

A large, light grey, stylized letter 'A' is centered on the page, serving as a background for the company name. The 'A' has a triangular shape with a white negative space in the center.

 **ELSOLD[®]**

Strong in the Region – successful in the World



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• ELSOLD® Editorial

ELSOLD GmbH & Co. KG is one of the world's leading manufacturers of lead, tin and corresponding alloys. Experts and customers appreciate our company as a competent and reliable partner.

In 2011 ELSOLD has been hived of as separate Enterprise of JL Goslar GmbH. Today at the new site in Ilsenburg, in the Harz region, where lead ore has been mined for more than 1000 years, ELSOLD offers a unique wealth of expert metallurgical knowledge and Know-How.

As an established result, our business unit ELSOLD® with more than 60 years experience has the largest scope of innovative soldering products worldwide. We supply customers throughout the electronic and solar industries.

ELSOLD® brand innovative soldering products fulfil the highest demands in modern electronic connection technology. Even in the initial design stages, we provide for all legal requirements, engineer and international standards.

In order to expand our international top position, we are in close contact with our customers: knowing their needs enables us to optimize our products. We combine traditional knowledge and Know-How with the latest scientific expertise.

Our ambitions for the years coming are quite clear: ELSOLD® will continue to develop and produce top quality innovative soldering products, customized to new technologies and production technique.

We are a company with a long tradition, we think local and act global. Our focus with all our activities is a long-term relationship with customers, partners and employees.

Join us into a future where ever growing challenges inspire top quality products.

... less waste, more profit
Factor 15x*

ELSOLD®
 Innovative Solder Products
SN100 MA-S



Standard
Sn99,3Cu0,7



ELSOLD® SN100(Ag) MA-S micro-alloy solder with Ni, Ge and P

In addition to a complete range of high quality solder alloys, ELSOLD® now offers a world class innovation - the micro-alloy **ELSOLD® SN100(Ag) MA-S**. This solder is manufactured in a revolutionary process called „Frischen“ or “Freshening” which can be described as an ultra-grade cleaning operation. This proprietary technique results in a highly pure and highly stable solder alloy with a much lower tendency to oxidize during soldering in an open environment / atmosphere solder equipment. Typical solder defects such as bridging and solder spikes are almost non-existent. Com-

pared with Sn99,3Cu0,7, our new lead free micro-alloy solder boasts the lowest amount of dross formation while soldering, thereby making it extremely economical!

The tables and graphs on the following pages show the enormous potential for slowing down production soldering losses and reducing costs! The numerous advantages of the revolutionary **ELSOLD® SN100 MA-S** can be summarized as follows: Good solderability, fine-grained & shiny solder joints, reduced erosion of solder pot & solder tools, reduced leaching and the lowest dross formation resulting in the best cost efficiency!

• ELSOLD® SN100 MA-S Bars and Ingots, lead-free

Alloy	Melting Range [°C]	Operation temperature [°C]	Delivery Form	Dimensions [mm]	Weight [ca. kg]	Order number
SN100 MA-S	227-230	255-285	Triangular bars	8/10x400	0,2	EL04 0027
SN100 MA-S	227-230	255-285	Ingots	20x20x335	1,0	EL04 0030
SN100 MA-S	227-230	255-400	Ingots w. eye	50x20x490	3,0	EL04 0028
SN100 MA-S Refill SC02	232-234	255-285	Triangular bars	8/10x400	0,2	EL04 0032
SN100 MA-S Refill SC02	232-234	255-285	Ingots	20x20x335	1,0	EL04 0034
SN100 MA-S Refill SC02	232-234	255-285	Ingots w. eye	50x20x490	3,0	EL04 0035
SN100Ag0,3 MA-S	217-227	255-285	Triangular bars	8/10x400	0,2	EL04 0036
SN100Ag0,3 MA-S	217-227	255-285	Ingots	20x20x335	1,0	EL04 0038
SN100Ag0,3 MA-S	217-227	255-285	Ingots w. eye	50x20x490	3,0	EL04 0040
SN100Ag1 MA-S	217-223	255-285	Triangular bars	8/10x400	0,2	EL04 0041
SN100Ag1 MA-S	217-223	255-285	Ingots	20x20x335	1,0	EL04 0042
SN100Ag1 MA-S	217-223	255-285	Ingots w. eye	50x20x490	3,0	EL04 0045
SN100Ag3 MA-S	217-219	255-285	Triangular bars	8/10x400	0,2	EL04 0046
SN100Ag3 MA-S	217-219	255-320	Ingots	20x20x335	1,0	EL04 0048
SN100Ag3 MA-S	217-219	255-320	Ingots w. eye	50x20x490	3,0	EL04 0049

All lead-free SN-100(Ag) MA-S alloys are naturally available in bar, solid and cored wire.

- Your advantages:
- good solderability
 - fine-grained & shiny solder joints
 - reduced erosion of solder pot & solder tools
 - reduced leaching
 - lowest dross formation
 - best cost efficiency

... less waste, more profit
Factor 15x*

ELSOLD®
 Innovative Solder Products
SN100 MA-S

Standard
Sn99,3Cu0,7

Highlight



micro-alloy solder SN100(Ag) MA-S
Solder bars, 3-edge solder rods and solder blocks

- in all lead free SN(Ag)Cu alloys
- highest purity [first melt]
- excellent solderability and wettability
- lowest oxidation build up
- lowest dross formation



Features: lead free solder micro-alloy SN100(Ag) MA-S

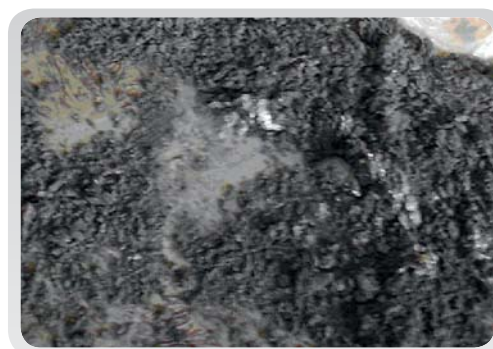
The special manufacturing process of **SN100 MA-S** eliminates unwanted impurities leading to a highly pure and stable alloy which shows a reduced tendency to oxidize. This proprietary manufacturing process guarantees an outstanding level of purity without contamination. Such alloys show a high stability and remain fluidly liquid thereby

reducing typical solder defects such as solder peaks and solder bridging. The soldering results are outstanding and quality fluctuations are kept to an absolute minimum.

One simple look at the molten solder bath surface after 8 hours and before dross removal clearly shows the difference between and SnCu0,7.

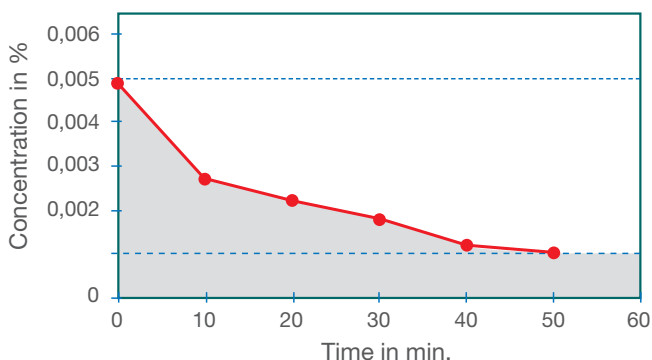


SN100 MA-S



SnCu0,7

FRESHENING – Reduction of Impurities in SN100 MA-S



Dross formation of „freshening“ **SN100 MA-S** compared to a non-“freshening“ material

Dross formation in 4h at 450 °C (non-dynamic bath)	
SN100 MA-S	2,3 %
SnAg0,3Cu0,7P	6,5 %

*Factor 15x less solder dross taken after 8 hours in a dynamic solder bath at 290°C



Highlight ELSOLD® SN100 MA-S

- good solderability
- fine-grained & shiny solder joints
- reduced erosion of solder pot & solder tools
- reduced leaching
- lowest dross formation
- best cost efficiency



Drive down your production losses...

