

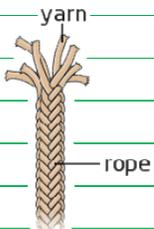
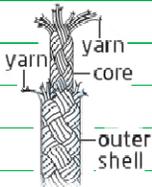
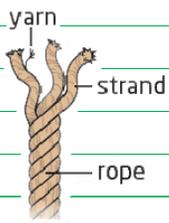
Use this section for power words.

Chuyên Môn ~ Nút Dây (Types of Rope)

Having the right **rope** for a job is just as important as using the right knot. For general use, there are two main factors you should consider when choosing a rope:

Strength: Make sure that the rope is strong enough to hold the load you're going to place on it. Because knots can weaken a rope by up to 50%, it's important to choose a rope that's strong enough to hold at least double the load you plan to place on it.

Static or dynamic: **Static ropes** stretch no more than 6% beyond their original length under normal loads. **Dynamic ropes** can stretch up to 50% beyond their original length. In some circumstances (as in rigging sails), using a rope that won't stretch is a must. In other situations, such as rock climbing, the rope must be able to absorb the force if the climber falls, which makes using a dynamic rope essential. Never buy or use rope unless you know its strength and whether it's static or dynamic. If the rope isn't clearly marked, ask a salesperson.



I. Rope Structure - Different ropes are constructed in markedly different ways. It's important to know these details if you're doing specialized work, such as rock climbing, sailing, or rescue work, because the way a rope's fibers are woven together, known as the rope's **structure**, affects the rope's performance.

A. **Laid ropes:** Made by twisting together fibers into thicker and thicker strands, these ropes are cheap, static, and not very strong. Starts from single yarn, many yarns twisted together to form a single strand and many strands twisted together to form a rope. They should be used only in household situations, such as hanging plants, where little strength is needed and safety is not at stake.

B. **Braid-on-braid ropes:** Also called **sheath-and-core** or **kernmantle**, these ropes have a braided outer sheath covering a core of fibers that can be braided or twisted. The sheath protects the core from the elements and UV rays, both of which can degrade a rope. Braid-on-braid ropes can be static or dynamic, depending on how they were made. Most braid-on-braid rope is expensive, but it's often the best rope for specialized activities like sailing and climbing.

C. **Single-braid ropes:** A single braid, made of at least 2 strands of yarn, these ropes are usually less expensive than braid-on-braid ropes. Since they have no sheath, they're less able to withstand the elements. Nevertheless, single-braid rope is strong and useful in many general applications.

II. Rope Materials - Ropes can be made from natural fibers, such as **hemp**, or from synthetic fibers, such as **nylon**, **polyester**, and **polypropylene**. The material from which a rope is made affects the rope's characteristics and best uses.

A. **Natural fibers:** Natural fibers, such as hemp, are usually found in laid rope. They're cheap, easy to handle, and, due to their slight roughness, are good at holding knots. Natural fibers are UV-resistant but tend to rot or mildew if they get wet. They can also be damaged by oils and solvents. Overall, they're not as strong as ropes made from synthetic materials.

B. **Nylon:** Strong, light, and elastic, nylon can be used to make everything from thick ropes to very thin fishing lines. Nylon ropes can be dynamic or static, depending on how the nylon is woven. Nylon sinks in water and loses some strength when wet. It's also vulnerable to acids and UV light.

C. **Polyester:** Not as strong or elastic as nylon, polyester ropes are generally static. Polyester sinks in water, doesn't lose its strength when wet, and is more resistant to UV rays than nylon.

D. **Polypropylene:** Ropes made from polypropylene float on water, making them perfect for waterskiing and water rescue. They're also water-resistant and won't freeze in cold weather. However, polypropylene ropes are stiff and tend to fail when exposed to high heat or excessive UV rays.

Homework: Memorize rope structures and rope materials.
Answer the following questions.

Questions:

- 1) What terminology is used when describing the end of the line used to tie a knot?
- 2) What is a kernmantle?
- 3) What type of rope material tends to rot and mildew if they are exposed to moisture?
- 4) Which type of material floats on water? Which one sinks?
- 5) If I am in the Arctic and need to tie my herd of winter reindeers, which rope material will I need to use?