirmed.

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6. Recommended Process Approach

To achieve consistent results:

- Ensure sufficient water volume
- Maintain appropriate wash temperature
- Allow adequate wash time
- Ensure effective movement of garments
- Consider garment structure and fabric type

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7. Trial and Validation (Essential)

Every factory process is different.

Before bulk production:

- Conduct small-scale trials
- Test under actual washing conditions
- Confirm complete dissolution
- Adjust process parameters if required

Validation is required before production.

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8. Responsibility

Final performance depends on process conditions and system control.

Users are responsible for testing, process adjustment, and validation before production.

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9. Summary

Complete dissolution depends on:

- Water volume
- Temperature
- Time

- Movement
- Garment structure

Reducing any of these may result in residue.

Proper validation and controlled processing ensure reliable results.

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10. Contact for Technical Support

For technical queries:

Email: info@durafil-group.com