Coats® Protos™

Coats Protos is a high strength, high modulus fire retardant sewing thread made from 100% para-aramid fibre. Coats Protos offers exceptionally high strength retention even at elevated heat ageing temperatures and can be used to stitch durable protective seams that can withstand burning flames, ballistic resistance and exposure to high temperatures. Coats is the only thread manufacturer that spins, twists, dyes and finishes the para-aramid fibre in a vertically integrated aramid manufacturing system to produce threads with excellent sewability and in difficult-to-dye colours.

WHY CHOOSE PROTOS?
- Made from para-aramid fibre with a high melting point of 450°C
- Stronger than steel, para-aramid is a high tenacity, high modulus fibre
- High retained strength after heat ageing at elevated temperatures
- Unique spinning capability for low fault para-aramid yarn
- Low elongation
- One of the few thread manufacturers that can dye para-aramid and hence deliver thread in a range of shades
- Meets Coats restricted substance list

MAIN USES
- Mattress tape edge seams
- Fire resistant and cut and slash industrial gloves
- Insulation and engine covers
- High temperature air bags
- Aerospace
- Bullet-proof vests and ballistic body armour
- Military protective garments

www.coats.com
PRODUCT RANGE

<table>
<thead>
<tr>
<th>TEX</th>
<th>Ticket</th>
<th>Ply</th>
<th>Strength cN</th>
<th>Elongation % Min - Max</th>
<th>Needle Size Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>75</td>
<td>2</td>
<td>3000</td>
<td>3 - 5</td>
<td>75 - 90</td>
</tr>
<tr>
<td>45</td>
<td>60</td>
<td>2</td>
<td>10500</td>
<td>3 - 5</td>
<td>80 - 90</td>
</tr>
<tr>
<td>60</td>
<td>50</td>
<td>3</td>
<td>4800</td>
<td>3 - 5</td>
<td>90 - 110</td>
</tr>
<tr>
<td>80</td>
<td>40</td>
<td>4</td>
<td>6000</td>
<td>3 - 5</td>
<td>100 - 120</td>
</tr>
<tr>
<td>90</td>
<td>30</td>
<td>5</td>
<td>18000</td>
<td>2 - 6</td>
<td>110 - 140</td>
</tr>
<tr>
<td>105</td>
<td>30</td>
<td>6</td>
<td>20100</td>
<td>2 - 6</td>
<td>120 - 160</td>
</tr>
</tbody>
</table>

THERMAL PROPERTIES

- Decomposes at 450°C - Does not burn but self-extinguishes on removal of flame
- High modulus low elongation fibre
- Stronger than steel
- Low ultra violet resistance, loses strength on exposure to prolonged sunlight
- Excellent cut and slash resistance

CHEMICAL PROPERTIES

- Excellent resistance to oils and petro chemicals
- Excellent chemical resistance

FASTNESS PROPERTIES

- Wash fastness (95°C): ISO 105 C04 (DIN 54011) Grade 3
- Rub fastness: ISO 105 X12 (DIN 54021) Grade 3
EXPERT REAL WORLD SUPPORT
The final cost of any product also includes hidden costs, fuelled by the methods and tools applied to it. Our experts know exactly how to reduce those costs, save time and increase productivity.

Seamworks
Install our Seamworks software to accurately calculate costs prior to production, putting an end to the risk of over or under ordering materials, and incurring unnecessary extra costs. The Seamworks tool is provided with installation, training and ongoing support included.

One to One Visits
There’s no need to come to us, our experts will travel to your site. In person, online or via the phone, our trained consultants deal with the kind of issues any busy factory may face, providing a solution for today and a blueprint for future efficiency.

Training and Presentations
From product selection to stitch formation, the use of colour to solutions for common production issues, we take the learning gathered through years of hands on experience and present it in the form of high impact seminars, workshops and presentations.

Embroidery Service Centre
Our Embroidery Service Centre makes embroidering a design much easier, increasing productivity at the same time as enhancing the design itself. Email the design and any problematic issues to us and our technicians will email the improved design right back.

To drive your hidden costs down, talk to Coats. From product audits in pre-production to the latest technological bulletins, we’ll provide support that achieves measurable results.

For more information, talk to your Coats representative today or visit coats.com

OTHER PRODUCTS IN THE PROTOS RANGE
To complement the Protos range, we also have a selection of specialist Protos threads. Each of these combines the superior properties of the Protos product with additional benefits specific to the end use.

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protos Binder</td>
<td>This slow-shrink, para-aramid yarn is designed to withstand high stranding</td>
</tr>
<tr>
<td></td>
<td>speeds and makes an excellent dual-end binder in loose tube cables.</td>
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<tr>
<td>Protos Fil</td>
<td>High-strength, fire retardant para-aramid thread that is recommended for</td>
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<td></td>
<td>mattress tape edge seams or products exposed to high external heat.</td>
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<tr>
<td>Protos Ripcord PF</td>
<td>Para-aramid yarn that is engineered with a special twisting technology that</td>
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<tr>
<td></td>
<td>improves its grip and offers easier cable ripping.</td>
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<tr>
<td>Protos Steel</td>
<td>Para-aramid wrapped steel core yarn that can withstand temperatures up to</td>
</tr>
<tr>
<td></td>
<td>1000°C, making it ideal for textile products that are exposed to high heat.</td>
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</tbody>
</table>

Special use Protos products are typically available across a select range of ticket sizes and technical information will in some cases vary from the above table.