

Woolgatherer Carding Mill

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Exceptional Products and Service

The staff at Woolgatherer Carding Mill strives to provide exceptional service and products. As one of the larger wool batting producers in the USA, Woolgatherer is able to produce quality products at competitive prices. Woolgatherer also cooperates with each customer to create the perfect batting for their needs.

Woolgatherer follows wool through every stage from the pastures to the finished product. Woolgatherer staff is meticulous about creating the best product possible and following our industry-leading principles for sustainability and quality.



Wool Storage unit overlooking Mt. Shasta.

Re-building the Domestic Wool Industry

Waves of cheap synthetic materials took the US by storm in the latter half of the 20th century. Nylon, rayon, polyester and acrylic became instantly popular with manufacturers as they are easy to produce in large batches with little variation. This boom caused a decreased interest in variable natural fibers like wool and cotton.

In response to the shrinking demand for wool, many farmers stopped raising sheep. With less wool being produced, carding mills, scouring mills and other wool processing facilities slowly began to shut down or focus on different fibers.

Some US farmers continued to raise sheep, but found that wool was so de-valued that it could barely be sold for enough money

to cover shearing costs. These farmers selected flocks that produced better meat and higher quantities of lanolin and paid less attention to wool quality.



Bringing the USA back into the global wool market.

During this period, the number of sheep in the US fell from a high of 56.2 million in 1942 to 8.5 million in 1996. In 2000 less than 1% of the world's wool clip was coming from the United States. More than 50% came

from China, New Zealand and Australia.

This leads us to the origin of Woolgatherer Carding Mill.

Patrick Holland began raising sheep to better train his award-winning sheep dogs. As his first shearing season came around, Patrick was surprised when he was unable to find a buyer for his wool. As he explored the issue and began to see the industry's problems, Patrick was inspired to purchase and re-build a defunct wool carding mill. He opened his doors in 1999 as Woolgatherer Carding Mill.

Woolgatherer was built on the foundation of cooperating with regional US wool-growers and creative businesses to find a new market for wool. We continue to work toward this goal today.



The end customer relies on us to provide them with accurate information.

Major steps in producing our wool batting

1. Raising healthy sheep
2. Shearing
3. Skirting, grading and baling
4. Blending and Scouring,
5. Picking and carding

The world record for shearing sheep is 839 lambs in 9 hours by Rodney Sutton of New Zealand

Understanding Wool Processing

1. Regional Wool Growers

We source the majority of our wool directly from family farms in Oregon and California.

Having a personal relationship with each of our wool-growers is mutually beneficial. We are able to request that the farmers work toward our chemical and cruelty-free growing criteria (See page 6). We can also give farmers our specific wool

preferences (such as how fine or coarse, or the amount of crimp) so that they can alter their flocks to fit our specifications. The growers are rewarded with guaranteed premium rates for their wool.

Our Premium EcoWool blend is the combination of 20 growers in the Pacific Northwest. Our other wool blends are sourced from US growers who are working towards our growing criteria. Additionally, when demand is high, we purchase

wool from a very high-quality wool pool in New Mexico. All of our wool is among the cleanest and highest quality in the world. We are one of the only high-capacity producers in the USA using domestic wool.

By working closely with regional growers we are able to stabilize prices and quality. By avoiding intercontinental-transport, we are promoting a regional industry with a smaller ecological footprint.



2. Shearing

Most shearing happens in the spring and summer when a sheep no longer needs its warm winter coat. If it is not removed, a sheep's coat can become dangerously heavy and warm. In addition to causing heat stress, wool can grow over the sheep's eyes causing "wool-blindness" or can increase the risk of injury such as drowning.

Shearing quickly and without cutting the sheep is a skill that takes practice. We work with the most skilled shearing teams in the region to make sure that shearing goes smoothly. These skilled shearers can remove a sheep's fleece in a mere 2 minutes. Generally a fleece is removed in one intact piece.

3. Skirting, Grading, and Baling

Once a fleece is removed from the sheep, it is passed to a skirting table. At the skirting table dirtier parts of the fleece from the sheep's belly and rear are removed. This less desirable wool is put aside and sold for different purposes.

Wool is also "graded" at this time. Wool grade is determined by fiber thickness and the amount of debris

in the wool. This information helps buyers to purchase the correct quality and type of wool.

