



Felt is a non-woven textile that is produced by matting, condensing and pressing fibres together. Felt can be made of natural fibres such as wool or synthetic fibres such as acrylic. There are many different types of felts for industrial, technical, designer and craft applications. While some types of felt are very soft, some are tough enough to form construction materials. Felt can vary in terms of fiber content, colour, size, thickness, density and more factors depending on the use of the felt.

FELTING



Wet felting

Felt is made by a process called wet felting where the natural [wool](#) fibres, stimulated by friction and lubricated by moisture (usually soapy water), move at a 90 degree angle towards the friction source and then away again, in effect making little "tacking" stitches. While at any given moment only 5% of the fibres are active, the process is continual, so different 'sets' of fibres become activated and then deactivated, thereby building up the cloth.

This "wet" process takes advantage of the inherent nature of wool and other animal hairs. The hairs are made up of unidirectional scales, and they are also naturally kinked. It is this combination which reacts to the friction of the felting process, forcing the scales on the hairs to lock together and thus causing the phenomenon of felting. It tends to work well with wool fibres because their scales, when aggravated, readily bond together.

It is also possible to produce artificial felts. If made using the wet method, an artificial felt will contain a minimum of 30% wool fibres with the rest being artificial fibres. This is the minimum composition necessary to hold a fabric together with the fibres alone; it would be difficult to form a stable fabric by hand below this ratio. Wholly artificial felts are actually needle-felts (see below).



WET FELTING



Carroting

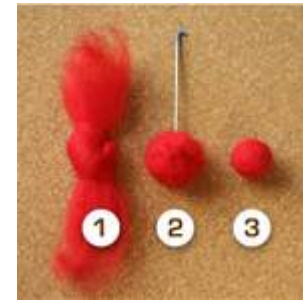
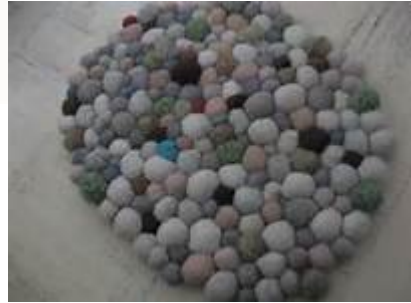
From the mid-17th to the mid-20th centuries, a process called "carroting" was used in the manufacture of good quality felt for making men's hats. Beaver, rabbit or hare skins were treated with a dilute solution of the [mercury](#) compound [mercuric nitrate](#). The skins were dried in an oven where the thin fur at the sides turned orange --- the colour of carrots. Pelts were stretched over a bar in a cutting machine and the skin sliced off in thin shreds, the fleece coming away entirely. The fur was blown onto a cone-shaped colander, treated with hot water to consolidate it, the cone peeled off and passed through wet rollers to cause the fur to felt. These 'hoods' were then dyed and [blocked](#) to make hats. This toxic solution and the vapours it produced resulted in widespread cases of [mercury poisoning](#) among [hatters](#), possibly giving rise to the expression "[mad as a hatter](#)".





Needle Felt

Needle felting is a popular fibre arts craft that creates felt without the use of water. Special needles that are used in industrial felting machines are used by the artist as a sculpting tool. While erroneously referred to as "barbed" needles, they in fact have notches along the shaft of the needle that grab the top layer of fibres and tangle them with the inner layers of fibres as the needle enters the wool. Since these notches face down towards the tip of the needle, they do not pull the fibres out as the needle exits the wool. Once tangled and compressed using the needle, the felt can be strong and used for creating jewelry or sculpture. Using a single needle or a small group of needles (2-5) in a hand-held tool, fine details can be achieved using this technique, and it is popular for 2D and 3D felted work.



NEEDLE FELTING





Nuno felting is a fabric [felting](#) technique developed by Polly Stirling, a fiber artist from New South Wales, Australia, around 1992. The name is derived from the Japanese word "nuno" meaning cloth.^[1] The technique bonds loose fibre, usually [wool](#), into a sheer fabric such as [silk](#) gauze, creating a lightweight felt. The fibres can completely cover the background fabric, or they may be used as a decorative design that allows the backing fabric to show. Nuno felting often incorporates several layers of loose fibres combined to build up colour, texture, and/or design elements in the finished fabric.

The nuno felting process is particularly suitable for creating lightweight fabrics used to make clothing. The use of silk or other stable fabric in the felt creates fabric that will not stretch out of shape. Fabrics such as [nylon](#), [muslin](#), or other open weaves can be used as the felting background, resulting in a wide range of textural effects and colours.

Nuno Felted Jacket by Elynn Bernstein / A Mano Studios

Nuno felt is an extremely versatile created fabric. It can be made in many weights to accommodate many different uses. It can be made much lighter in weight than traditional all-wool felt accounting for its wonderful movement and drape. Because of the range of weights possible with the cloth very fashionable and exciting garments can be made.

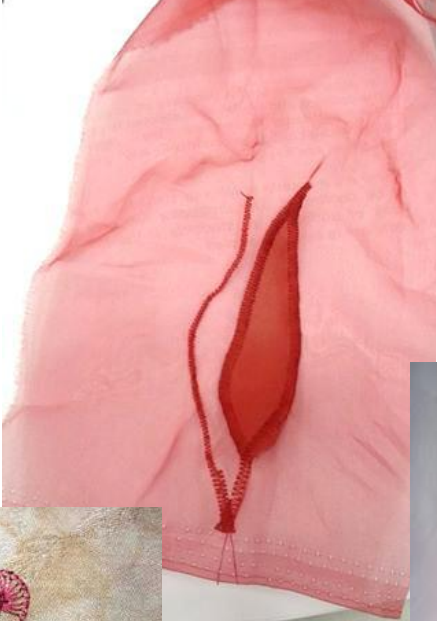
You would make a very light weight nuno fabric by laying one layer of loose fiber onto an open weave fabric base, thus being suitable for a summer dress. A much heavier nuno fabric results from laying 3-4 layers of loose fibers onto an open weave base making fabric suitable for a winter coat. A pair of boots could be made using even more layers of fibers.

Wool is only one kind of fiber that can be used in making this nonwoven cloth. There are hundreds of different wools and fibers to choose from, each with its own unique properties and handling abilities. Different fibers create different surface textures. Other types of fiber that will felt other than sheep's wool are: camel, llama, alpaca, Mohair goat, Cashmere goat, yak, Angora rabbit, beaver, dog, cat, human hair (think dreadlocks).



FELT APPLICATIONS

Applique



LASER CUTTING-INDUSTRIAL FELT

