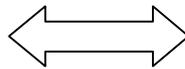


## Needle Life

One of the most asked questions I have experienced during the years of travelling and giving needle seminars to the apparel industry is: How long does a sewing machine needle last? Interestingly enough people from the shoe and leather industry where they really put wear and tear on the needle never asked me this question.

Generally my answer is: Between one minute and one month.

It can happen that you change a sewing machine needle because it was broken, start the machine and within the next moment the needle breaks again.



These two pictures have one thing in common. On the left side you can see the Taipei 101 Tower (508 m, 1667 ft.) compared to a normal sewing machine needle. The ratio of thickness to length is approximately the same. Everybody has an imagination of how difficult it is to construct a tower like the Taipei 101 and to make it rigid and stable in order to withstand heavy winds and earthquakes. The same applies to a sewing machine needle. But the sewing machine needle besides the bending resistance has one additional force to bear which is the penetration force, i.e. the load which is put on top of it by the sewing machine in order to be able to penetrate the sewing good.

From this comparison it becomes very clear that a sewing machine needle really is a piece of engineering artwork. On the other side it is clear as well that the needle – if treated the wrong way or overloaded – will be destroyed and end its life.

There are as many parameters influencing needle life as there are sewing factories on this planet! Literally!

So let us ask what needle life means and which parameters are influencing the life of a sewing machine needle.

## 1 Definition of Needle Life

During the sewing process different forces and influences are attacking the sewing machine needle. There might be

- Abrasive forces
- Penetration force
- Influence of operator
- Influence of sewing thread
- Influence of sewing machine

to name a few. Everyone of these forces and influences are the enemies of needle life. They might destroy the point, abrade the needle surface or even break the needle. Some of these influences and forces and their effects are directly visible, e.g. if you get holes in your fabric something has happened to the needle point or if the thread breaks there might be damage to the eye of the sewing machine needle.

As a general definition of the end of needle life we can say

**The life of a sewing machine  
needle has come to an end when  
the needle loses its proper  
function.**

## 2 Parameters influencing Needle Life

In the previous paragraph we already named a few influencing factors on needle life. If we look closer we will find the following parameters

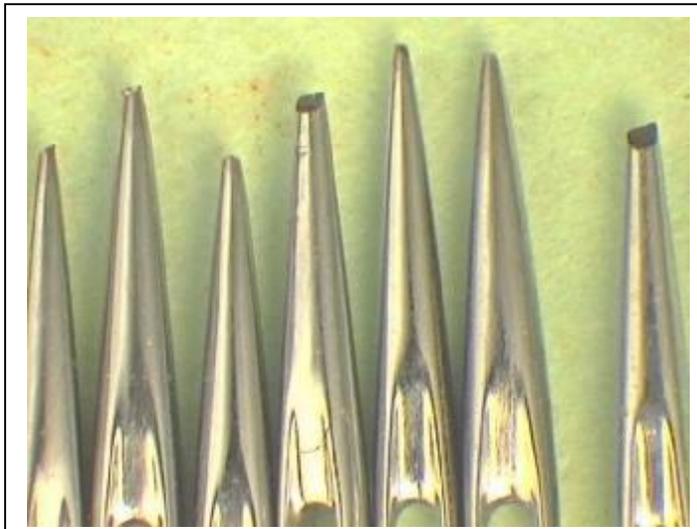
- sewing good
- operator
- machine setting
- machine speed
- thread quality
- thread size
- needle size
- needle point

besides other parameters being specific to every plant like climate, work environment and others. All these parameters are of influence to the needle life and are very individual to every sewing factory.

If we just take the operator as one of the most influencing factors on needle performance we can see that the skills and work experience is a significant parameter. But also here the human factor comes in because not everyday the operator works the same depending on the physical and mental condition. If you put two operators side by side sewing the same workpiece under the same outer conditions like same machine, same speed etc. it can happen that the results are very different, especially when we look into the needle consumption.

From all these influencing parameters it becomes very clear now that they cannot be predetermined because they are individual to the specific sewing factory. Almost every factory has different conditions and setups even if they make the same product.

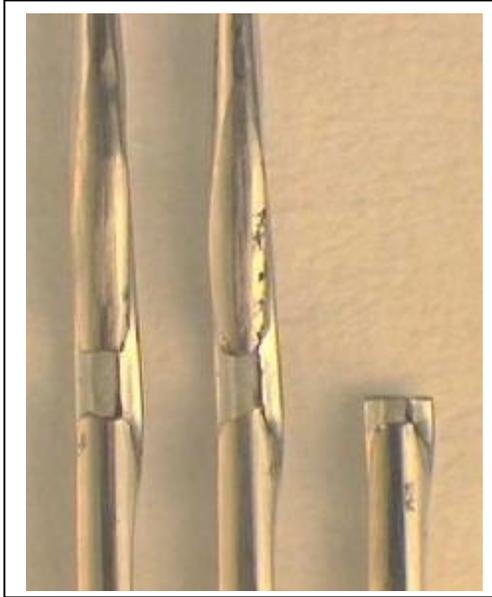
### 3 Examples



Broken needle points because the needle has touched some machine parts. The fabric never would cause this type of fault.

Abrasion on eye sidewall because the needle was deflected during sewing and was touching the sides of the needle hole in the throat plate





Total abrasion of eye sidewall. The eye is open. This happened with a very abrasive sewing good containing a flame-retardant chemical.

#### **4 How to find your individual needle life**

As the manufacturer of the sewing machine needle we are not able to give a prediction of needle life for the individual plant because it is impossible to know all your individual factors. But a lot of sewing factories have the data available or are able to find the data for every sewing line or even for every sewing machine. It just is a matter of about a month collecting data for every needle change, log the data and categorize by reason for the needle change.

This will give a good basis for quality improvement because if you have these data you will be able to implement a needle change policy in your factory as already a lot of the high quality manufacturers do. You will have the possibility now to change the needle before it starts to abrase or before the needle point gets damaged.

#### **5 Hints**

- The operator should check the needle point regularly for damage. This can be done with the fingernail of the pointing finger or with a piece of nylon stocking. The best effect is achieved if the check is done every hour.
- This check is essential when you are sewing knitwear because only this measure together with a needle change policy will maintain a good quality garment.