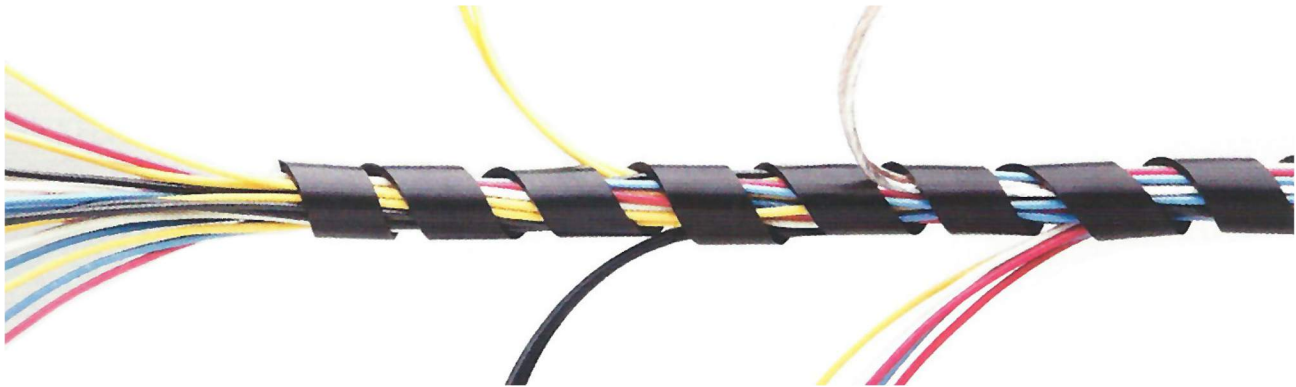


The Right
Spiral Wrap
Material
for Your
Application

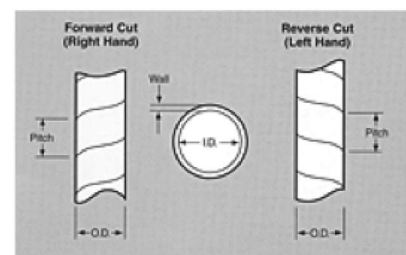
Introduction



Spiral wrap (also known as *spiral cable wrap* or *spiral tubing*) is protective tubing designed to resist abrasion, allow easy access for maintenance and keep hoses, cables, or wire bundles in place.

Spiral wrap is offered in a variety of sizes, materials and can accommodate a wide range of design and operational requirements. Because it is cut in a spiral-like pattern, it is easily installed without having to disconnect any components. It also provides design flexibility, thereby allowing bundled hoses, cables, or wires the ability to flex, displace or move around—while still maintaining the overall form and neatness of the covered components.

Spiral wrap is offered in forward or reverse cut. Selection between the two is merely a matter of right handed or left handed bundling while applying the wrap to cables, wires, or hoses. Forward cut spiral wrap is cut in a clockwise direction, with a given distance (pitch) between cuts. Forward cut can also be referred to as “right cut” or “right hand” spiral wrap. Reverse cut spiral wrap is cut in a counter-clockwise direction, with a given distance (pitch) between cuts. Reverse cut can also be referred to as “left cut” or “left hand” spiral wrap.



Nearly every industry that requires organization and protection for hose, cable, or wire harnessing utilizes spiral wrap products. Common applications include electronics and control systems, electro-mechanical assemblies, robotics, automated manufacturing systems, various industrial applications, public utilities home electronics, and many others.

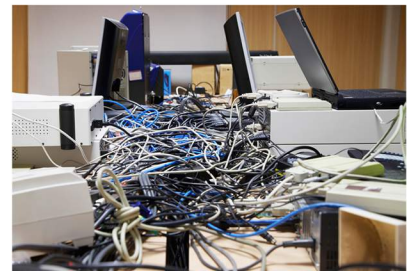
Benefits of Spiral Wrap

Understanding the primary benefits of spiral wrap is best done via a real-life example. Imagine an industrial robotic arm at work in an automotive manufacturing plant. The arm moves in range of motion, flexing and turning for hundreds or even thousands of cycles per shift. The arm has several bundles of wires or cables that bend and flex with each cycle of motion. Without being properly secured, cables and wires can be dislodged, and be subsequently damaged. In addition, in order to ensure proper operation, wrapped bundles must be flexible enough not to hinder the arms movement. In this case, spiral wrap is used to make certain the cables are stable, organized and protected. It also allows maintenance operators ease of serviceability.

Below are some of the primary benefits of spiral wrap:

- Manages multiple hoses, cables, or wires into a single collective bundle

The example of the industrial robotic arm demonstrates how spiral wrap can be used to protect cables for power and control systems, pneumatic or hydraulic lines. The application of spiral wrap allows all to be neatly bundled, without hindering freedom of movement, and allows maintenance staff to easily provide service.



