

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

The user should clarify a few details in advance:

1. Which temperature is required to "burn off" the layer of coating in the process?
2. What is the admissible leaching velocity of copper and silver in the solder? It depends on the temperature, time of contact and the composition of the solder alloy. This aspect is particularly important.
3. Which maximum contact time (soldering time) is defined by the production process? The required soldering time increases with a reduction of the tin content at constant temperature.
4. The thickness of the diffusion layer and the resulting embrittlement depends mainly on the soldering temperature and the tin content of the solder.

The following 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

Melting range: 183 to 190° C

Best suitable for temperatures up to 350° C

This 4-component alloy on tin-lead basis with 60% tin has proven especially suitable for the tinning of difficult-to-solder coated wires.

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 a fast leaching of copper in the solder. In order to reduce the copper leaching in case of very thin wires, the copper content in the solder may be increased up to 2%.

This alloy is subject to ROHS legislation and must – with a few exceptions - no longer used from 1.07.2006 on.

The following solders have lead contents of over 85% and are not subject to ROHS legislation in its present form. Thus they may still be used after 1.7.2006.

ELSOLD Soft Solder S-Pb91Sn8Sb1

Melting range: 280 to 305°C

Suitable for Dip Solder Baths from 350 to 400°C

Advantages:

- Low copper leaching
- Good wetting properties
- Low price due to low tin content and no silver

ELSOLD Soft Solder S-Pb93Sn5Ag2 (DIN EN 29 453)

Melting range: 296 to 301°C

For Dip Solder Baths from 350 to 450° C

- Advantages:**
- Lower silver leaching
 - Reduced dross formation during soldering due to deoxidising effect
 - Lower cost due to lower solder consumption

This solder is very often uses for soldering high-temperature-resistant coated wires.

ELSLOD Soft Solders (DIN 1707 - 100)

S-Pb97 Ag3

Melting Point: 305°C

Suitable for Dip Solder Baths over 450° C

S-Pb95 Sn3 Ag2

Melting Range: 304 - 310°C

FSuitable for Dip Solder Baths over 450° C

These solder materials yield extremely good results in dip soldering baths over 450°C. The wetting properties of these alloys require good solderability of the parts to be joined.

- Advantages:**
- Low dross formation at high temperatures
 - Minimum copper leaching
 - Constant soldering results in continuous operation

The tin content of 3% reduces the cost of the solder by allowing a reduction of the silver content to 2%.

■ Available Forms and Shapes:

Designation	Dimensions mm	Weight / Piece kg
Bars with suspension eyelets	50 (W) x 18 (H) x 600 (L)	Approx. 3,2*
	50 (W) x 20 (H) x 490 (L)	Approx. 3,4*
Triangular bars	8 (W) x 10 (H) x 400 (L)	Approx. 0,160*
Clippings	8 (W) x 10 (H) x 30 (L)	Bulk material
Solid wires	1 to 7	Spools of 1 – 2,5 – 5

* depending on density of the material (see table)

■ Shelf Life

Minimum 12 months. If stored in a clean, dry place, shelf life is practically unlimited.

Important information: The above information was put together based on the data available to the producer at the time of print. The technical data contained herein are consistent with the properties of the material but should not be used for the preparation of specification as it is intended for reference only.