

# Stainless steel pipe EN 1.4521 for press-fitting joint

**Stainless** steel has been developed over the years with innovation and the inclusion of new types of alloys that allow offering more specific products for each type of particular application.

In the field of piping to press, these innovations have also been added to product portfolios of manufacturers to allow the system to new applications and a better adaptation of the offer to each of the market needs, both at the level of quality as of cost.

In this line, it has appeared in recent years the supply of tubing for joining systems by press-fitting, with the tube made of ferritic stainless steel AISI 444 or EN 1.4521, with a chemical composition, 18% chromium, 2% molybdenum and stabilization with titanium and niobium.

This pipe for pressing is manufactured according to the European standard

EN 10312, in the usual diameters and thicknesses of the system, 15 x 1 ; 18 x 1 ; 22 x 1,2 ; 28 x 1,2 ; 35x1,5 ; 42 x 1,5 ; and 54mm. x1,5mm. At the moment the pipes of the superior dimensions are not offered in this type of material.

The pipe AISI 444- EN 1.4521 is produced by both TIG and laser welding processing, and it is offered in both annealed and not annealed conditions. This type of tubing is installed in connection with the accessories manufactured in AISI 316L grade, since accessories manufactured in AISI 444 are not offered.



As for all applications of the pressfitting system, the system is certified for applications that work up to 16 kg of pressure. Depending on the O-ring used, the range of working temperatures ranges from -20°C to +200°C.

The German certifying agency DVGW (German Institute for Gas and Water) decided to extend the certification of approved materials for the conduction of sanitary water for human consumption, to the tube made of stainless steel AISI 444-EN1.4521, and from that moment its use has grown exponentially generalizing as an alternative to type 316L for many applications, especially in the countries of central and northern Europe, under the applicable European standard EN10312.

This ferritic material has some advantages versus the use of austenitic steel pipe in certain cases, so it has become an attractive alternative in the offer for those applications.

First of all, its high resistance to pitting corrosion should be highlighted, especially when working at high temperatures, such as hot water or water with high chloride content (well water, etc.). Therefore, it is an excellent alternative to AISI 316/316L (EN1.4401/1.4404) when cost is an important decision factor.

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This fact also allows us to link with a second important advantage of this material: its greater price stability due to the absence of nickel in its composition. As we already know, the price of nickel, one of the main components of austenitic stainless steels, directly influences the volatility of the alloy extra, and thus in the austenitic material cost. Therefore, the price of stainless steel AISI 444-EN 1.4521 is usually more stable and economically interesting when compared to the AISI 316/316L type. This is undoubtedly an advantage that has contributed to the growth of the use of this material in the press tubing, since it provides the buyer with greater price stability when preparing their budgets and cost calculations.

Anyway, as it happens with all the materials, the pipe for pressing in stainless steel AISI 444-EN 1.4521 also presents some aspects that must be taken into account at the time of proceeding with its selection which do not occur in case of the austenitic stainless steel.

On the one hand, it is worth noting the hardness of the material, which although it allows for a certain degree of curvature in the tube, presents a greater difficulty than austenitic steel.

Also, this greater hardness also makes the material more delicate in some aspects than austenitic steel, and this factor requires a greater degree of attention when handling and transporting the pipe made of stainless steel AISI 444-EN 1.4521, to avoid micro-cracks of material that could cause long-term problems.

In summary, thanks to the evolution and the appearance of new materials and alloys within the world of stainless steel, a large number of applications and technologies are finding possibilities of access to new markets in expansion.

In the case of the pressfitting, in which Isotubi, S.L. has been innovating for more than 20 years and contributing to its dissemination both in Spain and in international markets, the appearance of the tube



made out of ferritic stainless steel AISI 444- EN 1.4521, and especially its recognition by DVGW for sanitary water applications, has allowed to offer customers a very good alternative to austenitic steels with good value for

money. In this way, it has been possible to contribute to the development not only of the pressfitting in particular, but of the stainless steel in general in front of other materials such as common steel or plastics.

