Material Behaviour & Chemistry Guide

Durafil Heat Soluble Yarn

150 Denier | Approx. 70°C Melting Point | Natural Colour

Understanding Low Temperature Removable Yarn Performance in Textile Manufacturing

1. Purpose

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

The product is a low temperature melting functional yarn designed for temporary separation, removable joins, spacing structures, and sacrificial process functions in knitting, weaving, hosiery, and technical textile manufacturing.

Understanding how the yarn responds to heat, tension, friction, fabric construction, and cooling helps users achieve reliable production results.

2. Product Overview

Property	Description
Product Type	Heat Soluble / Heat Removable Functional Yarn

Yarn Size	150 Denier
Base Material	Low Temperature Melting Synthetic Polymer
Colour	Natural
Construction	Continuous Filament
Functional Principle	Temporary yarn function followed by thermal softening / melting
Softening Range	Approx. 65–75°C
Nominal Melting Point	Approx. 70°C

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3. How the Material Works

Unlike conventional yarns intended to remain permanently in the textile structure, Durafil Heat Soluble Yarn is engineered to lose integrity when exposed to suitable heat.

During manufacturing, the yarn behaves as a normal process yarn providing temporary joining, spacing, support, or separation function.

When correct heat is later applied:

- Polymer softens
- Yarn strength falls rapidly
- Yarn melts or breaks down

- Temporary connection disappears
- Sections separate or structure changes

This allows efficient production of constructions that can later transform after heat processing.

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4. Key Material Behaviours

A. Heat Response

- The yarn softens progressively as temperature rises.
- Sufficient heat is needed for clean removal.
- Too little heat may leave yarn remnants.
- Too much heat may affect surrounding heat-sensitive fibres.

B. Friction Response

Mechanical friction can generate local heat.

High speed knitting, weaving, winding, or rough guides may create premature softening or running instability.

C. Tensile Behaviour

The yarn provides temporary process strength only.

Performance depends on:

- Yarn tension
- Number of ends used
- Machine speed
- Guide condition
- Construction design

It should not be treated as a permanent structural yarn.

D. Cooling Response

After heat exposure, melted zones cool rapidly.

Handling while still hot may influence final appearance of surrounding fabric.

E. Residue Behaviour

Depending on process conditions and yarn quantity used, minimal residue may remain if heat is insufficient.

Trials should confirm acceptability for each article.

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5. Interaction with Textile Structures

Results vary depending on construction geometry.

Faster Removal Often Seen In:

- Open knit structures
- Hosiery joins with accessible yarn path
- Loose woven constructions

Slower Removal Often Seen In:

- Dense knits
- Multilayer structures
- Tightly trapped yarn paths

Construction design matters as much as chemistry.

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6. Why Used as a Separation Yarn

The yarn allows manufacturers to:

- Join paired socks temporarily
- Simplify hosiery handling
- Create removable links between components
- Form temporary spacing zones
- Support innovative textile constructions
- Reduce manual cutting or separation labour

After removal, the final product becomes independent or structurally transformed.

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7. Difference from Conventional Yarn

Conventional Yarn	Heat Soluble Yarn
Intended to remain in textile	Intended for later removal
Stable under moderate heat	Designed to melt at lower temperature
Permanent functional role	Temporary process role
No transformation effect	Enables post-process separation

8. Common Process Mistakes

- Excessive machine tension
- High friction yarn path
- Using too many ends unnecessarily
- Insufficient heat for removal
- Uneven heat distribution
- No trials on new constructions
- Assuming all fibres tolerate same heat level

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9. Best Practice for Consistency

- Use only where temporary function is needed
- Maintain smooth yarn path
- Trial each article type
- Use controlled heat settings
- Confirm clean separation before packing
- Record approved conditions

10. Important Note

Final performance depends on machine settings, construction design, material type, heat method, and process control.

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

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11. Contact for Technical Support

For technical queries:

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