# Special Soft Solders for Pre-Tinning of Coated Wires and Special Applications

Depending on the quality of the coating temperatures of over 400 °C are often required for the pre-tinning of coated wires. These temperatures are considerably above the melting points of commonly used soft solders. These high temperatures cause rising oxide content in dip-solder baths. In order to avoid this undesired effect have developed alloys with better performance under these conditions.

**Any user should clarify a few details in advance:**

1.Which temperature is required to burn off the coating in the process?

2.What is the admissible leaching rate of copper and silver in the process? It depends on temperature, contact time and composition of the solder alloy. This aspect is particularly important.

3.Which maximum contact time (soldering time) is defined by the production process? At constant temperature the required soldering time increases with lower tin content.

4.Thickness of diffusion zone layer (IMP) and resulting embrittlement mainly depends on soldering time and tin content at constant temperature.

The following listed alloys can be considered suitable for the processing of coated copper wires and for other special tinning applications:

## ELSOLD Special Solder Type HTF for tinning applications, low oxidation

This quaternary alloy on tin-lead basis with 60 % tin has proven especially suitable for tinning of difficult-to-solder coated wires.

Melting range: 183 - 190 °C  Best suitable for temperatures up to 350 °C

**Advantages:** - low oxidation tendency and surface tension
- very good wetting and best soldering results
- smooth and shiny solder joints

This alloy can be used at temperatures up to 400 °C, however there will be increased dross and fast copper leaching. In order to reduce copper leaching, e.g. for very thin wires, copper content of the solder can be increased up to 2 %.

This alloy is subject to RoHS legislation and must not be used – with a few exceptions - any longer.


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## Special Soft Solders for Pre-Tinning of Coated Wires and Special Applications

Following solders have lead contents over 85 % and are not subject to RoHS regulations in its present form

### ELSOLD Soft Solder Pb91Sn8Sb1

Melting range: 280 - 305 °C  Suitable for Dip Solder Baths from 350 °C - 400 °C

**Advantages:** - low copper leaching
- good wetting
- low price due to low tin content and no silver

### ELSOLD Soft Solder Pb93Sn5Ag2 (EN ISO 9453)

Melting range: 296 - 301 °C  Suitable for Dip Solder Baths from 350 °C - 450 °C

**Advantages:** - low silver leaching
- reduced dross formation due to deoxidizing effect
- lower cost due to lower solder consumption

This alloy is frequently used for soldering high-temperature-resistant coated solder wires.

### ELSOLD Soft Solders (DIN 1707-100)

### S-Pb97Ag3

Melting point: 305 °C  Suitable for Dip Solder Baths over 450 °C

### S-Pb95Sn3Ag2

Melting range: 304 – 310 °C  Suitable for Dip Solder Baths over 450 °C

These solders yield extremely good results in dip soldering baths above 450 °C. Wetting properties of these alloys require good solderability of the parts to be joint.

**Advantages:** - low dross formation at high temperatures
- minimum copper leaching
- constant soldering results in continuous operation

Tin content of 3 % reduces cost of solder by allowing reduction of silver content to 2 %.


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## Special Soft Solders for Pre-Tinning of Coated Wires and Special Applications

### Delivery Forms

| Description | Dimensions [mm] | Weight / Piece |
|---|---|---|
| Bars with suspension eyelet | 50 (B) x 18 (H) x 600 (L) | approx. 4.3 kg |
| | 50 (B) x 20 (H) x 490 (L) | approx. 3.7 kg |
| Triangular bars | 8 (B) x 10 (H) x 400 (L) | Bundles of 25 kg |
| Clippings | 8 (B) x 10 (H) x 30 (L) | Bulk material |

### Shelf Life

Minimum 5 years if stored in a clean, dry place.

### Health and Safety

For information regarding health and safety please refer to the relevant material safety data sheet.




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