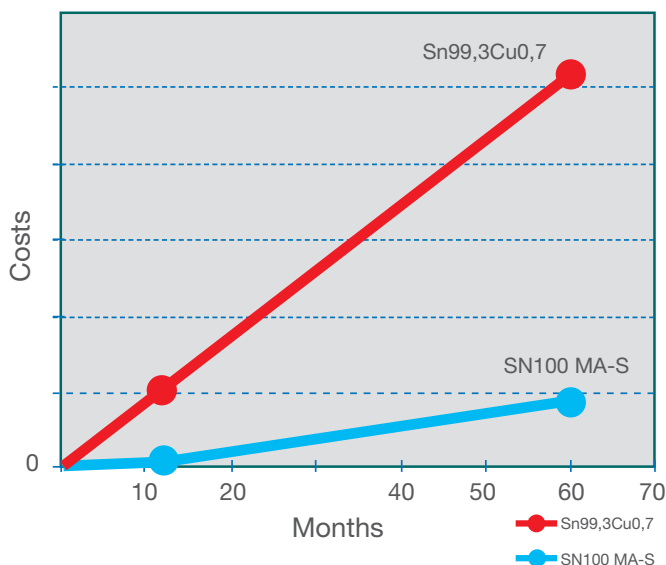
Factor 15x*

• Comparison of dross quantities

The tremendous advantage of **SN100 MA-S** can best be seen in a dynamic wave soldering process. At 290°C the dross formation on the wave can be reduced by a factor of 15!

This means not only fantastic savings due to using less expensive solder, but also savings due to a reduced service requirement of the wave soldering machine!

Costs due to dross related losses



Cost savings based on reduced dross formation in a dynamic solder bath

Dross formation of SN100 MA-S in comparison to SnCu0,7 at 290 °C in a **dynamic** solder bath (8h)

Dross formation in 8 hours at 290 °C (dynamic solder bath)

SN100 MA-S	1,5 %
Sn99,3Cu0,7	22,6 %

Based on the positive effects of “Freshening” and the influence of the micro-alloy additives, dross formation with **SN100 MA-S** is up to 93% reduced compared to non-“freshening” SnCu0,7 alloys without micro-additives.

When using **ELSOLD® SN100(Ag) MA-S** for lead free wave soldering in an open or atmosphere machine, the dross formation can be reduced up to 93%! This immense savings has an even greater payoff when using cost intensive silver alloys.

*Factor 15x less solder dross taken after 8 hours in a dynamic solder bath at 290°C

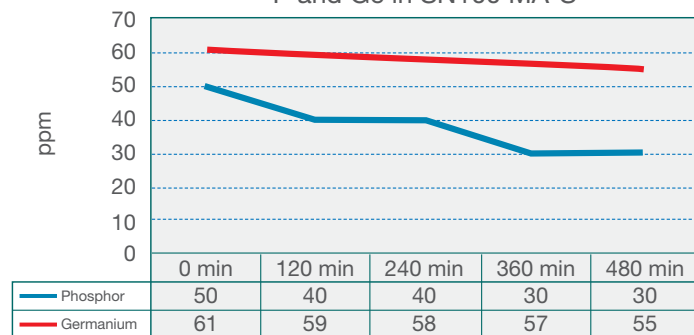


ELSOLD® SN100(Ag) MA-S micro-alloy solder with Ni, Ge and P

In addition to the well known positive characteristics of SnCu / SnAgCu alloys, it is the outstanding cost / performance ratio that makes **SN 100 MA-S** truly stand out. When using lead free alloys in an open or atmosphere wave solder machine, the dross formation can be larger than the required amount of solder in the product. This means that the manufacturing process of a product requires up

to 3-times the amount of solder that ends up being built into the product! With **ELSOLD® SN100 MA-S**, the dross formation is so reduced that the same product can be manufactured with a far lower solder requirement. This enormous savings has an even greater payoff when using cost intensive silver alloys.

P and Ge in SN100 MA-S



A solder bath analysis will clearly substantiate that the value added outstanding properties of **ELSOLD® SN100 MA-S** remain stable over a very long period of time.

The solder bath remains stable. The concentration of all elements remain stable in the observed period of time. Actually, only a very slight amount of Germanium (6 ppm) and Phosphor (20 ppm) could be observed.

• Typical analysis of SN100 MA-S

Composition	analytical results	prescriptive limits as of DIN EN ISO 9453 [%]
Sn - Tin	Rest	residual
Cu - Copper	0,70	0,5 – 0,9
Ni - Nickel	0,03	undetermined
Ge - Germanium	0,006	undetermined
P - Phosphor	0,004	undetermined
Ag - Silver	0,02	0,10
Pb - Lead	0,03	0,10
Sb - Antimon	0,003	0,10
Cd - Cadmium	0,0005	0,002
Zn - Zinc	0,0005	0,001
Al - Aluminium	0,0005	0,001
Bi - Bismuth	0,02	0,10
As - Arsenic	0,01	0,03
Fe - Iron	0,002	0,02
Co - Cobalt	0,002	undetermined
Au - Gold	0,001	0,05
In - Indium	0,004	0,10

*Factor 15x less solder dross taken after 8 hours in a dynamic solder bath at 290°C





Highlight

SN100 MA-S Cored Solder Wires Z0 und Z1

- Fine grained & shiny solder joints
- Lowest copper leaching
- Reduced erosion of solder tools
- Uniform material usage in the whole process chain with SN100 MA-S ingots, bars, solid wires and solder pastes
- Fast wetting
- Lowest, bright, transparent and non-corrosive residues
- No odor nuisance
- Classification: Z0: ORLO, Z1: ORM1

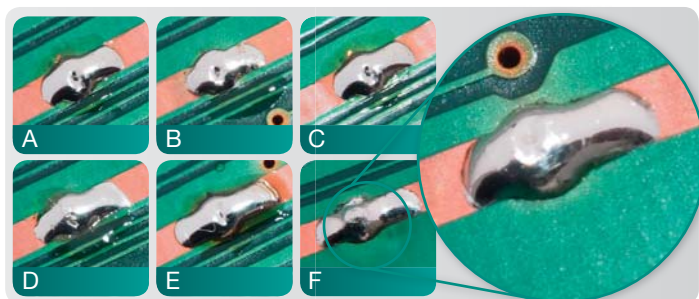
ELSOLD® SN100 MA-S Cored Solder Wire Type Z0 and Z1

ELSOLD SN100 MA-S solders are micro-alloyed, lead-free alloys with a very high purity, a low oxide content and a high oxidation resistance. The erosion of solder tools and the copper leaching are significantly reduced. Solder joints are fine grained and shiny.

When used in rework processes e.g. after wave soldering with ELSOLD SN100 MA-S massive solder products ELSOLD SN100 MA-S Cored Solder Wire offer the great advantage of an uniform material usage in the whole process chain and consequently uniform mechanical, electrical, chemical and optical properties. To that effect also uniform inspection specifications can be used in QA. Both the Sn-Cu alloy SN100 MA-S (SC07) and silver containing alloys SN100Ag0,3 MA-S (SAC0307), SN100Ag1 MA-S (SAC107) and SN100Ag3 MA-S (SAC305) are available.

