

Lead-Free Solders – Lead Content

The RoHS Directive states a maximum Lead content of 0.1%. The industry is moving away from Lead contents of around 37% and that the spirit of the Directive is to reduce the potential for Lead leaching into water supplies. Given this CEAM has considered that the max level of 0.1% to be restrictive for the Industry as a whole and has been lobbying the EU to make this level 0.2%, we were not successful in this endeavour.

In the EU solder alloys used for the joining of copper pipes used for supplying drinking water are required to be Lead-Free, the maximum Lead content in this application is 0.1%. Given that the water in these pipes is consumed directly by the public, it seems a bit of an overkill to ask that the Lead content on solder on PCBs be no more than 0.1%.

We understand our customers concerns that they need to comply with the RoHS Directive and that they are concerned about contamination of wave solder baths with Lead from components or accidental additions. This is driving the need for lower Lead levels in the incoming solder alloys, and for this reason we introduce our Ultra Low Lead (ULL) products offering a maximum Lead level of 0.05%. We would like to be in a position to offer our customers lower Lead levels to give them more headroom, however we are restricted by the Lead levels in the Tin that we purchase.

The production of Tin for 2005 is forecast to be around 330,000mt, of this total around 20% is consumed in solder production. In all cases the Tin ores that are mined contain also ores of Lead. These ores are reduced to metal in reducing rotary furnaces to produce a high tin alloy with various impurities including Lead. This raw alloy is further refined using a combination of pyro-metallurgical methods, Electro-refining, vacuum distillation and phase crystallisation to produce the "pure" Tin. We continually push our suppliers of Tin for lower Lead contents, however the producers have a physical limitation to the level of Lead that is present in the finished Tin dictated by the process that they use to refine. Also equally as important, to begin with, the ore that is supplied has a variable Lead content.

Extremely High purity Tin 99.99% (Laboratory Grade) is available in very small quantities and is 2 to 3 times the price of 99.97% Tin, and therefore it is not practical to use in solder products.

Given the issues mentioned above we can offer our Ultra Low Lead (ULL) product at 0.05%Pb max which we consider to be the best in the industry. In order to supply this product we need to be very selective in the Tin brands that we purchase, and pay premium prices for this material.

We will continue to closely monitor this situation and if improvements are made by the Tin producers that enable them to supply a lower lead content Tin in volume and at an acceptable cost we will pass this benefit to our customers.

