

# RESONETICS

## Driving Innovation

In MedTech and Life Sciences

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# Manufacturing Solutions

## Raw Materials

At Resonetics, we produce different types of raw materials for medtech applications, including precision thin wall hypotubing, precious metal marker bands, and nitinol wire. We produce all our raw materials to have high material quality, precise tolerances, and excellent surface finishes. We can produce our material to the exact specifications needed for your application and stock a wide range of standard sizes and shapes.



## Nitinol Material

At Resonetics, we melt our own nitinol raw material which is used to make nitinol tube, wire, and sheet for medical devices. We also offer different grades of nitinol material, from standard to ultra-low inclusion premium alloys. We have a 60-year history of working with nitinol, starting with melting the original material in the 1960s. Since then, we have established itself as one of the world's largest producers of nitinol raw material, tubing, and wire for medical devices. The forms of nitinol we offer are:

### Nitinol Tube

We are a high-volume manufacturer of precision nitinol tubing, with outer diameters as small as 0.15mm and inner diameter as small as 0.010mm.

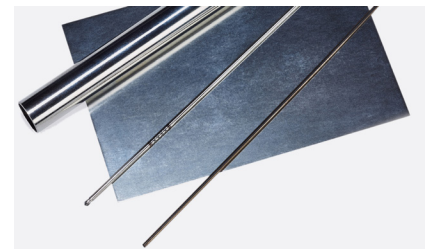


### Nitinol Wire and Strip

We produce nitinol wire and strip that have remarkable durability, flexibility, and kink resistance. Our wire comes in an outer diameter range from 0.076mm to 2.16mm.

### Nitinol Sheet

We are one of the main producers of nitinol sheet material, available in both super elastic and thermally flattened shape memory alloy. The thickness range for the sheet is from 0.05mm to 6.35mm.



### Material Grades

We offer three different grades of nitinol that can be used in our tubing, wire, and sheet.

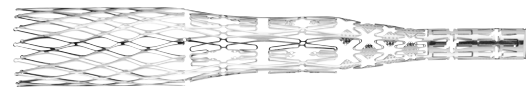
- Standard: maximum inclusion size of 30 um and inclusion area fraction of 2.0%.
- Redox: maximum inclusion size of 20 um and inclusion area fraction of 1.2%.
- Enduro: maximum inclusion size of 12 um and inclusion area fraction of 0.5%.



## Nitinol Processing

Nitinol, a nickel-titanium (NiTi) alloy, has unique superelastic and shape-memory capabilities essential to medical devices and technologies. Our expertise in highspeed femtosecond laser cutting, shape setting, electropolishing, and braiding enables medtech innovators to leverage this revolutionary material with comprehensive processing and manufacturing solutions. Our core nitinol processing capabilities include:

- Electropolishing
- Laser Cutting
- Shape Setting
- Braiding



## Metal Fabrication

We are experts in solving complex manufacturing problems and have broad expertise in many different manufacturing methods for metal fabrication, including centerless grinding, CNC machining, photochemical machining, stamping, coiling, and microforming. Each of our different capabilities in metal fabrication is supported by experienced process experts, state-of-the-art manufacturing equipment, and a proven quality system. Our capabilities include:

- Centerless Grinding
- CNC Machining
- Photochemical Machining
- Stamping, Coil, & Microforming



## Laser Processing

We are the leader in laser processing for complex medical devices, components, and implants. Our engineers have deep process knowledge, and we custom-build our own laser processing systems to provide the best manufacturing solution for each application. Our core laser processing capabilities include:

- Ablating
- Cutting
- Drilling
- Welding
- Perforation



## Fiber Optic Sensors

We are the leading manufacturer of fiber optic sensors and readout units for the medical device industry. The sensors are highly-precise, extremely small, and impervious to radio frequencies, electromechanical interference, and microwave radiation. We have a standard line of fiber optic sensor products to enhance your device, or our experienced engineers can create a custom sensor for your specific application.



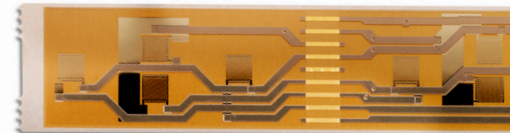
## Medical Batteries

Resonetics designs and manufactures the broadest range of electro-chemistries for implantable applications, including lithium-ion, lithium carbon monofluoride (Li/CFx), lithium carbon monofluoride-manganese dioxide hybrid (Li/CFx-MnO<sub>2</sub>), and lithium thionyl chloride (Li/SOCl<sub>2</sub>). Committed to providing customers with innovative and reliable integrated power solutions for the most critical medical applications, our engineers accelerate time-to-market with unmatched efficiency and flexibility in the industry.



## Electromechanical Sensors

Resonetics designs and manufactures custom electromechanical sensors to collect critical procedure data, like strain and temperature, in medtech applications. Our electromechanical sensors have a small footprint, making them ideal for integration into devices and implants used in minimally invasive surgery.



## Coatings and Coverings

Our advanced polymer coatings and coverings capabilities offer improved performance because of our proprietary adhesion technology. This technology activates the surface and improves the bond between metals and polymers. Based on the application, we can then apply a polymer coating to the metal surface or bond a covering made from fabric or polymer. Our engineers are experts in coatings and coverings used in medtech applications and can help you choose the right manufacturing process and polymers to meet the needs of your project and application. Our options include polymer coatings and sutureless coverings.