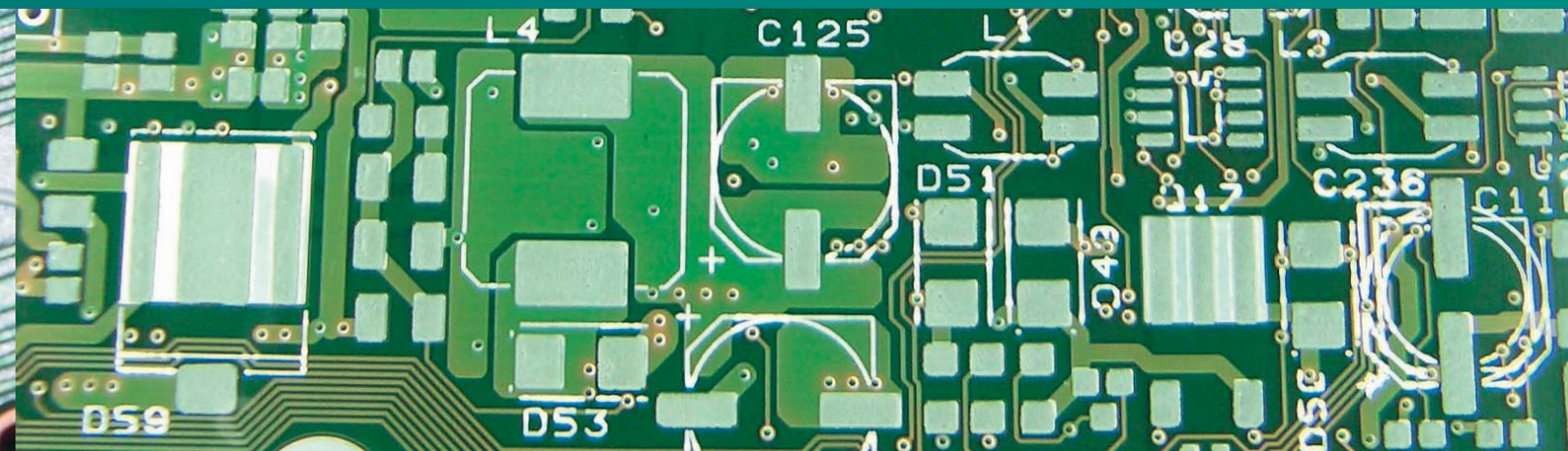
According to the high quality of the SN100 MA-S, special high quality fluxes were developed. Both the halide

free ORLO flux Z0 and (for materials and surfaces, which need a higher activity) the ORM1 flux Z1 offer lowest, bright, transparent and non-corrosive residues. Especially for manual soldering and rework processes the low and pleasant odor and the health friendly ingredients are further advantages.



ELSOLD SN100 MA-S Z0 (ORLO) 1.5% in comparison to usual cored solder wires, SC07, T_{iron} : 380 °C

- A: RELO 1.5%
- B: RELO 2.2%
- C: ORM1 1.5%
- D: ROL0 3.0%
- E: REL1 3.0%
- F: ELSOLD SN100 MA-S Z0 (ORLO) 1.5%



Highlight SN100 MA-S solder pastes

Your advantages:

- Fine-grained structure facilitates visual inspection
- Low de-alloying of copper allows lead-free tinning of thin wires and circuit paths, multiple joints and repairs
- Significant cost saving though low chemical attack on material soldering tips and equipment
- Excellent printing properties, for standard and high speed applications (Chip shooter)

• ELSOLD® SN100 MA-S solder pastes

Alloy	Metal content [%]	Powder size [µm]	Delivery forms	Flux type
SN100Ag3 MA-S	88	20-38	syringes, cartridges and cans	AP-20
SN100Ag3 MA-S	88	20-38	syringes, cartridges and cans	AP-40

• ELSOLD® SN100 MA-S solid wire

Alloy	Melting range [°C]	Diameter [mm]	Weight [kg]
SN100 MA-S	227-230	0,25 – 4,00	0,25 – 4,00
SN100Ag0,3Cu MA-S	217-227	0,25 – 4,00	0,25 – 4,00
SN100Ag1 MA-S	217-223	0,25 – 4,00	0,25 – 4,00
SN100Ag3Cu0,5 MA-S	217-219	0,25 – 4,00	0,25 – 4,00

• ELSOLD® SN100 MA-S cored wire

Alloy	Melting range [°C]	Diameter [mm]	Weight [kg]	Flux type	Flux classification
SN100 MA-S	227-230	0,25 – 4,00	0,25 – 4,00	Z0 (1,5 %; 2,5%)	ORL0
SN100 MA-S	227-230	0,25 – 4,00	1,5	Z1 (1,5 %; 2,5%)	ORM1
SN100Ag0,3 MA-S	217-227	0,25 – 4,00	1,5	Z0 (1,5 %; 2,5%)	ORL0
SN100Ag0,3 MA-S	217-227	0,25 – 4,00	3	Z1 (1,5 %; 2,5%)	ORM1
SN100Ag1 MA-S	217-223	0,25 – 4,00	6	Z0 (1,5 %; 2,5%)	ORL0
SN100Ag1 MA-S	217-223	0,25 – 4,00	2	Z1 (1,5 %; 2,5%)	ORM1
SN100Ag3Cu0,5 MA-S	217-219	0,25 – 4,00	1,2	Z0 (1,5 %; 2,5%)	ORL0
SN100Ag3Cu0,5 MA-S	217-219	0,25 – 4,00	2	Z1 (1,5 %; 2,5%)	ORM1



Highlight Solder Bars, Triangular Bars and Ingots

- all alloys with or without lead
- highest purity, virgin grade
- excellent soldering and wetting properties
- minimal oxides
- minimal dross generation
- also available as micro-alloyed (SAC) SC



• ELSOLD® Bars and Ingots, lead-free

Alloy	Melting Range [°C]	Operation temperature [°C]	Delivery Form	Dimensions [mm]	Weight [ca. kg]	Order number
Sn99.3Cu0.7	227	255-285	Triangular bars	8/10x400	0.2	EL04 0351
Sn99.3Cu0.7 MA	227	255-285	Triangular bars	8/10x400	0.2	EL04 6005
Sn99.3Cu0.7P	227	255-400	Triangular bars	8/10x400	0.2	EL04 0358
Sn96.5Ag3Cu0.5	217-219	255-285	Triangular bars	8/10x400	0.2	EL04 0403
Sn96.5Ag3Cu0.5	217-219	255-285	Ingots	20x20x335	1.0	EL04 6001
Sn95.5Ag3.8Cu0.7	217	255-285	Triangular bars	8/10x400	0.2	EL04 0374
Sn95.5Ag3.8Cu0.7	217	255-285	Ingots	50x20x490	3.0	EL04 0406
Sn97Ag3	221-232	255-285	Ingots	50x20x490	3.0	EL04 0397
Sn96.5Ag3.5	221	255-285	Triangular bars	8/10x400	0.2	EL04 0156
Sn96.2Ag3.8	221-238	255-285	Ingots	50x18x600	4.0	EL04 0411
Sn96.2Ag3.8	221-238	255-285	Triangular bars	8/10x400	0.2	EL04 0389
Sn96Ag4	221-238	255-285	Ingots	50x20x490	3.0	EL04 0419
Sn96.5Ag3.5P	221	255-320	Ingots	50x20x490	3.0	EL04 0408

- ELSOLD® alloys comply with standards DIN EN 29453, DIN EN 61190-1-3 and ELSOLD® own standards
- further forms available upon request, such as thick and wide rods, flat tapes, thin rods and bars, threads, solid wires etc.
- all alloys can be supplied in deoxidised form on request

All lead-free alloys are available as ELSOLD® MA® (micro-alloyed)

- Your advantages:**
- fine-grained structure facilitates visual inspection
 - low erosion of copper allows lead-free tinning of thin wires and circuit paths, multiple joints and repairs
 - Significant cost saving though low chemical attack on material soldering tips and equipment





ELSOLD® Bars and Ingots

Increasing miniaturisation, stricter requirements with regard to long-term reliability of complex electronic products, components and related extended performance features thereof make highest demands on soldering quality. ELSOLD® soft solders are therefore produced only from carefully selected

virgin-grade base metals. ELSOLD® soft solders cover the entire range of electronic applications: machine solders, high temperature solders, special solders (low-melting alloys, solders for static baths).

