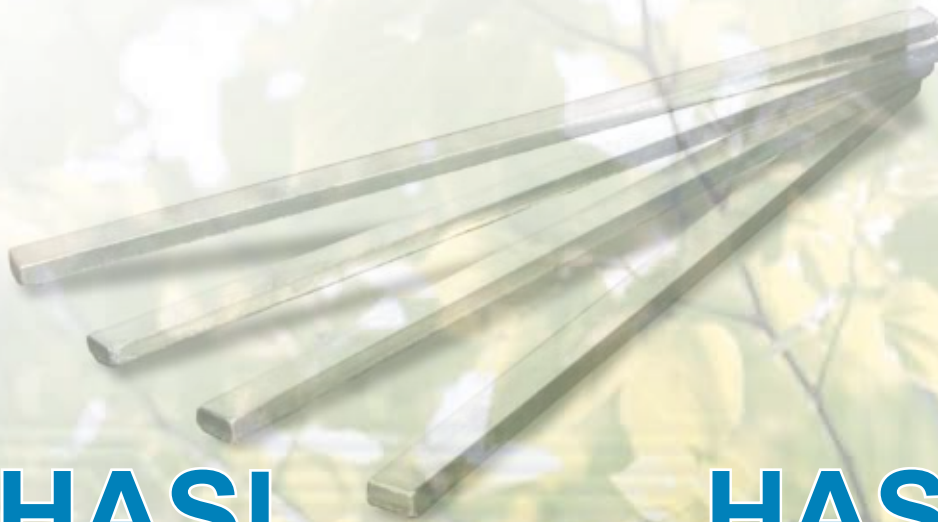


# HASL - Electronic Solders



**HASL**

**Sn100Ni+<sup>®</sup>**

**Sn99,3Cu0,7NiGe**

**HASL**

**Sn99Ag+<sup>®</sup>**

**Sn99Ag0,3CuNiGe**

**FELDER**  
**Löttechnik**

recommended by plant manufacturer:

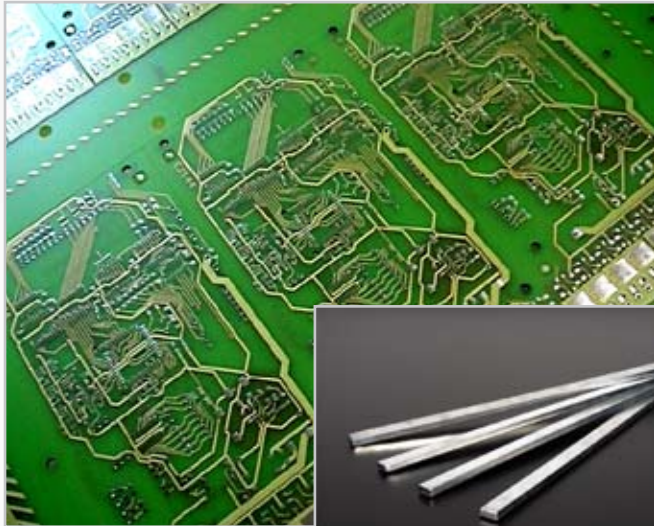


[www.pentagal.de](http://www.pentagal.de)

FELDER GMBH  
Löttechnik  
Im Lipperfeld 11  
D-46047 Oberhausen

Telephone: +49 / 2 08 / 8 50 35 - 0  
Fax: +49 / 2 08 / 2 60 80  
Internet: [www.felder.de](http://www.felder.de)  
E-Mail: [info@felder.de](mailto:info@felder.de)

# FELDER Löttechnik



## FELDER HASL-Electronic Solders

After a successful market launch of our new NiGe-patented alloys **ISO-Tin Sn100Ni+<sup>®</sup>** and **ISO-Tin Sn99Ag+<sup>®</sup>** for the wave soldering process, we are now also offering our electronic solders with its outstanding properties to HASL-users. On the Japanese and Asian market, respectively, these solders endowed with nickel and germanium have already been used many years in HASL-process, too. These solders are produced according to the patent of Fuji-Electric Co., Ltd., Japan. Recently, the first European PCB manufacturers have identified and realised these advantages, amongst others with Pentagal HASL-machines. The plant manufacturer PENTAGAL GMBH tested our HASL-electronic solders. The HASL-electronic solders are recommended as optimal solution, since the test results exceed all expectations of lead-free alloys, that have been well-known until now, by far. There is a possibility to have customers' printed circuit boards tested with our solder alloy „Sn99Ag+“ by a „PENTA HASL-machine“ at the company PENTAGAL GMBH, Bochum (Germany).

### Advantages of Sn100Ni+<sup>®</sup> and Sn99Ag+<sup>®</sup>

- Shiny surfaces
- Improved metal structure
- Prevention of tin-whiskers
- Reduced surface tension
- Extremely low corrosion appearances with copper
- Reduction of process temperature
- Low dross formation through germanium additive
- Improved wetting qualities

### Special advantages of Sn99Ag+<sup>®</sup>

Due to the additional silver content in **ISO-Tin Sn99Ag+<sup>®</sup>** a further reduction of the process temperature is reached. At the same time an increased wetting speed and therefore also a bigger throughput is achieved.

Product	Sn	Cu	Ag	Others	Melting temperature	Rods	Massive wire
HASL - Sn100Ni+	99,3	0,7	> 0 ≤ 0,07	NiGe	227°C	•	•
HASL - Sn100Ni+ Refill	99,9		> 0 ≤ 0,07	Ni0,1Ge		•	•
HASL - Sn99Ag+	99,0	0,7	0,3	NiGe		•	•
HASL - Sn99Ag+ Refill	99,6		0,3	Ni0,1 Ge	217-227 °C	•	•

### Form of delivery

Rods à 400 g, 20 x 10 x 330 mm  
3,5 kg blocks with hanging hole, 47 x 20 x 545 mm  
Pellets for first filling, 10 x 150 mm

**FELDER GMBH**  
**Löttechnik**  
Im Lipperfeld 11  
D-46047 Oberhausen

Telephone: +49 / 2 08 / 8 50 35 - 0  
Fax: + 49 / 2 08 / 2 60 80  
Internet: [www.felder.de](http://www.felder.de)  
E-Mail: [info@felder.de](mailto:info@felder.de)