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Adafruit 100410

Adafruit Stainless Thin Conductive Thread

Model: 100410

INTRODUCTION

The Adafruit Stainless Thin Conductive Thread is a specialized 2-ply thread crafted from 316L stainless steel. This thread is engineered for e-textile and wearable technology projects, providing a reliable conductive pathway for integrating electronic components into fabric. Its unique properties make it suitable for a variety of applications where flexibility and electrical conductivity are required.

PRODUCT OVERVIEW

This conductive thread offers several key features:

- **Material:** Made entirely of 316L stainless steel, ensuring durability and consistent performance.
- **Construction:** It is a 2-ply thread, providing a balance of strength and flexibility. While slightly thicker than standard polyester or cotton thread, it remains thin enough for hand sewing with medium-eye needles or machine sewing with machines capable of handling heavier threads.
- **Conductivity:** Features a low resistivity of 16 ohms per foot, making it effective for driving low-power electronic components such as LEDs that operate under 50mA.
- **Durability:** Due to its stainless steel composition, the thread resists oxidation, preventing performance degradation over time. It is also safe for washing, allowing for integration into garments and other washable items.
- **Packaging:** Supplied on a small bobbin, containing 23 meters (approximately 76 feet) of thread.

SETUP

Before beginning your project, consider the following setup guidelines:

1. **Hand Sewing:** The 2-ply construction allows for hand sewing. Use a medium-eye needle to accommodate the thread's thickness.
2. **Machine Sewing:** If using a sewing machine, ensure it is capable of handling 'heavy' thread to prevent damage to the machine or thread. Test on a scrap piece of fabric first.
3. **Spool Handling:** The thread comes wound on a bobbin. Handle carefully to prevent tangling.

Image 1: Adafruit Stainless Thin Conductive Thread wound on a bobbin, ready for use.

OPERATING INSTRUCTIONS

Utilize the conductive thread in your e-textile projects by following these instructions:

- **Creating Circuits:** Sew the thread to create electrical pathways on fabric. Ensure good contact between the thread and any electronic components (e.g., LEDs, sensors) you are connecting.
- **Powering Components:** The thread's low resistivity (16 ohms per foot) allows it to carry current for small electronic components. It is suitable for applications requiring less than 50mA.
- **Wearable Applications:** When integrating into wearables, such as gloves for touchscreen compatibility, ensure the conductive thread makes direct and consistent contact with the user's skin to facilitate electrical conduction.
- **Connection Points:** For robust connections, consider using conductive fabric patches or soldering directly to the thread where appropriate, ensuring the solder joint is flexible enough for the application.

Image 2: A close-up view of the Adafruit Stainless Thin Conductive Thread, showing its twisted 2-ply structure.

MAINTENANCE

To ensure the longevity and performance of your projects using Adafruit Stainless Thin Conductive Thread:

- **Washing:** The stainless steel composition makes this thread safe for washing. Follow standard garment care instructions for the fabric it is integrated into. Avoid harsh chemicals or excessive abrasion that could damage the thread or connected components.
- **Oxidation Resistance:** The 316L stainless steel material inherently resists oxidation, meaning the conductivity of your projects will not degrade due to rust or tarnish over time.
- **Storage:** Store the thread in a dry environment to prevent any potential environmental degradation, although its stainless steel nature makes it highly resilient.

TROUBLESHOOTING

If you encounter issues with your conductive thread projects, consider the following:

- **No Conductivity or Intermittent Connection:**
 - **Check Contact:** For applications requiring human touch (e.g., touchscreen gloves), ensure the thread makes direct and firm contact with the skin. Insufficient skin contact is a common cause of poor performance.
 - **Circuit Continuity:** Verify all sewn connections for continuity using a multimeter. Ensure there are no breaks in the thread or poor connections to components.
 - **Component Compatibility:** Confirm that the electronic components used are compatible with the thread's resistivity (16 ohms per foot) and current capacity (under 50mA). Higher current demands may require alternative conductive materials or multiple strands of thread.
- **Thread Breakage:**
 - **Sewing Machine Settings:** If machine sewing, ensure tension settings are appropriate and the needle is suitable for heavier threads to prevent stress on the thread.

- **Stress Points:** Design your project to minimize sharp bends or excessive tension on the thread, especially in areas of high movement.

SPECIFICATIONS

Brand	Adafruit
Model Number	100410
Material	316L Stainless Steel
Color	Silver
Ply	2-ply
Length	23 meters (76 feet)
Resistivity	16 ohms per foot
Item Weight	0.01 Kilograms (0.317 ounces)
UPC	701980281310, 715933168580

WARRANTY AND SUPPORT

Specific warranty information for the Adafruit Stainless Thin Conductive Thread is not provided in this manual. For details regarding product warranty, technical support, or further inquiries, please refer to the official Adafruit website or contact their customer service directly.

Manufacturer: KOTENIA (as listed in product specifications)