ELSOLD® Bars and Ingots with lead

Alloy	Melting Range [°C]	Operation temperature [°C]	Delivery Form	Dimensions [mm]	Weight [ca. kg]	Order number
Sn63Pb37P	183	240-260	Ingots	50x20x490	4.0	EL03 0129
Sn63Pb37P	183	240-260	Triangular bars	8/10x400	0.2	EL03 0017
Sn63Pb37P	183	240-260	Ingots	50x18x600	4.5	EL03 0133
Sn63Pb37	183	240-260	Ingots	50x20x490	4.0	EL03 0235
Sn63Pb37	183	240-260	Triangular bars	8/10x400	0.2	EL03 0393
Sn60Pb40P	183-190	240-260	Triangular bars	8/10x400	0.2	EL03 0013
Pb95Sn3Ag2	304-310	> 450	Triangular bars	8/10x400	0.2	EL03 0026
Pb95Sn3Ag2P	304-310	> 450	Triangular bars	8/10x400	0.2	EL03 0285
Pb92Sn8(Sb)	280-305	350-450	Triangular bars	8/10x400	0.2	EL03 0262
Bi50Pb31.3Sn.18.7	96	150-180	Wire	2/3x400	0.2	EL03 0192
Deoxidisation tablets, lead free, bottled		50 tablets				EL13 0042
Deoxidisation tablets, lead free, bottled		800 tablets				EL13 0043

Deoxidisation tablets (for solder baths with or without lead)

- To reduce dross formation
- The oxidation of the solder is slowed down by a very thin protective layer
- Recommended dosage: 3 to 5 tablets for every 10 kgs solder

Picture: Deoxidisation tablets delivery forms



Bottle
50 tablets



Bottle
800 tablets

Picture: Bars and Ingots delivery forms



Triangular bars



Extruded
bars



Ingots

Highlight

Solid wire



- all alloys with or without lead
- highest purity, virgin grade
- excellent soldering and wetting properties
- minimal oxides
- minimal dross generation
- also available as micro-alloyed (SAC) SC



• ELSOLD® Lead-free solid wires

Alloy	Melting Range [°C]	Operation temperature [°C]	Ø [mm]	Weight [ca. kg]	Order number
Sn99.3Cu0.7	227	255-285	3	5	EL06 1023
Sn99.3Cu0.7	227	255-285	1.5	1	EL06 1039
Sn99.3Cu0.7 MA	227	255-285	1.5	1	EL06 0006
Sn97Cu3	230-250	255-285	3	5	EL06 0598
Sn97Cu3	230-250	255-285	6	15	EL06 1086
Sn97Ag3	221-232	255-285	2	2.5	EL06 1012
Sn96.5Ag3.5	221	255-285	1.2	2.5	EL06 1067
Sn96.2Ag3.8	221-238	255-285	2	4	EL06 1076
Sn96.5Ag3Cu0.5	217-219	255-285	3	4	EL06 6019
Sn96.5Ag3Cu0.5	217-219	255-285	6	10	EL06 6003
Sn95.8Ag3.5Cu0.7	217	255-285	3	4	EL06 6023
Sn95.5Ag3.8Cu0.7	217	255-285	3	4	EL06 1034
Sn95.5Ag3.8Cu0.7	217	255-285	2	5	EL06 1029

All lead-free alloys are available as ELSOLD® MA® (micro-alloyed)

- Your advantages:**
- fine-grained structure facilitates visual inspection
 - low erosion of copper allows lead-free tinning of thin wires and circuit paths, multiple joints and repairs
 - Significant cost saving though low chemical attack on material soldering tips and equipment



ELSOLD® Solid Wires

Modern manufacturing technology, e.g. selective soldering, demands ultimate quality solid wires by using virgin grade base metals. ELSOLD® produces solid wires of highest purity. We guarantee consistent best product quality! Ongoing quality control of each and every production lot is recorded and filed. Our customers including the European Aerospace industry can fully rely on ELSOLD®, we are the only approved supplier of solid soft solder material with ECCS certification. (see page 2 ELSOLD® Certification).

Our modern production process permits the manufacture of all required alloys with or without lead and alloys for low and high temperature and also solder alloys for static baths for soft soldering processes in all areas of the electronic industry.

• ELSOLD® Solid wires with lead

Alloy	Melting Range [°C]	Operation temperature [°C]	Ø [mm]	Weight [ca. kg]	Order number
Sn63Pb37	183	240-260	3	4	EL05 1055
Sn63Pb37P	183	240-260	6	10	EL05 6018
Sn63Pb37P	183	240-260	3	1	EL05 0911
Sn64Pb36P	183	240-260	3	1	EL05 0991
Sn60Pb39.86Cu0.14P (HTF)	183-190	240-260	1.5	1	EL05 0527
Pb95Sn3Ag2P	299-305	> 450	3	1	EL05 0960

The list above shows a selection of our most sought-after products. Of course you can order the alloy you require.

All standard alloys are also available as solid wire

- Diameters available up to 8.0 mm
- Special dimensions available on request
- Standard coil sizes: 250 g / 500 g / 1 kg / 4 kg / 10 kg / 25 kg

Picture: Solid wires with lead delivery forms



4 kg



10 kg



25 kg

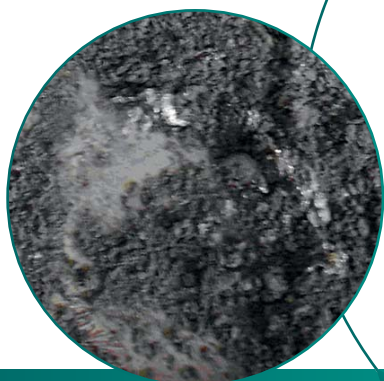


• ELSOLD® Recycling Programm

Save natural resources and protect the environment!

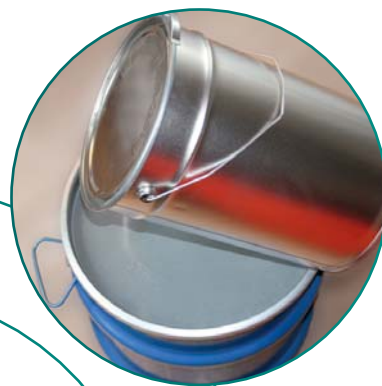
1

- free analyse of the delivered waste*
- Certificate of Spezification after recycling upon your request



2

- free metal buckets for collection and shipment of lead containing or lead free metal waste*



3

- fast settlements



Get in touch with us. Gladly we are ready to support you.

