

# IN THE STRING MAKING

## A STRING IS BORN

Music strings are nothing more than a simple sound cord. Or are they? Making a high-quality music string is a science all of its own and Thomastik-Infeld is a master of this discipline. Strings are high-tech products—a complex combination of physics, mathematics, material science, corrosion science, precision machining, and tool design.

“But where do you start?” the string forge is often asked. First, the designed string tension is determined. Thomastik-Infeld aims to make the string tension as low as possible, but as high as necessary to avoid a nasal sound or overloading the instrument. The core of a string must also withstand the desired string tension. The detailed definition of the properties that the string should have then follows. These can include, for example, sound character, variety of colors, modulation options, sound stability, bow response, and finger feeling.

This now results in the search for the right materials and their combination. “First the core material is chosen. According to the desired sound and handling properties, we decide on the type and number of intermediate layers and a surface material,” explains a Thomastik-Infeld string engineer.

Now the material for the lower layers of winding is selected. “We decide between round wire and flat strips, and determine how many strips and wires are wound in parallel, i.e. simultaneously. This naturally produces limitations and challenges. The higher the density and the diameter of the core, the less can be applied to the outside, so that the mass per unit length corresponds exactly to the specifications. Both the thickness and the degree of strength and rigidity of the material used have to

be taken into account. Different materials have different properties, and these affect the properties of the strings.”

Thomastik-Infeld works with its own high-precision rollers, which are developed and built in-house. These produce bands with an accuracy of up to 0.5 micrometers (0.0005 millimeters). “Just like in sport, these figures make the difference and elevate us to number one.”

For very high sounding strings, like the violin E-string and violin and viola A-strings, the mass of the core determines the predominant part of the total mass. This means you can only apply a very slight amount of winding mass. This is the reason why certain strings don't exist, such as silver wound A-strings for violin and viola or silver wound violin E-strings.

All in all, string development is a long process that can take up to two years. The production of a single string ultimately takes between 1.5 and 10 minutes. The end of string design? “No. We're always looking for new possibilities, materials, production techniques,” says Thomastik-Infeld.

