

# AUSTENITIC STAINLESS STEELS

This the family of the AISI 300 Stainless steels, used in the ENOVA® range of needles. This family of steels is used by MANI and ETHICON (for high quality sutures).

Examples:

**AISI 304** : X5 Cr Ni 18-10

**AISI 302** : X10 Cr Ni 18-8

Their general chemical composition is:

CARBON : < 0.15 %  
NICKEL : From 6 to 13 %  
CHROMIUM : From 17 to 2 %

Additional elements : Molybdenum, Copper, Manganese

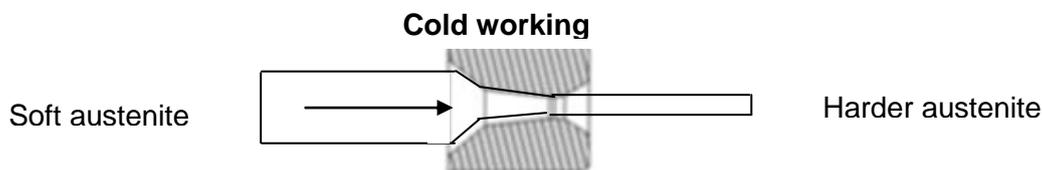
Due to their chemical composition, the structure of these stainless steel grades is fully austenetic at low and high temperatures.

It is the austenitic structure that gives the ductile comportment of the needle.

Thanks to the important chromium content, these steels have an excellent corrosion resistance. For example, they can be used in surgical implants.

The mechanical resistance of the austenitic stainless steels is given by a strong cold working.

During a strong cold working, the carbon atoms penetrate the austenitic structure, creating a solid solution that strongly strenghtens the wire.



It is its specific structure that gives the 300 stainless steels their excellent mechanical performances for needle application. These performances are today the best on the market.

The formability and the drillability of such stainless steels is really difficult, and need a specific process.

To achieve the perfect adequacy between high tensile strength and ductility, a perfect knowledge of the raw material elaboration linked to the specific know-how of the needle manufacturer is required .

The ENOVA® needle bending resistance is improved by more than 40% compared to a classical 420F martensitic taper point needle, while maintaining an excellent ductility.

## KEY INFORMATION

1. The **best steel** on the market
2. Most difficult machinability
3. **Main advantage:**  
Combine high bending resistance with high ductility.

## QUALITATIVE OVERVIEW OF THE PERFORMANCES

| Characteristics      | Martensitic 420 | Maraging       | Austenitic 300 |
|----------------------|-----------------|----------------|----------------|
| Bending Resistance   | +               | From + to +++  | From ++ to +++ |
| Ductility            | +               | From ++ to +++ | +++            |
| Attaching            | +               | From + to ++   | +++            |
| Corrosion Resistance | +               | +++            | +++            |
| Hardness             | +               | From + to +++  | ++/+++         |

**+ Good**

**+ + Very Good**

**+ + + Excellent**