

The material 1.4057 / AISI 431 is a martensitic chromium-nickel steel with a chromium content of 15-17 %. Due to the high chromium content, this stainless steel has better corrosion resistance and toughness than comparable steels with a lower chromium addition. The material 1.4057 / AISI 431 has a high strength and resistance and is therefore used, among other things, for the production of machine parts subject to high mechanical stress. The material can be used at temperatures from -40°C to 400°C.

**Chemical composition (mass fraction in % according to DIN EN 10088-3)**

C	Si	Mn	P	S	N	Cr	Cu	Mo	Ni	Ti	Other
0,12 - 0,22	≤ 1,00	≤ 1,50	≤ 0,04	≤ 0,03	-	15,0 - 17,0	-	-	1,50 - 2,50	-	-

**Specification**

EN-Grade	1.4057
EN-short name	X17CrNi16-2
EN-standard	10088
AISI	431*
B.S.	431S29
JIS	SUS431
Microstructure	Martensit

**Physical properties**

Magnetisability:	present
Density(kg/dm <sup>3</sup> )	7,0
Thermal conductivity (at up to 20°C)	25
Electronic resistance at Room temperature (in Ω mm <sup>2</sup> /m)	0,7

**Possible areas of application**

Automotive industry  
 Chemical industry  
 Aviation industry  
 Mechanical Engineering  
 Petrochemistry  
 Turbine construction  
 and more

**Mechanical properties at room temperature in the heat-treated state (according to EN 10088-3)**

Ø	Heat treatment condition	Hardness	0,2 % Yield strength	Tensile strength	Elongation at break
in mm	+A = annealed, +QT = remunerated	in HB	R <sub>p0,2</sub> in Mpa	R <sub>m</sub> in Mpa	A in% (longitudinal)
-	+A	295	-	Max. 950	-
≤ 60	+QT800	-	600	800 - 950	14
60 < t ≤ 160					12
≤ 60	+QT900	-	700	900 - 1050	12
60 < t ≤ 160					10

**Minimum values of 0.2 % proof stress at elevated temperatures (according to EN 10088-3)**

Temperature in °C	100	150	200	250	300	350	400
+QT800	515	495	475	460	440	405	355
+QT900	565	525	505	490	470	430	375

(\* based on)

**Notes on temperatures for hot forming and heat treatment (according to EN 10088-3)**

Hot forming		Abbreviation for heat treatment +A = annealed, +QT =remunerated	Annealing	
Temperatur e	Cooling type		Temperature	Cooling type
1100 - 800	Slow cooling	+A	680 - 800	oven, air
		+QT800	-	-
		+QT900	-	-

**Welding**

The material 1.4057 is suitable for some welding processes, but certain precautions must be observed. Gas containing hydrogen or nitrogen must not be used when welding this material. If welding addition is necessary, the materials 1.4430 or 1.4370 should be used. This applies especially if the weld does not have high strength. Preheating can be omitted when using the welding filler materials. Otherwise, preheating to 100°C - 300°C is necessary. During welding, the material must not cool down below 200°C. If no additional post-treatment of the weld seam is carried out, it should also be noted that the mechanical-technical values of the material can vary greatly in relation to those of the base material.

If you have further questions about this or any other product, please contact our team at +49 2263-9240-0 or email [wire@agst.de](mailto:wire@agst.de)

**Please note:**

The information given in this material data sheet has been compiled to the best of our knowledge and is based on the current version of the relevant standard. We accept no liability for any errors.