At this point the wool is called "grease wool." Grease wool is still quite dirty and greasy with lanolin. Lanolin is the oil that sheep produce to protect their skin and make their coats waterproof.

Skirted and graded grease wool is stacked and pressed into bales for more efficient shipping. Each bale contains about 500 lbs of grease wool from up to 100 sheep.

When all of the spring clip is sheared, skirted, and baled, it is pooled at Woolgatherer Mill and labeled for transport.

4. Mixing and Scouring

Grease wool must be washed before use in a process called scouring. At the scouring facility, different types of wool are mixed together to create our special wool blends. Our wool is scoured and mixed at one of the few scouring facilities remaining in the USA.

At the scouring facility workers open bales of wool, pull out each fleece, and skirt the wool one more time. Workers also blend bales together in a carefully planned ratio so that our batting will be consistent, fluffy, and resilient.

Next, the wool goes through huge

shakers. The shakers remove loose dirt before the wool is plunged into soapy tubs of water.

At the scouring plant, our wool is washed according to our special requests. The soap that cleans the wool is mild and biodegradable. We also ask that the scour train is slowed down so that the wool is more thoroughly cleaned and rinsed. Slowing the wash process removes dirt and residual detergent more thoroughly.

The wool passes through tubs of increasingly clean water until it reaches the end of the scour train. The wool is carefully inspected

once again to be sure that it meets the highest standards. It is then dried and baled for return to Woolgatherer.

After removing so much grease and debris, we are left with about half the weight of wool we sent to the plant!

The scour facility that cleans our wool is running on a recently upgraded machine that is much more efficient than older machines. It is able to run more wool, use less water, and also recycles much of its waste water.

The scouring train performs much like a washing machine, except the wool moves between cycles on a conveyor belt



To produce our exceptional batting, fleeces are skirted at three different times: during shearing, before scouring, and after scouring.



5. Wool Picking and Carding

After scouring, the wool is shipped back to Woolgather Carding Mill where it is transformed into a finished product. We run the wool through a unique series of machines that comb and fluff the wool and remove remaining vegetable matter.

Little burrs and bits of plants get tangled in wool and will not come out with simple washing. Many facilities use harsh chemicals to remove the matter. In order to avoid these chemicals, Woolgatherer purchases cleaner wool, skirts multiple times, and also

relies on an incredible carding machine to create unbelievably clean wool batting.

The first step in carding is to run the compressed, baled wool through a “picker” machine. The picker pulls the wool bale apart as it continues to mix and blend the wool.

After picking, the wool is fed into carding equipment. Wool moves methodically from coarse to fine processing stages. Huge metal cylinders crush plant matter and help

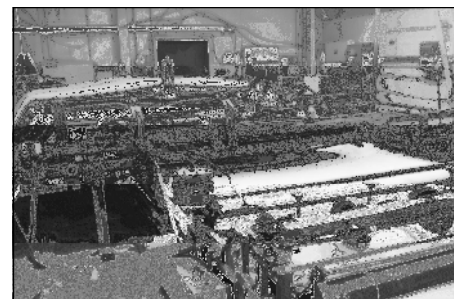
to remove more debris. Three complex drum carders comb the wool fibers repeatedly. The carders loosen and comb out plant matter as well as short and weak fibers. The detangled wool is eventually brushed into thin sheets with all fibers aligned in one direction.

Finally, the “lapper” layers the thin sheets of wool until they reach the desired thickness and width of batting. The finished batting is fed onto a roll and packaged in craft paper and plastic.



Left: Two drum carders spinning and working wool fiber. Different sized cylinders have different functions.

Right: The “lapper” layering thin sheets of wool into full-sized batting.



The Wahl ranch is located on the southern Oregon coast. The farm's expansive green pastures overlook the Pacific Ocean. The farm has been in the Wahl family for over 130 years.

Sheep grazing on the White House Lawn during WWI. Their wool was sold to raise money for the Red Cross.



Wool and animal cruelty
Some celebrities and animal rights groups oppose wool products. The primary cause of this relates to processes used with Merino sheep raised in Australia. We oppose cruelty to animals and these controversial processes. We do not use Merino or Australian wool. (See Mulesing on Page 5)

Spotlight on Grower Terry Wahl

Terry Wahl can tell you how many different species of birds he has seen on his expansive Oregon coast property. More than 30% of the Wahl property is off-limits to sheep and other livestock, left largely unbothered for all types of wildlife.