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* soft solder





ELSOLD® Cored Solder Wires – general information

Cored solder wire – the oldest solder medium – has been used for many years in the electronic industry. Cored solder wire permits the simultaneous application of solder and flux to the soldering point. Despite development of solder paste which serves the same purpose, cored solder wire has defended its position. It is still preferred for applications such as manual and repair soldering processes and automatic soldering (robot process).




ELSOLD® cored solder wire is available in many types and

is unchallenged because of its variety.

Besides the purity of the base metals, the particular innovation is the constant adaptation of solder paste composition to production parameter and process. Rosin and activator must be adapted to higher or changed process temperatures.

ELSOLD® produces top quality Cored Solder wires by choosing suitable flux constituents along with strictly monitored production conditions.

ELSOLD® Cored Solder Wires – Flux types

Flux type	Application and Properties	Class.	No Clean
A3	For applications requiring active flux effective on brass, nickel, bronze	ROH1	-
A8 	Milder activated than A3, brighter, transparent residues	ROM1	(✓)
C3	Halide free flux for all electronic applications	ROL0	✓
E1	Extremely temperature stable and splatter-free	REL0	✓
FS-28	Strongly activated, halide-free flux for demanding solder work, reduced resin content and low residue	ROL0	✓
3064 3064 BF	For difficult soldering processes, also effective on brass, nickel, bronze	ROM1	(✓)
H	Based on carbamide, very effective flux without resin, e.g. for manufacture of transformers and capacitors	ORM0	✓
T	For heavily oxidised surfaces, resin-free, halogen-activated. Used in the electric bulb industry	ORM1	-
105-19	Resin-free, halogenated, very active, low residue	ORM1	-
Z0 	Rosin and halide free, very low, bright and transparent residues, for all electronic applications	ORL0	✓
Z1 	Variation of Z0, activated with halides, for more difficult to solder surfaces	ORM1	✓

The list above shows a selection of our most sought-after products.

Of course you can order your alloy with the flux you require.

For custom-made orders, the flux fraction can be selected from 0.5% to 3.5% in steps of 0.5%.

Special dimensions available on request

- Standard coil sizes: 0.25 kg / 0.50 kg / 1.00 kg / 2.50 kg / 4.00 kg
- Special coil sizes available on request
- All cored solder wires are available with a diameter of 0.3 mm upwards
- Diameters are subject to standard tolerances as per DIN 12224-1
- Single or multi-core possible



ELSOLD® Cored Solder Wires

ELSOLD® is one of the leading manufacturers of high quality solder products for all noted processes, including solar technology. ELSOLD® cored solder wires are available in a variety of alloys combined with highly efficient fluxes. The special combination of proven activators and first-class

wetting properties guarantee the very best soldering quality in automatic and manual soldering processes. This also applies to soldering processes in solar technology.

• ELSOLD® Cored Solder Wires with lead

Alloy	Melting Range [°C]	Ø [mm]	Spool sizes [kg]	Flux		DIN EN		Halide content [%]	No Clean	Order number
				-content [%]	-type	29454	61190-1-1			
Sn60Pb39Cu1	183-190	1.00	1	3.5	A3	1.1.2	ROH1	0.75	-	EL01 1421
Sn60Pb39Cu1	183-190	1.00	1	3.5	C3	1.1.3	ROL0	0	✓	EL01 0913
Sn60Pb39Cu1	183-190	2.00	1	3.5	H	2.1.3	ORM0	0	✓	EL01 1742
Sn60Pb39Cu1	183-190	1.50	1	2.2	3064	1.1.2	ROM1	1	✓	EL01 5103
Sn60Pb39Cu1	183-190	1.00	0.50	2.2	3064	1.1.2	ROM1	1	✓	EL01 5122
Sn60Pb40	183-190	0.75	1	2.2	3064	1.1.2	ROM1	1	✓	EL01 5101
Sn60Pb40	183-190	0.75	1	3.5	C3	1.1.3	ROL0	0	✓	EL01 2139
Sn60Pb40	183-190	0.50	1	3.5	A3	1.1.2	ROH1	0.75	-	EL01 2275
Sn63Pb37	183	1.00	1	3.5	C3	1.1.3	ROL0	0	✓	EL01 2483
Sn63Pb37	183	1.00	1	2.2	3064	1.1.2	ROM1	1	✓	EL01 5158
Sn62Pb36Ag2	179	0.75	0.50	2.2	3064	1.1.2	ROM1	1	✓	EL01 5224
Sn60Pb36Ag4	178-180	1.00	1	3.5	C3	1.1.3	ROL0	0	✓	EL01 3425
Pb91Sn8Sb1	280-305	0.80	1	2.5	C3	1.1.3	ROL0	0	✓	EL01 2606

Picture: Cored Solder Wires with lead delivery forms



1000 g

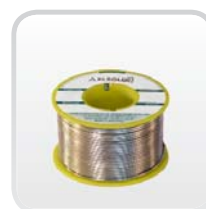


500 g

Picture: Cored Solder Wires lead free delivery forms



1000 g



500 g





Highlight “No-clean” Halide-free Flux Cored Solder wire “C3” Lead Free



- quick wetting
- low elastic residues
- non-corrosive flux residues
- short soldering time
- reduced copper erosion
- thermal stable flux
- fulfil all global standards
- for all soldering applications
- excellent solderability
- shiny solder joints



• **ELSOLD® Cored Solder Wires, lead-free**

Alloy	Melting Range [°C]	Ø [mm]	Spool sizes [kg]	Flux		DIN EN		Halide content [%]	No Clean	Order number
				- content [%]	- type	29454	61190-1-1			
Sn99.3Cu0.7	227	1.00	1.00	2.2	3064BF	1.1.2	ROM1	1	✓	EL02 5283
Sn99.3Cu0.7	227	0.75	1.00	2.5	C3	1.1.3	ROLO	0	✓	EL02 5416
Sn99.3Cu0.7	227	0.75	1.00	3.5	A3	1.1.2	ROH1	0.75	-	EL02 0014
Sn99.3Cu0.7	227	0.60	0.50	1.5	105-19	2.2.2	ORM1	< 2.00	-	EL02 5399
Sn99.3Cu0.7MA	227	0.75	0.50	2.5	E1	1.1.3	RELO	0	✓	EL02 0008
Sn99.3Cu0.7MA	227	0.50	1.00	2.5	E1	1.1.3	RELO	0	✓	EL02 6102
Sn97Cu3	230-250	2.00	3.50	2.0	T	2.2.2	ORM1	< 2.00		EL02 6011
Sn95Sb5	230-240	1.00	1.00	3.5	C3	1.1.3	ROLO	0	✓	EL02 3466
Sn97Ag3	221-230	1.00	1.00	2.2	3064BF	1.1.2	ROM1	1	✓	EL02 0010
Sn96.5Ag3Cu0.5	217-219	1.00	1.00	2.2	3064BF	1.1.2	ROM1	1	✓	EL02 5444
Sn96.5Ag3Cu0.5	217-219	1.00	1.00	2.5	C3	1.1.3	ROLO	0	✓	EL02 5545
Sn96.5Ag3Cu0.5	217-219	0.30	0.25	2.5	C3	1.1.3	ROLO	0	✓	EL02 6046
Sn95.8Ag3.5Cu0.7	217	1.00	1.00	3.5	C3	1.1.3	ROLO	0	✓	EL02 5508
Sn95.8Ag3.5Cu0.7	217	0.75	1.00	2.2	3064	1.1.2	ROM1	1	✓	EL02 5370

All lead-free alloys are available as ELSOLD® MA® (micro-alloyed)

- Your advantages:**
- fine-grained structure facilitates visual inspection
 - low de-alloying of copper allows lead-free tinning of thin wires and circuit paths, multiple joints and repairs
 - Significant cost saving though low chemical attack on material soldering tips and equipment



ELSOLD® Flux

ELSOLD® supplies a complete range of high-quality fluxes, specially manufactured to meet the toughest industry requirements. In addition to the solder alloy, the most important factor in ensuring a soldering process of a consistently high quality is the flux.

