

Material Behaviour & Chemistry Guide

Durafil Tex 40 Heat Fusible Thread

Understanding Low Temperature Melting Polyamide Performance in Garment Applications

1. Purpose

This guide explains the material behaviour and practical chemistry of Durafil Tex 40 Heat Fusible Thread.

The product is designed to soften and bond under controlled heat conditions, helping reinforce garment constructions such as blind hems and other internal sewn areas.

Understanding behaviour under heat, pressure, cooling, and fabric interaction helps users achieve consistent production results.

2. Product Material

Property	Description
Product Type	Heat Fusible Thread
Yarn Size	Tex 40

Base Polymer	Low Temperature Melting Polyamide
Colour	Natural
Functional Principle	Thermal softening and bonding
Typical Activation Range	Approx. 80–90°C
Nominal Melting Point	Approx. 85°C

3. How the Material Works

Low temperature melting polyamide is engineered to soften at significantly lower temperatures than conventional sewing threads.

When sufficient heat is applied:

- The polymer softens
- Surface flow begins
- Adjacent fibres or fabric layers can bond
- Cooling re-solidifies the material
- Seam area gains reinforcement

This allows hidden internal support without changing the outer garment appearance.

4. Key Material Behaviours

A. Heat Response

The thread becomes progressively softer as temperature rises toward activation range.

Too little heat may give weak bonding.

Too much heat may cause over-flow, stiffness, marking, or visible strike-through.

B. Pressure Response

Pressure during heating helps bring softened polymer into closer contact with surrounding fibres.

Balanced pressure improves consistency.

Excessive pressure may flatten fabric or push material into visible areas.

C. Cooling Response

After heating, the polymer re-solidifies during cooling.

Stable cooling improves bond integrity.

Moving or stretching garments before cooling may weaken final performance.

D. Flexibility Response

Once bonded, the seam area may feel firmer than untreated fabric.

This is normal and depends on:

- Thread quantity
 - Fabric construction
 - Bonding area size
 - Pressing conditions
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5. Interaction with Fabrics

Generally suitable for trials on many woven uniform and trouser fabrics such as:

- Polyester
- Polyester / viscose blends
- Cotton blends
- Polyamide blends

Results vary by fabric finish, density, coatings, and heat sensitivity.

Always test before production.

6. Difference from Conventional Sewing Thread

Conventional Thread	Heat Fusible Thread
Designed mainly for stitching strength	Designed for bonding support + stitching role
Stable under ironing temperatures	Softens within controlled lower temperature range
Mechanical seam holding	Mechanical + thermal reinforcement
No bonding effect	Provides internal bonding effect

7. Common Process Mistakes

- Using excessive temperature
- Uneven pressing pressure
- No cooling stage
- Assuming all fabrics behave the same
- Large setting changes without trials
- Using as needle thread where heat/friction risk is high

8. Best Practice for Consistency

- Trial each fabric style
 - Use controlled pressing conditions
 - Record approved settings
 - Allow cooling before handling
 - Review wash and wear requirements
 - Train operators on thermal sensitivity
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9. Important Note

Material behaviour depends on heat source, fabric type, pressure, dwell time, garment construction, and process control.

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

10. Contact for Technical Support

For technical queries:

Email: info@durafil-group.com