

Technical Product Information

Flux Cored Solder Wire X3, X4 & X5

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|----------------------------|--|
| Flux Classification | X3: RELO X4: REM1 X5: REH1 according to DIN EN 61190-1-1 and J-STD-004 |
| Flux Content | 3.0% (other flux content on request) |
| NoClean | Highest reliability with regard to corrosion and electromigration, advantageous optical appearance and haptics even without cleaning |

- ✕ *Fast and reliable wetting*
- ✕ *Up to 90% less spattering than conventional cored wires*
- ✕ *Bright, transparent residues – no dark discoloration*
- ✕ *Ductile residues – no brittle spalling*



Based on powerful, chemical modified resins and a special composition of activators ELSOLD cored solder wires with fluxes X3, X4 & X5 offer great advantages compared to conventional fluxes. During soldering they show a fast and reliable wetting and a significantly reduced spattering. Hereby on the one hand soldered components stay cleaner and working conditions at manual soldering processes are improved. On the other hand more flux is effectively available where it is needed – at the solder joint. After soldering, advantages can be observed when looking at the residues, which fulfill even highest requirements also concerning the reliability: High resistance against corrosion, electrical conductivity and migration and also against mechanical impact, which prevents a brittle spalling. Furthermore the bright color, the prevention of dark discoloration and the low tackiness fulfill both esthetic and technical demands, for example for a safe automatic optical inspection system.

Test Results according to IPC-TM 650:

| | |
|---------------------|---|
| Copper Mirror Test: | X3: RELO X4: REM1 X5: REH1 |
| Corrosion: | None |
| SIR: | $> 10^{12} \Omega$ |
| Spattering: | Up to 90% less spattering than conventional flux cored solder wires |

ELSOLD Lead-Free Alloys

| Alloy | Sn [%] | Ag [%] | Cu [%] | In [%] | Sb [%] | Density [g/cm ³] | Melting Range [°C] |
|-----------|--------|--------|--------|--------|--------|------------------------------|--------------------|
| SC07 | 99.3 | | 0.7 | | | 7.32 | 227 |
| SA35 | 96.5 | 3.5 | | | | 7.35 | 221 |
| SAC305 | 96.5 | 3.0 | 0.5 | | | 7.37 | 217 – 219 |
| SAC3507 | 95.8 | 3.5 | 0.7 | | | 7.40 | 217 – 219 |
| Sn95Sb5 | 95.0 | | | | 5.0 | 7.25 | 230 – 240 |
| ELSOLD W2 | 95.0 | 4.88 | | 0.12 | | 7.3 | 220 – 235 |

Alloys collate to DIN EN ISO 9453

| | |
|------------|---|
| Tolerances | for content $> 5 \% \pm 0.5 \%$ for content $\leq 5 \% \pm 0.2 \%$ |
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ELSOLD SN100(Ag) MA-S

ELSOLD SN100(Ag) MA-S alloys contain the micro-alloying elements Nickel, Germanium and Phosphor. Additionally they are produced in a special process, called 'freshening'. This proprietary technique results in a highly pure and highly stable solder alloy with a much lower tendency to oxidize during soldering. 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.

| | | ELSOLD SN100 MA-S | ELSOLD SN100Ag0.3 MA-S | ELSOLD SN100Ag1 MA-S | ELSOLD SN100Ag3 MA-S |
|------------------------------|----|-------------------------|------------------------------|----------------------------|----------------------------|
| Composition [Wt.-%] | Sn | 99.3 | 99.0 | 98.3 | 96.5 |
| | Ag | | 0.3 ± 0.2 | 1.0 ± 0.2 | 3.0 ± 0.2 |
| | Cu | | 0.7 ± 0.2 | | 0.5 ± 0.2 |
| | Ni | | | 0.03 - 0.06 | |
| | Ge | | | 0.003 - 0.007 | |
| | P | | | 0.001 - 0.005 | |
| Melting Range [°C] | | 227 – 230 | 217 – 227 | 217 – 223 | 217 |
| Density [g/cm ³] | | 7.32 | 7.33 | 7.36 | 7.38 |

ELSOLD Lead bearing Alloys

| Alloy | Sn [%] | Pb [%] | Ag [%] | Cu [%] | Density [g/cm ³] | Melting Range [°C] |
|-------------|--------|--------|--------|---------|------------------------------|--------------------|
| Sn60Pb40 | 60 | Rest | | | 8.5 | 183 – 190 |
| Sn60Pb39Cu1 | 60 | Rest | | 1.2-1.6 | 8.5 | 183 – 190 |
| Sn62Pb36Ag2 | 62 | Rest | 2 | | 8.4 | 178 – 180 |
| Sn60Pb36Ag4 | 60 | Rest | 4 | | 8.5 | 178 – 180 |
| Sn63Pb37 | 63 | Rest | | | 8.4 | 183 |

Packaging / Spools / Diameters

Spools

250 g, 500 g, 1000 g

Color Code

Lead bearing alloys: green
Lead-free alloys: neon-yellow

Standard Diameter

0.30 ± 0.03 mm 1.00 ± 0.05 mm
0.50 ± 0.05 mm 1.20 ± 0.05 mm
0.75 ± 0.05 mm 1.50 ± 0.05 mm

Shelf Life

We guarantee a minimum shelf life of 36 months if the material is properly stored in a clean environment. Most likely, ELSOLD cored wires can be used without problems long beyond this period. However, the user should find this out by making appropriate test before using the solder.

Safety and Health

For advises concerning safety and health please see the material safety data sheet.