

# Selection Logic & Charts

## Introduction

***There is no perfect thread for all applications; however, there is a perfect thread for the specific application.*** In order to select the right thread for a specific application, there are three elements you should consider:

1. **Fiber Type**
2. **Thread Construction**
3. **Thread Size**

American & Efird offers a thread education workshop, called *Threaducation*, on how to select the best thread for a specific application. This seminar is not about how we make thread but how to select the best fiber type, thread construction and size for a specific application. The information on this page is a summary of that seminar.

Most people who are involved in the selection of thread make their decision based on one or all of the following reasons:

- **Sewability** (Process ability)
- **Seam Performance** (Seam strength, seam durability, etc.)
- **Seam Appearance** (Color, color fastness, stitch appearance, etc.)
- **Availability** (Is the product available to meet my needs?)
- **Cost** (Cost includes both the price and the hidden costs associated with the above)

***Thread Selection by End Use*** is intended to help you ask important questions about thread and then guide you in the selection of the best fiber type, thread selection, and thread size for a specific application. A&E Sales Representatives and Technical Service Team are also available to answer specific questions about thread application and share with you their experience of what is the best thread to use.

## Example One of Thread Application and Selection

Let's say you are making a men's dress shirt or ladies blouse and the fabric is light-weight and susceptible to seam puckering. You know that automatic sewing equipment will be used on some operations and thread breakage is common on these machines. You also would like the thread to match the fabric it is being sewn in to and have good color fastness characteristics. What thread type and size would you recommend?

Looking at the Thread Selection Charts, you will find the following:

<b>Sewability Questions</b>	
<b>Seam Puckering?</b>	Cotton Wrapped Core or Polyester Wrapped Core
<b>Are there any Automatic Multi-directional Lockstitch Machines?</b>	Cotton Wrapped Core or Polyester Wrapped Core
<b>Seam Appearance Questions?</b>	
<b>Color fastness?</b>	Polyester or Vat Dyed Cotton
<b>Thread Application &amp; Size Questions?</b>	
<b>Light Weight?</b>	Thread Size T-18, T-21, T-24, T-26 (Shirt, Blouses, & Tops)

Looking under the Fabric Weights & Thread Sizes section, you will find that for 2 to 4 oz. goods, you would generally use a Tex 16, 18, 21, or 24 thread size.

If you read the description under Corespun Thread Construction, it says corespun threads:

- Sew on all types of sewing equipment with minimum sewing problems.
- Sew on automatic multidirectional sewing machines.
- Have a higher strength per size than spun polyester threads. (Allows the use of a smaller thread size to help minimize seam puckering. See our Technical Service Bulletin #3 on Minimizing Seam Pucker.)
- Have a fibrous surface giving a soft hand, low sheen appearance.
- Have a high elongation for greater seam strength and seam elasticity.
- PW Core threads have very good color fastness, chemical resistance & enzyme resistance.
- They are less expensive than cotton wrapped core.

Therefore the correct selection would be a T-18 or T-24 Poly Wrapped (PW) Core thread.

## Example Two of Thread Application and Selection

You are making a Tee Shirt that is primarily sewn with a overedge stitch construction. You want a thread with good chemical resistance and a thread should be as inexpensive as possible.

<b>Sewability Questions</b>	
<b>Overedge &amp; Coverstitch?</b>	Spun or Textured
<b>Seam Performance?</b>	
<b>Chemical Resistance?</b>	Polyester
<b>Thread Application &amp; Size Questions?</b>	
<b>Light Weight?</b>	Thread Size T-18, T-21, T-24, T-27 (Shirt, Blouses, & Tops)
<b>Textured Thread Construction?</b>	
<ul style="list-style-type: none"> <li>• High "fluff" thread for excellent seam coverage and seam elasticity.</li> <li>• Lowest purchase price.</li> <li>• Textured Polyester - for knit garments like Tee Shirts, fleece.</li> </ul>	

Therefore T-18 Textured Polyester thread would be recommended. A T-21 Spun Polyester might be required if there are any sewing operations requiring greater ply security like sewing on a pocket with a single needle lockstitch machine.