It must prepare the surface to be soldered for the actual soldering process as well promote wetting. Furthermore, following soldering the flux should have largely evaporated - without leaving behind any resistance-lowering or corrosive residues on the circuit boards.

• ELSOLD® Flux - Electronic

Flux	Container [l]	Solid content [%]	Flux Basis	Flux Basis	DIN EN 61190-1-1	Application	Order number
1003NC	10	5.9	Rosin-free Organic	Solvent-based	ORL0	Tinning of cables in dip soldering process	EL10 0055
1004NC	20	2.0	Rosin-free Organic	Solvent-based	ORL0	Tinning of cables in dip soldering process, General electronics	EL10 0108
2000NC	20	2.9	Contains rosin, Organic	Solvent-based	ORL0	General electronics	EL10 0040
2000M NC	20	2.9	Contains rosin, Organic	Solvent-based	ORL0	General electronics, Automotive electronics Telecom; standard and lead-free solder alloys	EL10 0110
2001NC	20	2.6	Contains rosin, Organic	Solvent-based	ORL0	Wave soldering of lead-free alloys. Low residue level.	EL10 0116
2001M NC	20	1.9	Organic	Solvent-based	ORL0	General electronics	EL10 0013
3002M NC	20	2.9	Organic	Water-based VOC-free	ORL0	General electronics, Automotive electronics, Telecom; standard and lead-free solder alloys, Sprayflux	EL10 0109
3003NC	20	2.9	Organic	Water-based VOC-free	ORL0	Wave soldering of lead-free alloys. Low residue level.	EL10 0117





Highlight Flux for the Solar Industry



- particularly developed for solar module production
- all fluxes are halide-free
- approved by notable manufacturers



• ELSOLD® Flux - Solar Industry

Flux	Container [l]	Solid content [%]	Product description	Product description	DIN EN 61190-1-1	Use	Order number
1004S	10	2	Rosin-free Organic	Solvent-based	ORL0	Soldering processes in the solar industry	EL11 0119
2001S	10	1.7	Organic	Solvent-based	ORL0	Soldering processes in the solar industry	EL11 0120
3003S	10	2	Rosin-free Organic	Water-based	ORL0	Soldering processes in the solar industry	EL11 0121

Picture: Delivery forms Flux



20 l canister



10 l canister



Highlight Rework Flux Solutions!



ELSOLD® supplies a complete range of high-quality fluxes, specially manufactured to meet the toughest industry requirements.

In addition to the solder alloy, the most important factor to ensure a solder rework process of a consistent and reliable quality is the flux. It must prepare the surface to be soldered for the actual rework process and promote proper wetting.

Furthermore, following reflow the flux should have evaporated without leaving any resistance-lowering or corrosive residues on the circuit boards.



→ ELSOLD® Rework Flux fluid

Name	DIN EN 61190-1-1	Acid number	Packaging	Order number
ELSOLD® 200R	ORL0	24 mg KOH/g	Filled Flux Pen	EL10 0078
ELSOLD® 200R	ORL0	24 mg KOH/g	Flux Bottle 25 ml	EL10 0079
ELSOLD® 400R	ROL0	70 mg KOH/g	Filled Flux Pen	EL10 0080
ELSOLD® 400R	ROL0	70 mg KOH/g	Flux Bottle 25 ml	EL10 0081

Test Method	Test Results	IPC-Test Method
Copper Mirror Test	Pass	IPC-TM-650 2.3.32
Silver Chromate Paper Test	Pass	IPC-TM-650 2.3.33
Halide, quantitative	0,0%	IPC-TM-650 2.3.35
SIR Test	Pass	IPC-TM-650 2.6.3.3
Corrosion Test	Pass	IPC-TM-650 2.6.15

Picture: Rework Flux delivery forms



Filled Flux Pen



Flux Pen,
Flux Bottle



Flux Bottles





Highlight Rework Flux Solutions!



The pasty fluxes from ELSOLD® (gel flux / tacky flux) like AP 40, are suitable for a wide range of rework applications. Pasty fluxes combine the advantages of SMD* adhesives and fluxes. Due to this fact the components are held in position until the rework process is finished. The fluxes are effective with existing solder depots as well as the separate dispensing of solder. The flux is highly adhesive, has excellent wetting properties, a broad process latitude and a high degree of compatibility with all standard circuit board sur-

faces e.g. perfect for Rework-Applications. This applies to leaded and lead free alloys and processes.

To fulfil the requirements of improved controllability, as in automatic optical inspections, Colored Tacky Fluxes contain neon colouring agents. Different types and concentrations were tested to develop a formulation, which enables an optimal visibility of the applied flux as well as a good inspection of the residues after soldering.

* SMD-Surface Mounted Device

ELSOLD® Rework Flux paste

Flux	Flux type	DIN EN 61190-1-1	Packaging [cc]	Use	Order number
AP-10	No Clean	ROL1	10	Lead and high lead content solder	EL09 0040
AP-20	No Clean	RELO	10	Lead-free solder, especially reliable	EL09 0057
AP-40	No Clean	RELO	10	High Reliability, as well as for leaded and lead-free alloys	EL09 0024
NC 559 AS	No Clean	RELO	10	Especially light residue	EL09 0032
SM 388	No Clean	RELO	10	Lead-free & lead-containing processes	EL09 0039
NWS 4200	water soluble	RELO	10	Can be washed off with water	EL09 0006

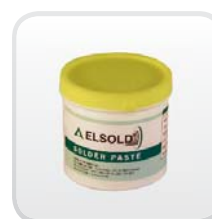


ELSOLD Colored Tacky Fluxes are available in neon yellow and neon pink

Picture: Pasty Rework Flux delivery forms



Handsyringe
5 ccm & 10 ccm



Refill jars



Syringes and Cartridges

Delivery forms: Syringes 10 cc / 30 cc
Cans 90 g / 180 g
Cartridges 150 g





Highlight LF Solder Paste AP-20



- Grain size T3 [45µm] up to T6 [15µm]
- non-corrosive residues, halogen-free
- excellent wetting properties in air and nitrogen atmosphere
- stable viscosity for more than 70 days at room temperature
- Tack Time > 48 hours, high thermal stability