The Wahls demonstrate the ideal of land stewardship. In addition to meticulous daily rotation of their flocks of sheep, the Wahls have worked hard over the years to restore and preserve the ecosystem they live in. Projects on their land include native plantings, river restoration, fencing to protect sensitive areas, and restoration of marshes.

The USDA recently recognized the Wahls as leaders in conservation. This is nothing new — the Wahls have been recognized many times over the years for their efforts.

The Wahl farm currently supports 6,000 sheep. The Wahls also raise cattle and harvest some forest products for extra income.

This family has weathered many changes in the wool industry. Years ago they paid \$.25 per sheep for shearing; now they pay \$2.60 per sheep.

Meanwhile, the sale price of wool has gone down.

We visited the Wahl Ranch during the summer shearing in 2006. Nearly 20 members of the Wahl family gather to organize the shearing event. Eight to ten professional shearers are also present.

We love working with the Wahls. We hope that the wool market continues to grow, allowing us to support them with better prices for better wool.



Master Shearer — John Quimby

John Quimby started shearing in the 1980's while he was raising sheep for a high school project. 25 years later, John is a regional shearing expert. He teaches shearing courses and travels the western USA to shear sheep at farms and county fairs.

After taking John's week-long shearing course, new students should be able to shear 60 sheep per day. Experts like John aim to shear more than

200 sheep in an 8 hour day — this averages about two minutes per sheep. During his busier years, John would shear 30,000 sheep annually. By our math, that translates to an astounding half of a million sheep in his lifetime!

A farmer himself, John has seen his share of changes in the wool and livestock industry. John recalled this story a sheep farmer told him: "When he was a kid you could

make enough money selling the wool from 300 sheep to go buy a new Ford pick-up. Now it would take all of the wool in Oregon."

Also, John has noticed that few young people are taking on the trade of shearing these days. After a lull in the demand for wool and with so few farmers raising sheep, no one seemed to think of shearing as a profitable skill to learn.

Growing Criteria for Eco Wool



What makes our wool EcoWool?

We have worked with our primary wool providers to develop an evolving set of guidelines for EcoWool producers. The following guidelines encourage growers to produce higher quality wool that is grown in a thoughtful, sustainable manner. We also carefully choose and blend specific types of wool to make our batting exceptionally soft and resilient.

PROPER GRAZING METHODS: Our growers rotate sheep to different pastures to allow vegetation to recover from grazing. Our wool also comes from farms that do not overstock their pastures. Overstocking and infrequent rotation produces soil erosion, higher amounts of invasive plants, and the need to bring in outside feed. Proper grazing techniques reduce soil erosion, create higher quality wool, and reduce the risk of sheep acquiring internal parasites.

We know most of our growers personally, and we talk with them about these guidelines before purchasing their wool.

PREDATOR-FRIENDLY: We encourage our growers to use trained sheep guardian dogs (rather than trapping, poisoning, or shooting) and the inclusion of other larger animals, such as llamas, to protect their flocks from predators. Predators play an important role in maintaining healthy ecosystems.

HEALTHY VETERINARY PRACTICES: Only certain kinds of medications and supplements can be used to treat Eco-sheep. We encourage alternative caring methods to keep sheep healthy with fewer chemicals. Generally, sheep raised in open pastures are healthier and require less veterinary care.

CHEMICAL CONTROL: We oppose the use of herbicides and pesticides on fields where sheep will be grazing. We are able to determine if wool has been in contact with harmful chemicals through random spot-testing.

SPECIFICATIONS FOR BREED,

COLOR, STRENGTH AND MICRON-WIDTH: Our wool blends use wool from six to eight different breeds of sheep. Our blends are chosen to create strong, durable wool batting that retains its loft and resiliency longer. We use a mix of coarse and finer wools with varying crimps to achieve our special batting.

SKIRTING: Skirting is the process of removing less-desirable wool from the belly and rear of the sheep. This wool is separated on a skirting table and sold to other clients. Our wool is skirted at the time of shearing and checked again at the washing facility.



Wool Industry Practices That WE OPPOSE!

