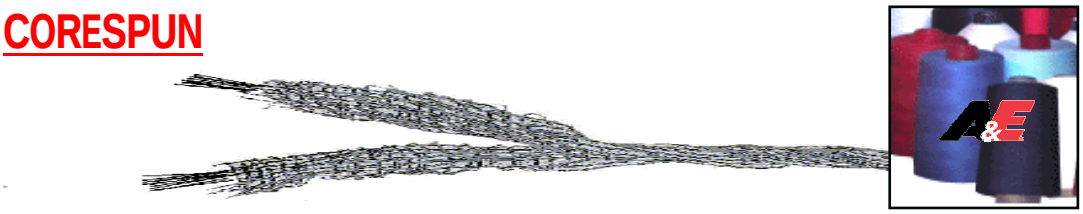
CORESPUN VERSUS SPUN POLY Threads

What are the major differences between A&E's corespun brands like *Perma Core*® and *D-Core*® and Spun Polyester know in Asia as "pp" threads? What impact does using one versus the other have on the quality of your sewn products?

CORESPUN



Corespun threads, sometimes referred "pcore" or "polycore" or "cottoncore", are made by wrapping a staple polyester or cotton wrapper around a continuous filament bundle of polyester fibers during spinning, and then plying these yarns into a sewing thread. The continuous filament polyester core makes up approximately 60% of the thread construction. This core contributes to:

- Higher strength per size (higher tenacity)
- Greater uniformity in size, strength and other physical characteristics
- A higher initial modulus or resistance to stretching contributing to better loop formation and reduced seam puckering.
- Better ply security – fewer unravel type thread breaks
- Superior abrasion resistance & durability

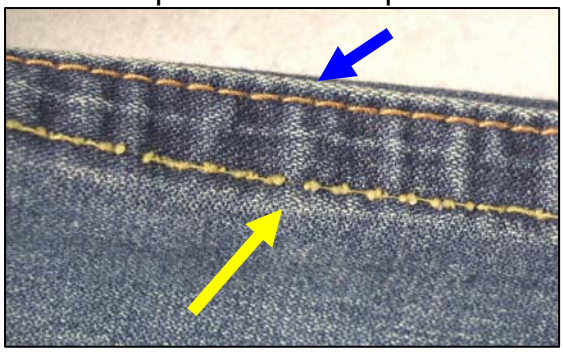
The wrapper of a corespun thread can be either staple polyester or staple cotton. The wrapper gives the thread a fibrous surface that contributes to:

- A softer "hand" or feel than a 100% continuous filament threads
- A matte finish stitch appearance similar to a spun thread construction
- Superior frictional characteristics compared to a continuous filament threads
- Poly wrapper contributing to:
    - Superior color fastness, chemical and abrasion resistance
    - Higher strength than cotton wrapped corespun threads
    - Superior "union dyeing" because of one-step dyeing process
- Cotton wrapper contributing to:
    - Superior needle heat resistance
    - A "wash-down" stitch appearance

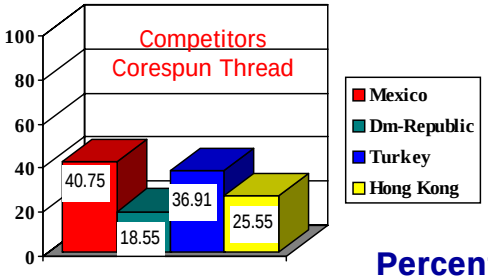
Core threads are recommended for the most demanding sewing applications from sewing fine blouses that are susceptible to seam puckering ... to denim products that will be stone-washed or sand blasted.

Perma Core® NWT* and *D-Core® NWT

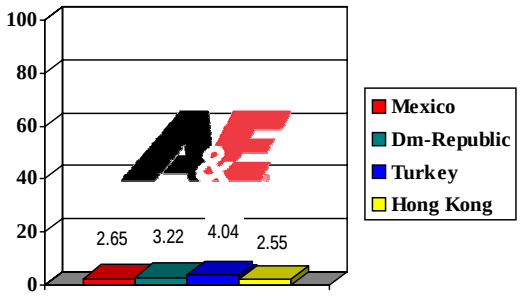
Both A&E's *Perma Core®* and *D-Core®* are made with our patented "NTT" process that contributes to fewer sewing interruptions on the production floor versus our competitor's corespun threads. *Perma Core® NWT* and *D-Core® NWT* are also available to help minimize repairs after harsh finishing processes on denim. "NWT" stands for **N**ew **W**ash **T**echnology and relates to the innovative improvements that we made to both *Perma Core® NWT* and *D-Core® NWT* to meet our customers' more demanding denim finishing processes used throughout the world.



Broken Stitch Comparison



Percent Repairs



Current thread | **Perma Core NWT**

As you can see from the data shown above comparing the percent repairs after finishing, *Perma Core® NWT* and *D-Core® NWT* are the best corespun products made in the world for sewing denim and twill garments that will be subjected to harsh finishing processes. Even though corespun threads are normally more expensive than spun polyester threads, in most cases the total cost of thread is actually less when you consider the costs related to loss of sewing efficiency on the production floor and the repair costs in the laundry.

Benefits of Using *Perma Core® NWT* and *D-Core® NWT* Corespun Threads:

- 40 to 50% stronger than spun polyester threads the same size
- Superior sewability on both manual and automatic machines with minimum interruptions - fewer restitched seams
- Helps to Minimize Open-Seams and Seam Failures
- Allows the use of smaller diameter thread to minimize Seam Puckering or Needle cutting
- Helps to minimize broken and cut stitches after finishing.

