

Technical Data Sheet

Spun Meta-Aramid Yarn

1. Product Description

This technical data sheet outlines the typical properties and specifications for high-performance spun yarn composed of 100% meta-aramid staple fibers. This yarn is renowned for its exceptional thermal stability, inherent flame resistance (FR), and excellent electrical insulation properties. It is designed for applications exposed to high heat and flame, where personnel safety and equipment protection are paramount.

2. Key Performance Characteristics

- **Inherent Flame & Heat Resistance:** The yarn is inherently flame-resistant. It will not melt, drip, or support combustion in air. It maintains its mechanical integrity when exposed to high temperatures, carbonizing at approx. $>400^{\circ}\text{C}$.
- **Excellent Electrical Insulation:** Possesses high dielectric strength and electrical resistivity, making it a primary choice for electrical insulation papers, tapes, and sleeves.
- **Good Chemical Resistance:** Highly resistant to a broad range of chemicals, including most organic solvents, dilute acids, and alkalis.
- **Good Textile Properties:** Meta-aramid fibers have excellent processability and can be spun into yarns that are soft, flexible, and comfortable, making them ideal for protective apparel. They are also readily dyeable (solution-dyed).
- **Good Durability & Abrasion Resistance:** Offers good service life with strong resistance to abrasion and tearing in textile applications.
- **Good UV Resistance:** Exhibits better resistance to UV light degradation compared to para-aramid, though prolonged, direct exposure can still cause some color change and strength loss.

3. Typical Physical & Mechanical Properties

The properties below represent typical values for a standard meta-aramid spun yarn and may vary based on specific yarn count, ply, and manufacturing processes.

Property	Typical Value	Test Method (Example)
Fiber Content	100% Meta-Aramid Staple Fiber	-
Yarn Construction	Ring Spun	-
Color	Natural (Off-white), Solution-Dyed	Visual
Tenacity	3.0 - 5.5 g/den (grams/denier)	ASTM D2256
Elongation at Break	15% - 30%	ASTM D2256
Limiting Oxygen Index (LOI)	28% - 32%	ASTM D2863 / ISO 4589
Decomposition Temperature	> 400°C (> 752°F)	TGA (Thermogravimetric Analysis)
Continuous Temperature Use	~ 220°C (428°F)	-
Moisture Regain	4.5% - 6.0%	ASTM D2495
Dielectric Strength	Excellent	ASTM D149

4. Standard Product Range

Spun meta-aramid yarns are available in a wide range of counts (linear density) and plies. The table below provides common examples. Custom specifications are often available upon request.

- **Ne:** English Cotton Count
- **dtex:** Decitex (grams per 10,000 meters)
- **TPM:** Twists Per Meter

Yarn (Ne)	Count	Ply	Approx. dtex	Twist (TPM)	Twist Direction	Min. Breaking Strength (N)
Ne 20/1		1-Ply	295	500 ± 20	Z	~12 N
Ne 20/2		2-Ply	590	420 ± 20	S	~23 N
Ne 20/3		3-Ply	885	420 ± 20	S	~35 N
Ne 30/1		1-Ply	197	600 ± 30	Z	~8 N
Ne 30/2		2-Ply	394	520 ± 30	S	~15 N
Ne 40/1		1-Ply	148	700 ± 30	Z	~6 N
Ne 40/2		2-Ply	296	610 ± 30	S	~11 N

5. Common Applications

This yarn is engineered for use in:

- **FR Protective Apparel:** Firefighter turnout gear, industrial workwear (e.g., oil & gas, utility), military and police uniforms, and auto racing suits.
- **Electrical Insulation:** Used to create aramid papers, felts, and tapes for motor slot insulation, transformer windings, and cable wrap.
- **Hot Gas Filtration:** Woven or felted into filter bags for high-temperature industrial flue stacks (e.g., asphalt plants, cement mills).
- **Industrial FR Sewing Threads:** For sewing seams on all types of flame-resistant garments and equipment.
- **Aerospace & Automotive:** Interior components, insulation blankets, and heat shields.

6. Packaging & Storage

- **Packaging:** Typically supplied on cardboard or plastic cones, with each cone weighing between 1.5 kg and 2.5 kg (3.3 lbs - 5.5 lbs). Cones are individually bagged and packed in labeled cartons.
- **Storage:** Store in a cool, dry place. While meta-aramid has good UV stability, it is recommended to avoid long-term storage in direct sunlight to protect fiber and color integrity.

7. Disclaimer

The information provided in this technical data sheet is based on typical data and is believed to be reliable. However, it is provided for guidance only and does not constitute a specification or warranty. End-users must conduct their own testing to determine the suitability of the product for their specific application. The supplier assumes no liability for any loss or damage arising from the use of this information. Specifications are subject to change without notice.