# Material Behaviour & Chemistry Guide

Durafil Heat Soluble Thread

Understanding Low Temperature Heat-Removable Thread Performance in Garment Production

## 1. Purpose

This guide explains the practical material behaviour and chemistry of Durafil Heat Soluble Thread.

The product is designed as a temporary stitching thread that softens and melts under controlled heat, allowing later removal of temporary stitches during garment finishing.

Understanding how the material responds to heat, sewing friction, fabric contact, and processing conditions helps users achieve reliable results.

## 2. Product Overview

| Property | Description |
|---|---|
| Product Type | Heat Soluble / Heat Removable Thread |
| Primary Use | Temporary stitching |
| Recommended Position | **Bobbin thread only** |

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|---|---|
| Not Recommended | Needle thread use |
| Base Material | Low temperature melting synthetic polymer |
| Colour | Natural |
| Functional Principle | Controlled thermal softening and melting |

## 3. How the Material Works

Unlike conventional sewing thread designed to remain in the garment, Durafil Heat Soluble Thread is engineered to lose structural integrity when exposed to suitable heat.

When the correct temperature reaches the stitch area:

- The polymer softens
- Thread strength drops rapidly
- The thread melts or breaks down
- Temporary stitches release
- Manual untacking can be reduced or eliminated

This allows temporary holding during production, followed by efficient removal later.

## 4. Why Bobbin Thread Only

The product must be used as a bobbin thread only.

Needle thread passes rapidly through the needle eye and fabric, generating friction heat.

Because this thread has a low melting response, use as needle thread may cause:

- Softening during sewing
- Thread breakage
- Sticking in needle area
- Inconsistent stitching
- Poor productivity

Using it in the bobbin position reduces friction heat exposure and improves control.

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## 5. Key Material Behaviours

### A. Heat Response

The thread softens progressively as temperature rises.

Sufficient heat is needed for removal.
Too little heat may leave visible thread.
Too much heat may affect sensitive fabrics.

### B. Friction Response

Mechanical friction can create local heat.

High-speed sewing, rough thread paths, or excess tension may damage the thread before intended removal.

### C. Tensile Behaviour

The thread is designed for temporary holding, not long-term seam strength.

Use enough stitches for holding function, but do not treat it as a permanent structural thread.

### D. Residue Behaviour

Depending on process conditions and application density, some minimal residue may remain after heat treatment.

Trials should confirm acceptability for each garment style.

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## 6. Interaction with Fabrics

Results vary depending on:

- Fabric thickness
- Fibre type
- Weave density
- Number of layers

- Heat sensitivity
- Moisture content
- Pressing contact quality

Dense or multi-layer garments may need stronger heat transfer.

Sensitive fabrics need careful trials.

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## 7. Difference from Conventional Sewing Thread

| Conventional Thread | Heat Soluble Thread |
|---|---|
| Intended to remain in garment | Intended for later removal |
| Stable under normal ironing | Designed to melt under controlled heat |
| Used needle or bobbin | **Bobbin only** |
| Permanent seam role | Temporary holding role |

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## 8. Common Process Mistakes

- Using as needle thread
- Excess machine speed causing friction heat

- Too many temporary stitches
- Insufficient heat during removal stage
- Uneven pressing contact
- No trials on new fabrics

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## 9. Best Practice for Consistency

- Use in bobbin position only
- Use conventional needle thread
- Keep machine path smooth
- Run small trials first
- Use controlled heat removal settings
- Confirm fabric appearance after finishing
- Record approved conditions

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## 10. Important Note

Durafil Heat Soluble Thread is designed for bobbin thread use only and must never be used as a needle thread.

Material behaviour depends on sewing conditions, heat method, fabric type, stitch density, and process control.

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

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## 11. Contact for Technical Support

Email: info@durafil-group.com