Perma Core® Ultimate

Recently A&E introduce Perma Core® Ultimate for applications that are susceptible to excessive seam puckering. Below are the Features & Benefits of this new A&E Brand.

- Zero shrinkage when tested at 180° C to help minimize puckering during finishing and laundering.
- Higher tenacity construction allowing very smaller thread sizes to be used to minimize yarn displacement puckering (Tex 16, Tex 18 & Tex 24).
- Higher initial modulus contributing to a high resistance to stretching under normal sewing tensions minimizing tension puckering.
- Wound with a state-of-the-art thread lubricant allowing Perma Core® Ultimate to be sewn with minimum thread tensions.
- Perma Core® Ultimate has been manufactured using special spinning technology that contributes to a very smooth thread surface helping to provide superior stitch and seam appearance

SPUN POLYESTER

Spun Polyester threads, sometimes referred to as “PP” or “PP Spun”, are made by spinning 100% polyester staple fibers into yarns and then plying these yarns into a sewing thread. Spun Polyester threads are normally made in a two or three ply constructions depending on the yarn size. A&E uses our patented NTT process in the manufacturing of our premium spun polyester brands like *Perma Spun*® and *Excell*®.

Not all spun polyester threads are alike in performance characteristics. In some parts of the world, local thread producers make spun polyester with antiquated ring-twisting equipment, as compared to the superior 2 for 1 twisting technology used today by A&E. The benefits of this technology are fewer major imperfections that can cause thread breaks and even needle breaks. There are other significant differences between A&E premium spun threads and local produced spun polyester threads and therefore we caution manufacturers to shop wisely. The disadvantages of using local spun threads often include:

- Fiber & yarn construction inconsistency
    - Some local thread companies shop around for the cheapest yarn available from different yarn spinners.
    - Most local yarn spinners use old technology for spinning that contributes to excessive yarn imperfections.
    - Excessive yarn imperfections will contribute to more thread breaks, restitched seams and poor seam appearance.
    - High shrinkage fiber.
- Dyed with low energy dyes that have inferior color fastness
- Color inconsistency from lot to lot
- Poor lube application
    - Low lube levels that can allow the thread to melt during sewing
    - Inconsistent lube application contributing to inconsistent sewing machine thread tension

Benefits of using premium Spun Polyester sewing threads versus Corespun threads:

- Lower Initial Price
- Readily available around the world

Below is a physical comparison between *Perma Core NWT®*, *D-Core NWT®*, and *Perma Spun®.* This information is based on averages and should not be used as minimum thread specifications.

Perma Core®

Tex Size	T-18	T-24	T-30	T-40	T-60	T-80	T-105	T-120
Yarn Size	59/2	45/2	35/2	29/2	18/2	15/2	12/2	15/3
Avg. Strength (lbs.)	2.1	2.7	3.5	4.5	7.8	9	10.6	13.51
Elongation (% at break)	21.5	20.5	21.5	21.5	24.2	24.8	26.3	25.7
Shrinkage:								
BW	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
HA	<3%	<3%	<3%	<3%	<3%	<3%	<3%	<3%
Loop strength (lbs)	2.7	4.0	5.2	6.3	11.6	13.3	15.8	20.5

D-Core®

Tex Size		T-24	T-35	T-40	T-60	T-80	T-105	T-120
Yarn Size		46/2	33/2	29/2	18/2	15/2	12/2	15/3
Avg. Strength (lbs.)		2.2	3.0	3.6	7.1	7.6	8.0	11.3
Elongation (% at break)		20.0	20.4	22.6	24.3	23.4	23.5	24.5
Shrinkage:								
BW		<1%	<1%	<1%	<1%	<1%	<1%	<1%
HA		<3%	<3%	<3%	<3%	<3%	<3%	<3%
Loop strength (lbs)		2.9	4.0	4.6	9.3	10.6	11.2	15.8

Perma Spun®

Tex Size	T-21	T-27		T-40	T-60	T-80	T-105	T-120
Yarn Size	53/2	43/2		29/2	19/2	14/2	16/3	16/4
Avg. Strength (lbs.)	1.6	2.1		3.2	4.7	7.1	9.7	10.6
Elongation (% at break)	16.1	16.3		17.0	18.0	18.6	19.9	18.5
Shrinkage:								
BW	<1%	<1%		<1%	<1%	<1%	<1%	<1%
HA	<3%	<3%		<3%	<3%	<3%	<3%	<3%
Loop strength (lbs)	2.7	3.1		4.8	7.9	11.3	15.1	16.9

If you study this physical data information, you can see that corespun threads generally have a much higher single-end breaking strength than premium spun polyester sewing threads.

Caution, physical data comparisons do not always tell the whole story when it comes to thread performance. For example, both the NTT and NWT enhancements to A&E corespun threads do not show up in the physicals listed above. That's why A&E

developed a data collection tool called ANETRAK for comparing actual sewing performance on the sewing floor or repairs in the laundry.

SUMMARY

There is no perfect sewing thread for all sewing applications. Obviously from the information discussed above, corespun threads are clearly superior sewing threads when compared to spun polyester sewing threads. On performance garments, this will definitely make a difference in the quality of your finished product.

Broken stitches or repairs using spun poly

No broken stitches or repairs using core

Many manufacturers have found that they can integrate their thread usage by using a combination of corespun and spun polyester threads. Since overedge seams consume the most thread, they will used spun polyester on these operations while continuing to using corespun threads on all topstitching and stress seam operations. A&E has developed ***ANECALC*** for comparing the total thread cost per garment when using different thread combinations. Remember, ***ANECALC*** will only help calculate the thread price per garment and not the total thread cost related to the performance of the sewing thread.

For more information about A&E threads, please contact your local A&E representative or call our Technical Service Department.