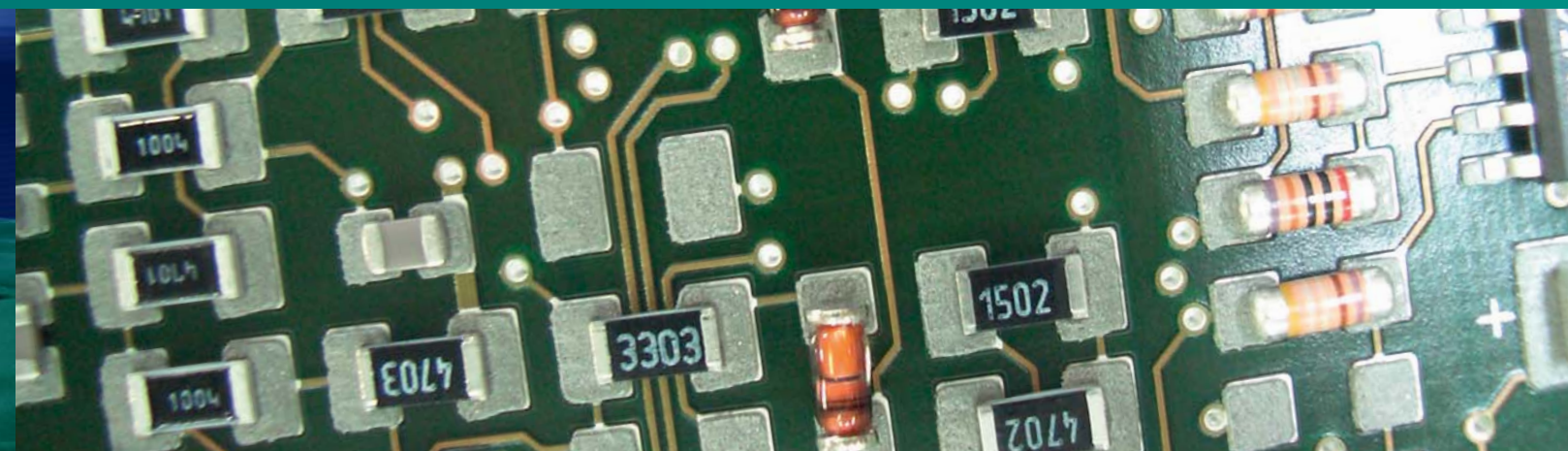
• ELSOLD® Solder Paste, lead-free

Alloy	Metal content [%]	Powder size [µm]	Melting range [°C]	Packaging	Weight [g]	Flux type	Order number
Sn96.5Ag3Cu0.5	88	25-45	217-219	Cartridge	1200	SM-388	EL08 0339
Sn96.5Ag3Cu0.5	88	25-45	217-219	Can	500	SM-388	EL08 0333
Sn96.5Ag3Cu0.5	88	25-45	217-219	Can	500	Syntech-LF	EL08 0357
Sn96.5Ag3Cu0.5	87.5	15-25	217-219	Can	500	AP-20	EL08 0016
Sn96.5Ag3Cu0.5	88	05-15	217-219	Can	500	AP-20	EL08 0023
Sn96.5Ag3Cu0.5	88.5	25-45	217-219	Can	500	AP-20	EL08 0011
Sn96.5Ag3Cu0.5	86	25-45	217-219	Syringe	35	SM-388	EL08 0363
Sn96.5Ag3Cu0.5	88	25-45	217-219	Can	500	AP-20	EL08 0007
Sn96.5Ag3Cu0.5	88	25-45	217-219	Cartridge	1200	SM-388	EL08 0339
Sn96.5Ag3Cu0.5 (MA)	88	20-38	217-219	Can	500	AP-20	EL08 0020
Sn95.5Ag3.8Cu0.7	88	25-45	217	Can	500	SM-388	EL08 0009
Sn99.3Cu0.7	88	25-45	227	Can	500	AP-20	EL08 0508
Sn96.5Ag3Cu0.5 / Bi58Sn42	87	25-45	188-192	Syringe	100	SM-388	EL08 0608
Bi57Sn42Ag1	86.5	25-45	139	Syringe	35	AP-10	EL08 0602
Sn96.5Ag3Cu0.5	88,5	25-45	217-219	Can	500	AP-40	EL08 0035
Sn96.5Ag3Cu0.5	86	25-45	217-219	Syringe	35	AP-40	EL08 0342
Sn96.5Ag3Cu0.5 (MA)	86	20-38	217-219	Can	500	AP-40	EL08 0036
Sn99.3Cu0.7	86	25-45	227	Can	500	AP-40	EL08 0325

All lead-free alloys are available as ELSOLD® MA® (micro-alloyed)

- Your advantages:**
- fine-grained structure facilitates visual inspection
 - low de-alloying of copper allows lead-free tinning of thin wires and circuit paths, multiple joints and repairs
 - Significant cost saving though low chemical attack on material soldering tips and equipment
 - excellent printing properties, for standard and high speed applications (Chip shooter)





ELSOLD® Solder Paste

ELSOLD® solder paste particularly stands out due to excellent wetting behaviour over a wide range of temperature profiles. At the same time, the solder paste not only has best slump characteristics but also excellent adhesion. Storage and durability is not critical because it is a special and modified synthetic material. Further advantages: minimal shrink-

ing, high printing speeds, high activity on all surfaces, useful for high speed printing. Repeatability, constant and excellent printing results, PCB by PCB.

ELSOLD® solder paste is suitable for closed raker systems as well as for Fine Pitch printing.

• ELSOLD® Solder Paste with lead

Alloy	Metal content [%]	Powder size [µm]	Melting range [°C]	Packaging	Weight [g]	Flux type	Order number
Sn63Pb37	90	25-45	183	Cartridge	1200	SM-388	EL07 0352
Sn63Pb37	90	25-45	183	Can	250	NWS-4200	EL07 0485
Sn63Pb37	90	25-45	183	Can	500	AP-10	EL07 0348
Sn63Pb37	90	25-45	183	Cartridge	600	AP-10	EL07 0503
Sn62Pb36Ag2	87	25-45	179	Syringe	35	AP-10	EL07 0330
Sn62Pb36Ag2	90	25-45	179	Can	250	AP-10	EL07 0502
Sn62Pb36Ag2	90	25-45	179	Cartridge	1200	SM-388	EL07 0002
Sn62Pb36Ag2	87.5	25-45	179	Can	500	AP-10	EL07 0506
Sn62Pb36Ag2	90	25-45	179	Can	500	NC-559 AS	EL07 0404
Sn62Pb36Ag2	88	25-45	179	Can	500	NC-559 AS	EL07 0483
Sn62Pb36Ag2	87	25-45	179	Syringe	100	NC-559 AS	EL07 0482
Sn62Pb36Ag2	90	25-45	179	Can	500	RMA-223 AS	EL07 0428
Sn62Pb36Ag2	90	25-45	179	Can	250	NWS-4200	EL07 0439
Pb92.5Sn5Ag2.5	90	25-45	287-296	Can	250	AP-10	EL07 0507
Sn62Pb36Ag2/Sn63Pb37	90	25-45	179-183	Cartridge	1200	SM-388	EL07 0356

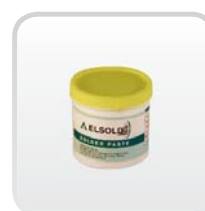
- Flux classification as per DN EN 61190-1-1
- Available powder types: 3 / 4 / 5 / 6 on request
- Various metal levels available depending on the required viscosity

Delivery forms:	Syringes	10 cc / 30 cc
	Cans	250 g / 500 g
	Cartridges	600 g / 1.2 kg
	Pro-Flow Cassettes	750 g

Picture: Solder Paste delivery forms



Syringes and Cartridges



Cans



Pro-Flow Cassettes



Cleaner

PCB cleaning or the cleaning of populated circuit boards involves the removal of flux residue from circuit boards, hybrids and DCBs. Although the so called “no clean“ procedure has established itself for numerous production processes in the low-end sector, cleaning, especially in the case of high-end subassemblies, is still indispensable. Based on our years of experience, we are able to supply our customers with a complete program of cleaning agents for the cleaning of subassemblies, templates and tools as well as DCBs and power modules. With our globally leading cleaning agents - aqueous, solvent-based and aqueous-alkaline - you will find the best, most economical and environmentally friendly solution for all your processes.

