THOMASTIK INFELD VIENNA
HANDMADE STRINGS SINCE 1919

Vienna, July 2021

FROM NYLON STOCKINGS TO MUSIC STRINGS

HOW THE DOMINANT-STRING WAS BORN

On February 28, 1935, Wallace Carothers produced the first completely synthetic fiber for the textile industry: nylon (PA6.6.). Three years later, on September 29, 1938, the US Patent Office issued a patent for the synthetic fiber and the manufacturing process. At almost the same time, the chemist Paul Schlack registerd the patent for Perlon (PA6) in Germany.

Both synthetic fibers are very similar in terms of their properties: they can be spun into threads, are stretchable, temperature-resistant, and almost indestructible. The only difference is the starting products used in their manufacture. Nylon and Perlon led to the birth of pantyhose and conquered the world. A German-American synthetic fiber cartel emerged.

1970, Thomastik-Infeld was the first string manufacturer in the world to introduce music strings with a core of nylon threads. A material that is intended to combine the advantages of gut and steel strings, changing the world of strings. But why did it take three decades to get there? And why had this development been achieved by the Vienna-based string manufacturer exclusively in 1970?

The first obstacle was related to war. Due to its properties, the synthetic fiber was classified as relevant to the war effort and used for the production of parachutes, ship ropes, tubes for aircraft tires, tents, and threads for wound care. This meant that civilian use of the new material initially took a back seat in Europe. Nevertheless, string manufacturers became aware of the new material and the first tests were finally carried out after the war ended. The hurdle was overcome quite quickly in the case of guitar strings. Non-wound synthetic wires are plucked to make them sound and vibrate. Done. “With strings for bowed instruments, however, the rosin would not adhere sufficiently to the bare synthetic wires, the strings did not vibrate and thus did not sing. The bending stiffness was also too high,” explain Thomastik-Infeld experts.

“We use nylon multifilaments. A multifilament is a bundle of nylon threads, with each of these bundles consisting of 10 to 100 individual threads. A violin core consists of several bundles. That adds up to between 80 and 1000 individual threads per string core. You wouldn’t think that at all if you saw a string from the outside!”

To let the threads vibrate and not tear, as well as to ensure there is enough weight on the string, they need a winding.

“First, the bundles (multifilaments) are attached to a hook on the left and right in a winding machine. Now the outer material has to be wound onto the core. To do this, it has to rotate. Not a single one of the 80 to 1000 threads should break, otherwise the continuous rotation would create a knot and the string would become unusable. This means that the hooks have to rotate synchronously with uncompromising precision, and the core and winding tensile forces must remain absolutely constant,” says Thomastik-Infeld.

“Because even if the core and winding tensile forces do not match, individual threads can be cut off by the winding material. Even the slightest deviation can lead to failure.” For a long time, all attempts by the competition failed to develop and manufacture

a suitable machine that could carry out these crucial production steps accurately and without errors. “We have already been very successful in the steel rope segment. We have always had a decisive advantage due to our enthusiasm for innovation, proximity to musicians, constant material research and our machine technology.” And that has led the Vienna-based string manufacturer to success again back in 1970!