

# Product Information

## FELDER-ISO-Tin<sup>®</sup> - „HAL-Sn100Ni+“

Lead free soft solder alloy according to Fuji- Pat. No. DE19816671C2, US6179.935, JP3296289,  
Sn99.26Cu0.7Ni0.03Ge0.01

Item-No.: 551292....

All information about our products are the result of our long standing experience which we would like to pass on to our customers as application support. However, as we do not have any influence on the application of the works carried out with our products, please see the warranty claims in our conditions of sale because our liability is limited.

This product information does not constitute warranted properties.

## Application

Lead-free electronic solder for HASL (Hot Air Solder Levelling)– applications in PCB manufacturing. As well usable in wave and selective soldering processes with high Ni entries which can result from Ni/Au plated circuit boards

## Properties

Beside the well-known advantages of Ni-endowed solders our alloy reaches improved wetting qualities on all common surfaces in the electronic production and lowest dross formation in comparison to all other lead-free solders.

Sn100Ni+ has a wide soldering temperature window and is applicable in wave soldering processes starting at 265 °C as well as in dip soldering processes up to 450 °C and HAL-processes around 280 °C. With increasing soldering temperature, however, it is to be expected an increasing GE-consumption as well as an intensified Cu-removal! For the HASL-application the Ni-endowment was optimized accordingly.

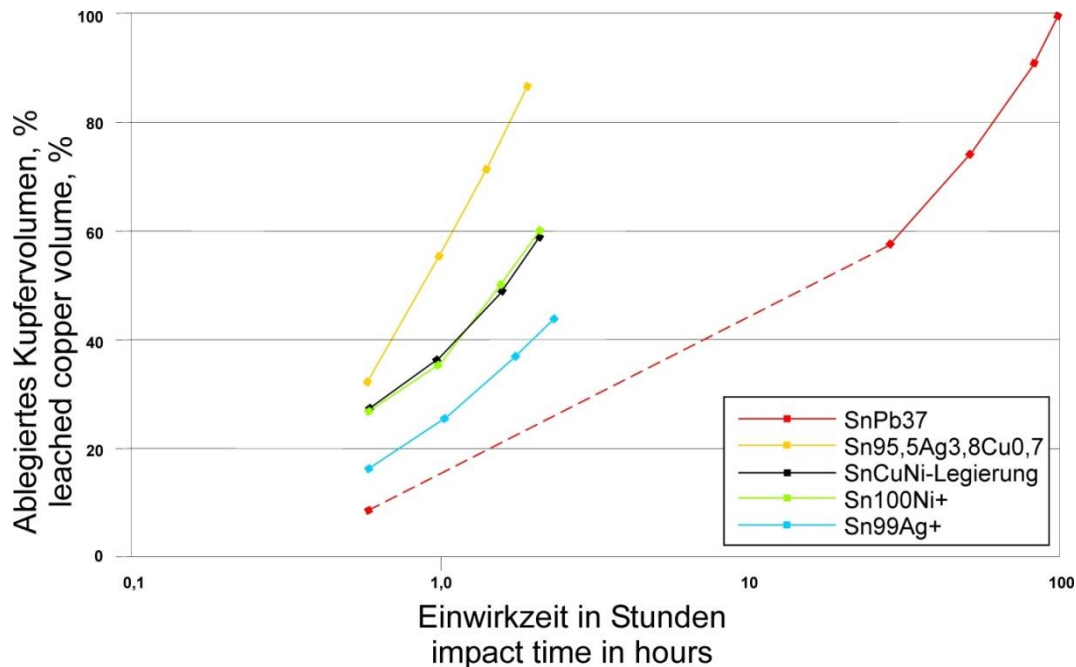
Alloy	HAL-Sn100Ni+ (Sn99.26Cu0.7Ni0.03Ge0.01)
Melting temperature in °C	227 (eutectic)
Recommended soldering temperature in °C	265 - 450
Density in g/cm <sup>3</sup>	7.31
Tensile strength in N/mm <sup>2</sup>	37.0
Thermal expansion coefficient in K <sup>-1</sup>	23.6 x 10 <sup>-6</sup>
Spreading test according JIS-Z-3197, 8.3.1.1 in %	>75
Electrical conductivity in m/Ωmm <sup>2</sup>	7.5
Specific resistivity in Ωmm <sup>2</sup> /m	1.33 x 10 <sup>-1</sup>

## Chemical composition according EN ISO 9453:2014

Element	Sn	Cu	Ag	Ni	Ge	Pb	Au
Content (%)	Rest	0,50 - 0,90	max. 0,1	0,03	0,01	max. 0,07	max. 0,05

Element	Al	As	Bi	Cd	Fe	Sb	Zn
Content (%)	max. 0,001	max. 0,03	max. 0,10	max. 0,002	max. 0,02	max. 0,10	max. 0,001

## Copper dissolution in comparison



## Advices

**FELDER-ISO-Tin®** Lead-free solder bars and wires do not contain any substances that are subject to restriction by directive 2011/65/EU ("RoHS").

Every delivery is provided with a batch number. If requested an analysis certificate will be furnished. The analysis values are ascertained by the means of an optical emission spectrometer.

Other alloys are included in our standard delivery program.

## Delivery Forms

400 g - rods, 330 x 20 x 10 mm,  
 3,5 kg – blocks with hanging hole 545 x 47 x 20 mm.  
 Other alloys are included in our standard delivery program.

## Storage

Stored at constant indoor climate durable for an unlimited period!