- **Carbonizing:** Wool fibers are dipped in strong acids to dissolve residual vegetable matter.
- **Chemical Crimping:** After carbonizing, wool fibers are unnaturally straightened and require a chemical "perm" to regain their coiled, crimped structure.
- **Dipping:** At many farms all sheep are subject to a bath in a pesticide solution. We recommend a more holistic approach.
- **Bleaching:** In order to get the purest whites and brightest colors, most wool fibers are bleached and dyed. Our batting is the color of natural white wool.
- **Harmful shearing:** We work with highly skilled shearing crews to make this process as quick and harmless as possible.
- **Mulesing:** Cutting patches of skin off sheep (to discourage infection and flies from laying eggs in the folds) is used primarily with Australian Merino sheep. None of our growers practice this method.
- **Overgrazing:** In addition to harming the land, overgrazing lowers overall wool quality. More invasive plants begin to grow and can increase the amount of vegetable matter in the wool. More vegetable matter often makes carbonizing necessary.

Wool Terms

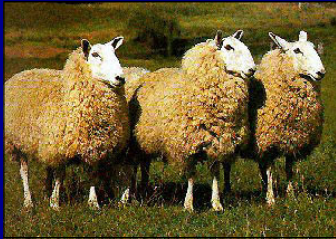
FLEECE: A sheep's coat of wool

SHEARING: Cutting off the fleece of the sheep

SCOURING: The process of cleaning raw wool

CARDING: Combing the wool fibers in one direction and breaking loose tangles and debris

LANOLIN: Natural oil found on wool



We use a blend of wool from the following breeds:

Dorset
Romney
Cheviot
Corriedale
Columbia
Suffix

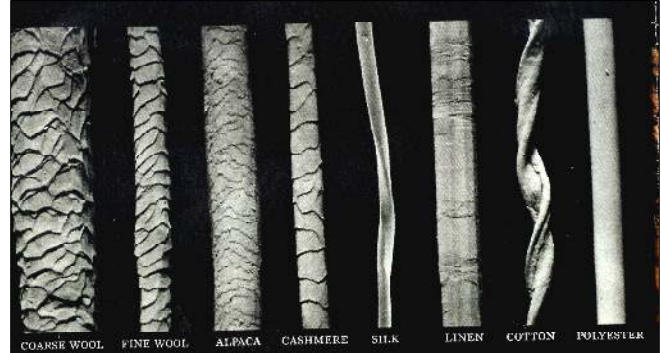
Rediscovering a Remarkable Fiber

The world seems to be rediscovering wool for traditional as well as creative new uses. As consumers become increasingly wary of chemically-synthesized petroleum fabrics and foams, we are seeing a renewed interest in wool.

Wool has many remarkable qualities that make it perfect for many uses. Our EcoWool batting is currently used in bedding, furniture, toys and a myriad of other products and crafts.

WOOL FACTS

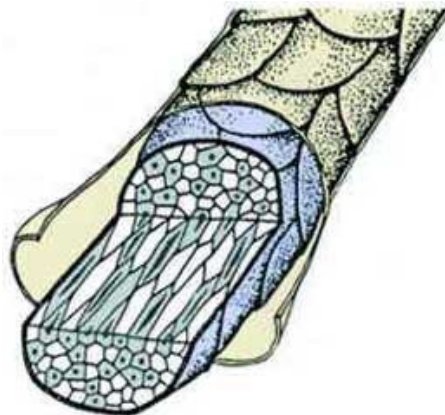
- Wool is extremely long-lasting. It can bend thousands of times without losing form.
- Wool is water resistant.
- Moisture is wicked to the inner surface of wool fibers. This allows wool to feel dry while it holds 30% of its weight in water.



Wool fibers can be thick or extremely fine. Different types of wool are optimal for different uses. Wool batting is generally made of thicker fibers than clothing.

- Wool is temperature-regulating. Wool garments are used from the hot desert to the coldest climates.
- Wool fiber is completely natural and 100% biodegradable.
- Wool can naturally pass flame tests used in the bedding industry without the addition of chemical flame retardants.
- Wool resists mildew & mold.
- Wool bedding reduces and discourages dust-mites.
- Wool fibers are resistant to dirt and stains.
- Wool bedding helps people sleep more soundly.
- Wool carpets and bedding act as natural air purifiers.

What Makes Wool Different?



Wool owes many of its unique beneficial properties to the microscopic structure of the fibers.

