

Standard: SS-EN 1676

Alloy group: AISi12(Fe)

Alloy designation: Stenal 445

CHEMICAL COMPOSITION %

Alloy	Elements															
	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Pb	Sn	Ti	Sr	Ca	Sb	Each	Total
STENAL 445	min	11,0	0,45		0,32	0,30					0,07	0,03				
	max	12,0	0,60	0,18	0,47	0,40	-	-	0,30	-	-	0,15	0,05	0,003	0,005	0,05

MECHANICAL PROPERTIES FROM SEPARATELY CAST TEST PIECES

Casting process	Temper designation	Tensile Strength	Yield strength	Elongation
		Rm MPa min.	Rp0,2 MPa min.	A % min.
Sand				
Permanent mould				
High pressure die casting	F	270	170	2
	T4 / T5	240 / 300	130 / 245	7 / 1

General description:

A development of the alloy 44500 AISi12(Fe) for high pressure die casting with improved properties. Stenal 445 has a tighter alloying range for favorable process effects and adjusted levels of alloying elements, which improves its properties. The alloy has a lower iron content, is alloyed with strontium and the manganese is balanced against the iron content compared to a standard alloy. Copper content can also be reduced further if corrosion resistance is important. Key properties are high mechanical strength, good fatigue properties and good ductility. Apart from the excellent strength properties, the alloy gives a lower process variation, which provides good opportunities for lower discard levels. It is possible to heat-treat the component if the porosity is kept low, which in turn makes it possible to tailor the properties to the applications.

Suitable applications:

Suitable in a variety of applications where high mechanical properties are required. Excellent for complex and/or thin walled castings.

Heat treatment:

The alloy can be artificially aged or precipitation hardened, provided that porosity can be kept low.

Remark:

Sr content is higher for delivery condition of ingots. Sr level will, in liquid state, decrease with time and needs to be maintained with separately added Sr. Recommended Sr level for castings is in range of 0,02-0,03.

Heat treatment:

T4: 3h at 480°C
T5: 4-6h at 150-170°C

Mechanical properties:

Measured from separately casted test bars thickness 4 mm, material potential, process depending. True properties only when testing component.