

## Material characteristics of Stainless Steel



AISI Standard	304	303	CF-8 (Precision casting)	301
<b>German Material No.</b>	1.4301	1.4305	1.4308	1.4310
<b>DIN / EN-Number</b>	EN 10088-1; -2; -3	EN 10088-1; -2; -3	EN 10283	EN 10088-1; -2; -3
<b>Symbol</b>	X 5 CrNi 18-10	X 8 CrNiS 18-9	GX 5CrNi 19-10	X 10 CrNi 18-8
<b>Alloying components %</b>	C ≤ 0,07 % Si ≤ 1,0 % Mn ≤ 2,0 % P ≤ 0,045 % S ≤ 0,030 % Cr 17,0 ... 19,5 % Ni 8,0 ... 10,5 %	C ≤ 0,10 % Si ≤ 1,0 % Mn ≤ 2,0 % P ≤ 0,045 % S ≤ 0,15 ... 0,35 % Cr 17,0 ... 19,0 % Ni 8,0 ... 10,0 %	C ≤ 0,07 % Si ≤ 1,50 % Mn ≤ 1,5 % P ≤ 0,040 % S ≤ 0,03 % Cr 18,0 ... 20,0 % Ni 8,0 ... 11,0 %	C ≤ 0,05 ... 0,15 % Si ≤ 2,0 % Mn ≤ 2,0 % P ≤ 0,045 % S ≤ 0,015 % Mo ≤ 0,8 % Cr 16,0 ... 19,0 % Ni 6,0 ... 9,5 %
<b>Minimum tensile strength R<sub>m</sub> in N/mm<sup>2</sup></b>	500 ... 700	500 ... 700	440 ... 640	500 ... 750
<b>Yield strength R<sub>p0,2</sub> in N/mm<sup>2</sup></b>	≥ 190	≥ 190	≥ 175	≥ 195
<b>Machinability</b>	medium	very good	medium	poor
<b>Forgeability</b>	good	poor	–	good
<b>Weldability</b>	excellent	poor	good	good
<b>Special characteristics</b>	antimagnetic structure suitable for low temperatures, can be used up to + 700 °C	antimagnetic structure	antimagnetic, austenitic structure	austenitic structure
<b>Corrosion resistance</b>	good Resistant to corrosion in the natural environment: water, rural and urban atmospheres without significant chloride or acid concentrations, in food areas and in agricultural food areas.	medium Due to the sulphur content reservations in environments which contain acids and chlorides.	good Resistant to corrosion, Material is largely comparable with AISI 304.	good Resistant to corrosion in the natural environment: water, rural, urban and industrial atmospheres.
<b>Main areas of application</b>	Food industry Agriculture Chemical industry Vehicle construction Construction industry Machine construction Decorative purposes (Kitchen equipment)	Vehicle construction Electronics Decorative purposes (Kitchen equipment)	Food industry Beverage industry Packaging industry Fittings Pumps Agitators	Springs for temperatures up to 300 °C Tools (knives) Plates for vehicle construction Chemical and food industry

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AISI Standard	316L Sintered Material	630	304 Cu
<b>German Material No.</b>	1.4404	1.4542	1.4567
<b>DIN / EN-Number</b>	(Sint C40)	EN 10088-3	EN 10088-1; -3
<b>Symbol</b>	X 2 CrNiMo 17-12-2	–	X 3 CrNiCu 18-9-4
<b>Alloying components %</b>	C ≤ 0,08 % Si ≤ 0,9 % Mn ≤ 0,1 % Mo 2,0 ... 4,0 Cr 16,0 ... 19,0 Ni 10,0 ... 14,0 %	C ≤ 0,06 % Si ≤ 0,6 % Mn ≤ 1,0 % P ≤ 0,03 % S ≤ 0,025 % Cr 15,0 ... 16,5 % Mo ≤ 0,5 % Ni 4,0 ... 5,0 %	C ≤ 0,04 % Si ≤ 1,0 % Mn ≤ 2,0 % P ≤ 0,045 % S ≤ 0,03 % Cr 17,0 ... 19,0 % Ni 8,5 ... 10,5 %
<b>Minimum tensile strength</b> $R_m$ in N/mm <sup>2</sup>	330	800 ... 1300	450 ... 650
<b>Yield strength</b> $R_{p0,2}$ in N/mm <sup>2</sup>	≥ 250	500 ... 1100	≥ 175
<b>Machinability</b>	–	poor	excellent
<b>Forgeability</b>	–	good	good
<b>Weldability</b>	–	good	very good
<b>Special characteristics</b>	antimagnetic structure	hardenable (precipitation hardening)	antimagnetic structure, suitable for low temperatures
<b>Corrosion resistance</b>	medium  By virtue of its coarser porosity the corrosion resistance is in general reduced as compared with Stainless Steel. Reservations especially in acid and salty environment.	good  Corrosion resistance comparable with AISI 304. Insensitive to intergranular corrosion.	very good  Resistant to corrosion in the natural environment: water, rural and urban atmospheres without significant acid concentrations, in food areas and in agricultural food areas.
<b>Main areas of application</b>	Paint, oil, soap and textile industry Electronics Decorative purposes (Kitchen equipment)	Shipbuilding Food industry Construction engineering Automotive industry	Food industry Agriculture Chemical industry Machine construction Shipbuilding Electronics Decorative purposes (Kitchen equipment)

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