They can remove, amongst other things, flux from lead based soldering, solder paste from templates, burnt-in flux in soldering machines and soldering carriers, adhesive residue and thick-film paste. the cleaning process is often unavoidable and forms the basis for further production steps- It assists in preventing errors, e.g. during wire bonding and the bonding of molded chips. Furthermore, you can prevent paste printing errors, corrosion, electrochemical migration and creepage current, as well as avoiding the contamination of subassemblies in the soldering machines. Through the use of modern ELSOLD® cleaning products the above named problems can be solved, i.e. avoided right from the start.

• ELSOLD® Cleaner

Cleaner	Container	Content [l]	Product basis	Application	Order number
WBI-01	Plastic container	5.0	Water-based cleaner with corrosion inhibitor	Ultrasound	EL12 0001
WXS-01	Plastic container	5.0	Water-based cleaner for templates, carriers and PCBs	Ultrasound/rinsing	EL12 0002
FRA-01	Spray can	0.4	Flux remover for printed circuit boards	manual	EL12 0003
SSC-01	Spray bottle	0.5	Screen and template cleaner	manual	EL12 0004
SSW-01	Plastic container with cleaning cloths	100 Pcs.	Screen and template cleaning cloths	manual	EL12 0005

Picture: Cleaner delivery forms



Cleaning cloths



Spray cans



Spry bottles



5 l containers





• ELSOLD® Service | ELSOLD® Certification

Delivery Service

ELSOLD®'s entire product range is produced in Ilsenburg. This results in short delivery times allowing us to provide JIT deliveries on special customer request.

Technical support and application advice

In order to assure the quality of our customers finished products, we attach great importance to providing advice and support. Selecting the right soldering products and processing parameters with regard to the customers' production equipment and environmental issues is crucial for us.

Change-over to lead-free materials

The change-over to lead-free materials creates costs and triggers questions about the reliability and difficulties of lead-free material. We are pleased to offer our experience from successful change-over processes already implemented in our customer base. Join us as partner when it comes to a need of competent answers to commercial and technical queries.

Internet Service

Download technical data sheets for all important solder products from our website www.elsold.de

Solder bath analysis

ELSOLD® analyses submitted samples. The customer is informed about the level of impurities with a recommendation as how to proceed for further operation.

Disposal of used soft soldering material

We dispose of your unusable old material (like "Dross") at fair conditions.

ELSOLD® Certification

ELSOLD® production process complies with the quality management standard ISO TS 16949. Certification for this comprehensive directive for the automotive industry was achieved in September 2007 and is still valid.

Certificate – Registration – No. 391568 TS09

ELSOLD® products fulfil the standards DIN EN ISO 9453, DIN EN ISO 9454, DIN EN 61190 1-1 to 1-3, the key international standards and the ELSOLD® works standards which are not covered by any official standard.

Selected ELSOLD® soft solders fulfil the ESA soldering standard ECSS-Q-70-71A. All spacecraft launched into space by ESA (European Space Agency) are soldered with ELSOLD® soft solders because of their high quality, high reliability and long service life.

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Internet www.elsold.com



Address/Delivery address

Company	
	Fax
Street	
	Author
City	

→ **Your Order** ▶ **Copy** ▶ **Fill in** ▶ **Send away**

Fax **+49 (0) 394 52 48 79 66**

Email **info@elsold.de**

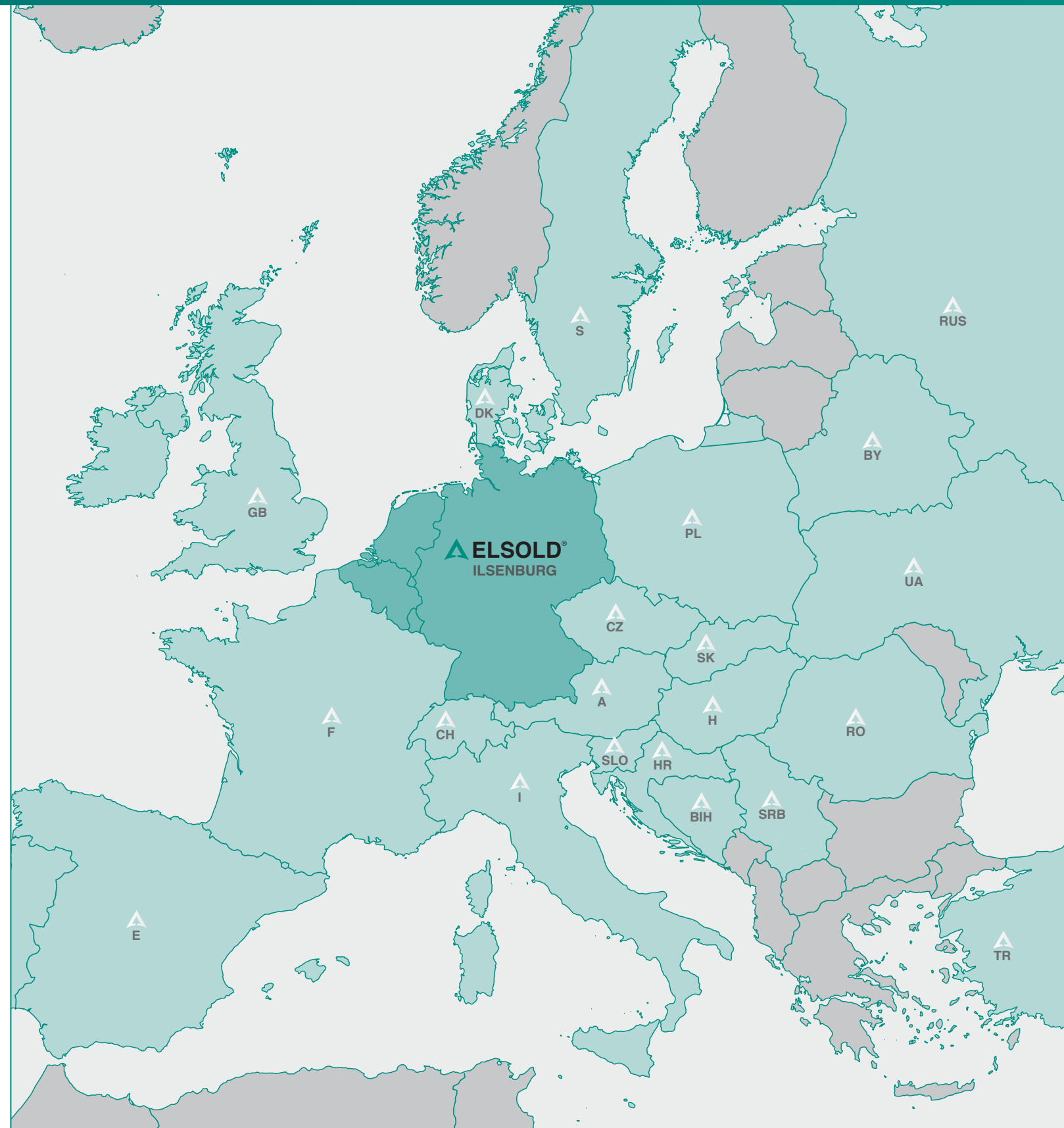
Order number	Product description	Quantity
EL _ _ _ _ _		
EL _ _ _ _ _		
EL _ _ _ _ _		
EL _ _ _ _ _		
EL _ _ _ _ _		

We would like to receive samples of the following products

Order number	Product description	Quantity
EL _ _ _ _ _		
EL _ _ _ _ _		

City, Date	Name in capital letters	Signature







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