## Sewability, Performance, & Appearance

<b>Sewability Questions?</b>	
Apparel?	Spun, Core, Air Entangled, Textured
Are there any Automatic Multi-directional Lockstitch?	CW Core or PW Core
Lockstitch? Buttonsew? Buttonhole?	Corespun, Spun, or Air Entangled
Overedge, Coverstitch?	Spun or Textured
Excessive needle heat?	Cotton or CW Core
Are Special fabrics being sewn like microfiber, poplins?	Perma Core™ - Fine Tex Size
Seam puckering?	CW Core or PW Core
Needle Cutting on Knits?	Small as Possible Tex Size
Are extra small needles required?	Small Tex Size
Heavy Non-Apparel?	Multifilament, Monocord

<b>Seam Performance Questions?</b>	
Chemical Resistance?	Polyester
Abrasion Resistance?	Nylon or Polyester
UV Resistance?	Polyester
Long-term Heat Resistance?	DuPont™ Nomex®
Short-term Heat Resistance?	Cotton or DuPont™ Kevlar®
Stone Wash Resistance?	Polyester
Minimize Cut-Stitch?	CW Core or PW Core
Seam Elasticity?	PW Core, Spun Poly, Textured

<b>Seam Appearance Questions?</b>	
High Sheen Appearance?	Filament
Low Sheen Appearance?	Corespun & Spun
100% Cotton Garment Overdye?	Cotton & Lyocel®
Color Fastness?	Polyester, Vat dyed Cotton
Bold Size for Contrast Stitching?	Large Tex Size
Seam Coverage?	Textured

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## Fiber Types

<b>100% Cellulose Fiber Threads</b>		
<b>Cotton Application</b>	<b>Rayon Application</b>	<b>Lyocell® Application</b>
<ul style="list-style-type: none"> <li>• Low strength per size</li> <li>• Low elongation</li> <li>• Not as durable as synthetics</li> <li>• Used for overdye or garment dye programs</li> <li>• Colorfastness not as good as polyester</li> <li>• Good Heat resistance</li> <li>• Wrap for CW Core</li> <li>• Only available in staple</li> </ul>	<ul style="list-style-type: none"> <li>• Medium strength</li> <li>• Low elongation</li> <li>• Low-wet modulus</li> <li>• Used for embroidery</li> <li>• High sheen</li> <li>• Only available in continuous filament</li> </ul>	<ul style="list-style-type: none"> <li>• Low strength</li> <li>• Low elongation</li> <li>• Recommend for use in Tencel® fabrics that are overdye &amp; subjected to enzymes</li> <li>• Only available in staple</li> </ul>
<b>Synthetic - Thermoplastic</b>		
<b>Polyester Application</b>	<b>Nylon Application</b>	
<ul style="list-style-type: none"> <li>• High strength per size - high elongation</li> <li>• Excellent chemical resistance</li> <li>• Very good color fastness</li> <li>• Very good abrasion resistance</li> <li>• Very good UV resistance</li> <li>• Used in most apparel applications</li> <li>• Available in staple or continuous filament</li> </ul>	<ul style="list-style-type: none"> <li>• High strength per size - high elongation</li> <li>• Excellent abrasion resistance</li> <li>• Good chemical resistance</li> <li>• More elastic than polyester</li> <li>• Used for industrial applications like furniture, shoes &amp; boots, luggage, etc.</li> <li>• Only available in continuous filament from A&amp;E</li> </ul>	
<b>Synthetic - Thermoplastic</b>		
<b>Polyester Application</b>	<b>Nylon Application</b>	
<ul style="list-style-type: none"> <li>• High strength per size - high elongation</li> <li>• Excellent chemical resistance</li> <li>• Very good color fastness</li> <li>• Very good abrasion resistance</li> <li>• Very good UV resistance</li> <li>• Used in most apparel applications</li> <li>• Available in staple or continuous filament</li> </ul>	<ul style="list-style-type: none"> <li>• High strength per size - high elongation</li> <li>• Excellent abrasion resistance</li> <li>• Good chemical resistance</li> <li>• More elastic than polyester</li> <li>• Used for industrial applications like furniture, shoes &amp; boots, luggage, etc.</li> <li>• Only available in continuous filament from A&amp;E</li> </ul>	