Overlapping scales and natural lanolin on the outside of wool fibers make wool durable and resistant to dirt, dust-mites, and mildew. Hollow tubes in the center of the fiber wick moisture away from your skin and hold water without making you feel clammy.

Wool can evaporate moisture in either a warming or cooling manner. This incredible property maintains warmth in the winter and coolness in the summer.

Woolgatherer's Special Wool Blends

PREMIUM ECOWOOL: This is the blend that made us famous. We use only locally-sourced wools that are carefully blended to create the highest quality batting. This blend is often cleaner and loftier than the organic, but the wool is not certified organic.

ECOWOOL: With slightly less stringent sourcing requirements, this wool still manages to be one of the cleanest, purest wool fibers available on the market. We work with growers who are transitioning to our EcoWool standards and are a little farther from Oregon (Utah, New Mexico etc.) to create this wonderful wool blend.

ORGANIC: Wool is purchased from certified organic domestic wool growers. With very limited availability of this resource, this blend can be subject to greater variation. Wool is also scoured with organic agents and processed at our exceptionally clean carding mill.

GREY/DARK: We occasionally offer blends of naturally colored wool. The color varies from brown to grey or almost black. Some of our bedding customers like the structure of this blend and find it to be more resilient than the white wool blends. Others like this wool for its unique color.



Our wool is the highest quality, cleanest batting available on the market today.

Is this batting carded or garneted?

Close-up of vegetable matter (VM) in otherwise clean wool



Wool batting coming out of the "picker" is still very lumpy.



Garneted batting with its more "web-like" structure.



Woolgatherer's carding machine originally produced wool yarns. It was later converted into a batting mill. Machines that card wool for yarns remove much more vegetable matter than batting mills, producing cleaner and more refined wool. Yarns cannot be properly spun with vegetable matter in the fibers. Woolgatherer's unique mill creates the cleaner, more refined fiber needed for yarn, but lays it into sheets of batting.

In addition to using finer wire combs than most mills, Woolgatherer uses more of the combs. Our carding machine has three large processing assemblies; most other mills use one or two. Additionally, midway through our carding process, all wool is run under an extremely heavy metal cylinder called a "Peralta." This cylinder crushes vegetable matter but does not damage wool. The crushed vegetable matter is easier for the metal combs to remove as the wool moves into the second stage of combing.

We are familiar with many other wool batting processors; they all use "garneting" machines rather than "carding" machines. Garneting machines use metal teeth instead of fine wire combs to brush the wool into batting. These teeth work the wool less thoroughly which leads to less removal of vegetable matter. The metal teeth also brush the wool into a "web" shape rather than the neatly aligned fibers of carded wool. Garneting machines can make lovely wool batting, particularly if the process begins with clean, high-quality wool.

As one can guess, running wool through more complex machinery takes longer. In order to fill the growing demand for our products, we are beginning to cooperate with garneting mills in the region. Our wool is so clean to begin with that simpler garneting machines produce excellent batting for most furniture and bedding uses. Some of our customers even prefer the structure of garneted batting.

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The Rise of Organic Wool Batting

Woolgatherer Carding Mill is one of the US industry leaders in promoting and producing organic wool batting.

- In the US no facilities are certified to produce organic wool batting. We are one of the few mills in the US that doesn't run synthetic fibers or pesticide-laden cotton on our machines. Woolgatherer is currently in the process of becoming an organic processing facility.
- Some manufacturers claim to be using or producing organic wool, but the wool may not be processed in a certified organic manner. Often, once the wool leaves the farm it is no longer being handled according to organic standards.
- The wool market has seen an explosion of interest in organic wool batting and material. The US is still

working on guidelines for organic wool processing. At this time most organic wool on the market is exclusively imported from New Zealand and Australia.



Demand for organic wool batting is growing much more quickly than the supply.

- Because it takes several years to certify a farm or processing facility as organic, the slim US wool industry is struggling to fill this void in supply.
- In the meantime, Woolgatherer Mill is working with current suppliers to promote organic certification and also looking to import organic wools until this market can be supplied with domestic sources.
- For many wool suppliers, organic certification is an expensive and time-consuming process that offers little financial incentive. Many growers follow guidelines that are nearly as strict as organic standards. EcoWool is a wonderful product that offers these "uncertified organic" farmers a market for their wool products.