

The ageing of liners



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Liners The Vital connection

Rubber Compounds and Deterioration

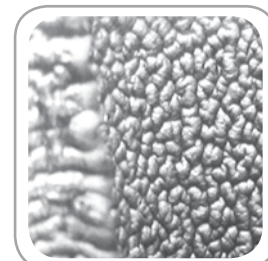
Rubber as a compound can come in various formulations depending on whether the rubber is natural, synthetic or a blend of the two. Depending on the use of the rubber in the milking system, the various components (liners, milk tube, air tube, bends, plugs, straps etc), can all be made of differing formulations.

As liners are the only part of the milking machine that comes in contact with the cow, it is important that the choice of rubber formulation for liners is best suited to massaging your cow's teats allowing for the continuous flexing while maintaining its physical properties.

For this reason DeLaval liners are made from a blend of nitrile rubber. This ensures the liners give the best milking performance and gentle teat massage for optimal milking out, while still maintaining some resistance to the factors that cause the liner life to be reduced.

However, regardless of the formulation, all rubber deteriorates over time. This length of time varies depending on the rubber formulation, rubber use and exposure to certain factors. Some of the factors that reduce rubber life include **UV light and ozone** in the atmosphere, **detergents, disinfectants and heat** introduced in the cleaning cycle of milking, **liner movement** during milking and the **absorption of milk fat** from milk. All of these factors play a role in ageing liners.

In each farming situation the exposure to all of these factors are different. This is why we recommend that liners are replaced at 2,500 cow milkings or six months of age whichever comes first, for optimal milking performance.



Why it 'Pays to Replace' your Liners on time.

Changing liners every 2,500 cow milkings has been proven to improve productivity and profitability of the farmer through three major areas;

- Improved Milking Hygiene
- Improved Milking Performance
- Improved Udder Health

Milking Hygiene Evidence

The liners inner surface increases in roughness with age. This enables any bacteria in the liners to survive the cleaning and sanitation process, by hiding in these microscopic cracks. This means there is an increased risk of high total bacteria count. Research work has shown that following the milking of an infected cow with S.aureus, infections can spread to the next 6-8 cows, through a contaminated liner – even if it is in good condition. Reference – THUM et al., (1975)

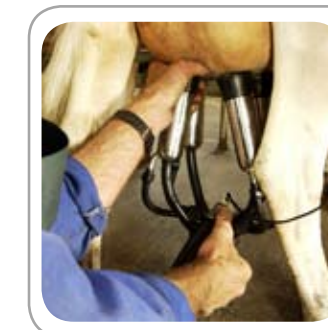
Milking Performance Evidence

The massage force of overused liners is reduced in comparison to good liners. Worn liners will account for an increase in time for milk flow of about 2 to 2.5 minutes (or 29%), for individual cows. Reference – SCHWIDERSKI (1986))

Worn out liners is often the reason for increased strippings and decreased total yield. Milking with over used liners will reduce milk yield by 4 to 5%. Reference – E. O'CALLAGHAN, (1994)

Udder Health Evidence

Worn liners result in reduced stimulation of the teat end causing more congestion and oedema. This reduces the teat's ability to stop bacteria from entering. This means that the teats have been exposed to vacuum for a longer period of time. As a consequence, the defence mechanisms of the teat will be weakened. This weakened defence mechanism, along with incomplete milking out, increases the teats predisposition for new infections. References – EBENDORFF et al., (1986); ZIESACK et al., (1986).



A liner range to suit all farming demands

The Standard Liner Range

The standard liner is designed and tested for heavier type claws. These liners fit the standard cut off nipple claw used extensively in Oceania.

This family of liners offers a range of dimensions so you can choose a liner to suit your shell, claw, jetter and herd teat size. The variations of dimensions occur in most aspects of the liner – the mouthpiece, the barrel length and diameter, the tailpiece diameter and the length of the short milk tube, to name a few.

This means that within our range of standard liners, we have a solution for your needs and it is this versatility that means DeLaval standard liners will fit most clusters in today's marketplace.

DeLaval standard liners all feature reinforcing on the short milk tube, where the liner fits over the nipple. This reinforcing means that the risk of liner punctures from the bevelled nipple on the claw is reduced.

All liners are monobloc liners ensuring a smooth transition between the liner barrel and short milk tube. This ensures smooth milk flow from the teat to the claw and reduces the frequency of impacts.



The various tailpiece designs have reinforcing where the liner attaches onto the nipple. This reinforcing reduces the incidence of liner punctures.



Mouthpiece dimensions vary from 18mm to 24mm in diameter. These dimensions allow you to select a liner to suit your herd's teat size, ensuring optimal milking performance.



All DeLaval standard liners are designed to attach to a claw with a standard cut off nipple design.



Milking in Harmony

The Harmony Liner Range

Harmony Liners are the key to enable the farmer to opt for a lightweight-milking cluster, like the Harmony Plus cluster. These liners have several key features that are unique to DeLaval and give the farmer benefits in milking performance.

All Harmony Liners have a micro-textured barrel. The micro-texturing assists the even passage of fat (from the skin and milk), through the liner. Without this micro texturing the fat is absorbed into the rubber, causing it to swell. This destroys the rubbers elasticity and milking problems result. Micro texturing minimises the swelling and ensures optimal performance throughout the life of the liner. Only Harmony liners have this micro-textured barrel, which is patent protected by DeLaval.

Harmony liners also have a unique shutoff and attach to the claw via a nipple-less connection. This key feature of the liners means that less liner punctures occur due to the fact that there is no sharp nipple to puncture the liner prior to its lifetime expiry. It also removes any issues with regards to effective cleaning, as there is no connection point for soil to build up between the nipple and the liner. The nipple-less connection also allows a wider passage of milk (12.5mm), through the short milk tube, giving the fastest milk flow away from the teat of all liners available today.



The short milk tube's wide diameter helps eliminate restrictions and minimises vacuum fluctuations under the teat. Optimised liner design mimics the calf's natural suckling action and promotes good udder health.



Liner microtexture reduces material swelling giving more consistent milking.



Nipple-less design allows an unrestricted milk flow to the claw and stable vacuum levels during the entire milking cycle. This design results in no liner cuts.



Precision manufacturing

DeLaval Liners

All DeLaval liners follow our strict guidelines in quality and performance. Each DeLaval liner is made according to a DeLaval approved specification.

Whilst some liners may be manufactured in countries other than Sweden, the technology in our rubber compounds, liner moulds and milking performance remains to our high standard.

This means that when you buy a DeLaval original liner you can rest assured that in any country around the world the liner and rubber formulation has been approved by DeLaval.

An example of our strict standards is that all DeLaval liners meet with BfR approval. This is a world wide recognised standard that means our rubber compound is approved for use in contact with food products, in any country. We refer to this as having food grade rubber. Many companies who produce rubber in the dairy industry do not have BfR approval. They run the risk of introducing dangerous substances into the milk. Using DeLaval liners will mean you have peace of mind, ensuring the highest quality of milk, knowing that your choice of rubber ensures a safe food product for families to drink.