## Thread Construction

<b>Air Entangled Thread Construction</b>	
<ul style="list-style-type: none"> <li>• Made from 100% polyester continuous filaments - Magic™</li> <li>• Sews on all types of sewing equipment (lockstitch, chainstitch, overedge, etc.)</li> <li>• High initial modulus for excellent loop formation</li> <li>• Does not have as soft a "hand" as spun polyester</li> <li>• Less expensive than Corespun &amp; spun threads</li> <li>• Excellent seam durability - high loop strength</li> <li>• For all types of garment and home furnishing applications</li> </ul>	
<b>Corespun Thread Construction</b>	
<ul style="list-style-type: none"> <li>• Sews on all types of sewing equipment with minimum sewing problems (lockstitch, chain, overedge, etc.)</li> <li>• Sews on automatic multidirectional sewing machines</li> <li>• Higher strength per size than spun polyester</li> <li>• Fibrous surface - soft hand, no sheen, low friction</li> <li>• High elongation for greater seam strength &amp; seam elasticity</li> <li>• Approx. 60% polyester core - more uniform than spun</li> <li>• Allow use of smaller thread size but maintain seam strength</li> </ul>	
<b>CW Core:</b> <ul style="list-style-type: none"> <li>• Cotton wrapped - D-Core™</li> <li>• Has good needle heat resistance</li> <li>• Wash down look</li> <li>• For denim garments, pants, etc.</li> </ul>	<b>PW Core:</b> <ul style="list-style-type: none"> <li>• Polyester wrapped - Perma Core™</li> <li>• Very color fast, chemical &amp; enzyme resistant</li> <li>• Highest strength per size - smaller thread can be used</li> <li>• Less expensive than CW Core</li> <li>• For all types of garment applications</li> </ul>
<b>Monocord Thread Construction</b>	
<ul style="list-style-type: none"> <li>• Made from 100% continuous filament nylon - Anecord Nylon™ - bonded only</li> <li>• Flat and ribbon-like</li> <li>• Excellent abrasion resistance</li> <li>• Excellent seam durability</li> <li>• High tenacity</li> <li>• Generally industrial sewing applications: furniture, leather goods, footwear, luggage, sporting goods</li> <li>• Prewound bobbins have higher yardage</li> <li>• More expensive - limited color line</li> </ul>	
<b>Monofilament Thread Construction</b>	
<ul style="list-style-type: none"> <li>• Made from a single end of 100% continuous filament nylon - Clearlon™</li> <li>• Translucent so it blends in with many colors</li> <li>• Not recommended for seams that lay adjacent to the skin</li> <li>• Inexpensive compared to other thread types</li> </ul>	



<b>Spun Thread Construction</b>	
<ul style="list-style-type: none"> <li>• Made from 100% staple</li> <li>• Fibrous surface - soft hand, low sheen, low friction</li> <li>• Sews on most types of sewing equipment (lockstitch, chain-stitch, overedge, etc.)</li> <li>• Less expensive than Corespun threads</li> <li>• High elongation for greater seam strength &amp; seam elasticity</li> </ul>	
<b>Spun Polyester:</b> Perma Spun™- For all types of garment applications	<b>Spun Cotton:</b> Anecot Plus™ - For garment dye programs.
<b>Textured Thread Construction</b>	
<ul style="list-style-type: none"> <li>• Made from 100% continuous filament, polyester or nylon</li> <li>• Sews on overedge, coverstitch, and chainstitch machines (but no on 301 lockstitch machines)</li> <li>• High bulk thread for excellent seam coverage and seam elasticity</li> <li>• High sheen</li> <li>• Lowest purchase price</li> </ul>	
<b>Textured Polyester:</b> Wildcat Plus™- For knit garments like tee shirts, fleece, or serging woven garments	<b>Textured Nylon:</b> Best Stretch™- For foundation garments, lingerie, high stretch fabrics used in bicycle & exercise apparel
<b>Twisted Multifilament Thread Construction</b>	
<ul style="list-style-type: none"> <li>• Made from 100% continuous filament - Anefil Nylon™ &amp; Anefil Polyester™ - soft or bonded</li> <li>• Excellent abrasion resistance</li> <li>• Excellent seam durability</li> <li>• High tenacity - greater strength per size</li> <li>• Generally industrial sewing applications: furniture, footwear, luggage, sporting goods</li> <li>• More expensive - limited color line</li> </ul>	



### Thread Applications & Sizes

<b>Weight</b>	<b>Tex Size</b>	<b>Application</b>
Extra Light	T-18, T-21, T-24	Sheer Blouses, T-Shirts
Light	T-24, T-27, T-30	Dress Shirts, Dresses, Knit Tops
Medium	T-30, T-35, T-40	Chinos Pants, Fleece Sweat Shirts
Medium Heavy	T-50, T-60, T-70	Light Weight Denims, Coveralls
Heavy	T-80, T-90, T-105	Heavy Denims, Parkas
Extra Heavy	T-120, T-135	Heavy Denims - Stretch

### Needle Applications & Sizes

<b>Weight</b>	<b>Needle Size (M)</b>	<b>Application</b>
Light	65, 70, 75	Shirts, Blouses, Tops
Medium	80, 90, 100, 110	Slacks, Chinos, Jackets
Heavy	110, 120, 140, 160	Denim Garments, Heavy Coats, Jackets, etc.

### Fabric Weights & Sizes

<b>Oz./Sq. Yd.</b>	<b>Thread Tex Size</b>
2-4 oz.	Tex 16, 18, 21, 24
4-6 oz.	Tex 24, 27, 30
6-8 oz.	Tex 30, 35, 40, 50
8-10 oz.	Tex 40, 45, 50, 60
10-14 oz.	Tex 60, 80, 90, 105, 120, 135