Fire hose is considered the most used tool in the fire service. Most hose is made in 50' and 100' lengths. Knowledge of hose and coupling construction provides firefighters a greater understanding of how fire hose will react when pressurized. This knowledge provides firefighters the ability to recognize damage, perform proper preventative maintenance activities, and facilitate repairs of damaged sections.

There are four broad classifications of hose, based upon its intended use:

- Attack Hose
- Relay-supply Hose
- Intake Hose
- Extinguisher Hose

Attack hose is designed for use by trained firefighters to combat fires beyond the incipient stage. Attack hose is designed to convey water to nozzles, master stream appliances, manifolds, and standpipe and sprinkler connections. Relay-supply hose is designed to convey water from a water source, such as a hydrant, to fire apparatus. In addition, relay-supply hose may be used for pumping water between fire apparatus. Relay-supply hose is designed to move large quantities of water at low pressures, thereby; it is generally larger than attack hose. Many fire departments purchase hose that is designed for both attack and relay-supply applications. This type of hose is sometimes referred to as triple-duty.

Intake hose is hose used to connect apparatus to a nearby water source such as a hydrant. There are two groups of intake hose: soft-sleeve hose and hard suction hose. Soft sleeve hose is used to convey water from a pressurized water source, such as a hydrant, to the pump intake on apparatus. Soft sleeve hose lengths vary depending on apparatus design and department philosophies. The majority of soft sleeves measure 15-30 feet in length. Hard suction hose is primarily used to draft water from a static water source. Extinguisher hose is hose used on large fire extinguishers. It can be found on stationary, wheeled, or vehicle-mounted units. There are two groups of extinguisher hose; conventional hose used for pressures under 400 psi, and high-pressure hose used for pressures up to 1,250 psi.

Modern fire hose is constructed by four basic methods. It is manufactured in different configurations such as single-jacket, double-jacket, rubber-lined, thermoplastic-lined, or hard rubber non-collapsing, to name a few.
The four basic types of hose, based on method of construction are:

- Woven-Jacket Hose
- Rubber-Covered Hose
- Braided Hose
- Wrapped Hose

**Woven-Jacket Hose**

There are two types of woven-jacket hose: lined and unlined. Unlined hose refers to hose manufactured with no inside liner or tube. This hose simply consists of an outer woven jacket. This type of hose is used in forestry and standpipe occupancy hose applications. Lined hose is more widely used and can be found in forestry and structural firefighting applications. Lined hose consists of a single or double woven-jacket with a liner or tube. The lining in jacketed hose is constructed of either compound rubber or synthetic thermoplastic materials that are lightweight and high in tensile strength. A phenomenon, called the vortex effect, occurs when water is placed in motion. This effect causes water to move in a clockwise direction, due to the earth's rotation on its axis. This effect will also cause a hose under pressure to elongate and twist to the right (clockwise). Jackets for rubber-lined fire hose are made on a circular loom with shuttles that follow a circular path and weave a seamless tube or jacket by traveling through a number of lengthwise cords known as the warp. The warp cords protect the hose lining from pressure and abrasion. The shuttles hold the filler cords and deposit these cords in the jacket similar to a coiled spring. The filler cords protect the hose lining from pressure and twist. These jackets are woven in a continuous length and are later cut in sections of required length.

The liner in jacket-woven hose reduces friction loss caused by the passage of water through the hose at high velocity. The function of the woven jacket is to protect the liner from damage and provide strength to the hose section. Woven-jacket hose may be single jacket or double jacket depending on the desired protection level required of the liner. Woven-jacket hose is made from cotton, rubber, synthetic materials, or a combination of these materials. The liner and outer jacket are bonded or vulcanized together with an adhesive activated by steam and heat.
Woven hose is lined with a composition rubber tube, although some neoprene or chloroprene tubes are used. Natural rubber is seldom used for present-day manufacturing of fire hose tubing, but all types of artificial rubber are still commonly referred to as rubber. The method by which the inner tube is formed is either by an extrusion process called "extruded tubes" or by a lapping process called "calendared tubes". Extruded tubes are produced by squeezing rubber through a circular die from a screw-fed machine similar to a meat grinder. The diameter and wall thickness is determined by the design of the circular die.

Calendered tubes are produced from a flat sheet stock cut to the correct width. The edges are then folded flat and vulcanized to form a cylinder. There may be several layers of flat sheet stock used, but the wall thickness is determined by the gauge of each rubber sheet and the diameter is determined by the width of the flat sheet stock.

**Rubber-Covered Hose**

In an effort to produce a lightweight yet durable hose, manufacturers have developed a rubber-covered hose. This type of hose has no definable liner or jacket. In fact, the traditional liner and jacket look to be one. The two most common processes used for producing rubber-covered hose are: *through the weave* and the *three-ply process*. Through-the-weave process is accomplished by passing a single, circular-woven fabric tube through an extrusion machine that coats the tube with a rubberized material. Another way to produce rubber-covered hose is to vulcanize the inside of a circular-woven fabric tube with nitrile rubber, then coat the outside with a protective layer of synthetic rubber. Rubber-covered hose is easily identified because it lacks the appearance of an outside woven jacket.
Braided Hose

Braided hose is used in the manufacturing of fire extinguisher hose and booster hose. Braided hose is a rigid, non-collapsible hose made of several alternate layers of braided yarn and rubber. The production of braided hose is similar to the three-ply process used in the manufacturing of rubber-covered hose. It is often referred to as reinforced, rubber-covered, rubber-lined hose.

If it is required to withstand extremely high pressures, the jacket is reinforced with a wire mesh. The braided jacket gives the hose extra strength and durability.

Wrapped Hose

Hard suction hose, also known as intake hose, is constructed by wrapping several layers of diagonally cut fabric around an extruded rubber tube. A rubber compound is applied between the layers to hold them in place. A heavy gauge wire is coiled around the hose between the layers to prevent collapse of the hose during drafting operations. Wrapped hose is heavy and not very flexible. Some hard suction hose is made in a corrugated design to make them more flexible.