- Maintains flexibility for hoses, cables, or wires constantly undergoing stresses, motion, or tension

Systems that repeat a range of motion constantly exhibit forces on the cabling or wiring. Unlike standard wire ties, spiral wrap allows for flexibility, while keeping all the wiring in place. It also prevents individual wires from disconnecting or “breaking out” of place. Wire ties degrade over time, when a bundle comes loose due to a break, the damage can be catastrophic. Unlike other methods of fastening, spiral wrap comes in a wide range of materials and sizes, and can be tailored to the needs of a specific application.



Benefits of Spiral Wrap (Continued)

- Easy to install and does not require any tools

Installing spiral wrap is easy and no special tools are involved. Simply wrap one end of the spirally cut tubing around a bundle of wires or cable—and then continue wrapping around the length of the component to be bundled. This easy installation also means that it can be installed as an upgrade to existing systems.



- A logical replacement to permanent wraps

Spiral wrap can be installed or easily removed from cable, hose, or wiring bundles. It is both reusable and non-permanent. Compared to heat-shrink tubing, tape, or ties, spiral wrap is efficient and cost-effective as a bundling solution. In addition, because of its removable nature, it makes regular maintenance and repairs faster and more cost effective.

- Adds an additional protective barrier

Depending on the material used for spiral wrap, it offers additional protection for hoses, cables, or wires. It is abrasion resistant, thereby protecting sensitive cables from chaffing, snags or impacts, and can provide varying degrees of flexibility.

- Engineered to offer additional protection to cable bundles

Spiral wrap is offered in a variety of materials; each designed to work optimally in specific environmental conditions. From high UV, to high heat, exposure to corrosives, and situations that require flame retardant properties, spiral wrap can be as diverse as the applications it is used in.

- Available in multiple sizes & materials

Spiral wrap is sold in various sizes to accommodate just about any group of cables, wires or hoses. It's sold in an assortment of outside diameters, wall thickness and pitch distance configurations.

Spiral Wrap Materials & Applications

By manufacturing spiral wrap in different materials, engineers or technicians can choose a type that best fits their design requirements. Each material gives spiral wrap various degrees of performance, protection and flexibility.

There are six primary synthetic polymers typically used for spiral wrap: Polyethylene, Fire-Resistant Polyethylene, Nylon, PTFE, UV-Resistant Polyethylene, and UV-Resistant Nylon.



Polyethylene (PE)

Polyethylene has become one of the most commonly used materials in plastics, films and containers worldwide. Polyethylene can be made with various densities, molecular weights and mechanical properties. Depending on the application, Polyethylene has been used in artificial joints, bulletproof vests, plumbing pipes, fittings, sporting goods and more.

It's a low-cost material that can be produced in large quantity and is a stable economic solution for spiral wrap. Polyethylene offers great flexibility and will accommodate the constant tension and/or compression of cable bundles. It offers a high degree of abrasion resistance and protection from constant scraping and chaffing, especially in environments such as manufacturing and heavy equipment.

Polyethylene is also resistant to alkalines, acids, solvents and other liquids—making it resistant to corrosion. Polyethylene spiral wrap typically operates in a temperature range of -76°F (-60°C) to 190°F (88°C).

Polyethylene is a general application material for spiral wrap. It is installed inside electrical panels, used for general cable bundling in home and commercial electronics, and produced in a variety of colors for organizational management.

Spiral Wrap Materials & Applications (Continued)

Fire-Resistant Polyethylene

Fire-Resistant Polyethylene offers the same performance features and mechanical properties as traditional Polyethylene in spiral wrap. However, it has the added benefit of being fire retardant with self-extinguishing characteristics. Typical operating temperatures for Fire-Resistant Polyethylene range from -4°F (-20°C) to 176°F (80°C). We offer Fire-Resistant Polyethylene in a variety of sizes and lengths and it is UL 1441 (Underwriter's Laboratories) tested.

Nylon

A form of thermoplastic polymers, Nylon possesses silky-like surface properties, lightweight characteristics and flexibility. Nylon can be made in either solid or fiber form, and used in a variety of industries. From a manufacturing perspective, Nylon can be processed using methods that include injection molding, casting, extrusion and even as a filament for 3D printing (additive manufacturing).

For spiral wrap, Nylon is non-toxic, tough and durable—but still allows users to easily manipulate or wrap cable bundles by hand. Combining lightweight qualities, abrasion resistance, and high operational temperature ranges, Nylon spiral wrap is ideal for enclosed environments where the possibility of heat exists. It is self-extinguishing and typically operates over a wide temperature range of -40°F (-40°C) to 250°F (121°C).

Nylon spiral wrap is well suited for high temperature or applications in compact or enclosed spaces, such as electrical cabinets, or under hood transportation and equipment applications.

Spiral Wrap Materials & Applications (Continued)

PTFE (TFE, Polytetrafluoroethylene)

PTFE consists mostly of Carbon and Fluorine, and is widely used for its lubricious characteristics. It is non-reactive to chemicals and extremely heat resistant. At room temperature, it possesses milky clear characteristics, a low coefficient of friction and good mechanical properties.

