



Austenitic Stainless Steel type 316L

Non-magnetic behavior in magnetic fields

The 316L stainless steel in the annealed condition exhibits a fully austenitic structure which makes it totally non-magnetic i.e.: no magnet attraction whatsoever.

Its relative magnetic permeability μ_r is below 1.004, as further evidence of its fully paramagnetic behavior. This non-magnetic behavior holds in all situations, whether in the presence of permanent magnetic fields (magnets) or induced fields such as generated by AC currents

The annealing process does not affect adversely the non-magnetic properties of a 316L wire: on the contrary, it actually insures a 100% austenitic microstructure and thus guarantees the non-magnetic behavior of the 316L.

Very slight magnetism could theoretically appear in 316L after large plastic deformations, and at low temperatures. The amount of cold reduction would have to be significantly in excess of 70 % to induce any detectable effect. As evidence of the permanence of non-magnetic behavior of 316L after cold work, the permeability μ_r has been measured at the non-magnetic level of 1.009 after 60 % deformation, even in fields of as high as 16000 Oersteds.

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