

506Sn EMF

6% SILVER ALLOY DOPED WITH TIN GIVING IT A BEHAVIOUR IDENTICAL TO SILVER BRAZES
 REFERENCE 506SN EMF IS RECOMMENDED FOR COPPER-BASED ASSEMBLIES
 (OPT FOR REFERENCE 506SN ESF FOR COPPER-TO-STEEL ASSEMBLIES)

STANDARDS ISO 17672 : 2016 Ag 205Si* (*Does not exactly match the standard)

MANUFACTURING SPECIFICATIONS COMPARED TO STANDARD / ISO

Standard values	ISO 17672 : 2016 - Tolerances							Spec AI	
	Ag	Cu		Zn	Sn	Si	Ni	Cd	Code
Composition %	4,0<>6,00	54,0<>56,0		38,0<>42,0		0,05<>0,25			Ag 205Si
Dimensions	Diameter : Extrusion +/- 0,3 mm Drawing +/- 3 % – Length +/- 5 mm								

Indicative values of the manufacturing specification / Alliages Industries

Spécification value 506SnEMF	ALLIAGES INDUSTRIES - Tolérances							Spec AI
	Ag	Cu		Zn	Sn	Si		Code
Composition %	4,0<>6,0	59,0<>61,00		32,0<>34,0	0,5<>1,5	0,05<>0,25		506SnEMF
Dimensions	Diameter : Extrusion +/- 0,2 mm Drawing +/- 3 % – Length +/- 5 mm – Coating : 0,15 mm							

Standard chemically tested in the laboratory in accordance with the ISO 17672 standard.
 Excluding dimensional tolerances for products not covered by the standard.

PHYSICAL PROPERTIES Rm MPa /mm² 20°C 601
 A % 20°C 30 %
 Melting point 755°C
 Density 8,75
Silicon stabilized alloy, no bubbling. Without Degassing
 Manufacturing method Direct extrusion, alloy and flux coating.

DOWNLOAD SDS TO DOWNLOAD N°500 ON THE [SDS section](#)
 TDS TO DOWNLOAD ON THE [TDS section](#)

COATING QUALITIES :
 MF / MINI-FLUX AND BORIC ACID FREE RATIO ALLOY / FLUX 90/10
 SF / STANDARD FLUX AND BORIC ACID FREE RATIO ALLOY / FLUX 76/24

Tensile test on rod according to NF EN ISO 6892-1: 2019 method B at 21°C

Tensile test on test pieces (non-standard: test speed at 10 mm / min) at 21°C

COMPARATIVE STUDY TABLE – RUPTURE – ELASTICITY / THE ALLOY

506Sn versus a 34% silver without cadmium and a 15% silver with Cadmium

Elongation at break Rm MPa /mm² at 20°C 601

Elastic limit Rp 0.2% (MPa) 482

Résultats (results)

Référence éprouvette <i>Specimen reference</i>	Section initiale <i>Cross section</i> (mm ²)	Le (mm)	Lc (mm)	Rm (MPa)	Rp 0,2% (MPa)
506Sn	3,21	100	120	601	482
534Sn	3,21	100	120	592	486
15Cd	2,82	100	120	543	330

L'incertitude élargie (U) mentionnée correspond à deux fois l'incertitude-type composée. Les incertitudes-types ont été calculées en tenant compte de différentes composantes d'incertitudes (étalon de référence, contribution des instruments, conditions d'environnement, répétabilité, reproductibilité...)

The expanded uncertainty (U) is obtained by multiplying the combined standard uncertainty by a coverage factor of k=2. Standard uncertainties are estimated considering standards and equipments used, environmental conditions, repeatability, reproducibility...

COMPARATIVE STUDY TABLE –

TRACTION ON TEST PIECES Copper on copper (Cu/Cu) and copper on steel (Cu/Ac)

506Sn against a 34% silver without cadmium and a 15% silver with Cadmium

Résultats (results)

Référence éprouvette <i>Specimen reference</i>	Fmax (N)	Localisation de la rupture <i>Fracture localization</i>
Cu/Cu - 506Sn	9 720	Breakage in the copper tube outside the brazed joint
Cu/Cu - 534Sn	9 872	
Cu/Cu - 15Cd	9 754	
Cu/Ac - 506Sn	11 361	Breakage in the copper tube outside the brazed joint
Cu/Ac - 534Sn	11 214	
Cu/Cu - 15Cd	9 754	

506Sn EMF

Eprouvettes assemblées après essais de traction : Assemblage Cu/Cu
De haut en bas : 506Sn – 534Sn – 15Cd



Eprouvettes assemblées après essais de traction : Assemblage Cu/Al
De haut en bas : 506Sn – 534Sn – 15Cd

**CLEANING**

The potassium salts contained in the SF, RF, MF, XF coating (Boric acid free) are 99.99% dissolved by washing in a very hot alkaline solution used in baths (regularly drained). Dilute abundantly with water. Collect liquids with an absorbent material. It is possible to neutralize these salts with a solution of sodium carbonate diluted 1/5. In this case, do not close hermetically during the operation.

In the event of insufficient removal, these salts remain on the parts, causing whitish stains.

These salts are stable, so there is no hydrolysis and no risk of galvanic corrosion by formation of an electric current

506Sn EMF

REGLEMENTATION	CLP (1272/2008)	: <u>Compliant</u>
	Reach	: <u>Compliant</u>
	RoHS/CERoHS	: <u>Compliant</u>
	DESP	: <u>Compliant</u>
	GHS (2007-2011)	: <u>Compliant</u>
	ErP-2009	: <u>Compliant</u>

This alloy is available in a bare version, in this case, it is recommended to use the CarboFLUX NT flux on copper and MaxiFLUX H on ferrous.

NB

The main metals are in order copper, zinc, silver and tin.

As in all copper, silver and tin alloys, the impurity limits of the ISO 17672 standard concern the metals, aluminium, bismuth, cadmium, lead, silicon and phosphorus.

Consequently, no phosphorus is added during melting.

During the manufacture of this alloy, the casting is deoxidised with a phosphorus master alloy in the same way as certain copper tubes. This alloy contains tin.

This alloy is sometimes doped with silicon when the appearance of the joint is essential, in these three cases there are no longer impurities. In all cases the appearance is silvery/yellowish in colour. If necessary, it is possible to vary the colour by modifying the zinc content, up to the acceptable limits for wire drawing.

The 506Sn alloy with a silver content of 6% is not especially recommended for stainless steel assembly, due to its low silver content.

Cu/Fe assemblies are technically possible although our preference is for alloys with a higher silver content beyond 20%, especially in the refrigeration industry.