For spiral wrap, PTFE offers extreme fire-resistance (VW-1). It has a temperature range of -450°F (-268°C) to 500°F (260°C), making it very useful for withstanding high-heat applications such as those found in aerospace, automotive, and military applications. In manufacturing applications, PTFE's temperature capabilities make it the perfect candidate for protecting cables or wires.

Our PTFE spiral wrap is RoHS compliant, UL recognized and able to meet the required standards for various military specifications (Mil-spec). This makes it ideal for use in cabling protection for high temperature engines and equipment and various electrical designs.

Spiral Wrap Materials & Applications (Continued)

UV-Resistant Black Polyethylene

UV-Resistant Black Polyethylene shares the same properties as standard Polyethylene, but is primarily designed for outdoor use. It is produced with an ultraviolet absorber which enables prolonged protection from direct sunlight and other harsh outdoor applications. Furthermore, UV-Resistant Black Polyethylene will not degrade when exposed to sunlight, saltwater, moisture, fuel, oil and detergents. UV-Resistant Black Polyethylene provides ease of application and abrasion resistance.

UV-Resistant Black Polyethylene spiral wrap is ideal for any outdoor application such as construction equipment, generators, outdoor electrical boxes, marine applications, and many more.

UV-Resistant Nylon

UV-Resistant Nylon offers the same properties of standard Nylon but is primarily designed for outdoor use. Its added ultraviolet absorber allows for prolonged exposure to direct sunlight, moisture, saltwater, fuels, oils, and detergents. It also possess many of the same characteristics as standard Nylon therefore making it tough, durable, abrasion resistant and operational over a wide temperature range. UV-Resistant Nylon is also cost effective, lightweight and flexible.

UV-Resistant Nylon spiral wrap can be used for any application that requires protection for cable bundles in enclosed spaces, electrical wiring under the hoods of cars or outdoor electrical equipment.

To see a summary of the material characteristics for each type of spiral wrap offered, please review the [Spiral Wrap Material Characteristics Table](#) on the next page.

Spiral Wrap Material Characteristics Table

Properties	Polyethylene	Nylon	PTFE	Fire-Resistant Polyethylene
Operating Temperature	-76°F (-60°C) to 190°F (88°C)	-40°F (-40°C) to 250°F (121°C)	-450°F (-268°C) to 500°F (260°C)	-4°F (-20°C) to 176°F (80°C)
Abrasion Resistance	22 mg. Loss per M cycles	6.8 mg. Loss per M cycles	7 mg. Loss per M cycles	27 mg. Loss per M cycles
Flammability	Flammable Fire-Resistant Polyethylene available separately.	Self-Extinguishing Non-toxic when exposed to high heat or open flame.	UL VW1 Fire-resistant	UL 1441 94V-2 Self-extinguishing features.
UV Resistant	Only Black Polyethylene is UV-Resistant.	Only Black Nylon is UV-Resistant	Yes	No
Approvals	A-A-59602 Fed. Spec. L-P-390 MIL-P 21922 RoHS Compliant	ASTM D 4066 L-P-410A MIL-T-47287A RoHS Compliant	UL VW1 ASTM D-3295 MIL-T-47287A RoHS Compliant	UL 1441 A-A-59602 RoHS Compliant
Sizes	.125" to 1.5" O.D.	.125" to 1" O.D.	.062" to 1" O.D.	.125" to 1" O.D.
Pitch	.187" to 1.5" Spiral Pitch, Custom Available Depending on O.D.	.187" to 1" Spiral Pitch, Custom Available Depending on O.D.	.062" to 1" Spiral Pitch, Custom Available Depending on O.D.	.187" to 1" Spiral Pitch, Custom Available Depending on O.D.
Colors	Natural, Blue, Brown, Green, Purple, Red, Orange, Yellow, White, Black, Grey, Pink, Pink Day Glow, Orange Day Glow, Yellow Day Glow and Green Day Glow. Not all colors are available in every size.	Natural or Black	Natural / Other colors available upon request	White or Black
Maximum Operating Temperature	190°F (88°C)	250°F (121°C)	500°F (260°C)	176°F (80°C)

About M.M. Newman Corporation

M.M. Newman Corporation is the world's leading manufacturer of [Heli-Tube® Spirally Cut Cable Wrap](#), a versatile expandable plastic cable harness. Established in 1956, we offer the widest range of materials, sizes and colors on the market today. Applications for Heli-Tube® are as varied as the product line. They range from organizing wires, hoses and tubing to protecting high pressure hoses to decorating an endless variety of consumer oriented products. We have a large inventory of Heli-Tube® and can ship your order immediately.

Everything revolves around you, the customer. Our manufacturing, quality control, fast and courteous service, just-in-time (JIT) delivery programs and other innovative services are designed to make us your supplier.